White Paper:
Clean Energy Standard Procurements to Implement New York's Climate Leadership and Community Protection Act

Technical Conference – July 14, 2020

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

This presentation is for information purposes only.

Technical Conference Overview

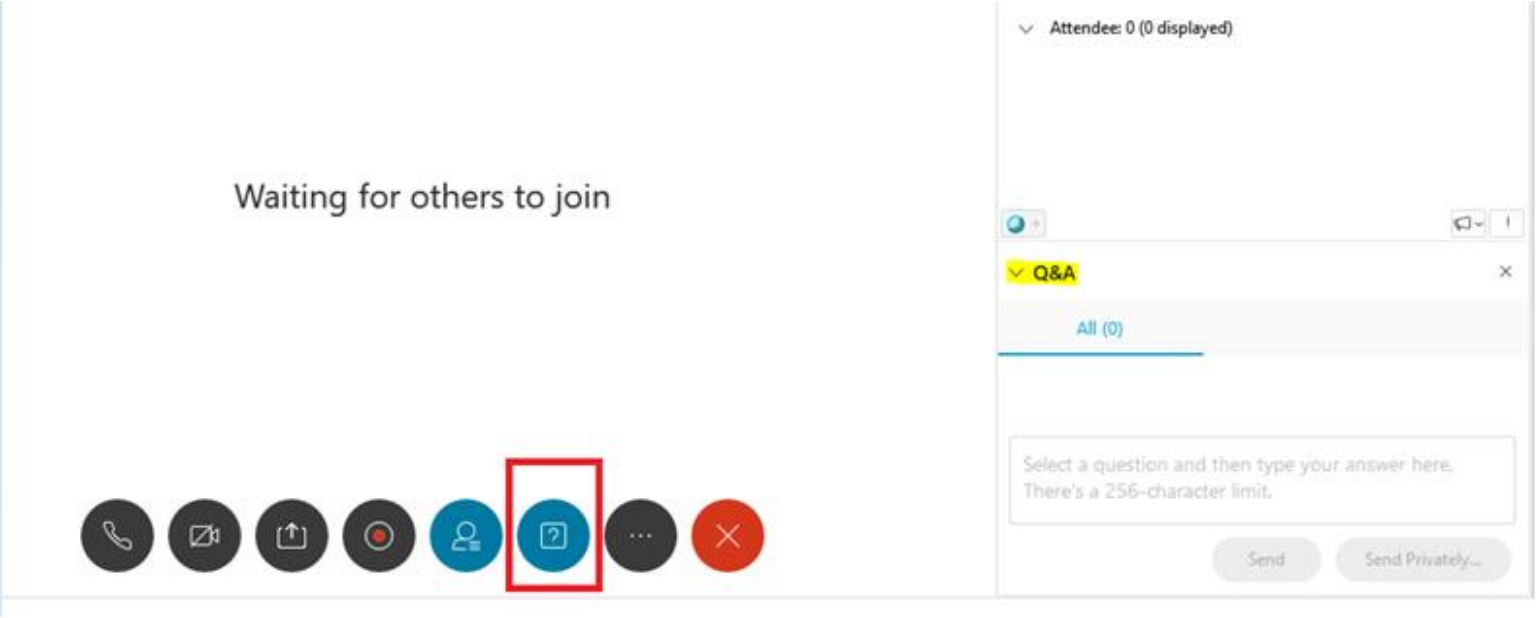
> **Introduction**

> **Paper Overview**

> **Q & A**

Technical Conference Overview - Questions

- All participants are automatically muted.
- Participants can submit questions via the Q & A chat box. Only NYSERDA and DPS Staff will be able to view the submitted questions.
- We will be answering both these questions and the questions we received ahead of time to the best of our abilities.



John B. Rhodes

Chair of the Public Service Commission and Chief Executive Officer of the Department of Public Service

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

Doreen Harris

Acting President and CEO of NYSERDA

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

White Paper Overview and Alignment with the CLCPA

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

Climate Leadership and Community Protection Act

now

CLEAN ENERGY ECONOMY
nearly 159,000 clean energy jobs

by 2025

RENEWABLE ENERGY
6,000 MW of distributed solar

RESILIENT and DISTRIBUTED GRID
1,500 MW of energy storage

ENERGY EFFICIENCY
185 TBtu end-use savings
in buildings and industrial facilities

by 2030

RENEWABLE ENERGY/
CLEAN ENERGY STANDARD
70% electricity from renewable energy

GHG REDUCTION
40% reduction in greenhouse
gas emissions from 1990 levels

3,000 MW of energy storage
30,000 employed in storage sector

by 2035

RENEWABLE ENERGY
9,000 MW of offshore wind

by 2040

CARBON-FREE
100% clean electricity

by 2050

GHG REDUCTION
85% reduction in greenhouse
gas emissions from 1990 levels

Scope of the White Paper

Alignment with the CLCPA

- > Adopts 70 by 30 Goal
- > Definition of Renewable Energy

Procurement Targets

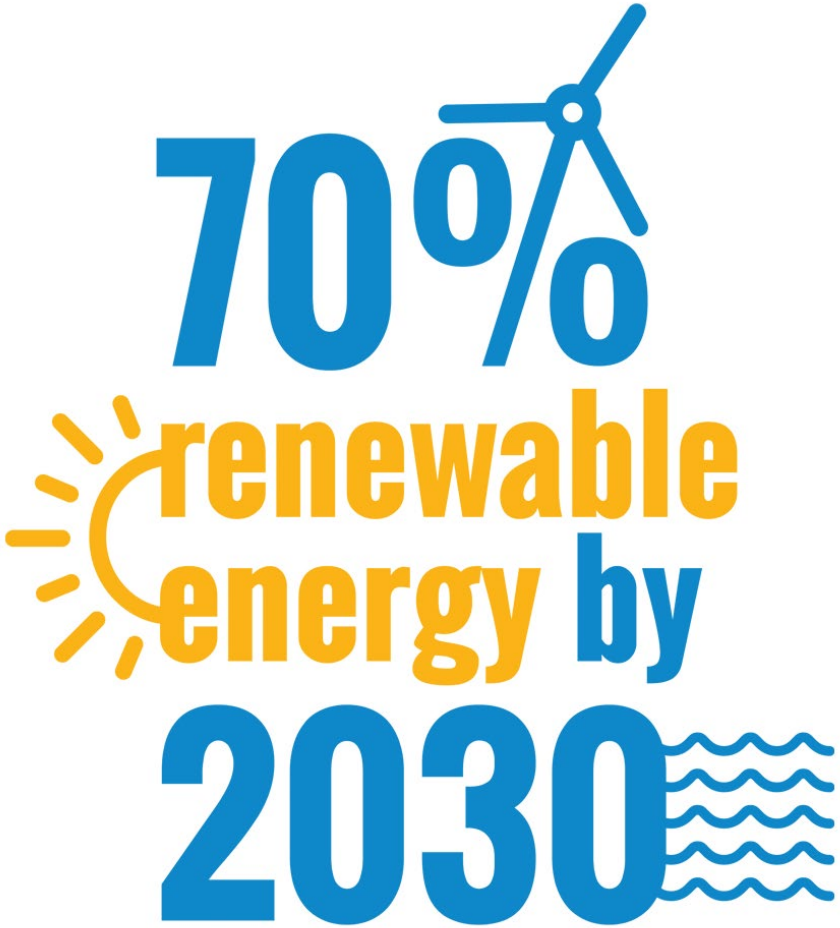
- > Tier 1 Land Based Renewables
- > Offshore Wind

Costs and Benefits Analysis

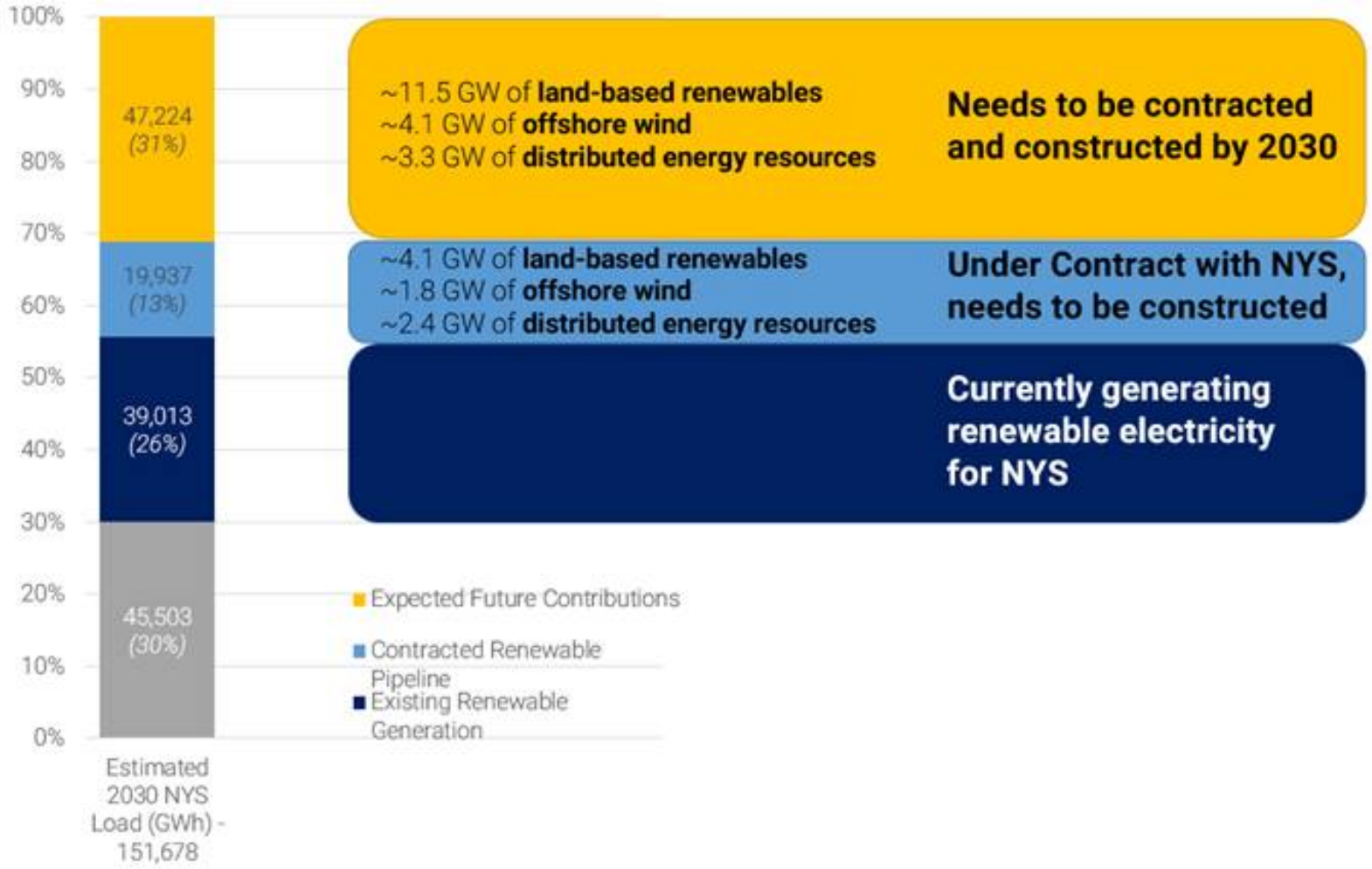
Repowering Proposal

Tier 4 Proposal

Competitive Tier 2 Petition



Alignment with CLCPA, 70% Renewable by 2030



Resource Eligibility

Definition of Renewable Energy

- Systems that generate electricity or thermal energy through use of the following technologies:
  - solar thermal
  - photovoltaics
  - on land and offshore wind
  - hydroelectric
  - geothermal electric
  - geothermal ground source heat
  - tidal energy
  - wave energy
  - ocean thermal
  - fuel cells which do not utilize a fossil fuel resource
- CLCPA **does not include** biomass or biogas, currently eligible under Tier 1 and the RES
- CLCPA **includes** all hydroelectric resources as renewable resources, compliance tiers may apply constraints

Non-Jurisdictional LSEs

Definition

The CLCPA defines the term "jurisdictional load serving entity" (LSE) as:

"any entity subject to the jurisdiction of the Commission that secures energy to serve the electrical energy requirements of end-use customers in New York State."

The focus on jurisdictional LSEs means that the 2030 Target is aimed at all entities serving retail load within a regulated utility territory:

- Investor-owned distribution utilities
- Energy service companies (ESCOs)
- Community Choice Aggregation programs (CCAs) not served by ESCOs
- Jurisdictional municipal utilities
- Any retail customers self-supplying through the New York Independent System Operator Inc. (NYISO)

The term does not include NYPA or LIPA.

Role of NYPA and LIPA

The 2016 CES Order explained that NYPA and LIPA "will participate in the CES not only to conform to a carbon requirement but to engage in an integrated statewide policy."

The ambition of the CLCPA's 70 by 30 Target makes "integrated statewide policy" even more necessary than it was for the 50 by 30 goal.

> In the most recent CES Annual Progress Report, **NYPA and LIPA committed to adopting renewable targets that achieve the CES mandate.**

It will be important to ensure ongoing coordination with NYPA and LIPA with respect to their participation in NYSERDA's procurements of environmental attributes.

Role of NYPA and LIPA

NYSERDA and Staff expect that NYPA and LIPA will participate in the 70 by 30 subject only to minor modifications as may be appropriate.

NYPA and LIPA have agreed to notify the Commission annually by filing a report on:

- How they have contributed to the achievement of the CLCPA Targets in the prior year
- A notice indicating the extent to which they intend to participate in NYSERDA's annual CES procurements
- And/or fund their *pro rata* share of attributes procured by NYSERDA in the coming year

Load Forecast and Procurement Trajectories

Converting goals to procurement trajectories

CLCPA stipulates 70x30 overall goal and 9 GW offshore wind target

- Step 1: estimate 70x30 requirement in GWh based on 2030 load forecast
- Step 2: account for existing and committed renewable generation
- Step 3: attribute the remainder to Tier 1 and the OSW Standard
- Step 4: determine estimated Tier 1 and OSW annual procurement averages

Step 1: Estimate 70 by 30 requirement in GWh based on 2030 load forecast

Pathways* 2030 load forecast ("High Technology Availability Pathway") to ensure consistency with 2030 40% GHG reduction target:

151,678 GWh

Load forecast projection requires an estimate of the impact of a range of programs. The Pathways Report indicates assumed underpinning annual sales rates for key efforts:

Building Efficiency Measures	Building Electrification	Light Duty Vehicle Electrification	MDV/HDV Electrification
85-90%	50%	60%	35%

2030 projection

*Pathways analysis available at: https://climate.ny.gov/Meetings-and-Materials

Step 1 (cont.): Estimate 70 by 30 requirement in GWh based on 2030 load forecast

This translates to the following assumptions on load increases and reductions by 2030:

Pathways Heat Pumps	Pathways EV	Electric Efficiency	Pathways Forecast
10,334 GWh	9,048 GWh	40,865 GWh	**151,678 GWh**

2030 projection

Additionally, a High Load scenario is assessed, reflecting the 2019 NYISO baseline forecast for 2030 (with behind-the-meter added in):

161,324 GWh

Resulting projected 70 by 30 renewable electricity requirement:

Base Case	High Load Case
106,174 GWh	112,927 GWh

Step 2: Account for existing and committed renewable generation

Target contributions from commitments to date	GWh
2018 renewable generation	39,013
Contracted and constructed Tier 1 projects	8,952
Contracted offshore wind projects	7,985
NY Sun 6 GW target by 2025	7,366
Total	**63,317**

> 2018 generation reflects NYSERDA's 2018 CES Progress Report, adjusted for bioenergy and solar PV as well as attrition/degradation by 2030

> Tier 1 contracted projects are shown after an assumed 20% attrition

> NY Sun behind-the-meter grossed up by 7.2% line losses given that target calculations are expressed at the generation level

Step 3: Attribute the remainder to Tier 1 and the OSW Standard

Target contributions	GWh	%
Existing and committed	63,317	41.7%
New offshore wind procurements	17,868	11.8%
New Tier 1 RES procurements	24,990	16.5%
Total	**106,174**	**70%**

Procurements under the OSWS are proposed to amount to an annual average of approximately 1 GW to reflect expected project sizes

Increased contributions from other policies (e.g. Tier 4, distributed solar) could reduce the incremental Tier 1 need

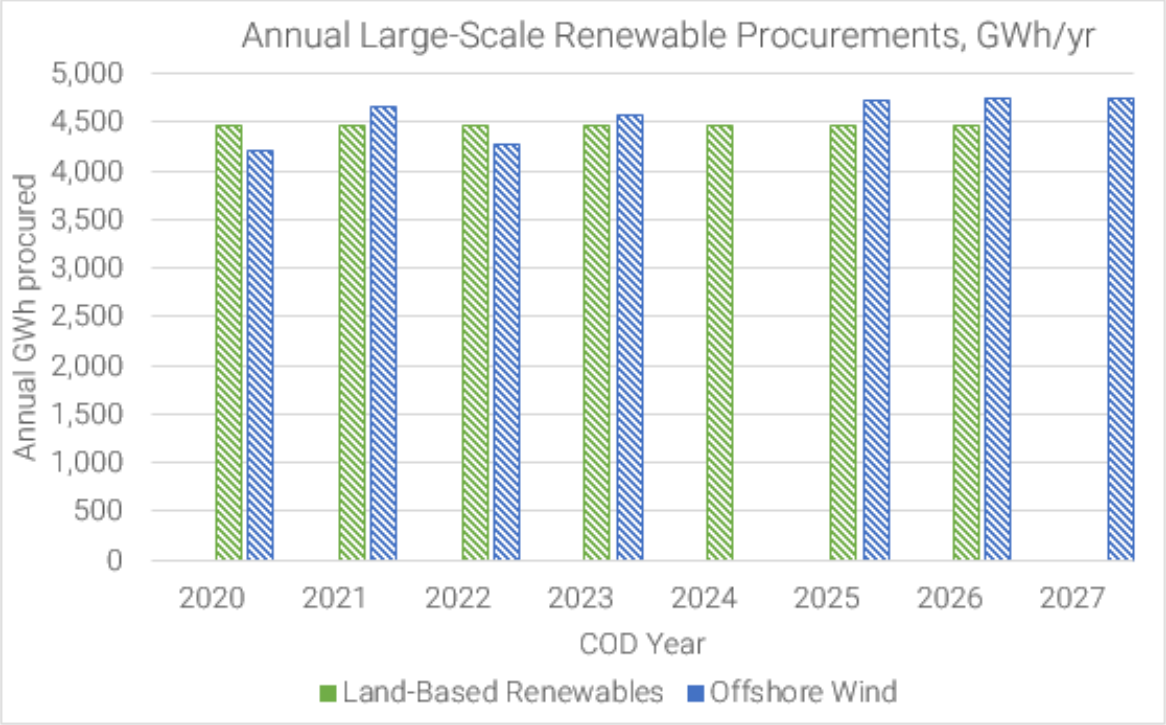
Step 4: Determine estimated Tier 1 and OSW annual procurement averages

Offshore wind:

- Proposal between 750 MW to 1,000 MW per year through 2027 to reflect reasonable project sizes and deliver the 2035 9 GW goal

Tier 1:

- Assuming a four-year construction lag, 7 annual procurements available in time for the 70 by 30 goal
- Annual average of 3570 GWh deployment. Assuming 20% attrition, this equates to 4,463 GWh average annual procurement



Costs and Benefits: Modeling Inputs

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

Cost and Benefits: Introduction

Assessment of Renewable Energy Standard (RES) Tier 1 and Offshore Wind Standard (OSWS) contributions towards (i) 70% renewables by 2030; and (ii) 9 GW of offshore wind by 2035, as set out in the Climate Leadership and Community Protection Act (CLCPA).

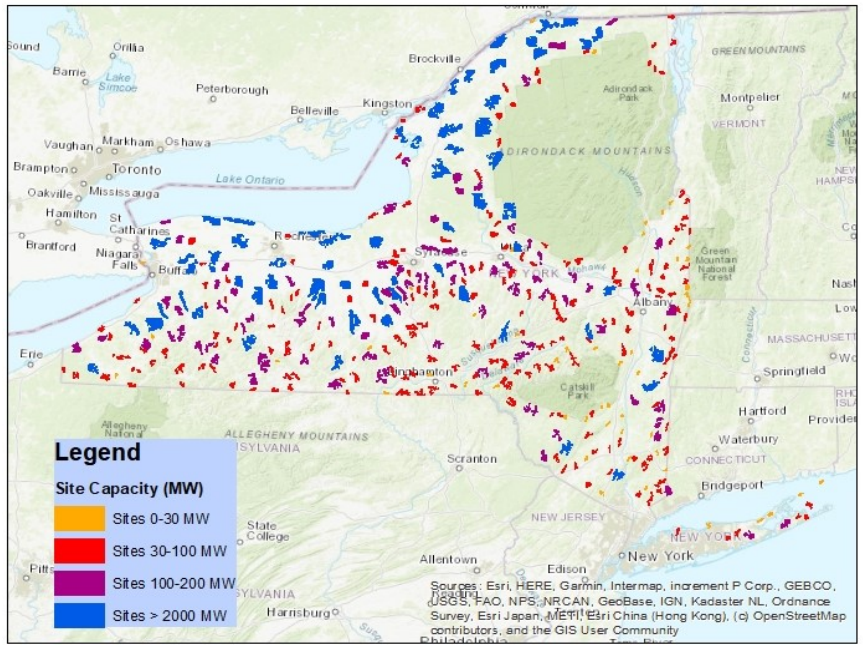
- Technologies assessed include solar PV, land-based wind, and offshore wind.
- The cost of procuring each technology is primarily a function of resource potential and technology cost.
- Energy and capacity price forecasts are foundational to the calculation of long-term REC pricing.
- Avoided carbon emissions are valued to calculate the long-term benefits of zero-emission generation.

NYSERDA and DPS acknowledge the contributions of Sustainable Energy Advantage, LLC (SEA) for its primary analytical role in the development of the analysis of land-based large-scale Tier 1 resources, and the Renewables Consulting Group (RCG) for its primary analytical role in the development of the Offshore Wind Analysis.

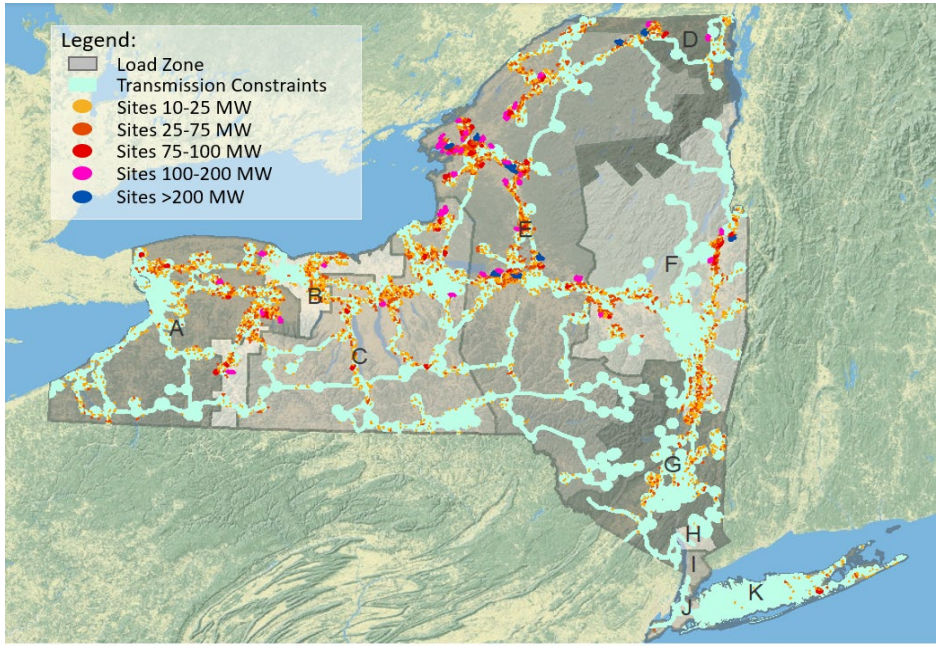
Resource Potential: Solar PV & Land-Based Wind

- **Geospatial analyses were used to determine statewide technical resource potential for both technologies.**
- **Constraints were applied related to existing land use, distance to existing substations and transmission lines, and the size of continuous area.**

Land-based Wind Potential Sites

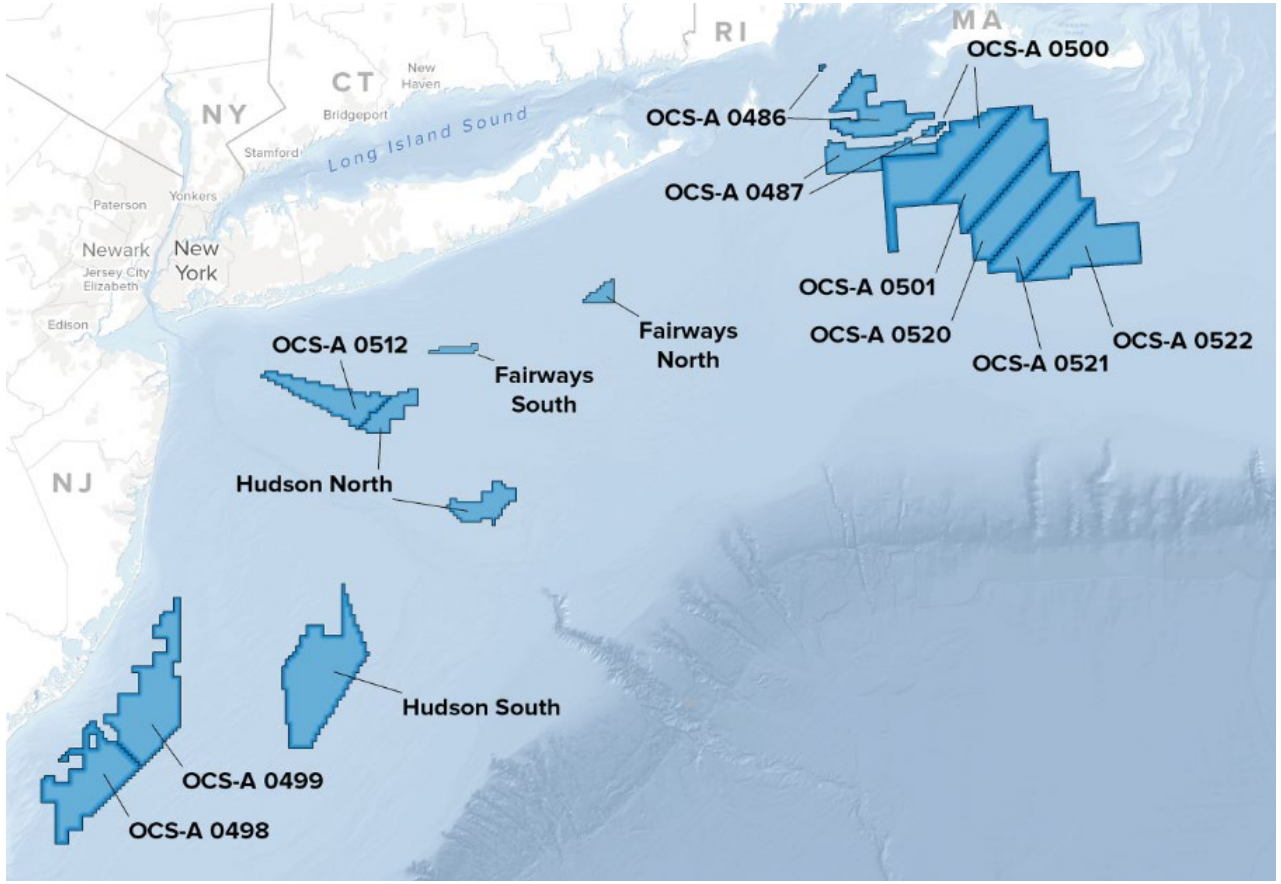


Utility-Scale Solar PV Potential Sites by Size Categories



Resource Potential: Offshore Wind

Summary of Current and Potential Offshore Wind Lease Areas



> Fifteen offshore lease areas were considered as possible long-term project sites to delivery energy to New York.

> These sites include active and potential future lease areas, and are by nature regional resources; each could therefore potentially could wind up delivering its power to a neighboring state.

> The analysis therefore reduced resource availability over time, reflecting other expected regional procurements.

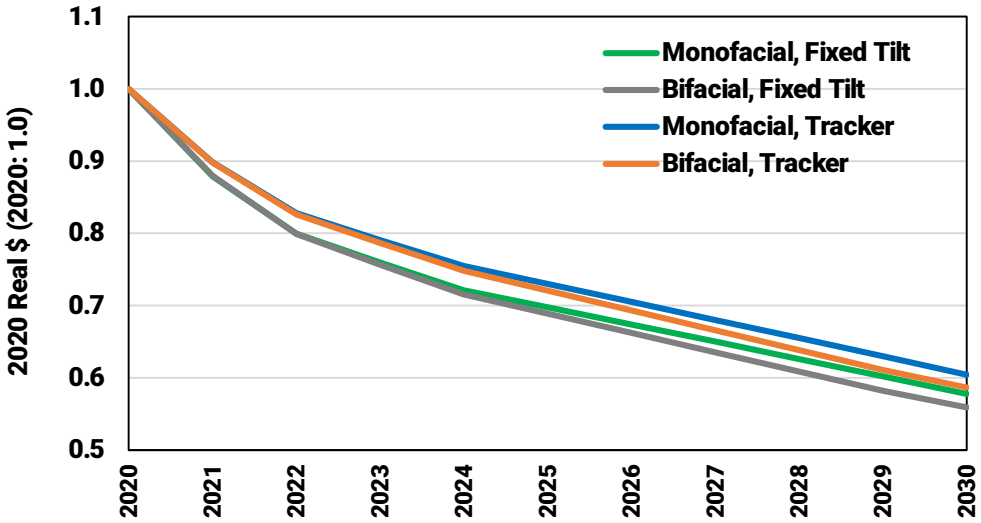
CAPEX Forecast: Tier 1 Resources

> "Base Case" project capital expenditures (CAPEX) assumptions for Tier 1 resources were derived from 10-25 MW projects for solar PV, and 200 MW projects for land-based wind.

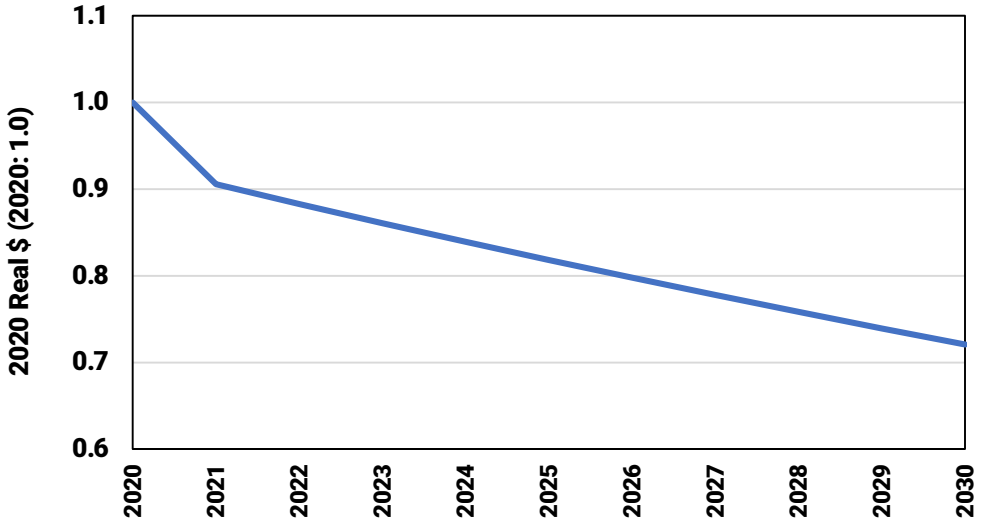
> Experience curves for both resources were developed to forecast technology cost declines on a $/kW basis over the period of the analysis compared to 2020 cost levels.

> A series of adjustments to this starting "Base Case" CAPEX were then applied to reflect cost differences between development in New York and these idealized benchmark U.S. projects. These included adjustments for geography, project size, and in the case of wind power, topography.

Utility-Scale Solar PV Capital Cost Trajectories (2020 Real $)



Land-Based Wind PV CAPEX Trajectories (2020 Real $)



CAPEX Forecast: Offshore Wind

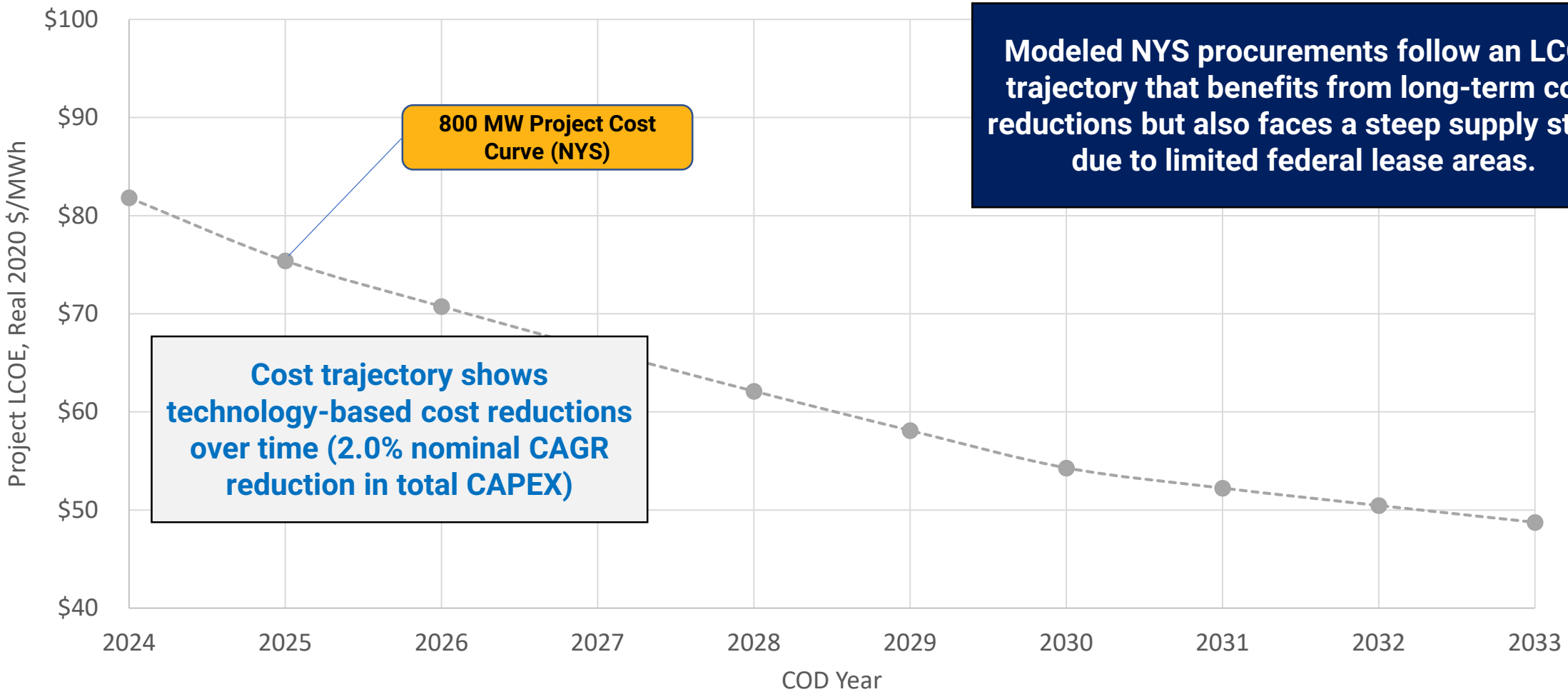
Offshore Wind CAPEX assumptions were modeled through 2040. CAPEX assumptions are broken down into the following components and were forecast for both HVAC and HVDC transmission systems:

- Project development costs;
- Turbine and foundation supply;
- Installation of turbines and foundations;
- Supply & installation of array cables, installation of substations and export cables; and
- Other, including port fees, environmental, logistics, commissioning, contingency, and other miscellaneous project costs.

Base Case CAPEX estimates were then adjusted for each project to reflect differing site characteristics and technology selections, including the following:

- Wind resource (capacity factor);
- Water depth and distance to port;
- Transmission distances (both to shore and land-based);
- Installation vessel strategy;
- Project size and turbine size; and
- Foundation type.

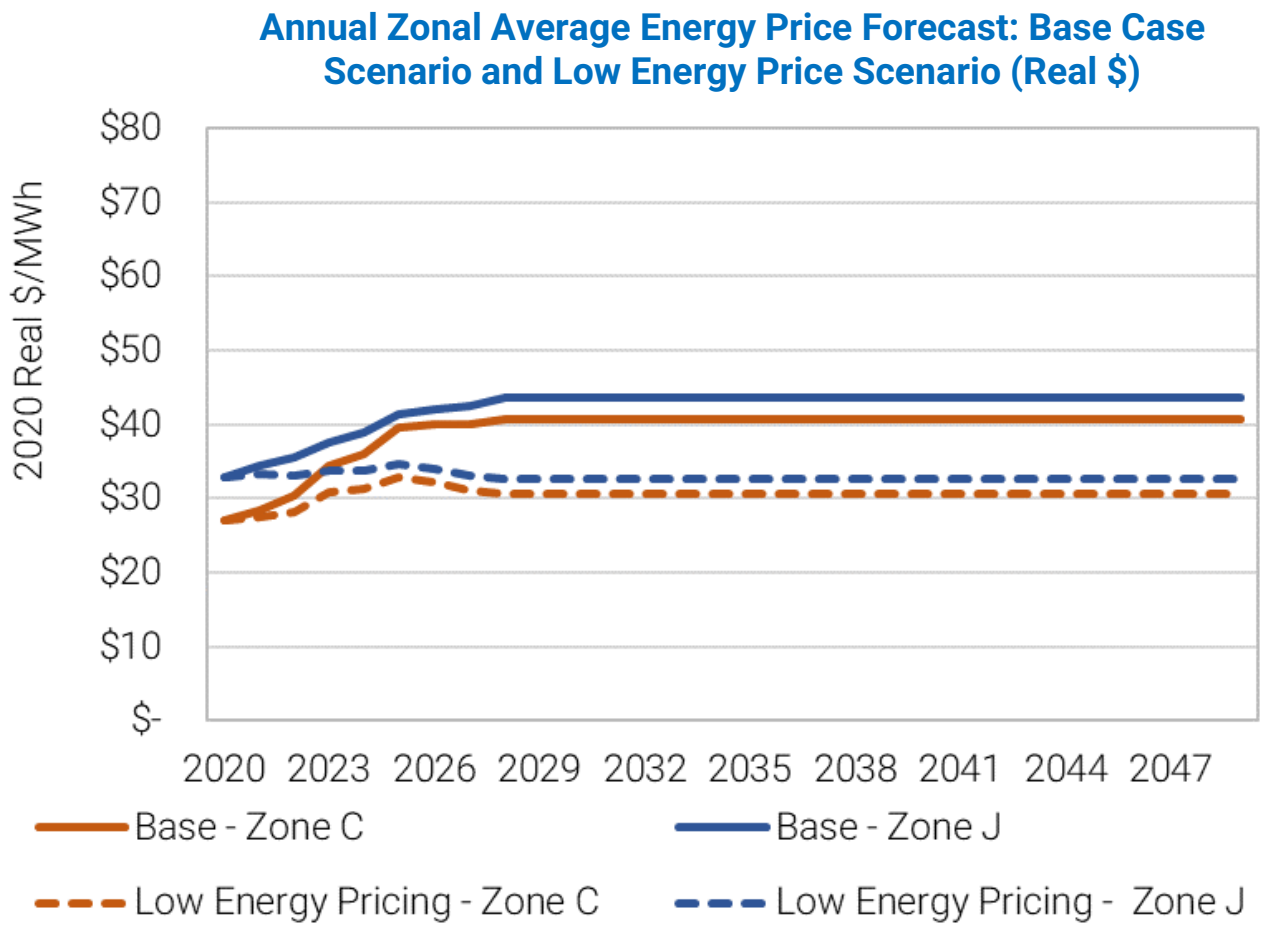
Offshore Wind LCOE Outlook



Modeled NYS procurements follow an LCOE trajectory that benefits from long-term cost reductions but also faces a steep supply stack due to limited federal lease areas.

Cost trajectory shows technology-based cost reductions over time (2.0% nominal CAGR reduction in total CAPEX)

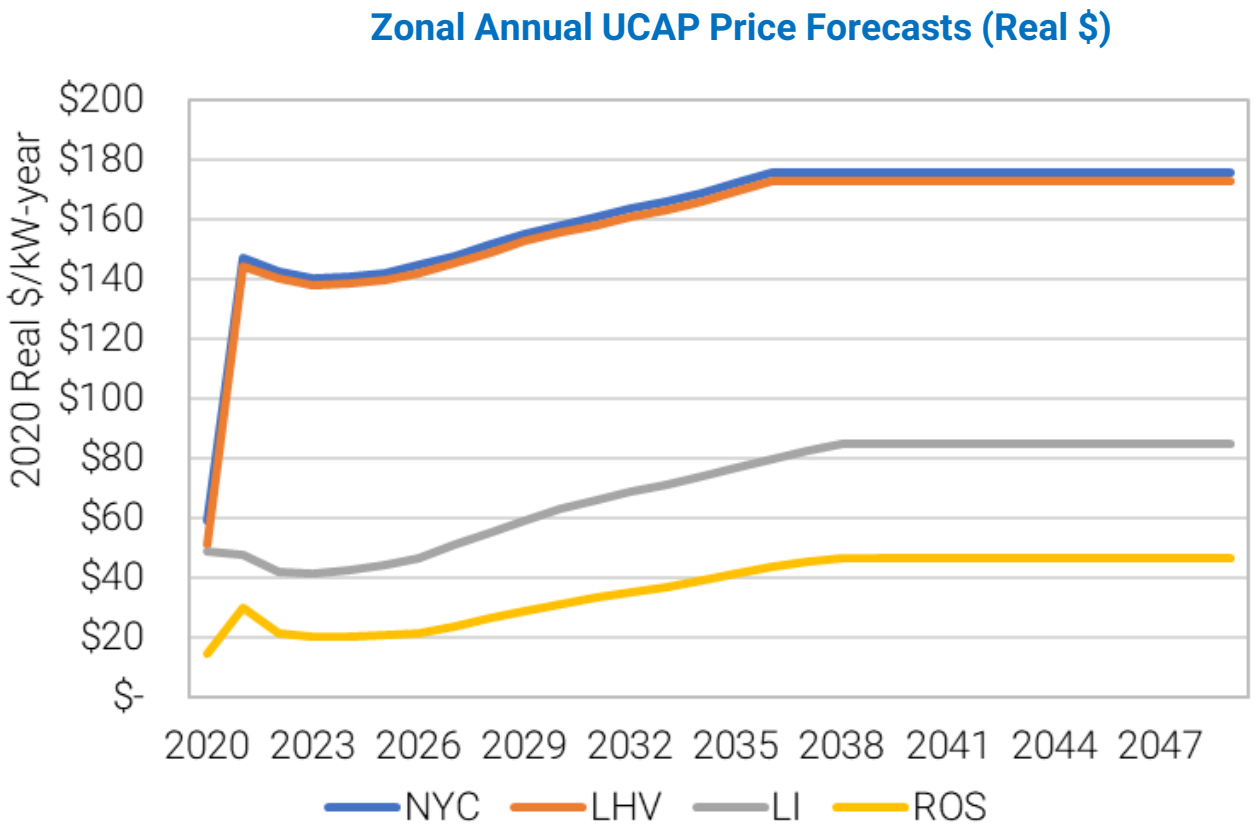
Energy Market Value: Wholesale Power Prices



> The 2019 NYISO CARIS I energy price forecast was used as the "Base Case" wholesale energy price forecast through 2028. Thereafter, the energy price was assumed to stay constant in real dollar terms.

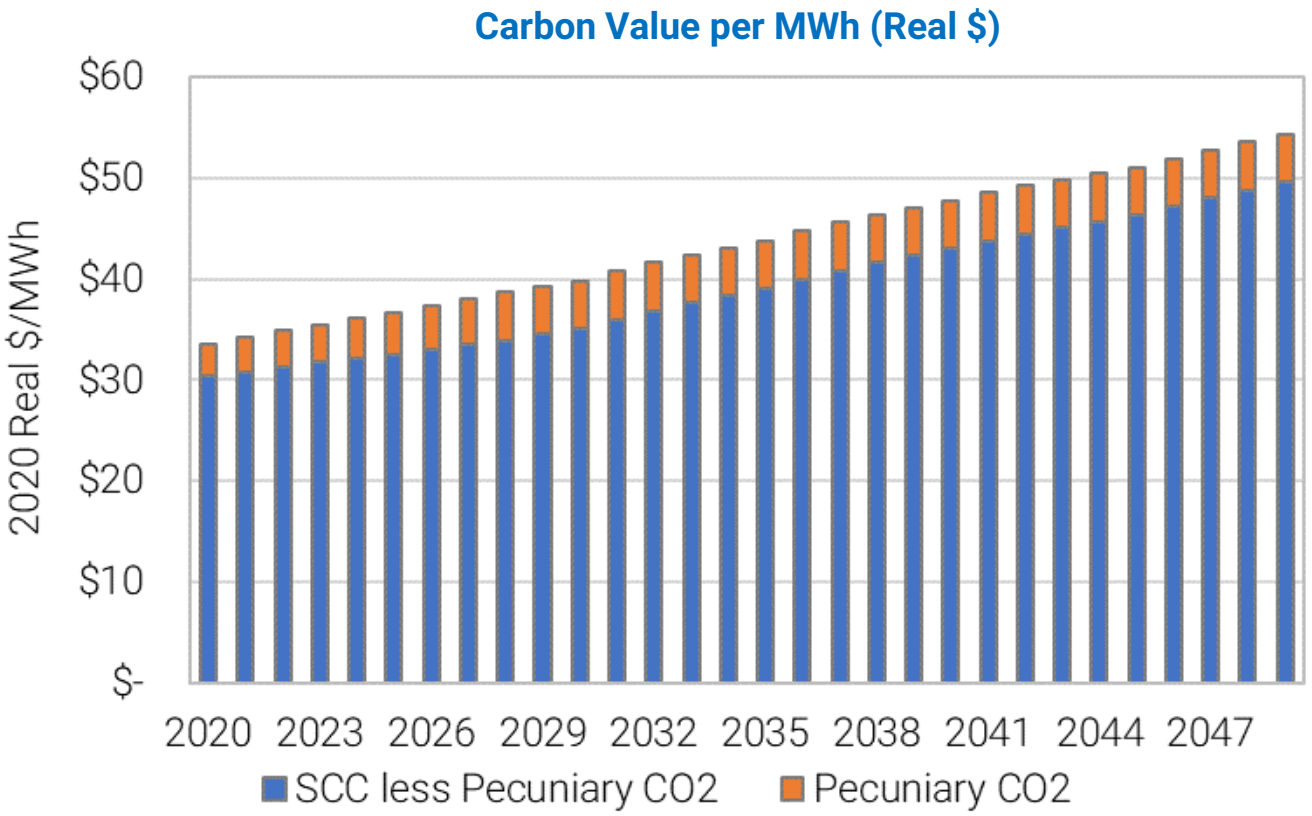
> In the Low Energy Price Scenario, the Base Case energy pricing forecast is gradually discounted over time such that long-term prices are discounted by 25% by the year 2028.

Energy Market Value: Capacity



- ICAP prices were referenced from the BCA Order Establishing the Benefit Cost Analysis Framework, Case 14-M-0101.
- In 2039 and thereafter, the capacity prices were held constant at the 2039 level in real dollar terms.
- Zonal Summer and Winter Installed Capacity Market (ICAP) generator prices from 2020-38 were translated to zonal average annual UCAP prices using the average of the zonal Summer 2018 and Winter 2018/17 translation factors.

Carbon Value



> The social cost of carbon (SCC) figures used in this study were taken from the EPA's Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866.

> When using the SCC, any value monetized through the Regional Greenhouse Gas Initiative (RGGI) was excluded to avoid double counting.

Costs and Benefits: Scenario Results

Costs and Benefits Analysis to Reach 70 by 30

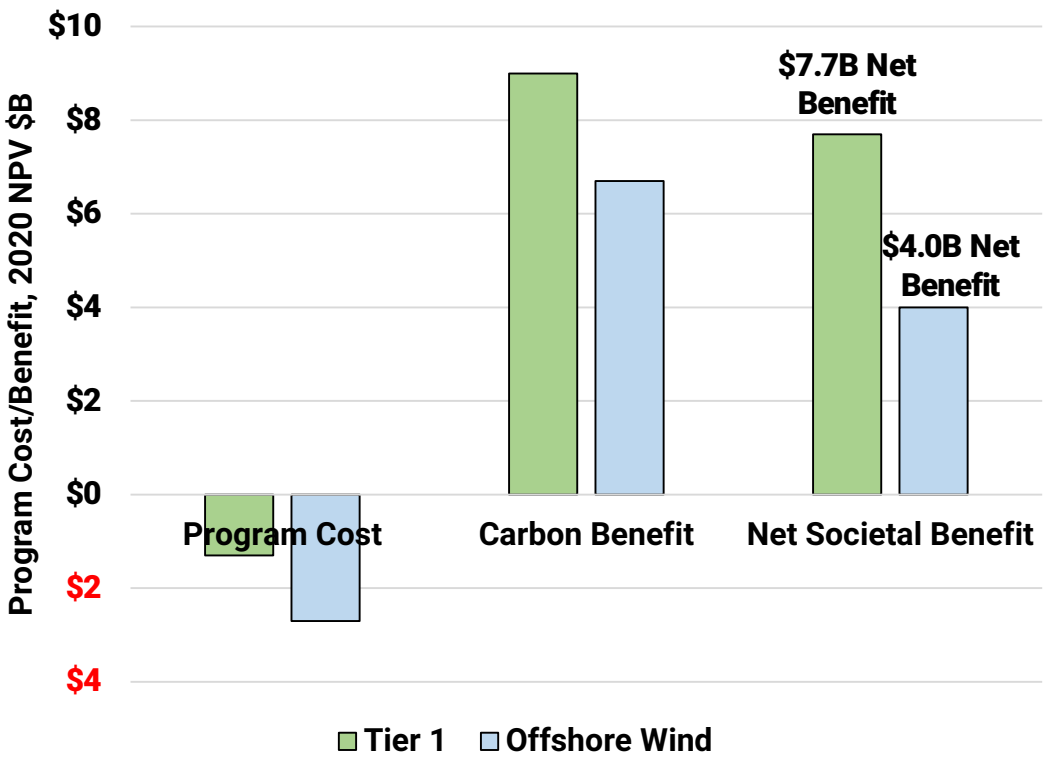
> Across a wide range of scenarios, future land-based and offshore wind procurements **present a significant net benefit**, with the value of energy, capacity, and avoided greenhouse gas emissions far outweighing the resource cost and **delivering a total bill impact of approximately 1.4%.**

> Program costs and benefits are a function of several key variables, most notably: technology costs, financing costs, NYS total load, and energy/capacity pricing.

> In a “Low Energy Pricing” scenario, program costs could more than double; however, even in this scenario, lifetime bill impacts do not exceed 1.2% for Tier 1 procurements or 1.5% for offshore wind procurements.

> In addition, **the impact of any increased program costs as a result of lower energy prices would be counterbalanced by the benefit ratepayers would experience from lower prices in the form of lower electricity bills.**

Costs and Benefits Analysis to Reach 70 by 30



> Both the Tier 1 and Offshore Wind programs are expected to accrue carbon benefits that far outweigh program costs, delivering a **combined net societal benefit of $11.7B** over the life of the projects.

> Extending the offshore wind program through 2035 (to capture the State's full 9 GW mandate) **increases these net societal benefits to $17.3B.**

> These net societal benefits capture only the value of avoided carbon emissions and do not include billions of dollars of other notable societal benefits, including PM2.5 reductions that would decrease premature deaths and hospitalizations.

Tier 1 Results: Base Case

Procurement Year		2021	2022	2023	2024	2025	2026
Deployment Year	***Units***	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
Procurement Volume	*GWh*	4,462	4,462	4,462	4,462	4,462	4,462
New Capacity, Land-Based Wind	*MW*	543	365	316	244	138	134
New Capacity, PV Solar	*MW*	1,186	1,541	1,634	1,733	1,897	1,994
Cumulative NYS Tier 1 Capacity	*MW*	1,729	3,635	5,585	7,602	9,681	11,809
New Generation, Land-Based Wind	*GWh*	1,734	1,181	1,036	821	627	474
New Generation, PV Solar	*GWh*	1,836	2,389	2,534	2,749	2,943	3,096
Cumulative NYS Tier 1 Generation	*GWh*	3,570	7,140	10,710	14,280	17,850	21,420
New Generation LCOE	*$/MWh*	$62.85	$67.12	$67.46	$66.67	$66.18	$65.77
New Generation Year-1 REC Price	*$/MWh*	$22.80	$23.89	$23.35	$20.36	$16.76	$13.71
New Generation Levelized REC Price	*$/MWh*	$13.46	$13.26	$12.52	$9.94	$6.15	$2.93

Portfolio Results	Lifetime Program Cost, $2020 NPV	Lifetime Avoided Carbon Value, $2020 NPV	Lifetime Net Societal Cost, $2020 NPV	Program Levelized Bill Impact, %
Incremental Program through 2030	$1.3 B	$9.0 B Benefit	$7.7 B Benefit	0.43%

Tier 1 Results: Scenarios

Portfolio Results	Lifetime Program Cost, $2020 NPV	Lifetime Avoided Carbon Value, $2020 NPV	Avoided Carbon in Volume, Short Tons	Lifetime Net Societal Cost, $2020 NPV	Program Levelized Bill Impact, %
Base Case	$1.3 B	$9.0 B Benefit	11.8 million	$7.7 B Benefit	0.43%
High Load Scenario	$1.9 B	$11.5 B Benefit	11.8 million	$9.6 B Benefit	0.60%
Low Energy Pricing Scenario	$3.3 B	$9.0 B Benefit	11.8 million	$5.7 B Benefit	1.07%
Low UCAP Scenario	$1.8 B	$9.0 B Benefit	11.8 million	$7.3 B Benefit	0.57%
Low Resource Cost Scenario	$0.9 B	$9.0 B Benefit	11.8 million	$8.2 B Benefit	0.27%
High Resource Cost Scenario	$1.8 B	$9.0 B Benefit	11.8 million	$7.2 B Benefit	0.59%

Base Case: 152 TWh of NYS load in 2030, requiring 20 TWh of incremental (2021+) Tier 1 resources

High Load: 161 TWh of NYS load in 2030, requiring 26 TWh of incremental (2021+) Tier 1 resources

Low Energy Pricing: A gradually increasing discount to Base Case energy pricing (2019 CARIS) such that long-term pricing is 25% lower than the Base Case

Low UCAP: A gradually increasing discount to Base Case UCAP values such that 2030 UCAP values are 50% lower than the Base Case

Low Resource Cost: A gradually increasing discount to Base Case CAPEX and OPEX such that 2030 LCOEs are 10% lower than the Base Case

High Resource: A gradually increasing premium to Base Case CAPEX and OPEX such that 2030 LCOEs are 10% higher than the Base Case

OSW Results: Base Case

Procurement Year		2021	2022	2023	2024	2025	2026	2027
Deployment Year	***Units***	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**
New Capacity	*MW*	1,000	1,000	1,000	-	1,058	1,058	1,058
Injection Zone	-	K	J	K	-	K	J	J
Cumulative NYS OSW Capacity	*MW*	1,000	2,000	3,000	3,000	4,058	5,116	6,174
New Generation	*GWh*	4,661	4,273	4,561	-	4,717	4,732	4,747
Cumulative NYS OSW Generation	*GWh*	4,661	8,934	13,495	13,495	18,212	22,945	27,692
New Generation LCOE	*$/MWh*	$97.50	$103.44	$89.23	-	$90.19	$89.29	$89.72
New Generation Year-1 OREC Price	*$/MWh*	$42.49	$39.87	$29.93	-	$28.19	$20.90	$20.00
New Generation Levelized OREC Price	*$/MWh*	$28.70	$27.48	$17.06	-	$14.90	$7.37	$6.13

Portfolio Results	Lifetime Program Cost, $2020 NPV	Lifetime Avoided Carbon Value, $2020 NPV	Lifetime Net Societal Cost, $2020 NPV	Program Levelized Bill Impact, %
Incremental Program through 2030	$2.65 B	$6.67 B Benefit	$4.02 B Benefit	0.88%
Incremental Program through 2035	$3.47 B	$13.07 B Benefit	$9.59 B Benefit	1.07%

OSW Results: Scenarios & Sensitivities

Portfolio Results through 2030	Lifetime Program Cost, $2020 NPV	Lifetime Avoided Carbon Value, $2020 NPV	Avoided Carbon Volume in 2030, Short Tons	Lifetime Net Societal Cost, $2020 NPV	Program Levelized Bill Impact, %
Base Case	$2.7 B	$6.7 B Benefit	7.4 million	$4.0 B Benefit	0.88%
Low Energy Pricing Scenario	$4.5 B	$6.7 B Benefit	7.4 million	$2.2 B Benefit	1.48%
Low UCAP Scenario	$3.0 B	$6.7 B Benefit	7.4 million	$3.7 B Benefit	1.00%
Low Resource Cost Scenario	$2.0 B	$6.7 B Benefit	7.4 million	$4.7 B Benefit	0.66%
High Resource Cost Scenario	$3.3 B	$6.7 B Benefit	7.4 million	$3.4 B Benefit	1.10%

Portfolio Results through 2035	Lifetime Program Cost, $2020 NPV	Lifetime Avoided Carbon Value, $2020 NPV	Avoided Carbon Volume in 2030, Short Tons	Lifetime Net Societal Cost, $2020 NPV	Program Levelized Bill Impact, %
Base Case	$3.5 B	$13.1 B Benefit	15.3 million	$9.6 B Benefit	1.07%
Low Energy Pricing Scenario	$6.9 B	$13.1 B Benefit	15.3 million	$6.2 B Benefit	2.12%
Low UCAP Scenario	$4.4 B	$13.1 B Benefit	15.3 million	$8.7 B Benefit	1.35%
Low Resource Cost Scenario	$2.0 B	$13.1 B Benefit	15.3 million	$11.1 B Benefit	0.61%
High Resource Cost Scenario	$5.0 B	$13.1 B Benefit	15.3 million	$8.1 B Benefit	1.53%

Tier 1 Modifications

Tier 1 Modifications

In order to meet 70 by 30 Target, procurement volumes must increase, and projects must be truly viable. Therefore, the following adjustments to the Tier 1 Procurement Process are proposed:

> **Annual Procurements with Flexible Targets**
Annual Tier 1 procurements in the amount necessary to achieve the 70 by 30 Target (no minimum or maximum quantity) that allows NSYERDA to have the flexibility to respond to market conditions.

> **Removal of Projects Not Presently Viable**
Authorizing NYSERDA to reject a proposal outright upon unanimous determination by the Technical Evaluation Panel that the project is not presently viable.

> **Broaden Portfolio Risk Factors**
NYSERDA would develop new portfolio risk factors intended to consider interactive effects caused by the increasing penetration of renewable energy resources on the grid.

Tier 1 Modifications

> **Consolidate Project Viability, Operational Flexibility and Peak Coincidence Evaluation Factors**
Merge the Project Viability, Operational Flexibility, and Peak Coincidence Evaluation Factors into one category, weighted at 20% as operational flexibility and peak coincidence will become increasingly intertwined with project viability as the penetration of renewable energy increases.

> **Clarification and Continuation of CES Delivery Requirements**
For renewable generators located in a control area adjacent to the NYISO, the electricity associated with the RECs must be scheduled, transmitted, delivered, and settled in the NYISO energy market in each hour and must be accompanied with documentation of a unit-specific contract path between the injection point in the control area of origin to the delivery point in New York.

Offshore Wind

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

Current Status

In January 2020, NYSERDA submitted a petition requesting authority to conduct a 2020 solicitation for 1,000 MW – 2,500 MW of ORECs.

In April 2020, the Commission granted NYSERDA's petition and issued the 2020 Offshore Wind Order that extended the principles of the Phase 1 Order while recognizing the program's evolution:

> Acknowledged the market's acceptance of the Index OREC pricing structure

> Directed NYSERDA to use a procurement mechanism consistent with the Commission's January 2020 Order governing procurements under the RES

Adoption of 9 GW Goal

Proposal:

Formal adoption the CLCPA's minimum statewide goal of 9 GW of OSW by 2035 and the authority for NYSERDA to procure the remaining amount of ORECs necessary to achieve that goal, and the flexibility to do so in an effective manner.

1,826 MW Already Procured	Up to 2,500 MW in NYSERDA's 2020 Solicitation	750 – 1,000 MW per year through 2027 to meet 9 GW 2035 Goal

This could change depending on the solicitation outcome

Ensures adequate time to meet the 2035 Goal, to include allowing time for any supplemental procurements necessary to replace previously selected projects that did not go forward

Transmission

For the 2018 and 2020 solicitations transmission will be built to support single projects

> It is nearly impossible to design or evaluate coordinated transmission solutions with any certainty until additional wind areas have not yet been leased by the Bureau of Ocean Energy Management (BOEM)

NYSERDA and its State partners continue to study the potential for alternative transmission networks as well as onshore transmission upgrades that will be necessary to accommodate the 9 GW of OSW, as required by the recently-enacted Accelerated Renewable Act.

Resale of ORECs and Compliance Using Other Offshore Wind Projects

NYSERDA requests the authority to re-sell ORECs to non-LSE buyers, at a cost no less than it sells to LSEs.

Proposes that the Commission clarify that LSEs are free to procure ORECs directly for compliance, and do not need to obtain them from NYSERDA

> If other OSW projects are developed for delivery into the NYCA without NYSERDA's involvement, NYSERDA will reduce its own procurement targets accordingly.

Other Offshore Wind Projects

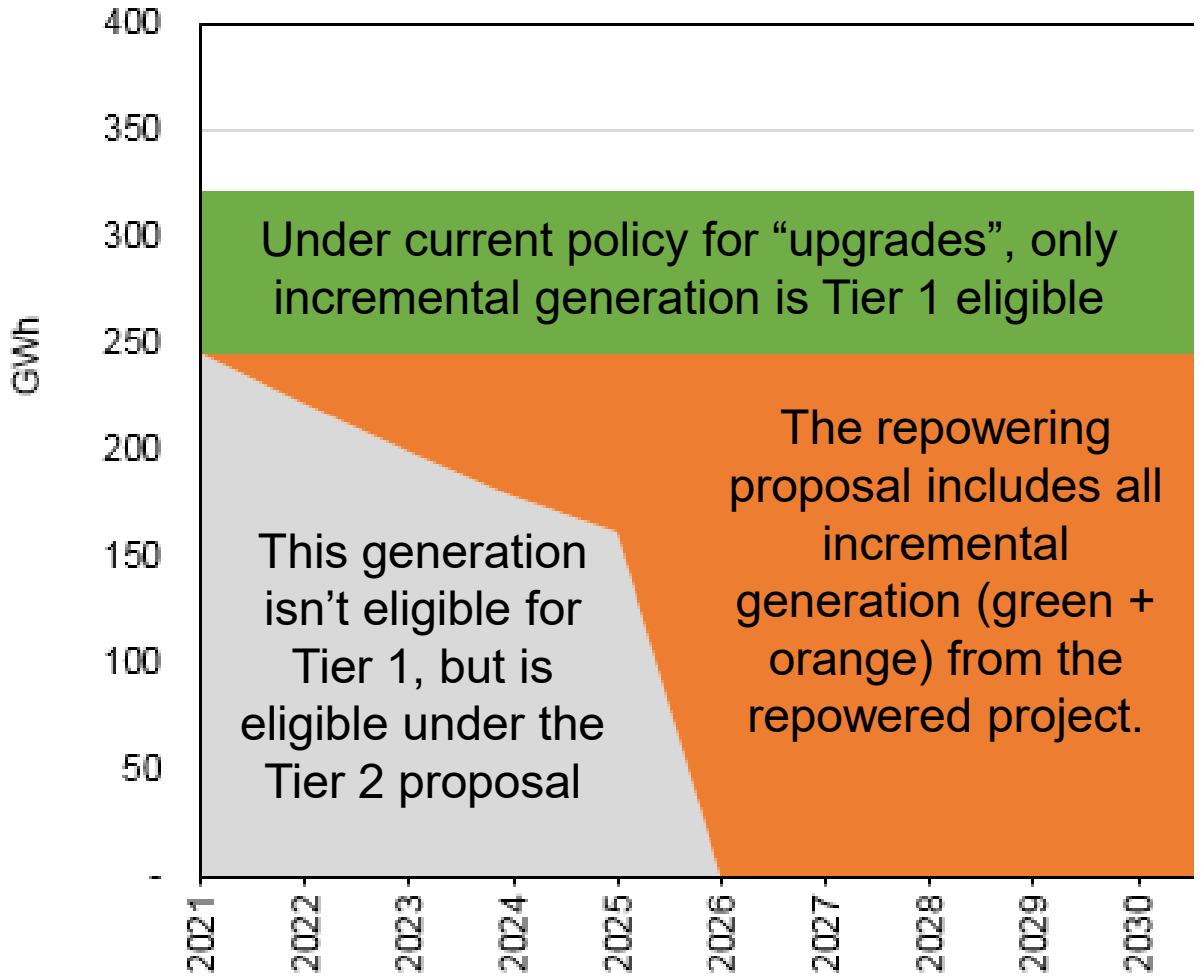
New York State Great Lakes Wind Feasibility Study would seek to:

> Identify the greatest resource opportunity and the lowest risk for Great Lakes Wind development on Lake Erie and Lake Ontario and characterize the technical and economic potential of the resource while considering environmental, maritime, economic, and social issues, market barriers, and costs.

> Provide thorough analysis and strategic forethought that would allow all stakeholders and New York policymakers the opportunity to consider the resource, its characteristics, and its potential contribution to the CLCPA goals.

Repowering

Repowering Proposal



> Proposes a methodology for **amending Tier 1 renewable energy eligibility to renewable energy facilities that undergo repowering.**

> To qualify as a “repowering” the project must (1) **replace each “prime mover”,** (2) involve **new capital expenditures** from which 80 percent of the tax basis for the facility is derived and (3) have at least a **15% increase in power generation.**

> Generation from the repowered project that occurs **after the useful life** of the existing facility would be **100 percent Tier 1-eligible.**

> If a project repowers **prior to the end of its useful life**, generation **in excess of the facility’s projected generation**, rather than its historic production, will be eligible for Tier 1.

New - Tier 4 Proposal

Tier 4 Proposal

Proposes the creation of a Tier 4 large-scale renewable program under the CES to specifically value environmental attributes associated with renewable energy deliveries into New York City (NYISO load Zone J).

Eligible Resources:

> Includes hydropower resources subject to certain conditions to ensure additional renewable energy delivery to New York and to avoid merely shuffling clean energy resources away from neighbors.

> All other non-hydro eligible resources under the CLCPA must have a commercial operation date after the date of the Order approving Tier 4.

Additionality

The Energy Baseline requires that the renewable generation delivered under Tier 4 exceeds the historical baseline of renewable energy that the supplier has historically delivered to New York.

> Ensures that Tier 4 deliveries are not met through re-directing existing deliveries, which would provide no net benefit to the State.

The Greenhouse Gas (GHG) Baseline requires renewable generation delivered under Tier 4 to represent a net increase in the supplier's total renewable energy generation as compared to a baseline.

> Ensures Tier 4 deliveries are not being backfilled by fossil fuel-fired resources in order to meet export demand, which would not reduce global greenhouse gas emissions.

Solicitation Process and Contracting

Volume:

> Up to 3,000 MW

Tenor:

> Up to 30 years

Method:

> Open RFP – Applications reviewed by NYSERDA and DPS Staff using evaluation criteria and weighting factors used in Tier 1.

> Standard Offer – Pre-determined rate.

> Bilateral Negotiation – Project-specific rate based on financial need, costs, and benefits.

Price:

> Capped at Tier 1 price

Joint Purchasing and Resale of Tier 4 RECs

It may be necessary for NSYERDA to enter into transactions involving more than one purchaser and/or to re-sell Tier 4 RECs due to potential interest from others:

> **LSEs or other large buyers**, such as the city government itself.

> Entities seeking alternative compliance through the purchase of RECs delivered to Zone J, may be eligible for **compliance under NYC Local Law 97.**

Joint Purchasing and Resale of Tier 4 RECs

Therefore, the white paper proposes that NYSERDA have:

> Discretion to purchase **any percentage or fixed quantity of RECs delivered** by a selected project, or **enter contractual arrangements with more than one entity**, as necessary.

> Authority to **procure both Fixed and Index RECs separately** from the same project, if doing so results in the lowest levelized net cost.

> Authority to **re-sell Tier 4 RECs** to any purchaser, including Local Law 97 compliance entities, at a competitive price, subject to a price floor set at its own levelized procurement costs (including administrative costs) through compliance year 2029.

  – *White paper seeks public comment on price floor and how any revenues, if any, should be redirected.*

LSE Compliance

Because Tier 4 is an integral component of achieving the 70 by 30 Target, it should be the financial responsibility of all LSEs serving retail load in the territory of electric distribution companies.

> LIPA and NYPA should adopt Tier 4 Targets proportional to their load and reflect the statewide goal.

> After selling to voluntary buyers, the remaining Tier 4 RECs will be sold to LSEs for compliance with its obligation in proportion to its overall share of statewide load, like the process for Zero Emissions Credits.

NYSERDA will file an implementation plan for stakeholder comment, that will include a description of the compliance obligation calculations, process and structure, as well as a standard purchase agreement and ultimate Commission approval.

Competitive Tier 2 Petition

Competitive Tier 2 Petition

In June 2019, Senate Bill 23 was passed and established a Tier 2 REC price at 75% of the Tier 1 REC price

- Existing non-state-owned renewable energy resources and hydropower <50 MW located within the State
- Non-competitive
- Estimated to cost $1.3 billion

In December 2019, Governor Cuomo vetoed the bill and directed NYSERDA and DPS to establish a competitive, cost-effective, program

In January 2020, NYSERDA filed a petition for a Competitive Tier 2 Program

- Existing non-state-owned run-of-river hydropower and existing wind generators located within the State
- 3 annual competitive solicitations for 3-year contracts
- Program cost capped at $200 million
- NYPA submitted comments requesting eligibility
  - The White Paper seeks comment on whether, and to what extent, NYPA's renewable baseline resources should be eligible for self-supply

LSE Tier 1 Compliance Obligations

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

LSE Tier 1 Compliance Obligations

No substantive changes beyond the Phase 4 Implementation Plan.

> No substantive changes proposed to the structure of LSE Tier 1 compliance obligations.

> For reasons of administrative simplicity, updated LSE compliance obligations are incorporated into the White Paper (as opposed to using the Divergence Test).

> Compliance obligations for 2021 and 2022 are revised downwards compared to those previously published to reflect the most recent expectations of available RECs and avoid unnecessary burdens on ratepayers.

	Current LSE Tier 1 Obligation	Proposed LSE Tier 1 Obligation
2020	2.84%	
2021	4.20%	2.04%
2022	8.40%	5.61%
2023		8.20%

Administrative Funding

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

Administration Funding

Annual Administrative Funding Request

> Administrative funding for all CES programs will be combined into one comprehensive annual funding request.

Administrative Adders

> NYSERDA anticipates having an adequate quantity of Tier 1 RECs, ZECs, and Tier 2 RECs (if adopted) available for sale in 2021 and therefore proposes to fund its administration through a Commission approved adder mechanism for these programs beginning in 2021.

Administration Funding

NYSERDA will notify LSEs of the administrative funds for the 2021 Compliance Period:

- Tier 1 RECs plus Commission-approved adder at the start of each quarterly sale.
- ZEC rate plus Commission-approved adder at least 2 months before the commencement of the compliance year.
- Tier 2 rates plus the Commission-approved administrative adder for the compliance period on the website by December 31, 2021.
- Given that offshore wind and Tier 4, if adopted, are not anticipated to produce attributes to sell in 2021, NYSERDA proposes to continue to utilize SBC, EEPS, and RPS uncommitted balances to cover administrative costs for the Offshore Wind Program and Tier 4.

NYSERDA will allocate a proportionate share of the annual New York State Cost Recovery Fee (CRF) to the CES program.

Reporting

Reporting

Revised program reporting requirements that combines and streamlines the CES program reporting requirements.

LSEs are required to submit a report in NYGATS documenting their annual Tier 1 RES compliance activities.

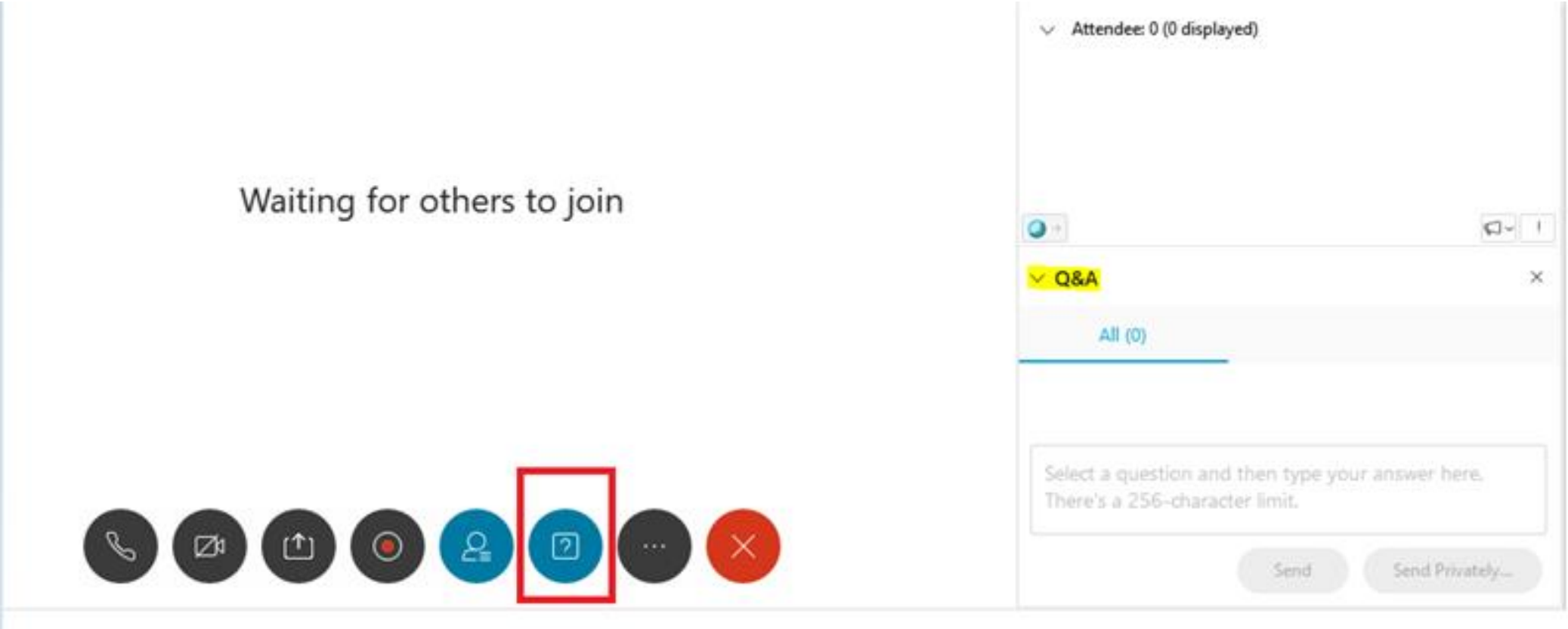
CLCPA requires Biennial Review, therefore, the Triennial Review process will not continue after 2020.

Next Steps and Q & A

Next Steps

Date	Major Milestones
June 18, 2020	DPS/NYSERDA files White Paper
July 14, 2020	Technical Conference on White Paper
August 31, 2020	Comments due on White Paper

Q & A

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

Submit Questions