New York State Energy Research and Development Authority (NYSERDA)

Purchase of New York Tier 4 Eligible Renewable Energy Certificates (RECs)

RFP No. T4RFP21-1 • May 2021

Clean Path NY

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Appendices

Separately submitted files

Clean Path NY

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May 12, 2021

New York State Energy Research and Development Authority
17 Columbia Circle
Albany, NY 12203

Dear _____,

The partners of Clean Path New York are pleased to provide this **"All Renewable, All New York"** response to NYSERDA's Tier 4 Request for Proposals.

We believe that the Clean Path NY project offers an unparalleled opportunity to meet New York State's nation-leading clean energy goals while also providing immense economic, environmental justice and public health benefits. When comprehensively evaluated (taking into account all benefits and payments) this proposal results in actual net benefits to the state of New York even after deducting payments for Tier 4 RECs.

We are confident that our team-- comprising the New York Power Authority (NYPA), and Forward Power (a joint venture of Invenergy and energyRe)-- possesses the experience and expertise in renewable energy, transmission and development that will be needed to bring an $11 billion project of this scale and complexity to fruition.

Clean Path NY will include a 1,300MW, 176-mile underground and underwater HVDC transmission line from Delaware County to New York City and 3,800MW of new wind and solar capacity in upstate New York. We will develop about 60 percent of this new generation, with the remainder to be built by third parties.

We believe that our project, scheduled to begin operation in 2026, is the best choice for New York for the following reasons, among numerous others:

- **Economic development** – Entire $11 billion investment is for projects located in New York state.
- **Economic benefits** – Clean Path NY is expected to save New York State ratepayers more than $12 billion in its first 25 years. In addition, the new clean energy projects will bring over 10,500 engineering, construction and operation, and maintenance jobs to the upstate region through the first three years of operation, along with increased tax and PILOT revenues of over $1.6 billion over the 25 year term.
- **Existing corridor use** – The underground portion of the line will be located primarily within NYPA's existing Marcy-South corridor and also along state Department of Transportation rights-of-way. This will mitigate environmental concerns and reduce vulnerability to extreme weather.
- **Superior congestion relief** – The line will alleviate the longstanding congestion at the Total East interface that has prevented renewable energy from upstate from reaching downstate areas where it is most needed.
- **Environmental Justice** – Clean Path NY will result in more than $6.25 billion in avoided social and public health costs over 25 years, with over 50% of these benefits in New York City and 49% in disadvantaged communities across the state.
- **Long-term solution** – Clean Path NY will likely serve New York for more than 70 years, well beyond the original 25-year contract term.

We look forward to working with NYSERDA and its staff to develop this project and are proud to submit this binding, conforming bid. Thank you for your consideration.

Clean Path NY

Sincerely,

Gil Quiniones
President & CEO, New York Power Authority

Michael Polsky
CEO, Invenergy

Jeff T. Blau
Founding Partner, energyRe

Acronyms and abbreviations

Acronym/ abbreviation	Meaning
AA	Blacks/African Americans
AC	Alternating current
ACOE	Army Corps of Engineers
ACORD	Association for Cooperative Operations Research and Development
ACSR cable	Aluminium conductor steel-reinforced cable
ACSS cable	Aluminum conductor steel supported cable
ADA	Americans with Disabilities Act
AIS substation	Air insulated substation
AKRF	Allee King Rosen and Fleming, Inc.
BG	Blenheim-Gilboa
BRS	Bull Run Solar
CAISO	California Independent System Operator
CAPEX	Capital expenditure
CDC	Centers for Disease Control and Prevention
CDO	Chief Data Officer
CEB	Clean Energy Business
CDT	Contract delivery term
CECONY	Consolidated Edison Company of New York, Inc.
CEII	Critical Electric Infrastructure Information
CEO	Chief Executive Officer
CEP	Communities Engagement Plan
CFO	Chief Financial Officer
CFR	Code of Federal Regulations
cfs	Cubic feet per second
CHW	Community Health Worker
CIP	Critical Infrastructure Protection

Acronym/ abbreviation	Meaning
CLCPA	Climate Leadership and Community Protection Act
COD	Commercial Operation Date
COO	Chief Operations Officer
COPD	Chronic obstructive pulmonary disease
CORE	CCCG Overseas Real Estate
CRIS	Capacity Resource Interconnection Service
CRIS cultural	Cultural Resources Information System
CSC	Convertible static compensator
CTE	Career and Technical high schools
CY	Class year
DAC	Disadvantaged communities
DBM	Design Basis Manual
DC	Direct current
DEC	Department of Environmental Conservation
DFWMR	Division of Fish, Wildlife and Marine Resources
DOS	Department of State
DPS	Department of Publice Services
EA	Environmental assessments
EB ID	Economic Benefit ID
ECI	Early contractor involvement
ECL	Environmental Conservation Law
EDP	Energía del Pacífico
EDR	Environmental Design and Research
EH&S	Environment, health, and safety
EIS	Environmental impact statements
EJ	Environmental justice

Acronym/ abbreviation	Meaning
EM&CP	Environmental Management and Construction Plan
EMF	Electro-magnetic field
EMS	Emergency Management Services
EPA	Environmental Protection Agency
EPC	Engineering, procurement and construction
EPMC	Engineering, procurement, and construction
ERCOT	Electric Reliability Council of Texas
ERIS	Energy Resource Interconnection Service
ERP	Emergency Response Plan
ESNA	Energy Storage North America
EVP	Executive Vice President
FAA-DNH	Federal Aviation Agency Determination of No Hazard
FACTS	Flexible AC transmission system
FAST manholes	Fault Annunciating Self-inspecting Transmission manholes
FAT	Factory acceptance test
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FSRU	Floating storage regasification unit
FTE	Fiull-time equivalent
FWS	Fish and Wildlife Service
GAAP	Generally Accepted Accounting Principles
GDP	Gross Domestic Product
GHG	Greenhouse gases
GIA	Generator Interconnection Agreement
GIS	Geographic information system
GIS substation	Gas insulated substation
GNSS	Global Navigation Satellite System
GP	General Permit
GTO thyristor	Gate turn-off thyristor
GW	Gigawatt
HDD	Horizontal directional drill
HIPPA	Health Insurance Portability and Accountability Act
HUC	Hydrologic Unit Code
HVAC	High voltage alternating current

Acronym/ abbreviation	Meaning
HVDC	High voltage direct current
IDA	Industrial Development Agency
IEBP	Incremental Economic Benefits Plan
IEDP	Innovative Energy Demonstration Program
IFB	Issue for Bid
IFC	Issue for Construction
IFR	Issue for Review
IGBT	Insulated gate bipolar transistors
IMPLAN	Impact analysis for planning
IPaC	Information, Planning, and Consultation
IPFC	Interline Power Flow Controller
ISO	Independent System Operator
ISO-NE	Independent System Operator New England
IT	Information technology
ITC	Investment Tax Credit
JSA	Job safety analysis
JV	Joint venture
kcmil	Thousand Circular Mil
kV	Kilovolt
kWh	Kilowatt hour
LA California	Los Angeles
LCR	Locational Minimum Installed Capacity Requirement
LEED	Leadership in Energy and Environmental Design
LEM	Lifecycle Extension Modernization
LIDAR	Light intensity distance and ranging
LNG	Liquefied natural gas
LOD	Limits of disturbance
LWRP	Local Waterfront Revitalization Program
M&A	Mergers and acquisitions
MET	Meteorological evaluation towers
MISO	Midcontinent Independent System Operator
MLLW	Mean Lower Low Water
MOA	Memorandum of Agreement
MOC	Management of Change

Acronym/ abbreviation	Meaning
MP	Milepost
MSG	Mineral Soil Group
MTA	Metropolitan Transportation Authority
MVA	Mega volt amps
MW	Megawatt
MWBE	Minority/Women-owned Business Enterprise
MWh	Megawatt hour
NAESB	North American Energy Standards Board
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Corporation
NGO	Non-governmental organization
NGVD	National Geodetic Vertical Datum
NHD	National Hydrography Dataset
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPCC	New York City Panel on Climate Change
NPDES	National Pollutant Discharge Elimination System
NPV	Net present value
NRHP	National Register of Historic Places
NTAC	NYPA Transmission Adjustment Charge
NWI	National Wetlands Inventory
NYC	New York City
NYCA	New York Control Area
NYCDEP	New York City Department of Environmental Protection
NYCDOT	New York City Department of Transportation
NYCRR	New York Codes, Rules and Regulations
NYGATS	New York Generation Attribute Tracking System
NYISO	New York Independent System Operator, Inc.
NYPA	New York Power Authority
NYS	New York State
NYSDAM	New York State Department of Agriculture and Markets
NYSDEC	New York State Department of Environmental Conservation
NYSDOS	New York State Department of State
NYSDOT	New York State Department of Transportation

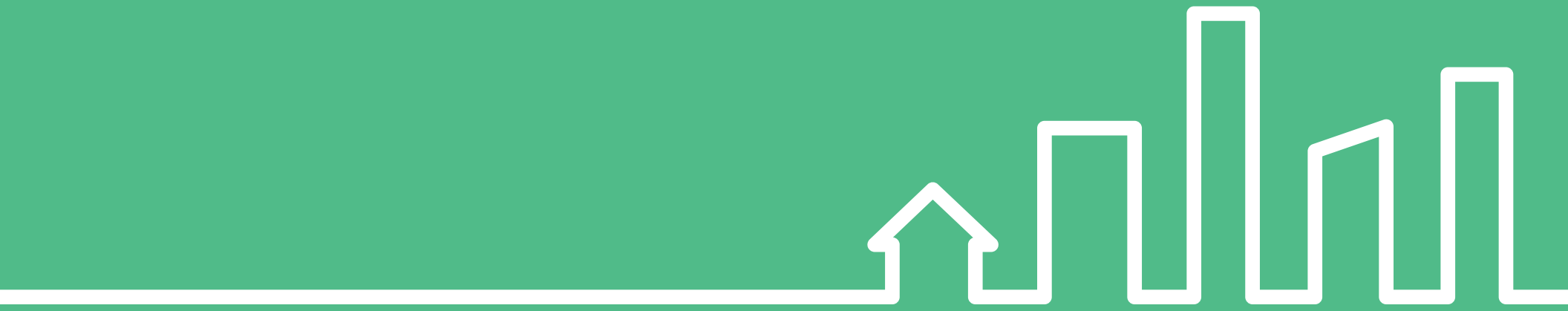
Acronym/ abbreviation	Meaning
NYSDPS	New York State Department of Public Service
NYSE	New York Stock Exchange
NYSEG	New York State Electric and Gas Corporation
NYSERDA	New York State Energy Research and Development Authority
O&M	Operations and maintenance
O&R	Orange and Rockland Utilities, Inc.
OATT	Open access transmission tariff
ODF	Offer Data Form
OEM	Original equipment manufacturer
OGS	Office of General Services
OMB	Office of Management and Budget
OPRHP	Office of Parks, Recreation, and Historic Preservation
ORES	Office of Renewable Energy Siting
P&ID	Piping and instrumentation diagram
PEJA	Potential Economic Justice Areas
PEP	Project Execution Plan
PFD	Process flow diagram
PHA	Process hazard analysis
PILOT	Payment in lieu of taxes
PIP	Public Involvement Program
PJM	PJM Interconnection LLC
PM	Particulate matter
PO	Purchase orders
POI injection	Point of injection
POI interconnection	Point of interconnection
POW	Protection of Waters
PPA	Power Purchase Agreement
PPE	Personal protective equipment
PSA	Professional Service Agreement
PSC	Public Service Commission
PTC	Production Tax Credit
PTP	Point-to-point
pu	Power unit
PV	Photovoltaic

Acronym/ abbreviation	Meaning
QA/QC	Quality assurance/quality control
REC	Renewable Energy Certificate
RFP	Request for proposal
ROW	Right of way
RT&E species	Rare, Threatened, and Endangered species
RTO	Regional tranmission operator
SBS	Small Business Services
SCFWH	Significant Coastal Fish and Wildlife Habitats
SDVOSB	Service Disabled Veteran Owned Small Business
SENY	Southeastern New York
SEQRA	State Environmental Quality Review Act
SERC	State Electricity Regulatory Commission
SHPO	State Historic Preservation Office
SIEPAC	Central American Interconnection System
SPDES	State Pollutant Discharge Elimination System
SPP	Southwest Power Pool
SRIS	System Reliability Impact Study
SSSC	Static Synchronous Series Compensator
STATCOM	Static Synchronous Compensator
STEM	Science, technology, engineering, and mathematics
STL	St Lawrence FDR Power Project
SUNY	State University of New York
SVP	Senior Vice President
SWPPP	Stormwater Pollution Prevention Plan
T&C	Terms and conditions
TBD	To be determined
TO	Transmission Owners
TTC	Transmission transfer capability
TVA	Tennessee Valley Authority
TWh	Terawatt hour
U.S.C.	United States Code
UCAP	Unforced capacity
UDR	Unforced delivery rights
UPFC	Unified Power Flow Controller

Acronym/ abbreviation	Meaning
UPNY	Upstate New York
US	United States
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
USFWS	United States Fish and Wildlife Services
USGS	United States Geological Survey
VOC	Volatile organic compounds
VOSB	Veteran-Owned Small Business
VP	Vice President
VSC	Voltage source converter
WBS	Work Breakdown Structure
WECC	Western Electricity Coordinating Council
XLPE	Cross-linked polyethylene

Section 1

Executive summary



1 Executive summary

1.1. Introduction

New York's Climate Leadership and Community Protection Act (CLCPA) of 2019 provides the roadmap for a green energy future and sets our state on an ambitious course to lead the nation in fighting climate change. We must achieve the aggressive goals laid out by the CLCPA for two very simple reasons: they provide what may be the single greatest economic opportunity for the people of New York and, equally important, they represent a moral imperative in the effort to preserve our planet. New York stands uniquely positioned to strengthen its international leadership in the shift from the fossil-fuel past to an all-renewable, completely clean electricity system of the future. This green vision will power a rebirth of our State's economy in the wake of the COVID-19 pandemic and provide a sorely needed rebalancing of equity—with respect to both economic opportunity and public health.

The New York Power Authority (NYPA) and Forward Power (a joint venture of Invenergy and energyRe) are proud to present Clean Path New York, a bold and transformative "All Renewable, All New York" energy vision.

Representing over $11 billion of investment and over 7,900,000 megawatt hours[1] (MWh) of new emissions-free energy each year, Clean Path New York joins together clean energy – generated across New York State, by New York workers – with new state-of-the-art transmission demonstrating the power of public-private partnerships to deliver transformative change for the State.

[1] Including NYPA's Blenheim-Gilboa pumped storage facility.

Figure 1-1. Clean Path New York represents an "All Renewable, All New York" energy vision.

By delivering renewable power directly to Zone J (New York City) and alleviating the bottleneck preventing upstate-generated clean energy from reaching downstate, Clean Path New York solves one of New York's most vexing challenges, the so-called "Tale of Two Grids." At the same time, Clean Path New York will remake the engine of opportunity that powers our great state and deliver a transformative economic and environmental justice victory for New York.

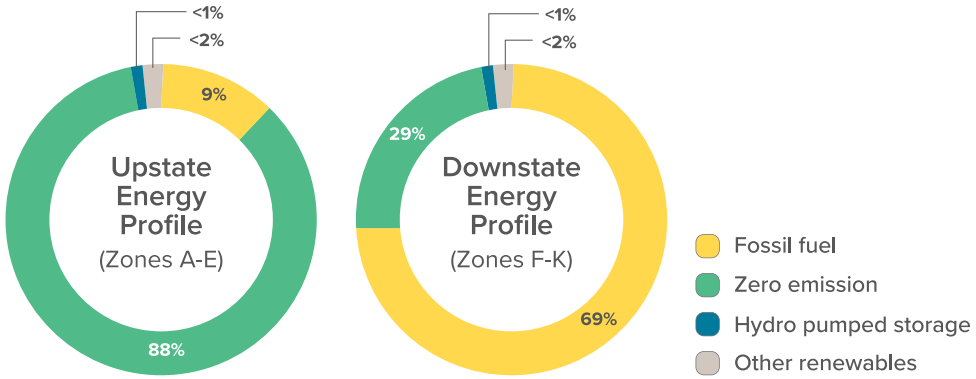


Figure 1-2. Current New York State energy profile.

Here is how we do it.

Clean Path New York is centered on the principle of "All Renewable, All New York" for all aspects of the project, which encompass **$7.5 billion of new generation and $3.5 billion of new transmission infrastructure, with delivery beginning in June of 2026 at a competitive strike price inclusive of transmission of $[redacted] per MWh.** The value drivers differentiating Clean Path New York as a uniquely compelling offering are summarized below.

An "All Renewable, All New York" Resource Portfolio

Clean Path New York's portfolio of 100% in-state, advanced development-stage renewable projects is the most technologically and geographically diverse available. **It comprises over 2,000 MW of new wind and 1,800 MW of new solar assets,** with almost 60% of this generation being developed directly by Clean Path New York and the balance by third parties. The scale and quality of this portfolio are further enhanced by the New York Power Authority's existing 1,160 MW Blenheim-Gilboa pumped storage facility in Schoharie County, which will provide over 375,000 MWh of firming services to maximize the availability and reliability of renewable power delivered via the transmission line.

An Upstate-to-NYC Underground Transmission Connection

Clean Path New York's new 174-mile, 1,300 MW HVDC transmission link will create a direct connection from Upstate to New York City, interconnecting in Zone E, which is north and west of the main source of system congestion at the Total East interface, and delivering into Zone J. To enhance project viability, it will be located entirely underground and underwater and primarily in the existing rights-of-way of the New York Power Authority's Marcy South 345 kV transmission corridor (105 of 174 miles).

As a buried line using existing rights- of-way, Clean Path New York will expedite permitting, mitigate potential community concerns, and be more resilient than above-ground alternatives in the face of severe weather and security threats.

1.3 GW state-of-the-art HVDC link over 174 miles between Zone E and Zone J

Figure 1-2. Delivery of renewable energy to New York City is projected to begin in June 2026.

Economic, Climate and Equity Benefits that Keep CLCPA's Promise

Clean Path New York offers the State an opportunity to reimagine and reinvigorate our economy with clean, affordable energy, while realizing the climate and equity benefits promised by CLCPA.

Clean Path New York will deliver **$12 billion of cost savings to ratepayers across the State in its first 25-years of operation.**

These will be driven in large part by **$5.6 billion of congestion cost savings** that emerge from the project's resolution of the "Tale of Two Grids" as its converter station location in Zone E dramatically reduces congestion across the Total East and UPNY-SYNY interfaces.

Importantly, the Clean Path New York transmission line will have a lifespan that lasts—and delivers savings—well beyond 25 years.

It will be an enduring lifetime asset for New York, with operations likely to continue for 70 years and more.

Clean Path New York will help the State achieve the CLCPA goals while delivering huge social and health benefits to disadvantaged communities. By delivering clean energy into New York City, Clean Path New York will reduce the output of oil- and gas-fueled generation sources by an average of **4.6 TWh per year statewide and 2.56 TWh per year in Zone J, reductions of 8% and 16%, respectively. Clean Path New York will reduce carbon emissions by 39 million tons in its first 25 years.** In 2030 the project delivers a 22% reduction in carbon emissions for the statewide electric system and in 2035 it delivers a reduction of 23%. When accounting for all emissions reductions, including carbon and other criteria pollutants—(NO_x, SO_2, and Particulate Matter (PM))—**Clean Path New York will result in over $6.25 billion in avoided social and public health costs over 25 years, with over 50% of these benefits in New York City and 40% accruing to disadvantaged communities across the state.**

Clean Path New York will create over **10,500 person years of in-state jobs** over the first three years of the contract delivery term – all paying prevailing wage. Clean Path New York generates over **$4.3 billion Category 1 and 2 incremental economic benefits, 36.3% of which flow to disadvantaged communities.** In addition, Clean Path New York will invest $270 million in Category 3 workforce development, public health, and community programs to provide a pathway for members of our most vulnerable populations to emerge as a vibrant new green workforce that will continue to build New York's future while also enhancing the overall quality of life in these communities. **This brings the project's total investment in disadvantaged communities to 40% overall – in line with goals of the CLCPA.**

Figure 1-3. Clean Path New York will deliver huge social and health benefits to disadvantaged communities.

Unrivaled Value and Benefits At A Competitive Price

Clean Path New York is a project that benefits all New Yorkers and more than pays for itself in the process.

The project delivers a direct net benefit of over $800 million to ratepayers, the ultimate funders of the project.

Clean Path New York delivers ratepayer savings in excess of the value of NYSERDA's REC payments to the project.

The net present value (NPV) of direct cost savings to ratepayers resulting from the project over the same 25-year term is $7.02 billion – $828 million more than the NPV of the REC payments. When we add in the value of $6.25 billion in avoided social and public health costs due to emissions reductions across the state, the billions of dollars invested in state economic development through job creation, and tax and payment in lieu of taxes (PILOT) revenues, the NPV of the project benefits outweighs the expense by a margin of 2:1.[2]

Beyond that, NYSERDA will be able to establish a resale market for Tier 4 RECs to New York City building owners who need to comply with Local Law 97's carbon reduction mandate. The marginal cost of excess emissions penalties faced by non-compliant buildings is well in excess of Clean Path New York's strike price, meaning that NYSERDA will be able to sell Tier 4 RECs to building owners at a profit.

This resale market will create a non-ratepayer funded income stream that the State can use to further advance our new clean energy economy.

To the extent a 30% Federal Investment Tax Credit for transmission projects is enacted, Clean Path New York would pass along 75% of the net effective benefit of the tax credit to NYSERDA.

An Experienced Team of New York Partners Ready to Execute

The New York Power Authority and Forward Power (a joint venture of Invenergy and energyRe) each bring unique skills, assets, and experience to Clean Path New York that ensure its success. The project's developers are trusted leaders in New York's energy industry with distinguished histories of achievement. We are excited to work together leveraging the best-in-class capabilities of each organization to ensure that, while other states may speak of demonstrating leadership, New York State will continue its history of actually leading the way forward for the rest of the world by building projects no one else thought possible. In all aspects of Clean Path New York, the project team views our work as a partnership with the local communities we operate in and serve.

Clean Path New York Team

NEW YORK STATE OF OPPORTUNITY. | NY Power Authority

Forward Power

Invenergy energyRe

[2] See Appendix 24 for cost benefit analysis

1.2. Fulfillment of PSC Evaluation Criteria

The Public Service Commission's analysis of whether the procurement of Tier 4 RECs from a particular project or portfolio of projects advances the public interest will incorporate criteria articulated in the Commission's BCA Framework Order 60. Clean Path New York is a compelling project when measured against these criteria.

A brief overview as to how Clean Path New York performs strongly in this context follows, with project attributes listed under each criterion:

1. Whether the agreement is a cost-effective means of progressing toward the CLCPA's 2030 and 2040 Targets in light of the unique challenges of reducing fossil fuel use in Zone J.

- Reduced load payment savings to ratepayers by $12 billion over 25 years
- Interconnection at Fraser Substation in Zone E, which is the closest interconnection location to Zone J, while still solving congestion across the crucial Total East interface. This will result in congestion savings of $5.6 billion over 25 years (a subset of the $12 billion above)
- Reduced fossil fuel electric generation by average of 4.6 TWh/YR statewide
  - Reduced carbon emissions by 39 million tons over 25 years
  - Reduced carbon emissions from the statewide electric system by 22% in 2030 and 23% in 2035
- NPV of ratepayer cost savings is $828 million greater than NPV of NYSERDA's total REC investment over 25 years
- Overall benefit/cost ratio of 2:1 when including all benefits and costs

2. The extent to which the selected project or projects will enable reduced reliance on fossil-fuel fired generation located in Zone J.

- Average of 2.56 TWh/YR of reduced thermal generation in Zone J
- Average thermal generation reduction of 16% per year in Zone J
- Reduce NYISO locational capacity requirement (LCR) over time by adding 1,300 MW of controllable resources into Zone J, decreasing the need for thermal assets for resource adequacy

3. The degree to which the selected project or projects complement the foreseeable deployment of offshore wind within Zone J.

- Our modeling indicates Clean Path New York will experience 0 hours of curtailment even with 9,000 MW of offshore wind (OSW) connected to Zones J and K in 2035, depending on the New York Independent System Operator rules to dispatch the line to Zone J for both economic and environmental benefits
- The converter station at Fraser in Zone E enables the export of OSW beyond the Total East Interface in periods of excess wind supply needed to serve Zone J

Clean Path New York will experience 0 hours of curtailment even with 9,000 MW of offshore wind connected to NYC and Long Island

4. Impacts to disadvantaged communities.

- 40% of the incremental economic benefits of the project accrue to disadvantaged communities
  - This constitutes an investment of $1.8 billion in project-specific expenditures
- 49% of the benefit avoided social and public health costs due to emissions reduction from decreased use of oil- and gas- fired generation accrue to disadvantaged communities
  - This constitutes an avoided cost value of over $3 billion to disadvantaged communities
- $270 million in Category 3 community benefits agreement
  - $100 million investment to expand workforce development and job creation programs targeting disadvantaged communities
  - $50 million investment in economic development programs targeting disadvantaged communities
  - $50 million investment in enhancements to public health in disadvantaged communities
  - $70 million investment in environmental justice programs

Figure 1-4. The project includes an agreement on $270 million in community benefits.

5. Project viability.

- 100% of transmission resource to be buried underground or under water in the Hudson and Harlem Rivers.
- Use of the Power Authority's Marcy- South right-of-way
  - No green-field transmission corridor development needed
  - 60% of transmission route controlled by single owner
- Clean Path New York directly developing and owning 60% of the 3,800 MW new wind and solar generation portfolio
  - 624 MW of directly owned generation assets already contracted under Tier 1 REC program
- 938 MW of third party-owned generation holding executed term sheets with Clean Path New York already contracted under Tier 1 REC program
- Use of 1,160 MW Blenheim- Gilboa facility in Schoharie County to firm renewables
- Control of upstate converter station site location
- Existing site control in Zone J for converter station site location

$6.25 billion in avoided social and public health costs

Over 50% of this benefit occurs in New York City

6. Economic benefits to the state.

- Over $11 billion investment in New York State infrastructure
- Job creation
  - Creates over 10,500 person years of in-state construction jobs
- Tax revenue
  - Approximately $1.6 billion in tax revenue, PILOTs and host community payments for local communities over 25 years
  - This tax revenue comes without increased demand on community services
- Investment in 70-year transmission resource to reduce congestion and lower energy costs long after initial 25-year contract expires
- Increased New York State energy independence and competitiveness by not investing in any single foreign sources of energy

Creates 10,618 person years of in-state jobs through 1st three years of contract term

Generates $1.6 billion in tax revenue, PILOTs and host community payments over 25-year contract term

Figure 1-5. New Yorkers will benefit from approximately 233 long-term jobs in the state.

1.3. Transmission: Siting & Routing - Minimizing Environmental and Community Impacts

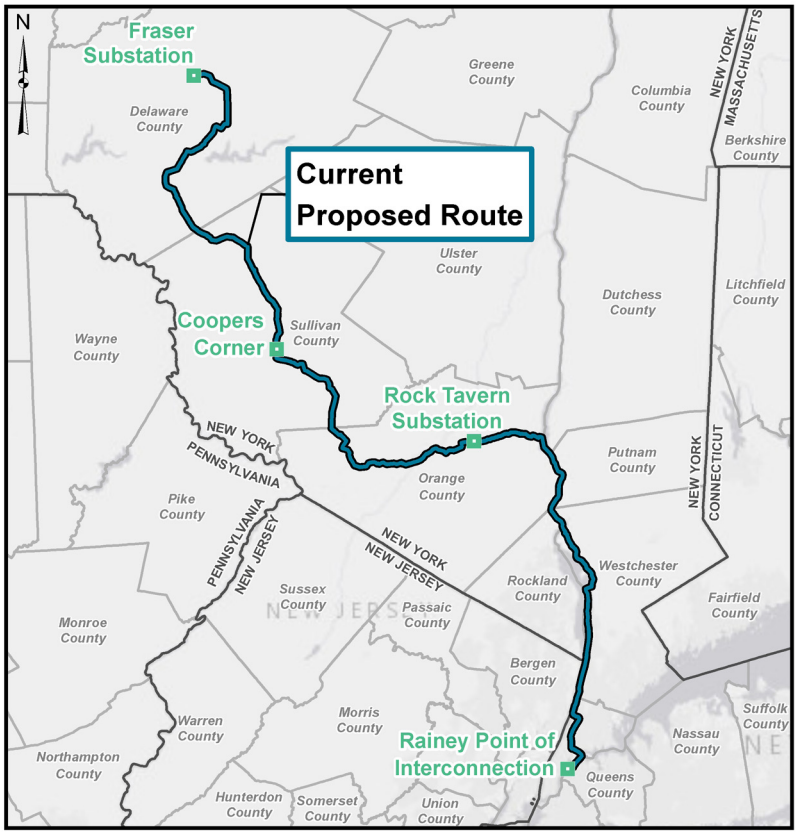


Figure 1-7. The transmission line runs for six miles in the Harlem River before making landfall in Zone J.

The transmission route represents the optimal balance of increasing connectivity across key constraints while maintaining cost effectiveness for ratepayers. The entirety of the new transmission resource developed under Clean Path New York will be buried underground or underneath the Hudson River. This is consistent with policy direction promoted by the PSC and the Cuomo administration as the project enhances system reliability through storm hardening and minimizes visual impact to communities.

In all, 105 miles of the 174-mile transmission project (60%) is located within NYPA's Marcy-South 345kV transmission corridor. Clean Path New York conductors will generally be buried five feet below grade. Much of the Marcy-South corridor is characterized by loose rocky soil at grade, obviating the need for destructive installation methods such as blasting. Use of existing rights-of-way reduces local impacts to the community and environment, which results in less complex permitting and increases project timeliness and feasibility.

The Marcy-South corridor to be used for Clean Path New York terminates at Rock Tavern, at which point the underground transmission resource continues south and east, primarily in New York State Department of Transportation (DOT)-controlled rights-of-way along Route 207, Route 300, and Route 69, until transitioning into the Hudson River at what is currently an industrial site in the Town of New Windsor. Clean Path New York is working with DOT to ensure close collaboration on the potential need for any routing alternatives to deliver a positive outcome with minimal impacts to local communities

Figure 1-6. The new transmission line will run beneath the Hudson River from New Windsor to New York City.

along the route. Once in the Hudson River, the transmission line will be installed in the riverbed, where it travels 16.2 miles south, making landfall again on the east side of the river in the Village of Buchanan (Westchester County) to avoid environmentally sensitive areas in the Hudson around Haverstraw Bay. Once in Buchanan, the line is again buried underground in DOT rights-of-way, including Route 9 and Route 9A, as it travels south to Ossining, where it re-enters the Hudson River and travels south for another 20.1 miles.

[redacted]

1.4. Supply Plan

Clean Path New York's supply portfolio comprises new on-shore wind and solar resources as well as NYPA's Blenheim-Gilboa pumped storage facility to serve as a firming resource to smooth the utilization of the intermittent wind and solar assets. Clean Path New York's portfolio is ideally suited to maximize utilization of the new transmission line. Our portfolio is both geographically and technologically diverse. It is also cost effective, with a robust production tax credit (PTC) and investment tax credit (ITC) qualification strategy across all assets, and includes many advanced stage projects, with 1,562 MW already contracted under NYSERDA's Tier 1 REC program.

Forward Power will develop and own 60% of the supply portfolio on a MW basis. For the balance of the supply Clean Path New York has secured term sheet agreements with third party developers RWE, Northland Power, Apex, Terra-Gen, and Boralex. Clean Path New York will enter into long-term REC purchase agreements with these third-party suppliers to supply the project.

All of the supply assets either already hold or will pursue Tier 1 REC contracts with NYSERDA so that, in the event the transmission resource does not require additional capacity for full utilization, the suppliers can receive Tier 1 compensation for their generation in place of Tier 4 RECs.

Figure 1-7. The transmission line runs for six miles in the Harlem River before making landfall in the Bronx.

The table below depicts the Clean Path New York supply portfolio, including information on ownership, capacity, construction start date, and COD.

Project	Developer	Capacity	Location	Technology	Tier-1 Contract	COD
Alle-Catt Wind	Invenergy	340 MW	Wyoming, Cattaraugus, Allegany Counties	Wind	✓	Q3 2024
Horseshoe Solar	Invenergy	180 MW	Livingston County	Solar PV	✓	Q4 2023
Number Three Wind	Invenergy	104 MW	Lewis County	Wind	✓	Q3 2022
Canisteo Wind	Invenergy	250 MW	Steuben County	Wind		Q2 2023
Bull Run Wind	Invenergy	449 MW	Clinton County	Wind		Q3 2024
Verona Solar	Invenergy	350 MW	Oneida County	Solar PV		Q4 2024
Twinleaf Solar	Invenergy	75 MW	Lewis County	Solar PV		Q4 2024
Taproot Solar	Invenergy	205 MW	Montgomery County	Solar PV		Q4 2025
Wintergreen Solar	Invenergy	75 MW	Montgomery County	Solar PV		Q3 2025
Orangeville Solar	Invenergy	75 MW	Wyoming County	Solar PV		Q3 2025
Seventy Seven Solar	Invenergy	100 MW	Wyoming County	Solar PV		Q4 2024
Bull Run Solar	Invenergy	170 MW	Clinton County	Solar PV		Q3 2025
Ball Hill Wind	Northland	107.2 MW	Chautauqua County	Wind	✓	Q4 2022
Bluestone Wind	Northland	111.8 MW	Broome County	Wind	✓	Q4 2022
High Bridge Wind	Northland	103.2 MW	Chenango County	Wind	✓	Q3 2023
Bald Mountain Solar	Boralex	20 MW	Washington County	Solar PV	✓	Q4 2022
West River Solar	Boralex	20 MW	Saratoga County	Solar PV	✓	Q2 2024
Sandy Creek Solar	Boralex	20 MW	Jefferson County	Solar PV	✓	Q4 2023
Greens Corners Solar	Boralex	120 MW	Jefferson County	Solar PV	✓	Q4 2023
Sky High Solar	Boralex	20 MW	Onondaga County	Solar PV	✓	Q1 2023
Baron Winds Phase I	RWE	121.8 MW	Steuben County	Wind	✓	Q4 2022
Heritage Wind	Apex	198 MW	Orleans County	Wind	✓	Q4 2021
Prattsburgh Wind	Terra-gen	147 MW	Steuben County	Wind	✓	Q4 2023

1.5. Utilization of Blenheim-Gilboa

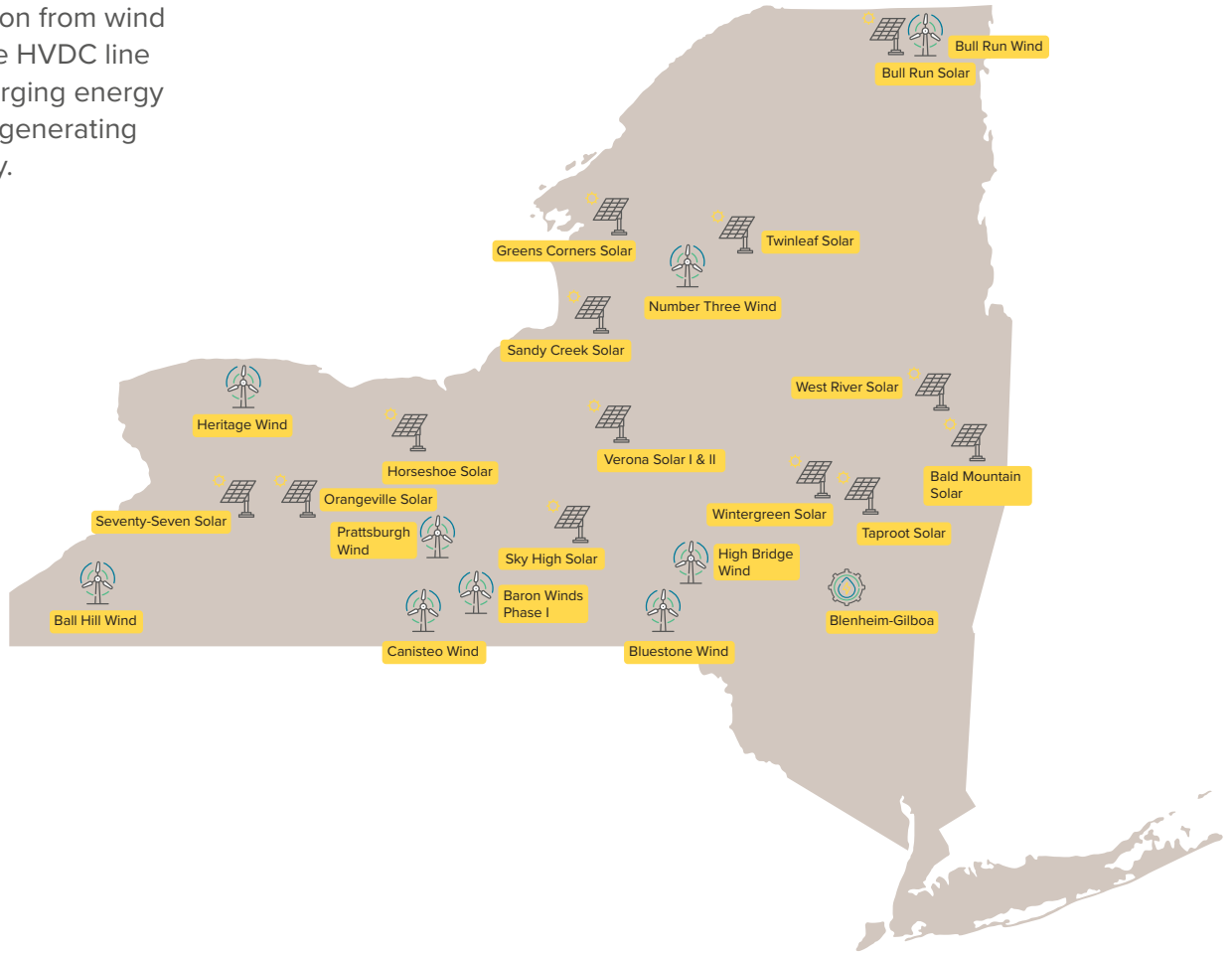
In 1973 NYPA developed the Blenheim-Gilboa pumped storage facility. It offers the State's power system 1,168 MW of pumped storage capacity. Despite its large capacity, the facility is underutilized; in 2019 Blenheim-Gilboa generated 406.8 GWh of energy (per NYISO Gold Book 2019), which equates to approximately 3.5 hours of daily use at full load output. Clean Path New York will optimize use of Blenheim-Gilboa, adding over 375,000 MWh per year to its output.

The incorporation of the Blenheim-Gilboa facility in the Clean Path New York project enables excess renewable energy to be stored when generation from wind and solar resources is high, and subsequently delivered to Zone J at times when generation from wind and solar resources is low. This increases utilization of the HVDC line and generation of Tier 4 RECs. It is expected that the charging energy will be provided by the buildout of the additional eligible generating resources, with hourly matching to ensure Tier 4 eligibility.

We offer an alternative (reduced) strike price of $[redacted] if including Blenheim-Gilboa in the project.

Contracting Blenheim-Gilboa pumped storage to balance intermittent Resources and maximize utilization of the New Transmission

Figure 1-8. The Blenheim-Gilboa facility will store excess renewable energy so it can be delivered when needed.



1.6. Solving the Tale of Two Grids: Delivering Cost Effective, Viable Reduction in Fossil Fuel Generation

Remediating the Tale of Two Grids

In order to achieve the CLCPA goals of 70% clean electricity by 2030 and 100% by 2040 is the remediation of what the New York Independent System Operator (NYISO) calls the "Tale of Two Grids."

Currently, congestion on the bulk power system prevents mostly emissions-free power in Zones A-E from being used in the region's major load center in Zones J and K. This congestion, when coupled with NYISO's locational capacity requirement (LCR) for Zone J, results in the downstate grid being more than 70% oil- and gas-fired. This imposes significant environmental justice burdens on disadvantaged communities in the South Bronx and Queens, which host these fossil fuel assets.

To rewrite the "Tale of Two Grids," congestion between Zones A-E and Zones J and K must be resolved and additional new clean energy generation must be brought online to offset the use of oil and gas generators in Zone J.

The most important congestion point on the bulk power system inhibiting the flow of energy from Zones A-E to Zones J and K is the Total East interface. Projects that interconnect in Zone F (at the Leeds or New Scotland substations) do not solve the Tale of Two Grids problem. Projects that inject power into Zone J from outside the New York Control Area (those that come from Canada or PJM) do nothing to solve it either; they simply bypass the problem, while leaving it unaddressed.

The transmission resource developed by Clean Path New York interconnects its withdraw-point converter station to the Fraser Substation in Zone E, the closest feasible location to Zone J while still being on the other side of Total East congestion. By keeping the transmission line as short as possible, Clean Path New York reduces project costs to the greatest extent possible while doing the most to remediate upstate/downstate congestion. **By interconnecting at the Fraser substation, Clean Path New York's transmission line reduces congestion costs over Total East by $250 million, or 57% in 2030.**

Our team studied the congestion effects of being located on the other side of Total East, in Zone F, in order to confirm whether interconnection at Fraser, in Zone E, was optimal from a system impact perspective. To quantify the value of any Tier 4 transmission project extending north of the Total East interface, Clean Path New York modeled a 2030 case with a 1,300 MW HVDC line originating at the Leeds substation, in Zone F, rather than the Fraser substation, in Zone E, and held constant everything else in the model. **The Leeds case showed almost $120 million, or 35%, more congestion than the Fraser case, $96 million of which is tied to the Total East interface.** The Leeds case also had renewables dispatch of 593 GWh less than the Fraser case, mostly due to increased renewables curtailment.

Figure 1-9. The project will help relieve environmental justice burdens on disadvantaged communities in the South Bronx and Queens.

Mature and Cost-Effective Supply

Clean Path New York includes 1,562 MW of wind and solar generation (more than 30% of the total project resources) already contracted by NYSERDA under the Tier 1 REC program. The portfolio features a majority of the Tier 1-contracted wind capacity in New York, which enables Clean path New York to achieve a high utilization of the New Transmission and maximize the value of the proposal.

Reduction in Fossil Fuel Generation and Other Benefits

By developing **3,800 MW of clean energy throughout the state** and remediating transmission constraints at the Total East interface and across UPNY-SYNY to allow that energy to flow into Zone J, **Clean Path New York will reduce the output of oil and gas-fueled generation sources by 4.6 TWhrs/YR — an 8% reduction statewide and a 16% reduction in Zone J.**

In Clean Path New York's 2025 modeling case of the electric system performed by PowerGEM, city-wide reductions resulting from the project would be equivalent to retiring all fossil fuel-fired equipment at:

- Ravenswood Generating Station
- Arthur Kill Generating Station
- Riverbay Generation Station
- Starrett City Cogeneration Plant

Beginning in 2030, the Clean Path New York reductions would be equivalent to retiring the facilities listed above plus:

- East River Generation Station
- Kennedy International Airport Cogeneration Plant.

Clean Path delivers $12 Billion in load payment savings to New York ratepayers over its first 25 years of service.

In 2030, the addition of Clean Path New York generation and transmission assets reduces statewide load payments by $438 million, an 11% reduction in the amount New York State ratepayers pay for their electricity. A little less than half of these savings are in Zone J, where load payments decline by $204 million, or 13%. These savings are even higher in our 2035 case, with Clean Path New York reducing statewide load payments by $528 million, or 13%, and Zone J load payments by $247 million, or 16%.

Post-Contract Flexibility Benefits New York State

It is important to note that Clean Path New York will have a service life that greatly exceeds the 25-year term contemplated under this Tier 4 REC solicitation.

New York State has an opportunity to make an investment in a transmission resource with a useful life of 70 years. Because Clean Path New York is located entirely within the State and entirely served by New York State generation resources, we are confident the State will be able to utilize the investment it makes in Clean Path New York long after the initial contract term with NYSERDA expires. The same cannot be said for any project that seeks to connect a single source of power to Zone J from outside the State under a single supply agreement. Clean Path New York is a true in-state, all New York solution.

1.7. Carbon Emissions Goals

In addition to its goals of 70% renewable energy by 2030 and a carbon-free electricity supply by 2040, New York State has a goal of reducing carbon emissions to at least 85% below 1990 levels by 2050.

According to the New York State Department of Environmental Conservation, the State emitted 410 million metric tons of CO_2 equivalent in 1990.[3] This implies that the State must reduce its CO_2 emissions by 349 million metric tons – to 61 metric tons – by 2050.

Based on PowerGEM's modeling, which assumes the State will meet its 70% renewable energy by 2030 goal, Clean Path New York in that year will reduce New York State's annual CO_2 emissions by 2.5 million tons. This represents a 22% reduction in statewide CO_2 emissions from electric generation in that year. Clean Path New York provides similar incremental CO_2 reductions even when modeled in conjunction with a similarly sized HVDC line interconnecting into Zone J from Canada.

Clean Path New York provides the targeted CO_2 emissions reductions that are the driving force behind the Tier 4 program.

Over 57% of these reductions, or 1.5 million tons, are located in New York City, and 82% of them – 2.1 million tons – are located in the constrained downstate New York State capacity zones (G-K).

In the 2035 case, with 9 Gigawatts (GW) of offshore wind interconnecting in Zones J and K, Clean Path New York reduces statewide carbon emissions by 23% versus the base case.

A project injecting renewable power directly into Zone J from outside New York may provide similar emissions reductions, but would do so by bringing out-of-state renewables into the State, not by improving the intrastate transmission system to dispatch New York's existing renewables more efficiently. Based on our modeling, a fully utilized 1,250 MW transmission line from Canada into Zone J would increase New York's net electricity imports by 52% in 2030 and 57% in 2035. While such a project would reduce emissions in Zone J, from a system perspective it would do so by injecting foreign renewables into the State, rather than by allowing New York State to more efficiently utilize in-state renewables.

Figure 1-10. Clean Path New York takes advantage of New York State's own renewable energy resources.

[3] Emissions numbers are drawn from the New York State Department of Environmental Conservation at https://www.dec.ny.gov/docs/administration_pdf/revexpterms496.pdf.

1.8. Complement to Offshore Wind

Clean Path New York is a complement to New York State's investment in offshore wind. Our interconnection assumes NYISO will control the dispatch of the line. Therefore, power flow will be based on a security- constrained economic dispatch model (adjusted to account for the economics of the project's REC revenue). This necessarily results in cost optimization for ratepayers. By locating a converter station within the New York Control Area (NYCA) at the Fraser Substation, Clean Path New York is able to convey power in either direction – into or out of Zone J.

Over the next decade, the State is expected to procure 9,000 MW of offshore wind. Our modeling indicates that Clean Path New York will not be curtailed even after all 9,000 MW of the offshore wind is interconnected into Zones J and K. If, however, wind output going into Zones J and K at some point exceeds downstate load, Clean Path New York will be able to serve as an export mechanism for that clean energy beyond the Total East interface, delivering it to load centers throughout the State that need it.

Figure 1-11. Offshore wind will contribute 9,000 MW of clean renewable energy.

1.9. NYISO Leadership on Intrastate HVDC

The global trend in bulk transmission development is toward the use of high voltage DC technology. HVDC offers the benefit of being able to travel long distances without voltage support, which increases efficiency, while also being controllable. Several HVDC projects connect into the NYCA from adjacent control areas. However, there are no fully intrastate deployments of the technology in New York State. Because of this, the NYISO's Open Access Transmission Tariff (OATT) and its operations manual do not currently contemplate how an intrastate HVDC asset would be managed, nor how one would participate in the bulk power market.

All stakeholders involved in energy policy and planning across the state recognize that this is an untenable situation as it allows interstate projects to proceed while inhibiting the market for intrastate development. Clean Path New York is leading the effort to resolve the regulatory gap at the NYISO. On March 25, 2021, we nominated a project to NYISO's Budget & Priorities Working Group, through which amendments will be made to the OATT and the operations manual to provide rules and guidelines for intrastate HVDC projects to serve the State's entire transmission development market.

Figure 1-12. HVDC provides an efficient, reliable source of electricity.

1.10. Benefits to Disadvantaged Communities

The COVID-19 pandemic laid bare, through outsized negative health outcomes for racial minorities, the stark consequences of systemic inequality woven into our social fabric. Social determinants like environmental justice burdens in disadvantaged communities are a large driver of these outcomes. Clean Path New York drives significant benefits to disadvantaged communities by greatly reducing emissions from fossil generation assets located in these communities and by creating economic development opportunities for community members.

Emissions Reduction

Dramatically reduced emissions across the State result in avoided social costs of more than $6.25 billion over the 25-year project term. Over 50% of these emissions reductions occur in New York City and 49% occur in environmental justice and disadvantaged communities. NOx, SOx, and PM emissions from oil- and gas-fired generation sources in 2030 and 2035 are all reduced by 20%. The air quality benefits reflect the value of improved public health that would result from less exposure to harmful pollutants – including fewer episodes of illness, fewer days of school or work missed, less disruption of business, lower health care costs, and fewer premature deaths.

Economic Development

Clean Path New York directs 40% of its overall incremental economic over $1.5 billion of investment in job creation from construction and operation of the project as detailed in our Community Engagement Plan and the Incremental Economic Benefits Sections of our response, Clean Path New York will establish a community investment fund totaling $270 million over 25 years targeting the following core strategic objectives aimed at reducing economic inequality and improving education while creating a pathway to green energy jobs, enhancing public health, and improving the environmental performance of buildings located in disadvantaged communities.

Clean Path New York will work directly with community stakeholders to listen to their priorities and needs and then act.

The Clean Path New York project team's initial focus will be on:

1. Support workforce development and education programs focused on increasing minority participation in the green economy ($70 million);
2. Provide increased funding for existing workforce development, local apprenticeship, and education programs currently administered by NYPA;
3. Invest in access to medical care and health services in disadvantaged communities ($50 million);
4. Performing efficiency and electrification retrofits in disadvantaged communities to spur local investment, create good jobs, and reduce the environmental burden existing buildings place on local communities ($50 million).

The fund will be managed by a board of directors representing communities and stakeholder groups that serve as hosts to the project. The board will be constituted after the project secures a funding award from NYSERDA.

Figure 1-13. Reducing emissions will improve the health and well-being of urban communities.

1.11. Economic Development by New York, for New York

Clean Path New York will serve as a powerful engine for economic development. Clean Path New York's "All Renewable, All New York" commitment ensures that the economic benefits of the project and associated investments stay in the state. New York has the opportunity to leverage the new green economy in a way that will lift all regions of the state. It is critical that all aspects of the project chosen under this RFP are entirely New York focused. Clean Path New York accomplishes that goal.

Key metrics are included in the tables below. Category 1 benefits include project-specific spending and job creation in New York State. Category 2 benefits include transmission and other infrastructure, supply chain, and community economic development in New York State. DAC is the acronym used by NYSERDA in the Tier 4 RFP worksheets to describe Disadvantaged Communities.

Investment in New York State and Disadvantaged Communities ($000)			
Generation and Transmission	**New York State**	**Disadvantaged Communities**	**% to Disadvantaged Communities**
Through 3rd Year of Contract	$2,060,650	$453,634	22.0%
Remainder of Contract	$2,314,549	$1,132,933	48.9%
Full Term	**$4,375,200**	**$1,586,566**	**36.3%**
Community and Workforce			
Through 3rd Year of Contract	$50,000	$50,000	100.0%
Remainder of Contract	$220,000	$220,000	100.0%
Full Term	**$270,000**	**$270,000**	**100.0%**
Combined			
Through 3rd Year of Contract	$2,110,650	$503,634	23.9%
Remainder of Contract	$2,534,549	$1,352,933	53.4%
Full Term	**$4,645,200**	**$1,856,566**	**40.0%**

Figure 1-14.

Labor relations

Clean Path New York joins the New York State Building & Construction Trades Council in the belief that good-paying union jobs in the fossil fuel industry can and should transition to good-paying jobs in the renewable energy industry. For this reason, we will require our Construction Managers and Prime Contractors to negotiate and sign a Project Labor Agreement with the Council, which will be binding on all subcontractors. The agreement will have a form and substance not materially different from that required pursuant to the NYSERDA Standard Form Tier 4 Renewable Energy Certificate Purchase and Sale Agreement, Section 18.11. Clean Path New York will work collaboratively with the Council to successfully navigate the geographic and craft jurisdiction of the affiliated councils and trades.[4]

Figure 1-15. Clean Path New York will work collaboratively with the Council to successfully navigate the geographic and craft jurisdiction of the affiliated councils and trades.

Job Creation in New York State and Disadvantaged Communities

	New York State	Disadvantaged Communities	% to Disadvantaged Communities
Through 3rd Year of CDT	10,618	2,016	19.0%
Remainder of CDT	210	26	12.3%
Total 25-Year Term	**10,827**	**2,042**	**18.9%**

Figure 1-16.

[4]See Appendix 25.

1.12. Team Experience and Commercial Structure

The project is overseen by a steering committee composed of the Senior Executive management personnel of each organization. This oversight committee is responsible for all aspects of project development, financing, and commercial structuring, and for all governance concerns related to the submission of this proposal.

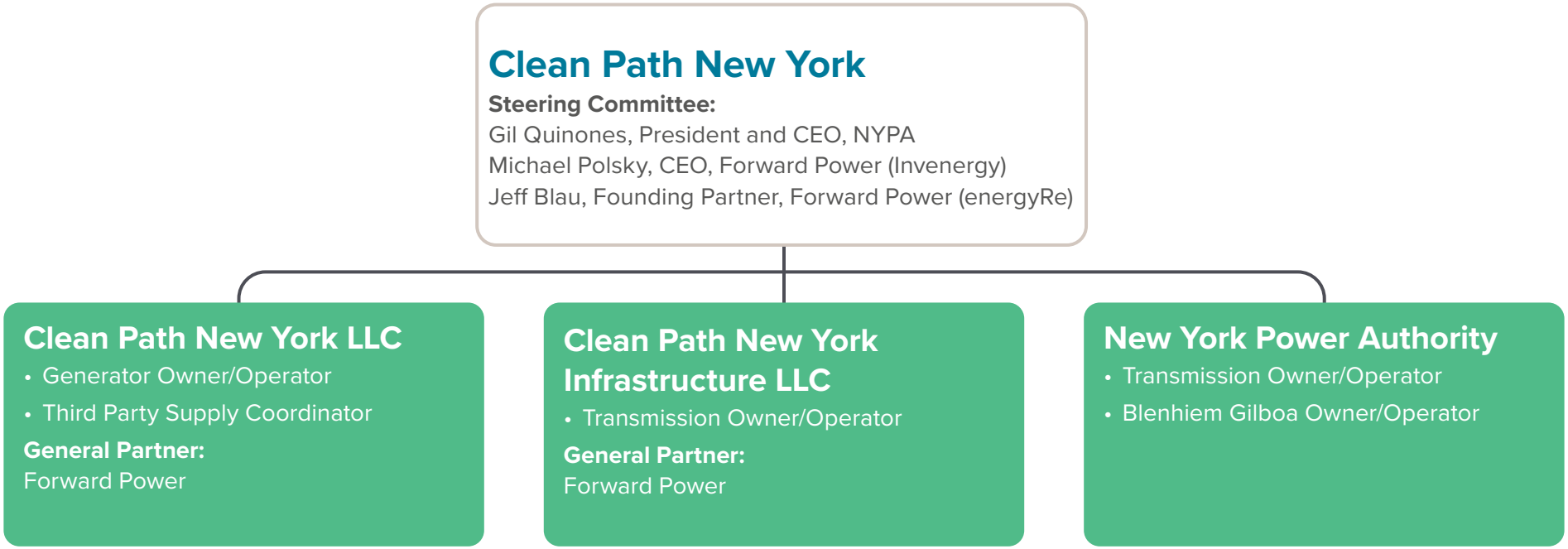


Figure 1-17. Management chart for project bid phase

The business model for Clean Path New York is driven by energy market revenues, transmission service agreements, and Tier 4 REC revenue. The commercial structure is depicted below.

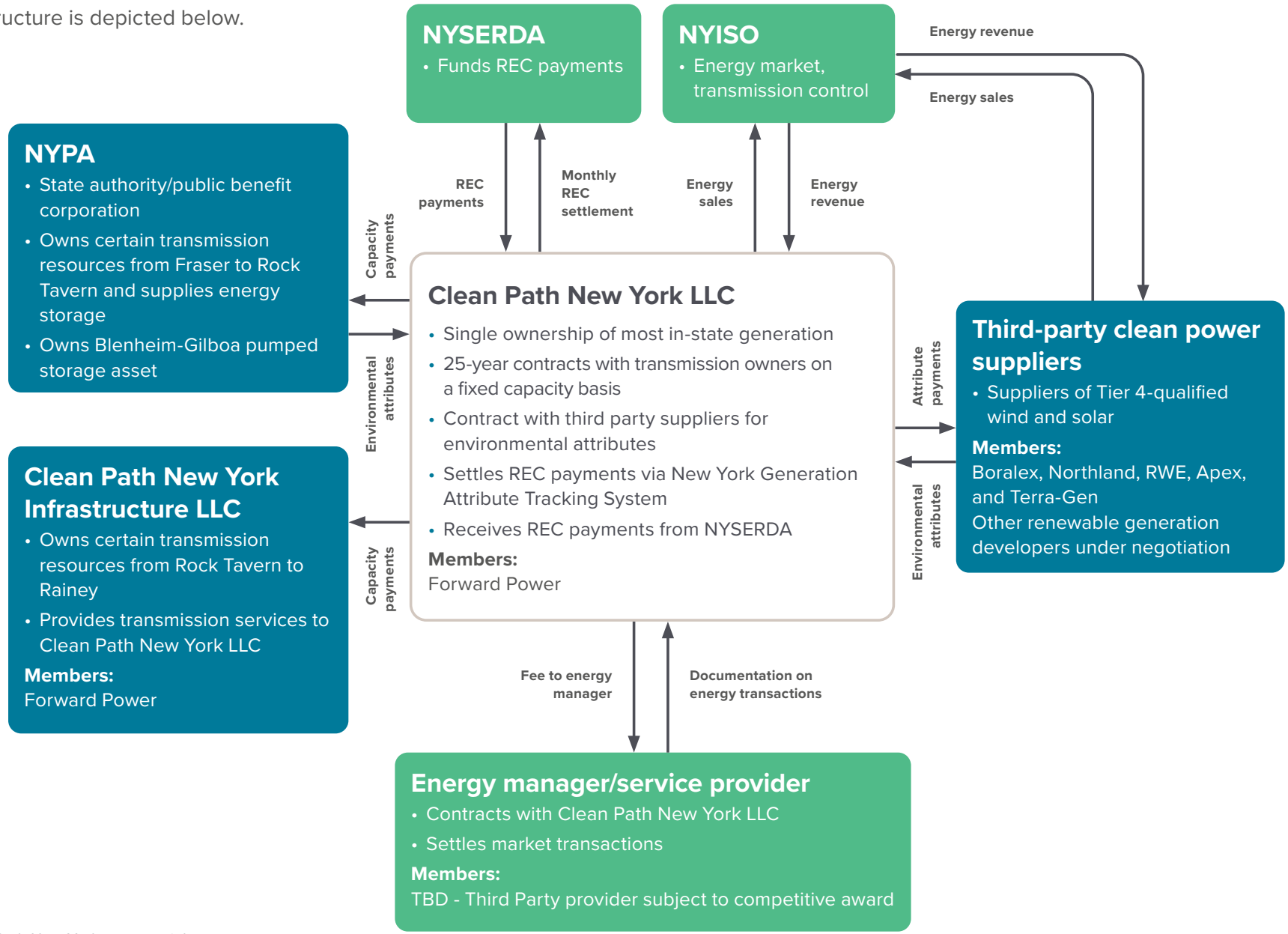


Figure 1-18. Clean Path New York commercial structure.

Clean Path New York is enabled through a series of transactions by independent business entities tied together through contractual relationships. Clean Path New York LLC will be the counterparty to NYSERDA's Tier 4 REC contract.

This Entity Will:

1. Directly own Tier 4-qualifying wind and solar generation assets;
2. Sell the power from those resources to the NYISO;
3. Contract with NYPA's Blenheim-Gilboa pumped storage facility;
4. Coordinate with NYPA to charge and discharge Blenheim-Gilboa to balance renewables and increase Tier 4 deliveries on the New Transmission;
5. Contract with third-party owned Tier 4-qualifying wind and solar resources to procure those resources' environmental attributes via power purchase agreements;
6. Contract with NYPA and Clean Path Infrastructure LLC for transmission services from the Fraser substation to the Rainey substation;
7. Contract with an energy manager / ESCO to provide the following services
   - Forecast day ahead and hourly load;
   - Document hourly-matching via metered flows in support of monthly reconciliation with NYSERDA via NYGATS for REC payments

NYPA and Clean Path New York Infrastructure LLC will develop and own the northern and southern legs of the new HVDC transmission resource connecting the Fraser substation to Rainey. These entities will hold transmission service agreements with Clean Path New York LLC for these transmission services.

NYPA will enter into a service agreement with Clean Path New York LLC to sell energy storage services to Clean Path New York LLC associated with its Blenheim- Gilboa pumped storage facility.

Third party-owned, Tier 4-qualified, clean power suppliers of wind and solar will enter into REC purchase agreements with Clean Path New York LLC to sell it environmental attributes associated with that Tier 4-qualifed generation. These generators will sell their power to the NYISO in exchange for energy revenues.

Figure 1-19. Clean Path New York helps lead the way to a sustainable, all-renewable energy future.

Conclusion

By reducing the cost and increasing the reliability of power delivered to New York's residential and commercial energy consumers, Clean Path New York will help to enhance the State's attractiveness as a place to live, work, and do business.

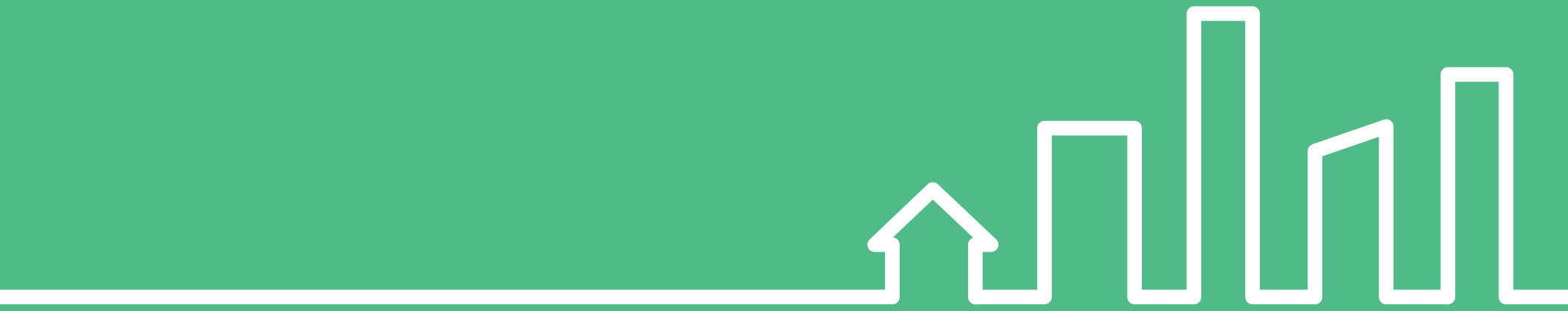
During the next few years, Forward Power will be making major new investments in renewable generating facilities in several regions within the State that have in the past not had the opportunity to participate fully in the growth of New York's economy – for example, the North Country and the Southern Tier. By making it possible to cut back on the use of – and eventually shut down entirely – some of New York City's worst-polluting power plants, Clean Path New York will not only help to improve the quality of life in neighborhoods such as Astoria, Long Island City, and the South Bronx, but also help stimulate new economic growth in those neighborhoods. By increasing the State's capacity to generate clean, carbon-free power, and to move it downstate, Clean Path New York will help accelerate the electrification of New York's economy -- a key element in the State's transition to more sustained, and sustainable, economic growth.

Over time, through public-private partnership, Clean Path New York can play a central role in the development of a diverse community of experienced, New York-based contractors and suppliers who can participate in the ongoing growth of renewable energy industries in New York State. Clean Path New York presents a historic opportunity to put New York on the path to achieving the ambitious targets of the CLCPA while making our State the nation's leader for renewable energy innovation.

Figure 1-20. Clean Path New York is an economic engine that benefits the people of New York State.

Section 2

Impacts of COVID-19 on proposer and project development



2 Impacts of COVID-19 on proposer and project development

2.1. Impacts of COVID-19 on Clean Path New York's operations

The current global landscape of the COVID-19 pandemic presents a significant challenge to all organizations. Clean Path New York and our project partners have minimized business and project continuity risk through our collaborative and digital delivery approach. We follow New York State and Centers for Disease Control and Prevention (CDC) guidelines for all aspects of our COVID-19 safety response, including health assessments, mandating masks, social distancing, cleaning, travel advisory, and field operations.

Over the years, the Clean Path New York partners have invested heavily in cloud-based IT infrastructure to enable the majority of what we do to be completed remotely. This not only enables us to effectively collaborate with internal and external stakeholders but also helps our project delivery partners optimize workflow to meet project requirements and timelines as well as keep our respective employees safe during this unprecedented pandemic. We have used those capabilities to collaborate with our partners and our consultants to develop this proposal.

Since the start of the COVID-19 pandemic, our environment, health, and safety (EH&S) and emergency preparedness specialists have been implementing mitigation strategies recommended by New York State and CDC. We regularly review new emerging evidence and guidelines to ensure that our measures and strategies are up-to-date with the latest understanding of COVID-19. The result is a best-in-industry foundation to guide our teams and partners to make better decisions with confidence about what they need to do as well as what they should avoid.

Our collective infrastructure expertise helped us optimize project design, permitting, construction, and operation while managing risk. The lessons learned in the process further emphasize the importance of adapting our infrastructure's operation and design to better withstand uncertainties — such as lockdowns and new disease threats. Just as net-zero carbon and climate resilience have led to industry standards and norms, we seek to build resilience to epidemics/pandemics by adapting and transforming our designs and operational practices to address future threats.

In March 2020, Clean Path New York partners transitioned to a fully remote working environment for all nonessential staff due to COVID-19. This transition was nearly seamless, with minimal to no loss of productivity on our major projects.

Our capabilities are enabled by best-in-class digital infrastructure for a modern digital workforce including the following:

- Robust IT Infrastructure capable of serving critical remote operations
- High-performing, secure cloud-based platforms such Autodesk suite of products, PLS-CADD suite of products, and other specialty technical products
- Advanced staff training in remote applications
- Contemporary, streamlined workflows
- Advanced project controls and reporting
- Advanced financial management

Concurrently, Clean Path New York is engaged in comprehensive planning for return-to-office, and some partners have safely and seamlessly returned to the workplace when offices were reopened.

Key partners of Clean Path New York include the owner-operators of essential service facilities in New York. Our success in sustaining facility operations and project delivery results from our focus on the productivity and well-being of our staff and partner workforce. For example, at the beginning of 2020, Clean Path New York partner NYPA, had a capital project portfolio of approximately $865 million. In March 2020, due to COVID-19, many projects were paused following state executive orders. However, with appropriate business process measures already in place, NYPA was able to achieve 78% of its planned capital project goals ($674 million capital spend in 2020) with over 202 projects in active construction.

2.2. Clean Path project development process

Clean Path New York anticipates receiving the NYSERDA Award Notification in the third quarter of 2021. Upon selection, we will use our best-in-class digital infrastructure to continue collaborating with NYSERDA and our project delivery partners to finalize contracts and project financing. By mid-2021, we envision that most of our workforce will have received a COVID-19 vaccination. Considering that vaccination will not eliminate the virus from our society, we will continue to be vigilant and regularly reassess the pandemic situation using our rigorous management systems. However, planning for a worst-case scenario, we will enhance our current successful project development and execution processes, focusing on the following aspects.

Protect staff and workers

We will continue to update our COVID-19 protocols to align closely with New York State and CDC guidelines. We will continue to encourage our staff to follow enhanced hygiene protocols, social distancing, mask-wearing, and other recommendations or requirements as outlined by the prevailing state and federal guidelines.

Implement enhanced field operations protocols

Clean Path New York will require all employees and contractors to complete a health assessment screening survey before entering project sites. We will also take additional measures for employees traveling out of state or internationally to protect the workforce against new variants of the virus.

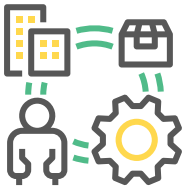
Project offices and sites will have signage to enforce, hygiene, social distancing, mask-wearing, and occupancy limits in elevators, conference and classrooms, and muster rooms.

Engage health, safety and environmental (HSE) professionals

We will deploy EH&S professionals and emergency preparedness professionals on project sites to control and monitor the workforce. Routine refresher training will be provided to update the workforce with the latest guidelines and address corrective measures.

Perform enhanced project risk assessment and mitigation

The Clean Path New York project management team will perform frequent project risk assessments, including worker availability and deployment, material delivery, manufacturing, and construction.



Closely monitor the supply chain and intervene to prevent significant disruptions

Clean Path New York Partners have well-established supply chains, matured over the years from successfully delivering major energy projects in New York. We will assign procurement specialists to closely monitor the supply chain and intervene when a potential disruption is identified. Such interventions would include engaging alternative suppliers to augment supply capabilities.

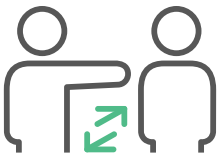
Clean Path New York will develop, maintain, and keep on each project site a comprehensive COVID-19 pandemic project work plan.

The plan will include Clean Path New York policies regarding these control measures:

PPE utilization ● On-site social distancing ● Hygiene ● Sanitation ● Symptom monitoring ● Incident reporting ● Site decontamination procedures ● COVID-19 safety training ● Exposure-response procedures ● Post-exposure incident project-wide recovery plan

Sustain project performance through digital technology

Clean Path New York envisions leveraging our powerful digital technology platforms for design development, material procurement, permitting, community engagement, project management, and project financing of the project.



Implement pandemic-resilent design

We will design the project to be pandemic-resilient so that the project components could be efficiently constructed during COVID-19 restrictions and operated during future virus outbreaks. In the initial project development phase, Clean Path New York will depend on virtual site visits with the use of action cameras, drones, and LIDAR.

The plan will be updated as the state and federal agencies issue new guidelines. A copy of the plan will be available for inspection by state and local authorities.

Clean Path New York's construction site safety practices will include the following:

- All workers will be screened at the beginning of their shift by taking their temperature and asking about likely COVID-19 symptoms.
- A daily attendance log of all workers and visitors will be kept in the site office. The attendance log will enable contact tracing in case a positive test occurs for a worker on the site.
- Weekly safety training (toolbox talk/tailgate training) will be held for all workers to explain the site-specific protective measures for all workers.
- COVID-19 safety requirements will be visibly posted on the sites.
- Workers will be required to keep social distancing of at least 6 feet and minimize interactions when picking up and delivering equipment or materials. Where social distancing is impractical, additional measures such as improved ventilation, shorter shifts, and enhanced personal protective equipment (PPE) will be considered.

- PPE such as gloves, goggles, face shields, and face masks as appropriate or required for the activity being performed will be provided to workers.
- Masks and gloves will be mandatory for all workers on the site.
- Soap and running water in abundant quantity will be provided for frequent handwashing. Workers will be encouraged to leave their workstations to wash their hands regularly. Portable washing stations will be provided when running water is not available.
- High-touch surfaces will be frequently cleaned and disinfected. If feasible, touchless access to the site will be provided.
- If workers develop COVID-19 symptoms, they will be required to report immediately to their supervisors. Clean Path New York will arrange for testing and evaluation by a healthcare provider.
- If a worker is confirmed to have COVID-19 infection, Clean Path New York will inform fellow workers of their exposure while maintaining confidentiality as required by the Americans with Disabilities Act (ADA) and Health Insurance Portability and Accountability Act (HIPAA).

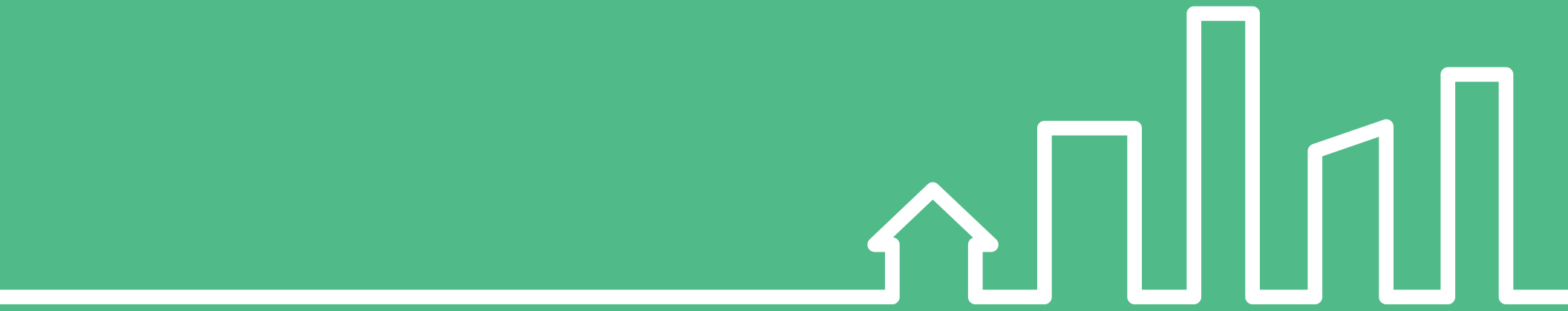
2.3. Impacts on the content of this Step Two Proposal

Clean Path New York has utilized the robust IT infrastructure explained above, including cloud-based applications to collaborate on the development of this proposal. Digital solutions were identified at the very early stages to optimize the process, improve experience, and moderate the development of this proposal.

The result is a fully developed proposal that has benefited from frequent online communication among the partners and their consultants. Digital solutions have aided in all aspects of the proposal, including all the backup and associated essential activities such as project development, management, and communication, and the successful completion of the associated technical studies, digital site survey, and other necessary activities.

Section 3

Proposer experience



3 Proposer experience

3.1. Introduction

Clean Path New York LLC is the bidding entity for the project and will be the counterparty to the NYSERDA Tier 4 REC contract. This new partnership includes the New York Power Authority (NYPA) and Forward Power LLC (Forward Power), collectively referred to as the Partners herein. The structure of the Partners is shown in the organizational chart as Figure 3-1. Forward Power is a joint venture between Invenergy Renewables and energyRe, a company formed to develop new renewable energy resources in New York State and provide energy management and transaction services to Clean Path New York.

While Clean Path New York LLC is a new entity incorporated in Delaware and wholly owned by Forward Power. Its members have significant experience and management capability to develop and operate the project. Each member has been successful in developing projects of similar scale and complexity, working together and with countless other organizations, to bring projects effectively to commercial operation in a timely fashion, as described and demonstrated in this section.

3.2. Organizational chart

The project, referred to herein and throughout the proposal as Clean Path New York, is overseen by a steering committee composed of the senior executive management of each member organization. This oversight committee is responsible for all aspects of project development, financing, commercial structuring, and all governance-related matters around the submission of this

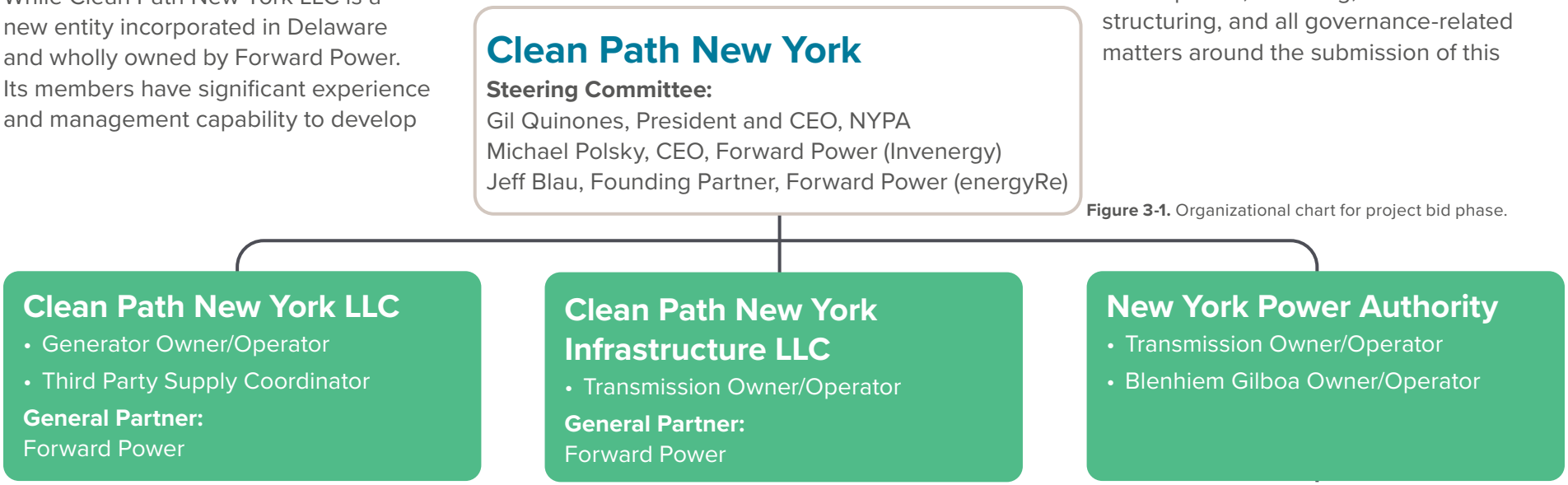


Figure 3-1. Organizational chart for project bid phase.

proposal. See Figure 3-1 below for an illustration of the corporate structure.

Clean Path New York (https://www.cleanpathny.com/) will function as an umbrella project for various independent business units to support both the supply and transmission sides of the project. On the supply side, the Clean Path New York partners will collaboratively develop, operate, and/or schedule a sizable portfolio of emissions-free generation and storage resources to serve the project.

A portion of this supply is composed of new wind and solar generation assets directly owned by Forward Power, with another portion owned by and contracted through REC purchase agreements with third-party owners. Clean Path New York will utilize NYPA's 1,160 MW Blenheim-Gilboa pumped storage facility to provide firming supply to the intermittent renewables that make up the balance of the supply portfolio.

All of this activity (ownership of generation and contracting REC purchase agreements) will reside within Clean Path New York LLC, an entity owned by Forward Power. This entity will be the single counterparty to NYSERDA's Tier 4 REC contract.

On the transmission side of the project, Clean Path New York is supported by two entities: NYPA and Clean Path New York Infrastructure LLC. NYPA will develop and own the northern segment of the transmission system, including the converter station and the interconnection facility at the withdrawal point near Fraser Substation in Delaware County, NY and the balance of the transmission infrastructure located within its Marcy-South corridor and corresponding right-of-way, which ends at the Rock Tavern Substation in Orange County, NY.

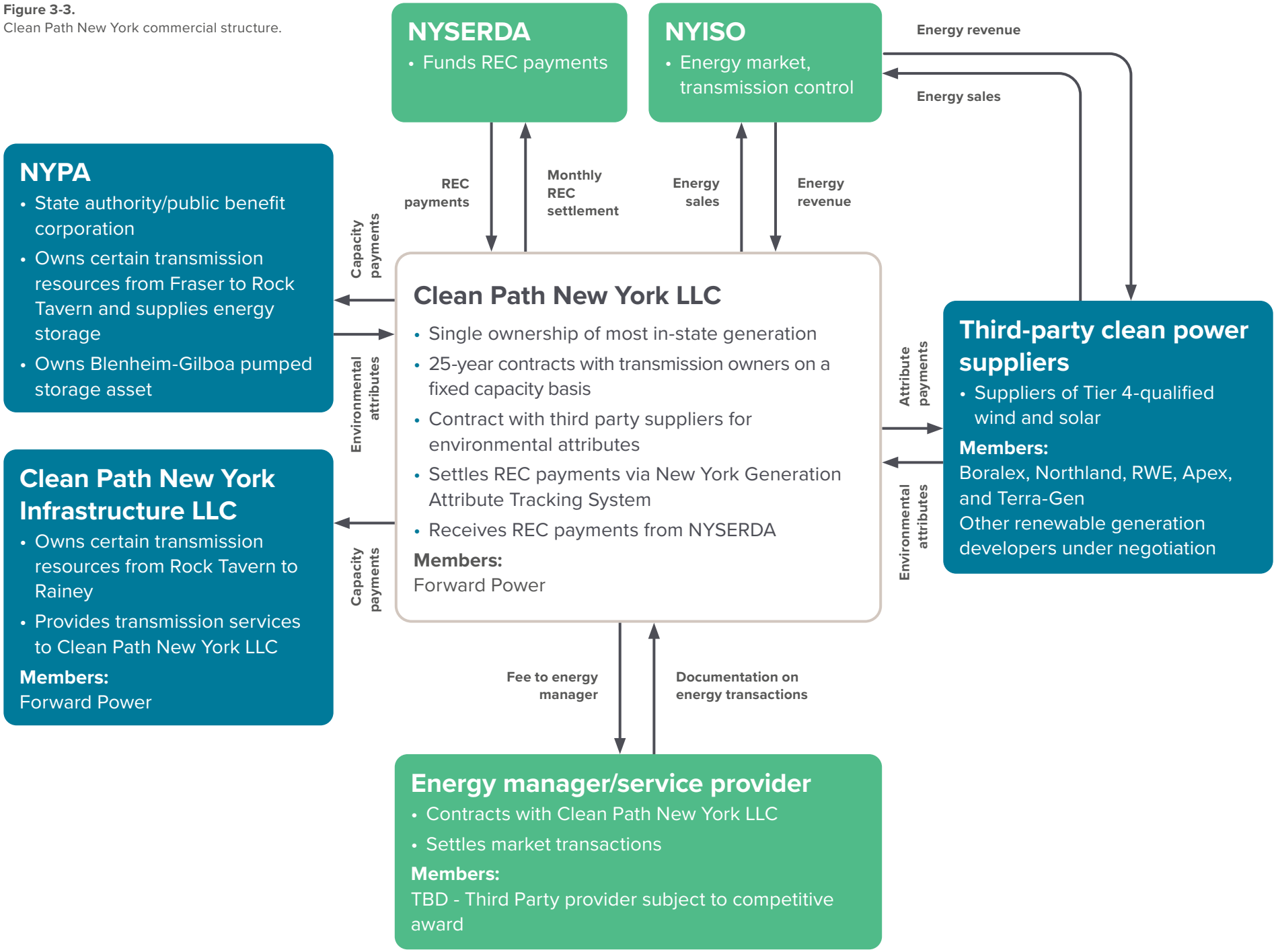
Clean Path New York Infrastructure LLC will be owned by Forward Power. It will develop and jointly own the southern segment of the transmission system, including the converter station and the associated interconnection facility at the Rainey Substation in Queens, NY and the balance of the transmission infrastructure located underground and under the Hudson and Harlem Rivers between Rock Tavern and Rainey.

Figure 3-2. Invenergy's Shoreham solar project on Long Island provides 24.90 MW of power.

The business model for Clean Path New York LLC is driven by energy market revenues, delivery service agreement, and Tier 4 REC revenue. The commercial structure is depicted below in Figure 3-3 on the next page.

Clean Path New York has assembled an unparalleled portfolio of more than 3,000 MW of exclusively New York renewable generation to support this proposal. The portfolio include more than 1,500 MW wind generation. The wind generation resources offered brings much more diverse generating profile compared to other renewables, in addition to a significantly higher net capacity factor, a large quantity of wind is considered essential to a cost effective and successful Tier 4 project. The portfolio also include more than 1,400 MW Solar generation resources to complement the wind and strengthen the overall energy profile of the portfolio. In addition to Invenergy Renewables, Northland, RWE, Apex, Terra-Gen and Boralex resources are also included with underlying termsheets with Clean Path New York LLC,

Figure 3-3.
Clean Path New York commercial structure.



those additional experienced developers with track records of being able to deliver projects also enhance the credibility of the offered portfolio of resources.

The project is enabled through a series of discrete transactions by independent business entities tied together through contractual relationships as explained earlier. Clean Path New York LLC will be the counterparty to NYSERDA's Tier 4 REC contract. This entity will do the following:

- Directly own Tier 4-qualifying wind and solar generation assets
- Sell the power from those resources to the NYISO
- Potentially contract with NYPA's Blenheim-Gilboa pumped storage facility
- Contract with third-party owned Tier 4-qualifying wind and solar resources to procure those resources' environmental attributes via REC purchase agreement
- Contract with NYPA and Clean Path New York Infrastructure LLC for transmission services from the Fraser Substation to the Rainey Substation
- Contract with an energy manager and/or energy service company to provide the following services:
  - Forecast day ahead and hourly load
  - Document hourly-matching via metered flows to support monthly reconciliation with NYSERDA via New York Generation Attribute Tracking System (NYGATS) for REC payments

NYPA and Clean Path New York Infrastructure LLC will develop and own the northern and southern segments of the new HVDC transmission system connecting the 345 kV NYSEG owned Fraser substation (withdrawal point) to the 345 kV Rainey Substation (delivery point) owned by Consolidated Edison Company of New York, Inc. (CECONY). These entities will hold transmission service agreements with Clean Path New York for transmission services.

NYPA will enter into a service agreement with Clean Path New York to sell energy storage services associated with its Blenheim-Gilboa pumped storage facility.

Third-party-owned, Tier 4-qualified, clean power suppliers of wind and solar will enter into a REC purchase agreement with Clean Path New York LLC to sell the environmental attributes associated with their Tier 4-qualified generation. These generators will sell their power to NYISO in exchange for energy revenues just as Clean Path New York LLC would sell the energy from its owned Resources into the NYISO market.

3.3. Experience of each project participant

New York Power Authority (NYPA)

NYPA is the nation's largest state-owned public power utility, with 16 clean hydroelectric and natural gas-fueled generating plants across New York State and more than 1,400 circuit-miles of high-voltage transmission lines, or approximately one-third of the state's total. NYPA's electricity output and power purchases account for up to one quarter of the state's electricity. The expanse of NYPA assets is demonstrated in the asset maps in Appendix 1.

40,000+

jobs are directly supported by NYPA's low-cost power allocations statewide, including the **ReCharge NY** program, introduced by Governor Andrew M. Cuomo in 2011. Through the ReCharge NY program, qualifying businesses and nonprofits statewide can potentially lower their energy costs by using specially allocated NYPA power.

NYPA's mission is to power the economic growth and competitiveness of the state by providing customers with low-cost, clean, reliable power and the innovative energy infrastructure and services they value.

NYPA also has full-fledged partnerships with state and local governments that have made a major difference for improving the energy efficiency of their tax-supported public facilities and reducing their electric bills and associated greenhouse gas emissions. NYPA is well on its way to becoming the first end-to-end digital utility in the country for optimizing its efficiency and performance and the value that it brings to a wide variety of customers.

More information on NYPA can be found on www.nypa.gov.

NYPA has a long-standing reputation as a "can do" organization developing transmission and generation to suit New York State's unique needs. It is in pursuit to become the first digital utility through investments in cutting-edge technologies.

Forward Power

As previously described, Forward Power is a newly-formed joint venture between Invenergy Renewables and energyRe. The capabilities and experience of both of these entities are described separately below.

Invenergy

Invenergy's name is synonymous with innovation in an industry undergoing transformation. As the world's largest privately held developer and operator of renewable power, Invenergy works with leading utilities, global brands, and public sector partners to take energy infrastructure projects from drawing board to reality.

Invenergy's 1,100 employees are united by a vision to be innovators building a sustainable world. Headquartered in Chicago, the company has successfully developed over 27 gigawatts of power projects across the Americas, Europe, and Asia. Invenergy projects enable a more sustainable, flexible, and resilient grid.

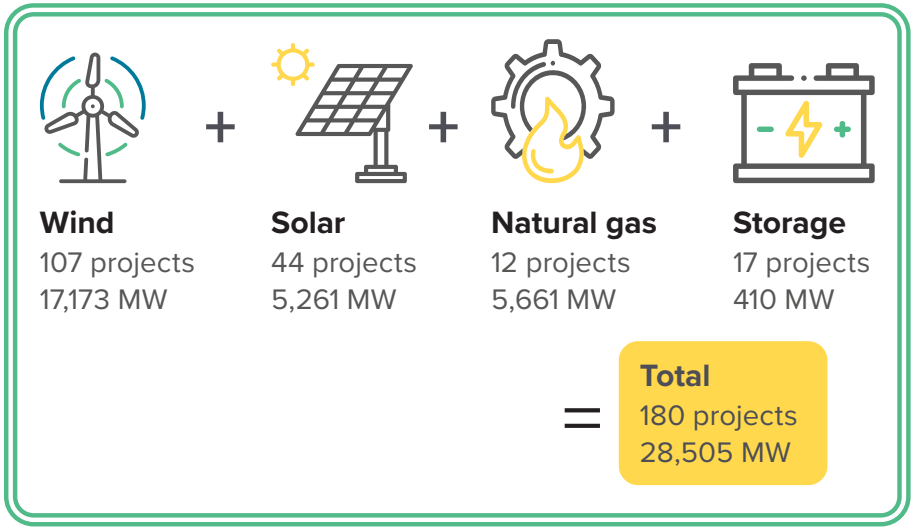


Figure 3-4. Invenergy's portfolio consists of four core technologies.

Figure 3-4 below shows projects operating, under construction, or contracted that Invenergy has developed across four core technologies since its founding in 2001.

Transmission experience

Because the core of Invenergy's business model is project development and long-term ownership and operations, the company takes great care to ensure the longevity, reliability, and cost-effectiveness of its assets, especially the transmission and interconnection infrastructure for its projects.

Since 2001, Invenergy has built all required transmission and distribution lines, generator step-up transformers, and substations for its facilities in CAISO, ERCOT, MISO, NYISO, PJM, WECC, SERC, SPP, Canada, and in the TVA territory, as well as internationally. Invenergy has developed, permitted, and constructed this infrastructure across various terrains,

state, and local jurisdictions and in vastly differing environmental and regulatory conditions. This experience adds to over 702 miles of high-voltage transmission lines, over 2,592 miles of distribution lines, 88 substations, 102 generator step-up transformers, and 5,284 pad-mounted transformers, of which several have been built for utilities.

Invenergy solutions

Invenergy's unique combination of full-service solutions, end-to-end execution ability, and relationship-driven approach has won it a reputation for meeting customer's needs with high-value projects delivered on time and on budget. Traditionally, Invenergy's approach has been to develop, build, own, and operate projects, but the company provides a full range of services and flexible structures to serve utilities, corporate buyers, asset owners, and financial institutions.

Full range of services and flexible structures

- Development-transfers
- Build-transfers
- Engineering, procurement and construction (EPC)
- Joint Development Agreements
- Power Purchase Agreements (PPAs)
- Short- and long-term operations, and maintenance and asset management

End-to-end, fully integrated capabilities

- Project development
- Permitting
- Engineering
- Transmission
- Interconnection
- Finance
- Project construction
- Asset management
- Operations and maintenance

Invenergy has deep technical expertise at every step of the project lifecycle. This is rooted in an engineering culture that recognizes the critical importance of project aspects like system design, transmission, and interconnection, which others are often comfortable outsourcing. End-to-end, fully integrated capabilities allow Invenergy to serve as the single entity responsible for project development, construction, financing, and operations, with seamless execution from one phase to the next.

Invenergy's involvement in projects from early development through operations ultimately benefits customers through higher project efficiency and quality. Invenergy's operations group constantly reports on how the latest equipment and system configurations perform under real-life conditions in the field, which immediately shapes procurement and design considerations by Invenergy's development, engineering, and construction groups working on pipeline projects. This keeps Invenergy at the forefront of project design and construction practices and methods. Invenergy boasts an impressive portfolio of 180 projects totaling 28,505 MW of power.

In addition to the services and capabilities it offers, Invenergy embraces a relationship-driven approach to business, based on the belief that a project can only be considered successful if all parties are engaged and satisfied. Customers, EPC contractors, and financial institutions who have choices about the power sector companies

More information on Invenergy can be found on https://invenergy.com/.

they work with consider Invenergy a preferred partner. That is why Invenergy has successfully completed over $35 billion in transactions over the past two decades and over 50% of its projects represent repeat business.

Invenergy and NYPA personnel have interacted in various roles throughout their careers, including one of Invenergy's in-development wind projects in New York.

energyRe

energyRe is an independent New York-based company focused on solving complex challenges and providing clean energy solutions. Guided by the values of community engagement, government partnership, and a demonstrated commitment to sustainability, energyRe is working towards a clean energy future for all New Yorkers.

The team at energyRe has expertise in infrastructure, engineering, and real estate development with leadership that comprises principals of Related Companies, the most prominent private real estate firm in the US with over $60 billion in assets owned or under development. These properties include the 28-acre Hudson Yards neighborhood on Manhattan's West Side, The Grand and Related Santa Clara in California, as well as luxury condominiums, rentals, and offices.

Related started exclusively as an affordable housing developer in 1972 and today is one of the largest developers of affordable and workforce housing in the United States. Named to *Fast Company* magazine's list of the 50 Most Innovative Companies in the World, Related is a champion of environmentally conscious real estate and continuously advances the design, construction, and operation of its properties to reduce their environmental footprint. In 2008, Related committed that every building developed in the United States, regardless of asset class, shall be certified LEED Silver or better.

The principals of energyRe have developed the following marquee projects involving interconnection to Con Edison's transmission infrastructure.

Hudson Yards cogeneration microgrid[1]. Nearly every Eastern Rail Yard building at Hudson Yards was planned with the intention of installing cogen to help meet high-level LEED requirements. But the plants would have been small because each building's individual demand for hot and chilled water varies greatly over the course of the day or week. Commercial buildings peak in the afternoon, residential buildings peak in the morning and evening, and the retail and cultural facilities are busiest over the weekend when the commercial buildings are nearly empty.

In response, we consolidated the power and thermal demands of the buildings, establishing a microgrid and connecting the buildings to a thermal loop. Related established one larger plant instead of four smaller ones, making more than four times as much cogen capacity economically rational. This single-plant solution capitalizes on the mixed-used program of Hudson Yards.

Just as crucially, Related did not have to build out a costly electrical distribution network to implement the microgrid. Instead, the cogen plant delivers power directly to the Con Edison grid, and Con Edison offsets this power from the Eastern Rail Yard buildings' electricity bills. In the event that Con Edison's grid fails, breakers open to isolate Hudson Yards from the rest of the grid, and cogen power will be delivered directly to the buildings.

All told, Related's 13.3-MW cogen plant, thermal loop, and Con Edison interconnection cost nearly $200 million. To recoup some of this cost, Hudson Yards sells various forms of power to the Eastern Rail Yard buildings and tenants through a subsidiary set up for its power business. This setup allows Hudson Yards to cover ongoing operating costs and the facilities' mortgage payments. It comes with a binding

[1] https://www.mckinsey.com/industries/real-estate/our-insights/using-power-and-technology-to-deliver-resilience-in-hudson-yards

[2] https://www.utilivisor.com/news/energy-conservation-at-time-warner.html

commitment that rates will be no higher than they would be if the microgrid did not exist.

Time Warner Center load management energy conservation[2]. Time Warner Center is a two-million-square-foot mixed-use skyscraper developed by the Related Companies in 2003 and managed by Related Management thereafter. The facility has foot traffic of approximately 5,700 people per day for entertainment, luxury condominiums, retail shops, and hotel and commercial office space.

Time Warner Center, in partnership with NYSERDA and utiliVisor, undertook a load management energy conservation project that optimized chilled-water production for the past two years. Since the project has been implemented, approximately 1,407,014 kWh has been saved.

Gateway Center battery storage project[3]. Gateway Center, a big-box-store mall in Brooklyn's East New York owned by Related, is the site of a 5 MW lithium ion battery energy storage project, the largest battery storage project in New York City. The battery connects in front of the meter for dispatch based on Con Edison's signal.

> "So far the Gateway Center project has provided the local electricity grid with more than 100 MWh of electricity from the storage system, offering support during periods of higher energy demand."
>
> **Enel X**

More information on energyRe can be found here: https://www.energyre.com/.

[3] https://www.greentechmedia.com/articles/read/enel-is-back-in-new-york-city-with-a-bigger-battery

Enel X, the developer of the battery system that leases the space from Related, said in a statement, "The system's design enables a direct relationship between Enel X's energy storage resource and Con Edison, while simplifying the lease transaction from a real estate perspective by removing the complexities of energy management and tenant participation from the structure."

The battery generates revenue by delivering capacity to the utility as part of its Brooklyn-Queens Neighborhood Program, which uses flexible resources to defer expensive grid upgrades.

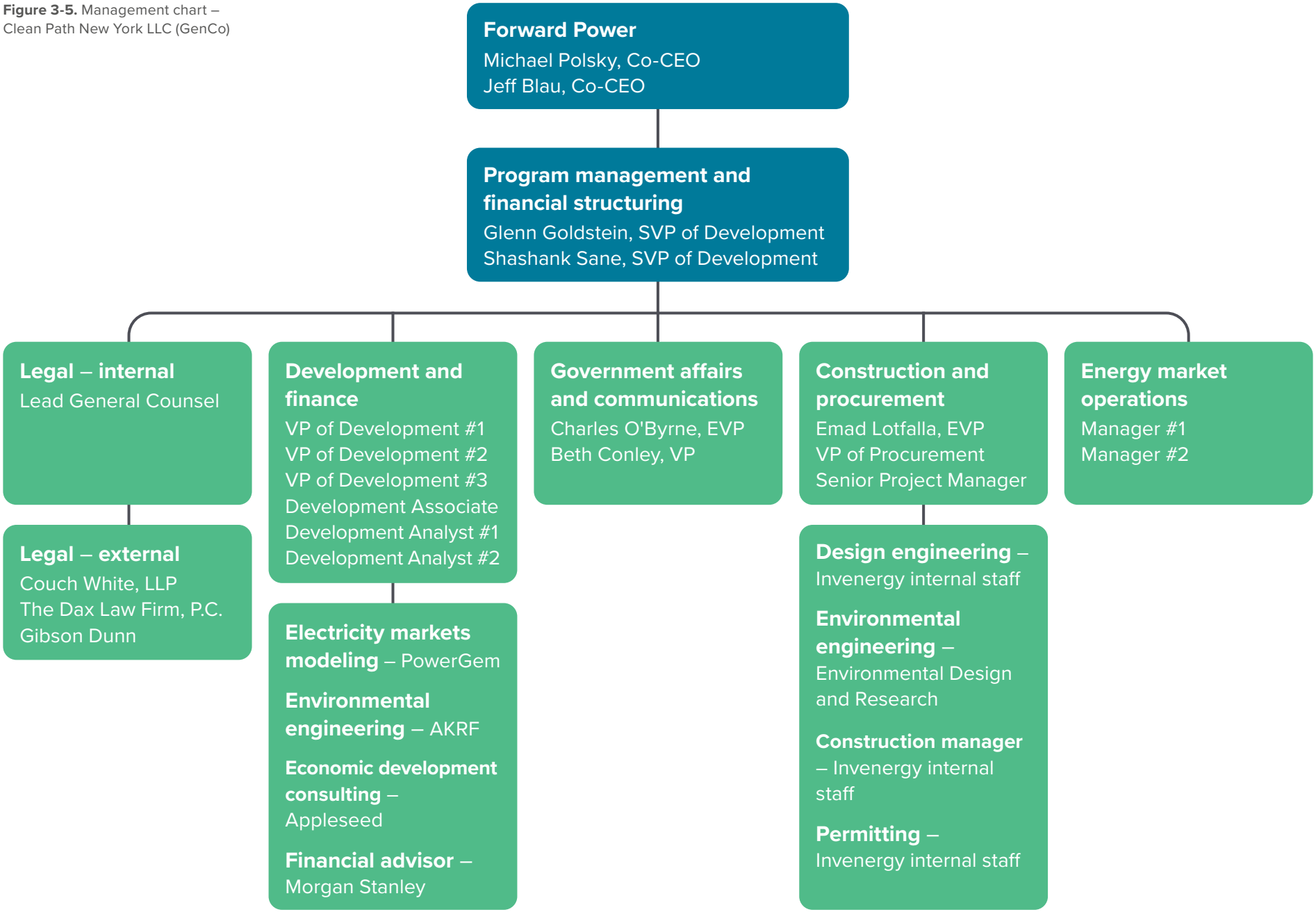
3.4. Proposer's project team and management charts

Clean Path New York is set up as a framework of both contracted and underlying established businesses. Each of those businesses has a team of internal and external resources supporting it. Given the early stage of the project, certain resources are not yet required to support the teams' activities. The organizational charts in this section represent the resources currently engaged in the effort, and the accompanying narrative seeks to clarify how the project comes together as well as why certain resources have not yet been engaged at this stage.

Clean Path New York LLC

Clean Path New York LLC, which develops and owns almost 70% of the supply portfolio of wind and solar, serves as counterparty to the REC purchase agreements with third-party suppliers and orchestrates supply dispatch. Clean Path New York LLC will have service contracts with Invenergy Renewables and EnergyReto provide and allocate resources dedicated to legal, development and finance, government affairs and communications, construction and procurement, and energy market operations. Those services and resources will be

Figure 3-5. Management chart – Clean Path New York LLC (GenCo)



focused on the resources and will coordinate with the Clean Path New York Infrastructure LLC team with regards to interface and schedule coordination of the New Transmission. The management organization chart of Clean Path New York LLC is shown under Figure 3-5 on the next page.

In addition to internal counsel of the entities involved in this project, legal counsel is provided by Couch White, LLP, focusing mostly on regulatory aspects, and by The Dax Law Firm P.C., advising on energy contracts and FERC-related matters, and Gibson Dunn advising on partnership agreements and other contracts as well as bulk power market regulatory counsel.

On the technical front, PowerGEM performed electric system production cost modeling. AKRF examined statewide local emission impacts on criteria pollutants pursuant to the project's impact on the electric system using PowerGEM's modeling output. Appleseed performed the incremental economic benefits assessment on the supply side of the project. Projects directly owned by Forward Power self-performed generation plant design and used Environmental Design and Research (EDR) for Article VII, Article 10, and 94-C permitting support, including environmental impact assessment and remediation programs. These firms are considered the gold standard in their field.

As projects move into construction, Forward Power, through its member companies Invenergy and energyRe, has the expertise and resources in internal design and construction to serve as its own owner's representative and to cover technical aspects related to that period of the project. It has internal capabilities in construction and procurement to self-perform general contracting services on large, complex projects that would typically be served by a traditional EPC contractor. Trade management is self-performed under this general contracting role, and subcontractor awards are yet to be made on projects given their early stage.

Forward Power will self-perform construction management and procurement internally. Using its internal Energy Markets Operations team, Forward Power will self-perform energy modeling work to inform market exposures, price sensitivity, and curtailment risk of its portfolio. Forward Power has retained Morgan Stanley to serve as financial advisor to the supply side of Clean Path New York LLC. Individual lenders have not yet been designated.

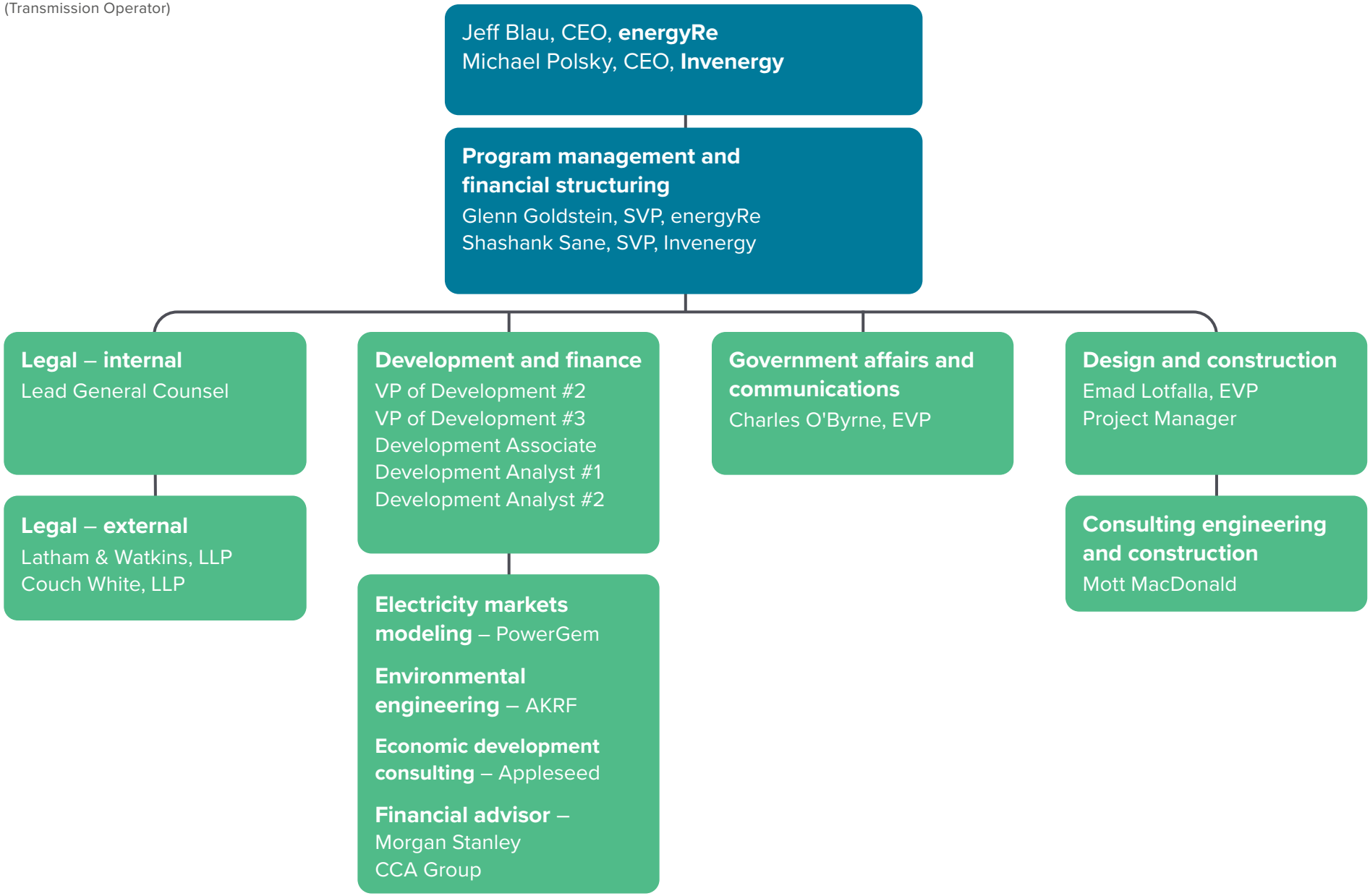
For supply orchestration, dispatch, and execution and settlement of market transactions with NYISO and NYSERDA, Forward Power will contract with a yet-to-be designated energy manager/energy service company to administer these activities. Invenergy Renewables, and NYPA all have internal business units capable of providing this service to Clean Path New York LLC and such corporate resources will be allocated on as needed basis.

As projects move out of development into stabilized operations period, Invenergy Renewables will develop an operations strategy that includes adding plant operators and maintenance teams as needed to operate each additional facility or providing active oversight of those activities.

Clean Path New York Infrastructure LLC

Clean Path New York Infrastructure LLC will be owned by Forward Power. The company will develop and own the southern segment of the new HVDC transmission system from Rock Tavern to the Rainey Substation. Forward Power will maintain a team of internal resources dedicated to legal, development and finance, government affairs and communications, and design and construction management. The

Figure 3-6. Management chart – Clean Path New York Infrastructure LLC (Transmission Operator)



management organization chart of Clean Path New York Infrastructure LLC is shown under Figure 3-6 on the next page.

In addition to internal counsel of the entities involved in this project, legal counsel will be provided by Latham & Watkins who will advise on regulatory and commercial agreements, partnership agreements and other contracts and bulk power market regulatory counsel. Couch White, LLP will provide land use and environmental legal counsel.

Per the description under Clean Path New York LLC, PowerGEM, AKRF, and Appleseed were retained to perform cost modeling, determine environmental impacts, and assess incremental economic benefits, respectively.

As projects move into construction, Forward Power will allocate internal resources to manage certain aspects of design and construction. Clean Path New York Infrastructure LLC has retained Mott MacDonald, an experienced engineering and project management firm with a track record of delivering transmission projects, to serve as the overall HVDC transmission system technical consultant and engineer for the project. Mott MacDonald will provide engineering support for both segments of the transmission line.

Clean Path New York Infrastructure LLC has retained CCA Group and Morgan Stanley to serve as financial advisors to the transmission side of Clean Path NY. Individual lenders have not been designated.

As the project moves out of development into stabilized operations, Forward Power will add a team of transmission operators, converter station engineers, and maintenance teams as needed to operate the facility.

New York Power Authority

NYPA will develop and own the northern segment of the new HVDC transmission system spanning from the Fraser Substation in Delaware County, NY to the Rock Tavern Substation in Orange County, NY. The largest transmission owner and developer in the state of New York, NYPA maintains a team of internal resources dedicated to legal, development and finance, government affairs and communications, and transmission engineering. The management organization chart of NYPA is shown under Figure 3-7.

Mott MacDonald's scope of responsibility for the project includes the following:

- Electrical engineering and design
- Routing design and constructability
- Field survey services including geotechnical assessment
- Environmental and mitigation review
- Article VII permitting support
- Construction management
- Procurement support
- Overall project management

Legal counsel is provided by Van Ness Feldman LLP covering energy contracts and FERC matters, and Norton Rose Fulbright covering partnership agreements and other contracts. There will be significant involvement of NYPA's internal counsels around the overall project development.

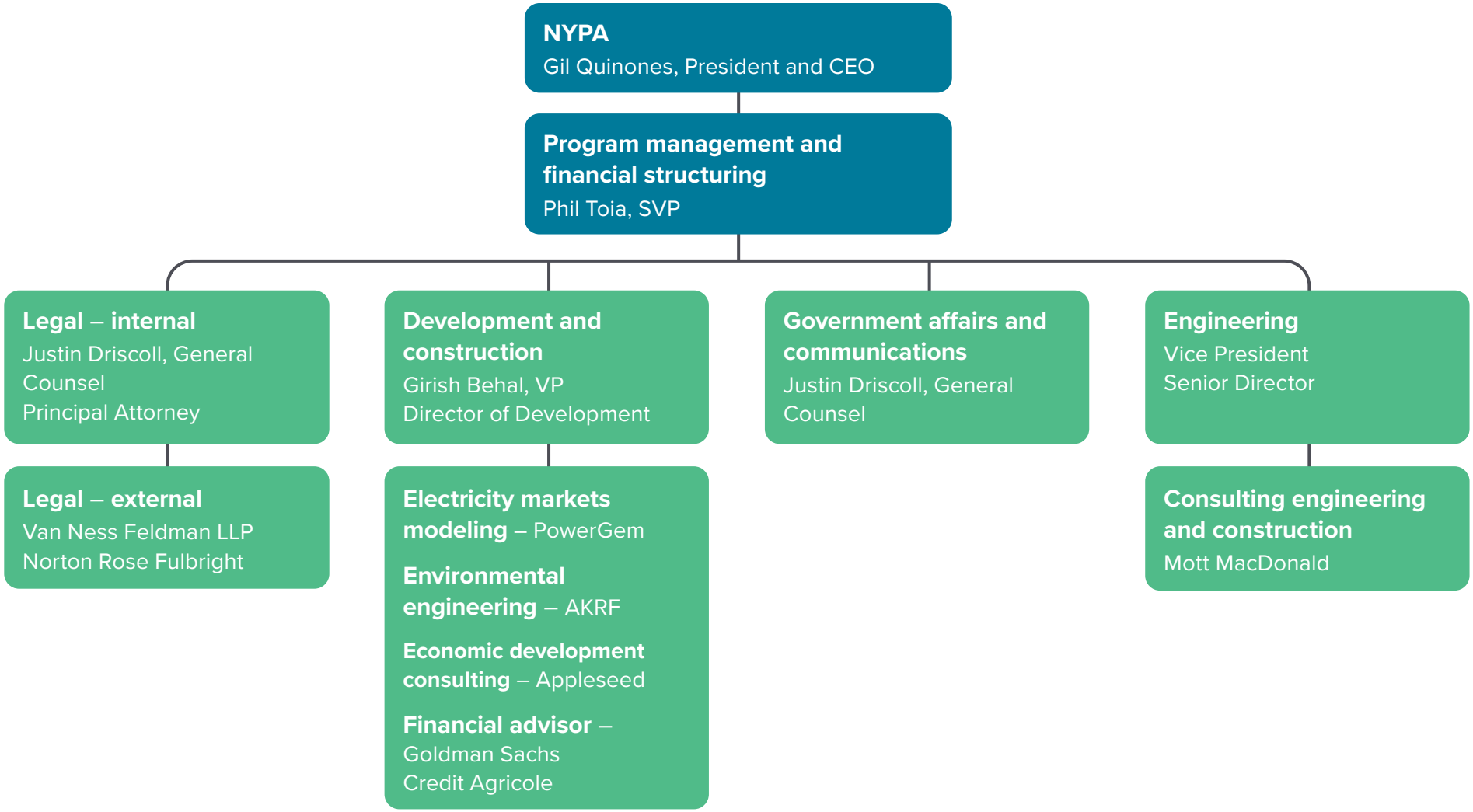
Legal counsel is provided by NYPA's in-house counsel, led by Justin Driscoll, Executive Vice President and General Counsel, as well as the law firms of Van Ness Feldman LLP (energy contracts and FERC matters) and Norton Rose Fulbright (project finance and structure). There will be significant involvement of NYPA's In-house counsel around the overall project development.

PowerGEM performed electric system production cost modeling. AKRF examined statewide local emission impacts on criteria pollutants, pursuant to the project's impact on the electric system using PowerGEM's modeling output. Appleseed performed the incremental economic benefits assessment on the transmission side of the project.

Mott MacDonald will also provide engineering and project management services to NYPA as part of its role of the New Transmission engineering services. Mott MacDonald's scope of responsibility for the project includes:

- Electrical engineering and design
- Routing design and constructability
- Field survey services including geotechnical assessment

Figure 3-7. Management chart – NYPA (Transmission Operator, Bleinheim Gilboa Operator)



- Environmental and mitigation review
- Article VII permitting support
- Construction management
- Procurement support
- Overall project management

As projects move into construction, NYPA has internal design and construction expertise to serve as owner's representative for the northern leg of the project. It will retain project management support to manage the project, although that designation has not yet be made given the early stage of the project. EPC contractor awards have yet to be made on the transmission project, given its early stage.

NYPA has retained Credit Agricole and Goldman Sachs to serve as financial advisors to the transmission side of Clean Path NY. Individual lenders have not yet been designated.

As the project moves out of development into stabilized operations, NYPA will add a team of transmission operators, converter station engineers, and maintenance teams as needed to operate the new addition to its vast portfolio of transmission facilities.

Clean Path New York Steering Committee

Jeff Blau

Jeff Blau is founding partner of Forward Power and energyRe and CEO and a partner of Related Companies. At Related, he has been responsible for directing and overseeing new developments worth over $60 billion in virtually every sector of the real estate industry, with a strong emphasis on sustainability and environmentally responsible development. As CEO, he is responsible for the strategic direction of the company, overall management of the firm, the pursuit of new development opportunities, corporate acquisitions, and financing activities. Under his leadership, Related continuously advances the sustainable design, construction, and management of its projects and is pioneering urban energy solutions that address increasing demands on cities.

Michael Polsky

With more than 40 years' experience in the energy industry, Michael Polsky, founder and CEO of Invenergy, is widely recognized as a pioneer and industry leader in the cogeneration and independent power industry in North America. Under his leadership, Invenergy has grown to be the largest privately held renewable energy developer and operator in the world. Before establishing Invenergy in 2001, Michael founded SkyGen Energy, a developer, owner, and operator of natural gas-fueled generating plants. SkyGen was purchased by Calpine Corporation in 2001, and Michael was appointed as a member of the Board of Directors.

Gil Quinones

Gil Quinones is President and CEO of the New York Power Authority. He is an internationally recognized leader in advancing sophisticated power generation, delivering new technologies and clean energy sources to drive economic growth, create jobs, and fight climate change. He is responsible for developing and implementing the statewide utility's strategic vision and mission and for supervising its operations, legal, and financial matters and relationships with external stakeholders. Gil's career of more than 30 years reflects a singular blend of experience in the regulated and competitive utility markets, the public and private sectors, and state and local governments.

Clean Path New York program management and financing structuring team

Glenn Goldstein

As Executive Vice President of Development at energyRe and President of Related Retail, Glenn Goldstein has over 25 years' experience in development and complex legal matters. He brings expertise to every element of the development process, including site acquisition and planning approvals, financing, construction, sustainable design, leasing, and property management. He has led the development of several large-scale projects including Hudson Yards, Gateway Center phases I and II, and the Bronx Terminal Market.

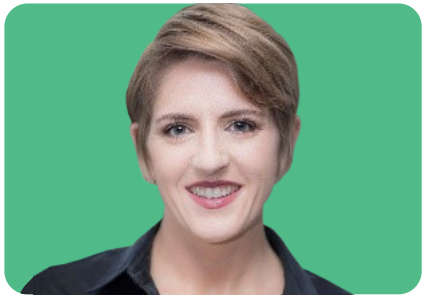
Shashank Sane

Shashank Sane leads Invenergy's transmission business, leading the company's pursuit of high-voltage, long-distance transmission projects from inception to completion. Shashank has held multiple roles at Invenergy since he joined in 2013. He led Invenergy's Edge business, which helped facility and fleet owners to lower costs, enhance sustainability, and increase resiliency through on-site and market-integrated turnkey solutions. Previously, he led Invenergy's Corporate Development team where he executed on value accretive M&A transactions and identified new business opportunities for the company.

Phil Toia

Phil Toia, President of NYPA Development, has nearly 30 years' experience in the electric utility industry in engineering, system planning, project management, and field work. He is an experienced operations leader with a strong emphasis on strategic planning, financial performance, asset and work management, and employee safety. Prior to joining NYPA, Phil worked in engineering, project management, and system planning roles in the power generation, investor-owned utility business, and at several consulting firms.

Clean Path New York government affairs and communications team



Beth Conley

Beth Conley currently heads Invenergy's communications team as Vice President. She leads both internal communication efforts across the company and external efforts, such as content management and media engagement, that support Invenergy's large portfolio of clean energy projects. Beth joined Invenergy in 2018. Prior to serving as VP, she held multiple positions as Senior Manager, Strategic Communications and Director, Communications.

Justin Driscoll

As Executive Vice President and General Counsel at NYPA, Justin Driscoll advises and represents NYPA in all legal matters. He provides strategic counsel to the CEO, Board of Trustees, senior executives, and the Governor's Office regarding NYPA's industry-leading role in renewable energy project development, land-based and offshore transmission, electric vehicle charging infrastructure, and energy storage. He leads wholesale power market and regulatory efforts, as well as NYPA's FERC hydropower licensing, legislative, and government relations activity.

Charles O'Byrne

Charles O'Byrne is Executive Vice President of Policy at energyRe and Executive Vice President for Policy at Related Companies. He serves in a leadership role on a wide range of assignments involving government affairs on the federal, state, and local levels; labor issues; litigation matters; and questions of strategy on multiple projects within the Related portfolio, including environmentally conscious real estate developments and pioneering urban energy solutions that address increasing demands on cities.

Development and construction

Girish Behal

Girish Behal is Vice President of Projects and Business Development at NYPA. Girish has more than 16 years' utility sector experience in various capacities at different organizations. Girish leads an innovative, solutions-oriented team that works on development of high-voltage onshore transmission, onshore and offshore renewables, offshore transmission, grid-scale energy storage, and project licensing supporting the overall renewable goals of New York State.

Design and construction

Emad Lotfalla

Emad Lotfalla is Executive Vice President of Design and Construction for Related Companies. He is responsible for leading all design and construction efforts for the Hudson Yards development and providing strategic advice to the senior executive team across Related's global development portfolio. Emad brings over 35 years' experience in design and construction, having successfully managed the construction of over 12 million square feet in all asset classes, including high-rise commercial office and residential buildings, hospitals, academic facilities, aviation and infrastructure, and high-profile cultural facilities.

3.5. Key personnel proposed

The project team we have selected brings together unparalleled expertise and shares the state's goal of achieving emissions-free electricity by 2040. A brief description of each key person listed on the management charts (Figures 3-5, 3-6, and 3-7) is shown. Further detailed information regarding these team members' experience, credentials, and education can be found on their resumes in Appendix 2.

In addition to those listed, Clean Path NY has access to a diverse set of qualified individuals, most of them local to the New York area, with the technical skills and experience to successfully deliver renewable energy into New York City.

Project	Location	Project type, size, and technology	COD	Capacity factor (est.) 2020	2019	2018	Capacity factor (actual) 2020	2019	2018	Availability factor 2020	2019	2018	Reference
Marcy to New Scotland Transmission Upgrade Project* (NYPA) This collaborative project was undertaken by NYPA and LS Power Grid NY to rebuild approximately 100 miles of transmission lines across central New York to increase power transfer capabilities. The project was competitively awarded by the NYISO public policy transmission planning process and is currently in construction, with an in-service date at the end of 2023.	Marcy to New Scotland, NY	• Overhead transmission and substation • 345kV • Bundled ACSS cable • 93 miles • AIS and GIS substation work	Q4 2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Patricia Lomardi 123 Main Street White Plains, NY 10601 914.287.3259
Moses Adirondack Smart Path Reliability Project (NYPA) The existing Moses-Adirondack 1 and Moses-Adirondack 2 transmission lines, approximately 80 miles of 1,600 H-frame wooden poles, were NYPA's first operating asset. The lines, supported by wooden structures, are at the end of their life and will be replaced with steel monopoles and support future 345kV upgrades to increase renewable transfer from the North Country to the rest of New York State.	Massena to Croghan, NY	• Overhead transmission • 345kV • Bundled ACSR cable • 80 miles	Q3 2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	MA1: 92.37% MA2: 92.02%	MA1: 92.37% MA2: 92.02%	Patricia Lomardi 123 Main Street White Plains, NY 10601 914.287.3259
PV-20 Cable Replacement Project* (NYPA) PV-20 is a single-circuit 115kV transmission line running from Plattsburgh Substation to Cumberland Head Substation, approximately 7.5 miles. The cables were oil-filled, with gravity-fed oil reservoirs at each termination. Based on a completed study that looked at reducing the environmental risk associated with oil-filled cables, the remaining useful life of the circuit components and future circuit loads, the submarine portion of the cable was replaced with solid dielectric cable.	Plattsburgh, NY to Vermont	• Submarine transmission • 115kV • Solid dielectric cable • 7.5 miles	Dec. 2017	N/A	N/A	N/A	N/A	N/A	N/A	89.13%	97.48%	93.25%	Patricia Lomardi 123 Main Street White Plains, NY 10601 914.287.3259
Flexible AC transmission (FACTS)* (NYPA) The Marcy Station convertible static compensator (CSC) project was developed to increase the power transfer capability of NYISO's Central-East and Total-East transmission corridors. This high-power voltage source inverter system is the most advanced flexible AC transmission system (FACTS) device installed to date. It increased power transfer capability by 200 megawatts.	Marcy, NY	• +/- 200MVAr • GTO thyristor-based inverter	Phase 1: 2001 Phase 2: 2004	N/A	N/A	N/A	N/A	N/A	N/A	88.54%	89.26%	93.28%	Dan Herrmann 6520 Glass Factory Rd Marcy, NY 13403 315.792.8249
Next Generation Niagara (NYPA) The Next Generation Niagara Program is a life extension and modernization program consisting of four major capital projects. The Integrated Controls Project will provide increased protection in case of a cybersecurity breach. The Mechanical and Electrical Upgrade Project upgrades the 13 generating units and their associated auxiliary power generating equipment. The RM 630T Gantry Crane will be replaced, as it is required to perform any major maintenance to the generating units. The Penstock Platform and Inspections Project will provide a penstock inspection platform to perform FERC-mandated inspections of the 13 penstocks.	Niagara, NY	• Hydro facility life extension and modernization	2034	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Patricia Lomardi 123 Main Street White Plains, NY 10601 914.287.3259

Table 3-3. The Clean Path NY partners have experience developing similar projects.

Project	Location	Project type, size, and technology	COD	Capacity factor (est.) 2020	Capacity factor (est.) 2019	Capacity factor (est.) 2018	Capacity factor (actual) 2020	Capacity factor (actual) 2019	Capacity factor (actual) 2018	Availability factor 2020	Availability factor 2019	Availability factor 2018	Reference
Sheldon Wind Energy Center* (Invenergy) Sheldon is Invenergy's first operating wind farm in New York. The project has a capacity of 112.5 MW and utilizes 75 GE 1.5 SLE wind turbines. The wind farm began commercial operation in March 2009 and produces enough electricity to power more than 23,400 homes.	Wyoming County, NY	• Generation • Wind • 112.5 MW	March 2009	26.00%	24.50%	24.09%	24.78%	24.50%	23.64%	97.69%	96.39%	95.07%	Beth Conley 1 S. Wacker Drive Suite 1800 Chicago, IL 60606 312.429.2529
Orangeville Wind Energy Center (Invenergy) Orangeville is a 94 MW wind power generation facility in Wyoming County, New York, completed in 2014. The project utilizes 58 GE 1.6-100 wind turbines, producing enough electricity to power more than 25,900 homes.	Wyoming County, NY	• Generation • Wind • 94 MW	March 2014	34.90%	33.08%	35.05%	34.01%	33.07%	36.07%	91.62%	89.72%	92.33%	Beth Conley 1 S. Wacker Drive Suite 1800 Chicago, IL 60606 312.429.2529
Southern Oak Solar Energy Center (Invenergy) Southern Oak is a 160 MW solar energy facility in Camilla, Georgia. The project is currently under a 30-year Power Purchase Agreement with Georgia Power Company, and provides power for 30,000 American homes. The Southern Oak facility features LONGI-brand, PERC Hi-MO2 bifacial modules combined with NEXTracker single-axis trackers.	Mitchell County, GA	• Generation • Solar • 160 MW	May 2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Beth Conley 1 S. Wacker Drive Suite 1800 Chicago, IL 60606 312.429.2529
Grand Ridge Energy Center* (Invenergy) Three clean energy technologies are co-located at Grand Ridge Energy Center, including a 210 MW wind farm, 36 MW of battery storage, and a 20 MW solar farm, all developed and operated by Invenergy. The first project phase began operating in 2008 and the latest came online in 2016. A battery system helps maintain power quality and reliability for the PJM electric grid. The project provides enough power for 54,000 homes.	LaSalle, IL	• Generation • 210 MW wind • 20 MW solar • 36 MW battery storage	2008 - 2016	27.94%	28.75%	23.34%	27.02%	28.54%	26.18%	97.48%	96.53%	96.49%	Beth Conley 1 S. Wacker Drive Suite 1800 Chicago, IL 60606 312.429.2529
Energía del Pacífico (EDP)* (Invenergy) EDP is an LNG-to-power project, currently under construction in El Salvador. The project includes a 378 MW gas-fired power plant that will run on natural gas, a 28 MW common steam turbine generator, an offshore liquified natural gas import terminal, and a floating storage regasification unit that will deliver gas to the power plant via a natural gas pipeline. It includes a 44-kilometer 230 kV double-circuit transmission line from Acajutla to Ahuachapán and its associated substations. EDP is under a 20-year agreement with the Government of El Salvador.	Port of Acajulta, El Salvador	• Generation • LNG-to-power • 378 MW	Q1 2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Beth Conley 1 S. Wacker Drive Suite 1800 Chicago, IL 60606 312.429.2529
Time Warner Center* (energyRe) Time Warner Center changed the face of Manhattan in a dramatic way, adding drama to the city's skyline and serving as an urban catalyst that redefines the Columbus Circle neighborhood. Related worked closely with the City of New York and the MTA on the development of the soaring 2.8-million-square-foot vertical mixed-use property	New York, NY	• 2.8 million total square feet	2004	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Jon Weinstein 30 Hudson Yards New York, 10001 212.801.3902

Table 3-3 (continued). The Clean Path NY partners have experience developing similar projects.

Project	Location	Project type, size, and technology	COD	Capacity factor (est.) 2020	2019	2018	Capacity factor (actual) 2020	2019	2018	Availability factor 2020	2019	2018	Reference
Hudson Yards* (energyRe) Hudson Yards, Manhattan's first-ever LEED GOLD Neighborhood Development, is at the center of New York City's rapidly changing West Side. The largest private real estate development in New York since Rockefeller Center, Hudson Yards is codeveloped by Related Companies and Oxford Properties Group.	New York, NY	• $28 billion of investment • 28 total acres • 14 acres of open spaces • 18.1 million total square feet	2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Jon Weinstein 30 Hudson Yards New York, 10001 212.801.3902
The Grand LA* (energyRe) The Grand LA is a multiphase master-planned development to reenvision and redevelop underutilized government-owned parcels adjacent to the Civic Center and key cultural institutions such as the Music Center, Walt Disney Concert Hall, The Colburn School of Music, and the Museum of Contemporary Art. The result will be a dynamic mixed-use district fitting for the cultural center of Los Angeles.	Los Angeles, CA	• 3.2 total acres • 1.56 million total square feet	Est. 2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Jon Weinstein 30 Hudson Yards New York, 10001 212.801.3902

Table 3-3 (continued). The Clean Path NY partners have experience developing similar projects.

The Marcy to New Scotland Transmission Line Upgrade Project, managed jointly by LS Power Grid New York and the New York Power Authority, puts New York on track to meet its goals under the Climate Leadership and Community Protection Act, which includes a zero-emissions electricity sector by 2040.

Marcy to New Scotland Transmission Line Upgrade (AC Transmission Segment A)

Partner	New York Power Authority		
Location	Marcy to New Scotland, NY		
Project type	Transmission		
Project size	93-miles and multiple substations, 345kV		
Project technology	AC transmission		
COD	Q4 2023		
Estimated and actual capacity factor (past three years)	**Year**	**Estimated**	**Actual**
	2020	N/A	N/A
	2019	N/A	N/A
	2018	N/A	N/A
Availability factor (past three years)	**Year**	**Availability factor**	
	2020	N/A	
	2019	N/A	
	2018	N/A	
Reference	Patricia Lombardi 123 Main Street, White Plains, NY 10601 914.287.3259		

Project description

NYPA and LS Power Grid NY are collaborating to rebuild transmission lines across central New York to increase power transfer capabilities.

The Marcy to New Scotland Transmission Line Upgrade Project was competitively awarded by the NYISO public policy transmission planning process and is currently in construction, with an in-service date at the end of 2023.

This project upgrades 93 miles of transmission lines and includes the construction of two new substations between NYPA's central transmission hub in Marcy (Oneida County) and New Scotland (Albany County). The project uses existing electric transmission corridors and replaces aging and outdated transmission towers with the latest technologies to increase energy efficiency.

Marcy to New Scotland Transmission Line Upgrade (AC Transmission Segment A) (continued)

Benefits

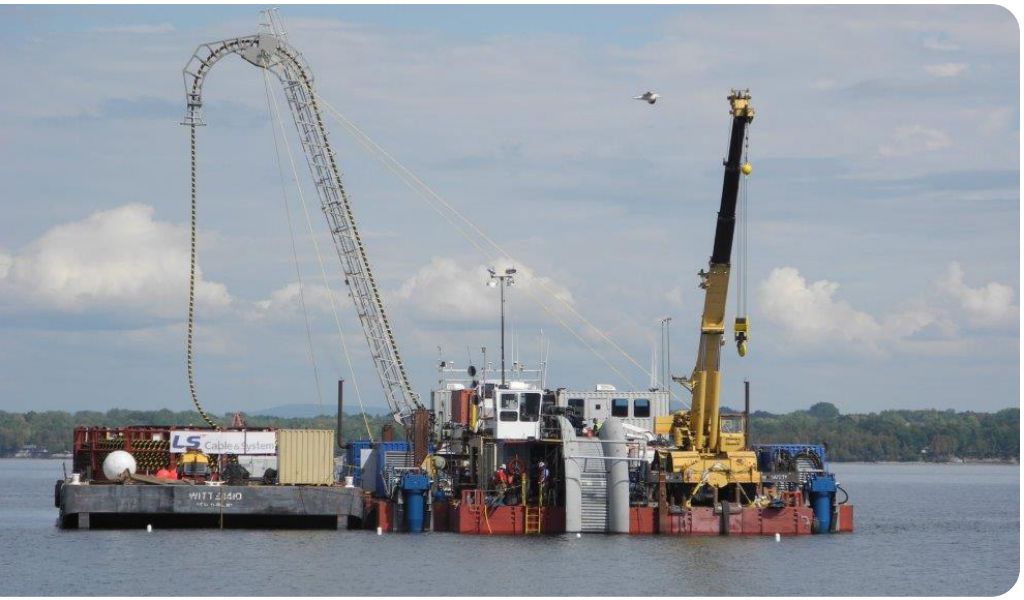
The project is designed to increase transmission capacity and help deliver more renewable energy to higher-demand areas across the state. It will stimulate the local and regional economies by creating and supporting hundreds of clean energy construction jobs.

On February 25, 2021, Governor Cuomo said, "A clean and reliable transmission infrastructure is critical to combating climate change and achieving New York's nation-leading clean energy goals. The start of construction on this important project marks a major milestone in our efforts to construct a new energy superhighway to move energy across the state more efficiently, while also creating new jobs and opportunities for New Yorkers that will help to reinvigorate our local and statewide economies."

The project, managed jointly by LS Power Grid New York and the New York Power Authority, puts New York on track to meet its goals under the Climate Leadership and Community Protection Act, which includes a zero-emissions electricity sector by 2040, 70% renewable energy generation by 2030, and economy-wide carbon neutrality.

"A clean and reliable transmission infrastructure is critical to combating climate change and achieving New York's nation-leading clean energy goals. The start of construction on this important project marks a major milestone in our efforts to construct a new energy superhighway to move energy across the state more efficiently, while also creating new jobs and opportunities for New Yorkers that will help to reinvigorate our local and statewide economies."

Andrew Cuomo, Governor of New York



A single-circuit transmission line originally installed in 1958 with oil-filled cables and reservoirs was successfully replaced with new dielectric cables. Challenges included large-scale directional drilling and the need to protect the environment of Lake Champlain and an underwater archeological site.

PV-20 Cable Replacement

Partner	New York Power Authority		
Location	Plattsburgh, NY to Vermont		
Project type	Submarine cable		
Project size	7.5 miles transmission and substations		
Project technology	AC transmission		
COD	December 2017		
Estimated and actual capacity factor (past three years)	**Year**	**Estimated**	**Actual**
	2020	N/A	N/A
	2019	N/A	N/A
	2018	N/A	N/A
Availability factor (past three years)	**Year**	**Availability factor**	
	2020	89.13%	
	2019	97.48%	
	2018	93.25%	
Reference	Patricia Lombardi 123 Main Street, White Plains, NY 10601 914.287.3259		

Project description

PV-20 is a single-circuit 115kV transmission line, approximately 7.5 miles long, running from the Plattsburgh substation to the Cumberland Head substation. The submarine cable portion consisted of four 500 kcmil cables installed in 1958 (one spare). The cables were oil-filled, with gravity-fed oil reservoirs at each termination.

One of the original 500 kcmil cables failed in 1970 and was not replaced. Three additional 1000 kcmil cables were installed the same year.

A study looked at reducing the environmental risk associated with oil-filled cables, the remaining useful life of the circuit components, and future circuit loads. Based on the results, it was determined that the submarine portion of the cable should be replaced with solid dielectric cable. It was important to protect Lake Champlain, a recreational and navigable waterway with ferry routes in close proximity to the work zone.

PV-20 Cable Replacement (continued)

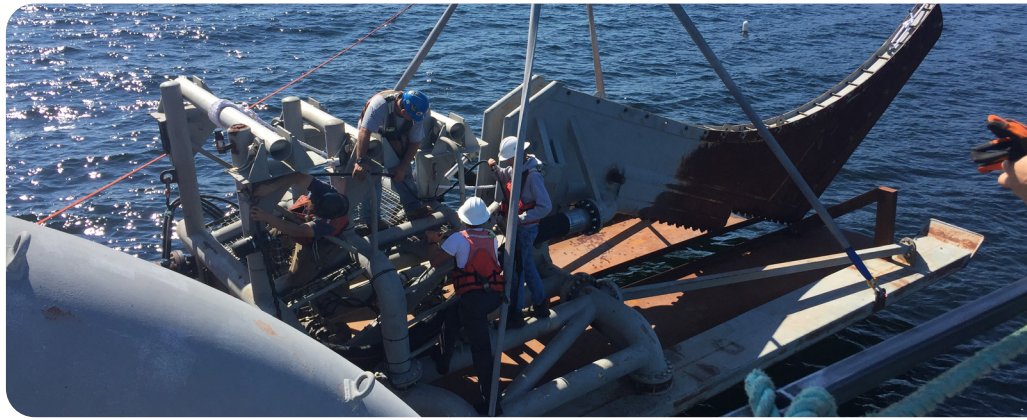
The project, carried out jointly by NYPA and the Vermont Electric Power Company, required interagency communications and collaboration with New York State and Vermont regulatory agencies as well as the US Army Corps of Engineers. The project required a lake survey which discovered an underground archeological site associated with the Lake Champlain Maritime Museum on the lake bed very close to the existing lines.

The cables were manufactured overseas, requiring shipping coordination to a US port and additional logistics to deliver the cables to Lake Champlain. Large-scale directional drilling was required to install conduits from each of the transition station locations some 100 yards into the lake. The cables were then jet-plowed into the soil approximately four feet to meet permit conditions. Where this was not feasible, concrete mattresses were placed on top of the cables.

Divers with cameras were utilized to monitor conduit, cable, and mattress placement. While removing the existing oil-filled conductors, divers were again used to monitor the maritime museum. Spill response plans were utilized with vessels prepared on site. The shoreline was also monitored and protected.

Benefits

New dielectric cables with spare and new transition stations were successfully installed without adverse effects on the environment of Lake Champlain or the underwater archeological site. The replacement of the cables mitigated environmental risk and improved the overall reliability of the circuit. The project was energized in December 2017.



Marcy Station Convertible Static Compensator

Partner	New York Power Authority		
Location	Marcy 345 kV station, Marcy, NY		
Project type	FACTS: Flexible AC transmission		
Project size	+/- 200 MWAr		
Project technology	GTO thyristor-based inverter		
COD	2004		
Estimated and actual capacity factor (past three years)	**Year**	**Estimated**	**Actual**
	2020	N/A	N/A
	2019	N/A	N/A
	2018	N/A	N/A
Availability factor (past three years)	**Year**	**Availability factor**	
	2020	88.54%	
	2019	89.26%	
	2018	93.28%	
Reference	Dan Herrmann 6520 Glass Factory Road, Marcy, NY 13403 315.792.8249		

A convertible static compensator (CSC) was designed and installed at NYPA's Marcy Station. This high-power voltage source inverter system is the most advanced flexible AC transmission system (FACTS) device installed to date. It increased power transfer capability by 200 megawatts.

Project description

To increase power transfer capability on NYISO's Central-East and Total-East transmission corridors, a convertible static compensator (CSC) was designed and installed at NYPA's Marcy Station near Utica, NY.

The project team developed a power circuit with two inverters, each rated 100 MVA, that could perform the functions specified for the CSC. These functions required independent control of the output voltage for the two inverters, as well as transfer of real power between the two inverters.

The system had to operate in a variety of configurations, each with multiple control modes and functions. The design had to take into account the physical layout of the switchyard and existing equipment. To protect the inverters from damaging overcurrents that may arise during line faults, a thyristor bypass switch was developed to protect series connected inverters during severe transmission line disturbances.

Marcy Station Convertible Static Compensator (continued)

The project was the first of its kind, with the ability to operate in 11 different configurations using four distinct operating modes:

- STATCOM (Static Synchronous Compensator)
- SSSC (Static Synchronous Series Compensator)
- UPFC (Unified Power Flow Controller)
- IPFC (Interline Power Flow Controller)

Benefits

This high-power voltage source inverter system is the most advanced flexible AC transmission system (FACTS) device installed to date. It provides precise and continuous control of power transmission parameters. The project increased power transfer capability by 200 megawatts.

200 MW
of increased power transfer capability

1st
of its kind

11
different configurations

4
distinct operating modes

The Sheldon Wind Farm, Invenergy's first operating wind energy center in New York, is located in Wyoming County. The project has a capacity of 112.5 MW and utilizes 75 GE 1.5 SLE wind turbines. The wind farm began commercial operation in March 2009 and produces enough electricity to power more than 23,400 homes.

Sheldon Wind Energy Center

Partner	Invenergy		
Location	Wyoming County, NY		
Project type	Generation		
Project size	112.5 MW		
Project technology	Wind		
COD	March 2009		
Estimated and actual capacity factor (past three years)	**Year**	**Estimated**	**Actual**
	2020	26.00%	24.78%
	2019	24.50%	24.50%
	2018	24.09%	23.64%
Availability factor (past three years)	**Year**	**Availability factor**	
	2020	97.69%	
	2019	96.39%	
	2018	95.07%	
Reference	Beth Conley 1 S. Wacker Drive, Suite 1800, Chicago, IL 60606 312.429.2529		

Project description

The Sheldon Wind Farm is Invenergy's first renewable facility to reach operations in New York. Invenergy developed, constructed, and operates the project.

The project is located in Sheldon, New York, on approximately 21,300 acres of land leased from approximately 85 landowners. The site is located atop two ridgelines and rolling hills along the tops of the ridges. The surrounding land is predominantly agricultural usage (cropland and pasture).

In 2011, Invenergy entered into a ten-year agreement to sell Renewable Energy Credits (RECs) from the wind farm to the New York State Energy Research and Development Authority. Sheldon interconnects to the NYISO transmission system via the Sheldon substation, which was constructed adjacent to NYSEG's 230 kV Stoelle Road–Meyer transmission line.

Sheldon Wind Energy Center (continued)

Sheldon substation

The Sheldon substation, developed by Invenergy to interconnect the Sheldon Wind Farm, is a 230kV substation in a 3-breaker ring bus configuration. The in-service date was in 2008 and the facility is currently in operation. Ownership was transferred to NYSEG, which currently operates the facility.

Benefits

The Sheldon Wind Farm produces enough electricity to power more than 23,400 American homes. Its emissions reductions are equivalent to removing 30,700 cars from the road.

The project employed more than 1,000 workers during peak construction and employs nine full-time operations and maintenance staff. The project invests more than $2.9 million annually in wages, benefits, local taxes, and landowner payments.

Grand Ridge Energy Center is the world's largest co-located wind, solar, and energy storage facility, totaling 266 MW. It maintains power quality and reliability for the PJM electric grid and serves as an innovation and research center for Invenergy.

Grand Ridge Energy Center

Partner	Invenergy		
Location	LaSalle County, IL		
Project type	Generation		
Project size	210 MW wind, 20 MW solar, 36 MW battery storage		
Project technology	Wind, solar, storage		
COD	2008 - 2016		
Estimated and actual capacity factor (past three years)	**Year**	**Estimated**	**Actual**
	2020	27.94%	27.02%
	2019	28.75%	28.54%
	2018	23.24%	26.18%
Availability factor (past three years)	**Year**	**Availability factor**	
	2020	97.48%	
	2019	96.53%	
	2018	96.49%	
Reference	Beth Conley 1 S. Wacker Drive, Suite 1800, Chicago, IL 60606 312.429.2529		

Project description

Grand Ridge Energy Center is located in LaSalle County, Illinois, 80 miles southwest of Chicago. Three clean energy technologies are co-located, including a 210 MW wind farm, 36 MW of battery storage, and a 20 MW solar farm, all developed and operated by Invenergy.

The first phase of the project began operating in 2008 and the latest came online in 2016. Renewable energy from Grand Ridge helps consumers meet sustainability goals, while its battery system helps maintain power quality and reliability for the PJM electric grid. The project serves the PJM power market, which stretches from northeastern Illinois all the way to the Eastern seaboard.

A center of innovation

Grand Ridge is the site of Invenergy's first solar project and its first storage project. The Brookfield solar test bed facility is located on site. Here, engineers and operators are able to evaluate and compare the performance of various system configurations and equipment types as well as test new operations strategies and techniques.

Grand Ridge Energy Center (continued)

The experience of developing, owning, and operating these projects has given Invenergy confidence in development, battery chemistry, deployment, and operations, paving the way for its large solar and storage portfolio today.

Invenergy is also funding the collection of data from five telemetry units that are attached to bald eagles to better understand their behavior and interaction with the landscape and operational wind facilities. This research is being conducted in partnership with the US Fish and Wildlife Service in Illinois.

Honors

The site has won both *Power Engineering* and *Renewable Energy World Magazine*'s Project of the Year Award as well as Energy Storage North America's (ESNA) Innovation Award.

Benefits

The project produces enough renewable energy to power 54,000 US homes. It provides fast-response regulation service to the PJM market. Emissions reductions from the project are equivalent to removing 68,000 cars annually from the road.

The project generates $4.88 million annually in wages, benefits, local taxes, and landowner payments. Three hundred thirty jobs were created during construction, and the project employs six full-time operations and maintenance staff.

Energía del Pacífico, Ltda. de C.V. (EDP) is an LNG-to-power project currently under construction at the Port of Acajutla, El Salvador. This $1 billion project, the largest private investment to date in El Salvador, will meet about one third of El Salvador's total electricity needs while significantly reducing the amount of carbon and sulfur pollution in the air.

Energía del Pacifico, Ltda. De C.V. (EDP)

Partner	Invenergy		
Location	Port of Acajutla, El Salvador		
Project type	Generation		
Project size	378 MW		
Project technology	Liquefied natural gas to power project		
COD	February 2022		
Estimated and actual capacity factor (past three years)	**Year**	**Estimated**	**Actual**
	2020	N/A	N/A
	2019	N/A	N/A
	2018	N/A	N/A
Availability factor (past three years)	**Year**	**Availability factor**	
	2020	N/A	
	2019	N/A	
	2018	N/A	
Reference	Beth Conley 1 S. Wacker Drive, Suite 1800, Chicago, IL 60606 312.429.2529		

Project description

In 2013, the Government of El Salvador issued a call for electricity supply aimed at securing a 20-year supply of new electric power generation from sources other than heavy fuel. EDP secured the winning bid.

EDP consists of the following:

- 378 MW power plant that will run on natural gas, with one 28 MW common steam turbine generator
- Offshore liquified natural gas (LNG) import terminal, including a dedicated, permanently moored, floating storage regasification unit (FSRU)
- Approximately 1.8 km natural gas pipeline delivering gas to the power plant
- 44-kilometer 230 kV double circuit transmission line from Acajutla to Ahuachapán and its associated substations

EDP's development, construction, and operations are led by Invenergy and supported by El Salvador-based partners Grupo Calleja, VC Energy de Centroamérica, and Quantum Energy. EDP includes El Salvador's first LNG-fueled power plant and the region's first FRSU.

Energia del Pacifico, Ltda. De C.V. (continued)

Challenges

Laying the groundwork for this project had its challenges, including regulatory approvals for offshore gas storage and transmission, the complex scope of the transmission network, designing novel physical components, and minimizing environmental and visual impacts. As project lead, Invenergy is leveraging decades of development, engineering, finance, construction and operating experience to execute this complex project alongside its partners.

Investing in El Salvador

EDP completed project financing for the LNG-to-power project in December 2019. The project brings approximately $1 billion in foreign direct investment, making it the largest private investment ever in El Salvador. Leading global financial institutions — Overseas Private Investment Corporation (succeeded by the United States International Development Finance Corporation), International Finance Corporation, IDB Invest, Finnish Export Credit Ltd., and KfW IPEX-Bank — are lenders to the project.

EDP's ground-breaking development and project financing has been recognized by multiple awards, including Latin Finance's Infrastructure Financing of the Year Award and Latin Lawyer's Project Finance (Energy) Award. EDP's successful financing demonstrates Invenergy's ability to proficiently structure project financing and to maintain and develop successful relationships with a wide range of partners.

Complex transmission infrastructure

For the project, Invenergy is building a 44-kilometer (27.3-mile) transmission line and three substations. The line will run from the coastal port town of Acajutla through mountainous terrain to Ahuachapan. It will connect to and strengthen the Central American Interconnection System (SIEPAC), supplying electricity to six Central American nations. The transmission is a showcase of Invenergy's execution abilities as the ROW negotiations had to be finalized before power plant construction could begin.

Benefits

EDP will provide cleaner, more reliable energy for El Salvador, diversifying the energy mix and meeting more than 30% of the country's energy demand. Reliable power generation will drive economic growth and contribute to the stability of the region. The project will create 1,000 jobs during construction and more than 60 permanent jobs.

Invenergy is heavily invested in the social and economic advancement of the municipality of Acajutla. Invenergy is providing more than $500,000 of projects and initiatives each year that will improve the quality of life for local communities through improvements in basic infrastructure and social services. These include a street reworking project and a wastewater treatment plant in Acajutla, and donations of masks and hand sanitizer to the communities of Acajutla, Ahuachapán, Sonsonate, and Santo Domingo de Guzman.

Time Warner Center

Partner	energyRe		
Location	New York, NY		
Project type	Mixed use development		
Project size	2.8 million square feet		
Project technology	N/A		
COD	2004		
Estimated and actual capacity factor (past three years)	**Year**	**Estimated**	**Actual**
	2020	N/A	N/A
	2019	N/A	N/A
	2018	N/A	N/A
Availability factor (past three years)	**Year**	**Availability factor**	
	2020	N/A	
	2019	N/A	
	2018	N/A	
Reference	Jon Weinstein 30 Hudson Yards, New York, NY 10001 212.801.3902		

Related worked closely with the City of New York and the Metropolitan Transportation Authority (MTA) on the development of Time Warner Center. Sitting atop the third busiest subway station in the New York City transit system, Time Warner Center proves that thoughtful urban design with a complementary mixture of uses and transportation improvements creates a whole project that is greater than the sum of its parts. Time Warner Center addressed the City's concerns to develop a positive neighborhood catalyst, while simultaneously meeting MTA's need to maximize the value of its site.

Project description

Time Warner Center changed the face of Manhattan in a dramatic way, adding drama to the city's skyline and serving as an urban catalyst that redefines the Columbus Circle neighborhood.

Related worked closely with the City of New York and the MTA on the development of the soaring 2.8-million-square-foot vertical mixed-use property.

Time Warner Center (continued)

Active nearly 24 hours a day, the 80-story building reflects the pace and cadence of the City around it. It includes the following features:

- Bustling commercial office center, soon to be home to Deutsche Bank
- 338,000-square-foot retail and dining complex featuring world-renowned chefs Thomas Keller, Masa Takayama, and Michael Lomonaco
- 5-star Mandarin Oriental Hotel with 198 rooms and 46 suites
- 40,000-square-foot Equinox® Fitness Club
- 122-seat Jazz at Lincoln Center
- 199 luxury residences

Benefits

Completed in 2004, Time Warner Center quickly became a mixed-use destination like New York City had never seen before. Today, its shops attract more than 16 million visitors annually and have helped establish the neighboring entrance to Central Park as the most popular entry to Manhattan's most beloved green space.

Acting as a bridge between the mature neighborhoods of Midtown Manhattan and the Upper West Side, Time Warner Center created a new center of gravity for the Columbus Circle neighborhood due to its scale, diversity of offerings, and sensitive architectural and urban design.

Hudson Yards, Manhattan's first-ever LEED GOLD Neighborhood Development, constructed over the Eastern Rail Yard of the Long Island Rail Road, is at the center of New York City's rapidly changing West Side. At the nexus of Chelsea and Hell's Kitchen, Hudson Yards is the largest private real estate development in New York since Rockefeller Center and co-developed by Related Companies and Oxford Properties Group.

Hudson Yards

Partner	energyRe		
Location	New York, NY		
Project type	Mixed-use development		
Project size	18.1 million square feet		
Project technology	N/A		
COD	March 2019		
Estimated and actual capacity factor (past three years)	**Year**	**Estimated**	**Actual**
	2020	N/A	N/A
	2019	N/A	N/A
	2018	N/A	N/A
Availability factor (past three years)	**Year**	**Availability factor**	
	2020	N/A	
	2019	N/A	
	2018	N/A	
Reference	Jon Weinstein 30 Hudson Yards, New York, NY 10001 212.801.3902		

Project description

Hudson Yards is far more than a collection of towers and open spaces. It is a model for the 21st-century urban experience; an unprecedented integration of buildings, streets, parks, utilities, and public spaces that forms a connected, responsive, clean, reliable, and efficient neighborhood. The development is part of New York City's goal to transform the broader 42-block Hudson Yards District from a largely vacant, underdeveloped area into a vibrant mixed-use neighborhood of workers, residents and visitors is also being achieved ahead of projections, with over 30 million square feet of new development completed or in construction since the rezoning in 2005.

Building an entire new neighborhood in the heart of Manhattan from the ground up afforded us the opportunity to recalibrate every aspect of a 21st-century, urban mixed-use neighborhood. When Hudson Yards is completed, an estimated 125,000 people daily are expected to live, work, dine, shop, study, stroll, or sightsee at the neighborhood.

Hudson Yards (continued)

Since opening in March 2019, Hudson Yards has become a thriving destination for foodies, fashionistas, art lovers, park goers and tourists—not to mention home the world's most innovative businesses and trendiest urban dwellers. Hudson Yards is home to dozens of restaurants and one-of-a-kind shopping experiences; The Shed, a unique cultural center; the first Equinox Hotel®, world-class medical facilities and lush gardens; Edge, the Western Hemisphere's highest outdoor observation deck, and Vessel, New York's newest landmark; a climbable, interactive public monument unlike any in the world. All of this is in addition to state-of-the-art office space, and the finest in luxury residences and affordable rental apartments. When Hudson Yards is completed, an estimated 125,000 people daily are expected to live, work, dine, shop, study, stroll or sightsee at this 28-acre neighborhood, which will include 18 million square feet of commercial and residential space, 14 acres of public open space, and a public school.

To build the first half of Hudson Yards, a "platform" was constructed over the Eastern Rail Yard of the Long Island Rail Road. Completed in 2016, the 10-acre platform bridges 30 working tracks, three subsurface tunnels used by Amtrak and New Jersey Transit, and the Gateway Tunnel, which is not yet in service.

The platform, which weighs more than 35,000 tons, is supported by 300 caissons — ranging from four to five feet in diameter and 20 to 80 feet in depth — that were drilled into the bedrock between existing tracks. In total, 25,000 tons of steel and 14,000 cubic yards of concrete were used in its construction. Throughout construction, all train lines remained operational.

Supported by an advanced technology platform, operations managers monitor and react to power demands and temperature changes in order to enhance the employee, resident, and visitor experience. Communications are supported by a fiber loop, designed to optimize data speed and service continuity for rooftop communications, as well as mobile, cellular and two-way radio communications.

Resilience

Whatever the potential disruption — superstorm, brownout — Hudson Yards has the onsite power-generation capacity to keep basic building services, residences, and restaurant refrigerators running. Because it is built above a rail yard, the first level of Hudson Yards is well above the flood plain.

A unique electrical interconnection will allow the cogeneration plant to disconnect from the utility during grid outages and restore power to tenants.

The 895-foot-tall tower features a 1.2 MW cogeneration plant that generates power, hot water, and chilled water with twice the efficiency of standard systems. It remains operational in the event of a power outage. A stormwater retention tank replenishes cooling towers and irrigate terrace landscaping, and an Operation and Energy Control Center coordinates security, building performance, and visitor experience throughout Hudson Yards.

Hudson Yards (continued)

Economic benefits

Hudson Yards is a new economic engine for New York City. The project contributed more than $10 billion to the City's GDP during construction and serves as a significant source of revenue to the MTA. Hudson Yards is well known as the largest private sector project in US history and an enormous source of jobs through construction and associated industries. The first wave of construction at Hudson Yards, comprising nearly 7.5 million square feet, was built predominantly with union labor.

From 2012 through 2025, hard- and soft-cost spending on the development of Hudson Yards will have directly supported an average of nearly 4,600 jobs each year, including an average of 3,116 jobs each year in construction, and 1,476 jobs in associated industries. Total wages and salaries paid to these workers will average $579.7 million each year, an average of about $126,000 per job.

Related created the "Hudson Yards Hiring Network" in 2018 to help assure that as many of the operational jobs being created by our new Hudson Yards development would be made available to city residents who might have additional barriers to employment. The Hiring Network coordinates the efforts of multiple city agencies and at least ten community nonprofits that service the needs of those who are justice-involved, have physical and mental health disabilities, live in public housing, or are veterans or homeless.

After the second half of the project is built between 11th and 12th Avenues, Hudson Yards is expected to contribute nearly $19 billion annually to New York City's GDP. This is just one piece of the overall economic impact the redevelopment of the Hudson Yards district will have on the city, state, and region.

Environmental benefits

Hudson Yards is Manhattan's first-ever project to receive the LEED GOLD Neighborhood Development designation.

A 13.3MW cogeneration facility will provide over 50% of the electrical and thermal demand of the Eastern Yards, avoiding 25,000 million tons of greenhouse gas emissions each year (equal to the annual emissions of 5,000 cars).

Nearly 10 million gallons of stormwater will be collected each year from building roofs and public plazas, then filtered and reused in mechanical and irrigation systems to conserve potable water for drinking and reducing stress on New York's sewer system. Captured rainwater is used to irrigate the over 200 mature trees and 28,000 plants in the public park.

The Grand LA is a visionary project to revitalize downtown LA's cultural and civic core with a mix of commercial, retail, cultural, and residential units stitched together with great public spaces and world-class architecture.

The Grand LA

Partner	energyRe		
Location	Los Angeles, CA		
Project type	Mixed use development		
Project size	1.56 million square feet		
Project technology	N/A		
COD	Est. 2022		
Estimated and actual capacity factor (past three years)	**Year**	**Estimated**	**Actual**
	2020	N/A	N/A
	2019	N/A	N/A
	2018	N/A	N/A
Availability factor (past three years)	**Year**	**Availability factor**	
	2020	N/A	
	2019	N/A	
	2018	N/A	
Reference	Jon Weinstein 30 Hudson Yards, New York, NY 10001 212.801.3902		

Project description

The Grand LA is a multiphase master-planned development to reenvision and redevelop underutilized government-owned parcels directly adjacent to the Civic Center and key cultural institutions such as the Music Center, Walt Disney Concert Hall, The Colburn School of Music, and the Museum of Contemporary Art. The Grand is designed to become a 24-7 destination for shopping, dining, entertainment and hospitality, as well as a paradigm-shifting place to live. The result will be a dynamic mixed-use district fitting for the cultural center of Los Angeles.

Part of The Grand Avenue Project is a visionary public-private partnership with the Los Angeles Grand Avenue Authority to revitalize downtown LA's cultural and civic core with a mix of commercial, retail, cultural and residential uses stitched together with great public spaces and world-class architecture. This multi-phased master planned development is re-envisioning and re-developing underutilized government-owned parcels directly adjacent to the Civic Center and key cultural institutions..

The Grand LA (continued)

The Grand will include 176,000 square feet of retail space anchored by chef-driven restaurants and a collection of shops; more than 400 residences of which 20% will be affordable housing units; a luxury hotel and more. The development will also include a large, vibrant public plaza with a series of landscaped, open terraces. Key project components funded by Related include these:

- Grand Park (12-acre public park, 3 million visitors yearly, completed 2012)
- The Emerson residential tower (271 residences, 5,000 square feet of retail/restaurant, completed 2014)
- The Broad contemporary art museum (completed 2015)
- The Grand (3.2 acres, 436 residences, 309 hotel rooms, 1,036-space parking garage, 175,000 square feet retail/restaurant/entertainment, 1.56 million total square feet, estimated completion 2022)

Designed by Frank Gehry, The Grand will include a dynamic mix of hotel, dining, nightlife and residential anchored by a central public plaza above subterranean parking. This $1 billion mixed-use development is being developed by Related Companies and its partner CORE USA, a joint venture of China Harbour Engineering Company and CCCG Overseas Real Estate (CORE). Destination restaurants and shopping will be spread among a series of landscaped open terraces along with a 39-story residential tower, 20% of which will be affordable-rate units.

As part of Related's longtime commitment to the larger Grand Avenue Project, Related also developed Grand Park.

The Grand LA (continued)

Benefits

The Grand will generate broad community benefits including an estimated 10,000+ new jobs, including 8,310 construction jobs and 3,280 permanent jobs during operations. The Grand is working with local labor advocates and human service agencies to create construction and permanent employment opportunities for formerly incarcerated individuals, nonnative English speakers, those without a high school diploma, and other populations that face employment barriers

The project will provide much-needed affordable housing, $1.3 billion in one-time total economic output for Los Angeles County, $397 million in revenues to the City of Los Angeles, and $68 million in revenues to the County of Los Angeles over the next 25 years.

The destination will attract thousands of visitors from across the nation and around the world, along with downtown residents and visitors from other communities throughout the region.

The Grand exceeds energy efficiency requirements through high-efficiency heating, cooling, and hot water systems, LED lighting, ENERGY STAR equipment and appliances, and smart controls. Use of the city's potable water supply is reduced through significant rainwater collection and reuse for irrigation systems and water efficient fixtures.

The Grand offers residents and visitors access to sustainable and unique amenities including EV charging stations, on-demand electric vehicle car sharing, and over 150 bicycle parking spaces. The Grand's site design enhances the neighborhood fabric with mixed uses and a pedestrian-friendly streetscape.

3.6. Listing of projects developed or under construction

Table 3-3 on the next page provides a listing of projects that the Clean Path NY members have successfully developed or are currently under construction. Further details on projects marked with an asterisk are provided in this section.

3.7. NYISO market experience

NYPA NYISO market experience

NYPA has extensive experience operating in the NYISO market in a variety of roles, including as a generation owner, as a transmission owner, and as a load serving entity. NYPA has been a market participant since before the inception of the NYISO in the year 2000.

As a generation owner, NYPA offers output from its diverse fleet of 16 generating facilities into the NYISO energy, capacity, and ancillary serves markets. NYPA generates approximately 25 TWh annually, providing nearly 20% of New York State's electricity. NYPA operates a modernized trading facility at its offices in White Plains, NY and has a 24x7 trading desk, ensuring seamless interaction with the NYISO. NYPA's trading group offers approximately 6,000 MW of hydropower and natural gas generation into the NYISO markets on a daily basis. NYPA optimizes its participation in the NYISO markets in these ways:

- Implementing dynamic protocols for generation bidding into the NYISO energy, ancillary, and capacity markets
- Forecasting generation, market prices, and emissions on a range of time scales
- Developing and implementing short- and long-term fuel supply planning and risk mitigation strategies to support the cost-effective and reliable operation of NYPA's generating facilities
- Developing and implementing management strategies for hedging energy transactions to provide price and revenue stability.

As a transmission owner, NYPA operates more than 1,400 circuit miles of transmission lines, primarily from its Clark Energy Center in Marcy, NY. NYPA recoups costs associated with its transmission lines through both the NYPA Transmission Adjustment Charge and NYISO Tariff. NYPA operates its transmission assets in compliance with NYISO and FERC regulations, ensuring reliability and open access. NYPA has extensive experience coordinating with the NYISO and developers on interconnections of new generators to NYPA's transmission assets.

NYPA is an active stakeholder at the NYISO, representing and advocating for New York's interests in the various NYISO working groups and guiding the development of NYISO policies and market rules.

Invenergy development experience

Invenergy is an experienced developer and operator in NYISO, with approximately 900 MW in operation or contracted, including the following operating renewable facilities:

- High Sheldon Wind Farm, 112.5 MW, in Town of Sheldon, Wyoming County, NY
- Orangeville Wind Farm, 94 MW, in Town of Orangeville, Wyoming County, NY

- Marsh Hill Wind Farm, 16.2 MW, in Town of Jasper, Steuben County, NY
- Shoreham Solar Commons, 24.9 MW, in Town of Brookhaven, Suffolk County, NY

Invenergy's development and environmental permitting staff have conducted the permitting efforts on all these projects. Invenergy has broad experience with New York State permitting agencies and process, under SEQRA, Article 10 and Article VII, and has long-standing working relationships with the agencies whose jurisdiction these projects fall under.

Invenergy market experience

Invenergy operates over 11,000 MW of renewable and natural gas facilities through its operations group, Invenergy Services. Invenergy Services provides asset management and operations for Invenergy-owned projects. It has steadily grown assets under management since expanding to serve third-party owners at the beginning of 2019. With 223 MW operated by the company, Invenergy has extensive experience navigating and dispatching renewable power into the NYISO market.

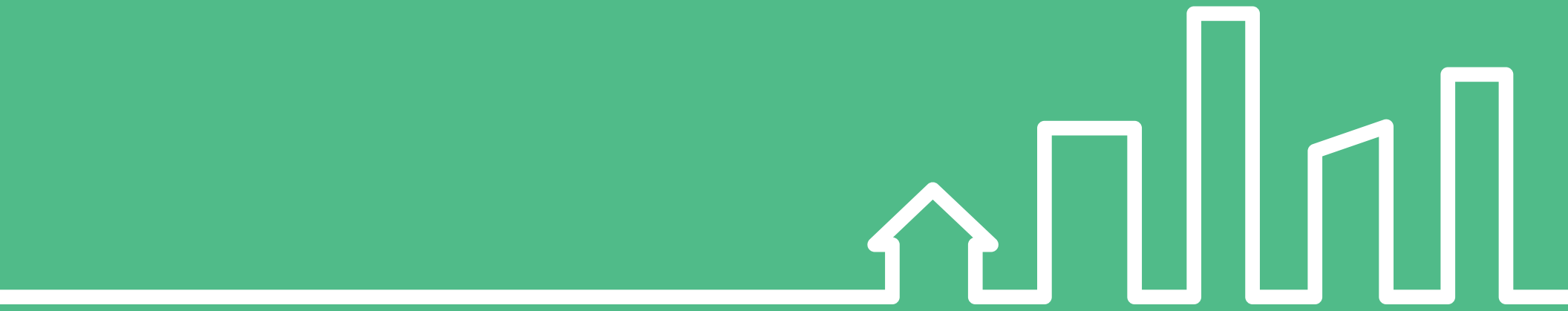
Invenergy Services operates its renewable fleet from the Invenergy Control Center in Invenergy's Chicago headquarters office. The Invenergy Control Center employs control room operators and power schedulers staffed around the clock 365 days a year. The control room staff is responsible for monitoring and maintaining the availability of all wind, solar, and energy storage facilities that Invenergy Services operates in North America. This facility serves as the critical hub for the fleet. All communications between the sites, transmission operators, balancing authorities, markets and outside counterparties run through its network.

As the main liaison to generation facilities, the Invenergy Control Center manages all market-related functions, including availability submissions and energy offers into the various markets throughout the NYISO. The Power Trading and Settlements groups are located within the control room to work side by side with the Power Scheduling group.

The Invenergy Control Center ensures that all applicable contractual, market and NERC compliance related requirements are complied with for all generation facilities. The Invenergy Control Center and Backup Control Center located in the west suburbs of Chicago are both compliant with all NERC Critical Infrastructure Protection ("CIP") requirements.

Section 4

Resource description and site control



4 Resource description and site control

4.1. Introduction

The proposed renewable energy resources (referred to in the proposal as either "Resources" or "portfolio of Resources") are primarily new onshore wind and solar PV projects. Figure 4-1 on the next page provides a graphical summary of all the proposed Resources that meet the eligibility requirements of "Renewable Energy System" as defined by the Climate Leadership and Community Protection Act. Table 4-1 provides general details for these Resources. Attached to this proposal is Appendix 3 presenting a summary description of control status by parcel for each resources to provide evidence of site control. All of the resources that were awarded Tier 1 RECs through NYSERDA's Renewable Energy Standards solicitation have already demonstrated site control to NYSERDA. Those remain available to NYSERDA upon request.

Clean Path New York has assembled an unparalleled portfolio of more than 3,400 MW of exclusively New York renewable generation to support this proposal. Clean Path New York is confident this portfolio represents the largest volume of in-state renewables of any project and highest utilization of any intrastate transmission line, resulting in optimum project economics while also maximizing in-state economic benefits. The advantages of this large portfolio are further amplified by leveraging the state's largest storage resource, Blenheim-Gilboa, as described in detail in Section 9. Because wind has a much more diverse generating profile than solar, in addition to a significantly higher net capacity factor, a large quantity of wind is essential to a cost effective and successful Tier 4 project. Wind projects are also in much shorter supply in New York, considering that NYSERDA has contracted nearly 5 GW of solar compared to only about 1.5 GW of Tier 4-eligible wind. Clean Path New York has therefore focused its efforts on wind, securing more than 1,900 MW and 5 TWh/year of wind generation. Furthermore, Clean Path New York's portfolio is mature and ready to perform. More than 45% of Clean Path's portfolio (by capacity) currently holds a NYSERDA Tier 1 REC contract and more than 30% holds a Certificate of Environmental Compatibility and Public Need pursuant to Article 10. In addition to Invenergy, the Clean Path portfolio includes projects from Northland Power, RWE, Apex, Terra-Gen, and Boralex, all of whom are experienced developers with track records of being able to deliver projects. These developers have all signed letters of support with Clean Path New York, which are provided as Appendix 4. Finally, the portfolio is zonally diversified, with no more than 30% of capacity in any one zone. This will help to reduce overall basis risk to Clean Path and will also provide resource diversity to the portfolio.

3,400+ MW

of **exclusively New York** renewable generation in the Clean Path New York portfolio

[1] Clean Path New York notes that NYSERDA's response to Question #61 in its circulation of questions and answers posted on May 7, 2021, added a requirement for maps of MSG classifications. While it is not practical to produce this mapping in the remaining timeframe, Clean Path New York can provide such mapping post-bid submittal, if requested by NYSERDA.

Clean Path New York is proposing a portfolio of diverse resources.

Figure 4-1. Clean Path New York's Resources are located exclusively in New York State.

Clean Path New York is bidding a projected annual quantity of 7,496,113 MWh with the potential to add an additional 374,753 MWh (for a total of 7,870,865 MWh) if selected for award inclusive of storage utilizing NYPA's pumped storage facility at Blenheim-Gilboa. Between projects owned by Invenergy and projects retained through executed indicative term sheets with third-party generators, Clean Path New York holds 3,354 MW of generation (1,924 MW of wind, 1,430 MW of solar[1]). This portfolio represents 87% of the expected generation capacity (MW) and 92% of the expected generation (MWh). Clean Path New York is confident that, if selected, it will be able to round out the portfolio necessary to meet the projected annual quantity, as evidenced by list of additional resources listed in Section 4.25.

Project	Developer	Capacity	Location	Technology	Tier-1 Contract	COD
Alle-Catt Wind	Invenergy	340 MW	Wyoming, Cattaraugus, Allegany Counties	Wind	✓	Q3 2024
Horseshoe Solar	Invenergy	180 MW	Livingston County	Solar PV	✓	Q4 2023
Number Three Wind	Invenergy	104 MW	Lewis County	Wind	✓	Q3 2022
Canisteo Wind	Invenergy	250 MW	Steuben County	Wind		Q2 2023
Bull Run Wind	Invenergy	449 MW	Clinton County	Wind		Q3 2024
Verona Solar	Invenergy	350 MW	Oneida County	Solar PV		Q4 2024
Twinleaf Solar	Invenergy	75 MW	Lewis County	Solar PV		Q4 2024
Taproot Solar	Invenergy	205 MW	Montgomery County	Solar PV		Q4 2025
Wintergreen Solar	Invenergy	75 MW	Montgomery County	Solar PV		Q3 2025
Orangeville Solar	Invenergy	75 MW	Wyoming County	Solar PV		Q3 2025
Seventy Seven Solar	Invenergy	100 MW	Wyoming County	Solar PV		Q4 2024
Bull Run Solar	Invenergy	170 MW	Clinton County	Solar PV		Q3 2025
Ball Hill Wind	Northland	107 MW	Chautauqua County	Wind	✓	Q4 2022
Bluestone Wind	Northland	111 MW	Broome County	Wind	✓	Q4 2022
High Bridge Wind	Northland	103 MW	Chenango County	Wind	✓	Q3 2023
Bald Mountain Solar	Boralex	20 MW	Washington County	Solar PV	✓	Q4 2022
West River Solar	Boralex	20 MW	Saratoga County	Solar PV	✓	Q2 2024
Sandy Creek Solar	Boralex	20 MW	Jefferson County	Solar PV	✓	Q4 2023
Greens Corners Solar	Boralex	120 MW	Jefferson County	Solar PV	✓	Q4 2023
Sky High Solar	Boralex	20 MW	Onondaga County	Solar PV	✓	Q1 2023
Baron Winds Phase I	RWE	121 MW	Steuben County	Wind	✓	Q4 2022
Heritage Wind	Apex	198 MW	Orleans County	Wind	✓	Q4 2021
Prattsburgh Wind	Terra-Gen	147 MW	Steuben County	Wind	✓	Q4 2023

Table 4-1. Clean Path New York's Resources summary.

4.2. Alle-Catt Wind

Resource site plan and proposed route to the injection point

Alle-Catt Wind	
Developer	Invenergy
Location	Wyoming, Cattaraugus, and Allegany Counties, NY
Installed capacity	340 MW
Status	Development stage (expected COD: Q3 2024)
Technology	116 onshore wind turbines in four wind turbine models
Land use	45% agricultural land and 45% forested land
Land control	Secured, through lease or option, 37,000 acres across 300 parcels
Interconnection	NYISO Queue position 0569; completed SRIS and Class Year 2019

Table 4-2. Alle-Catt Wind resource summary matrix.

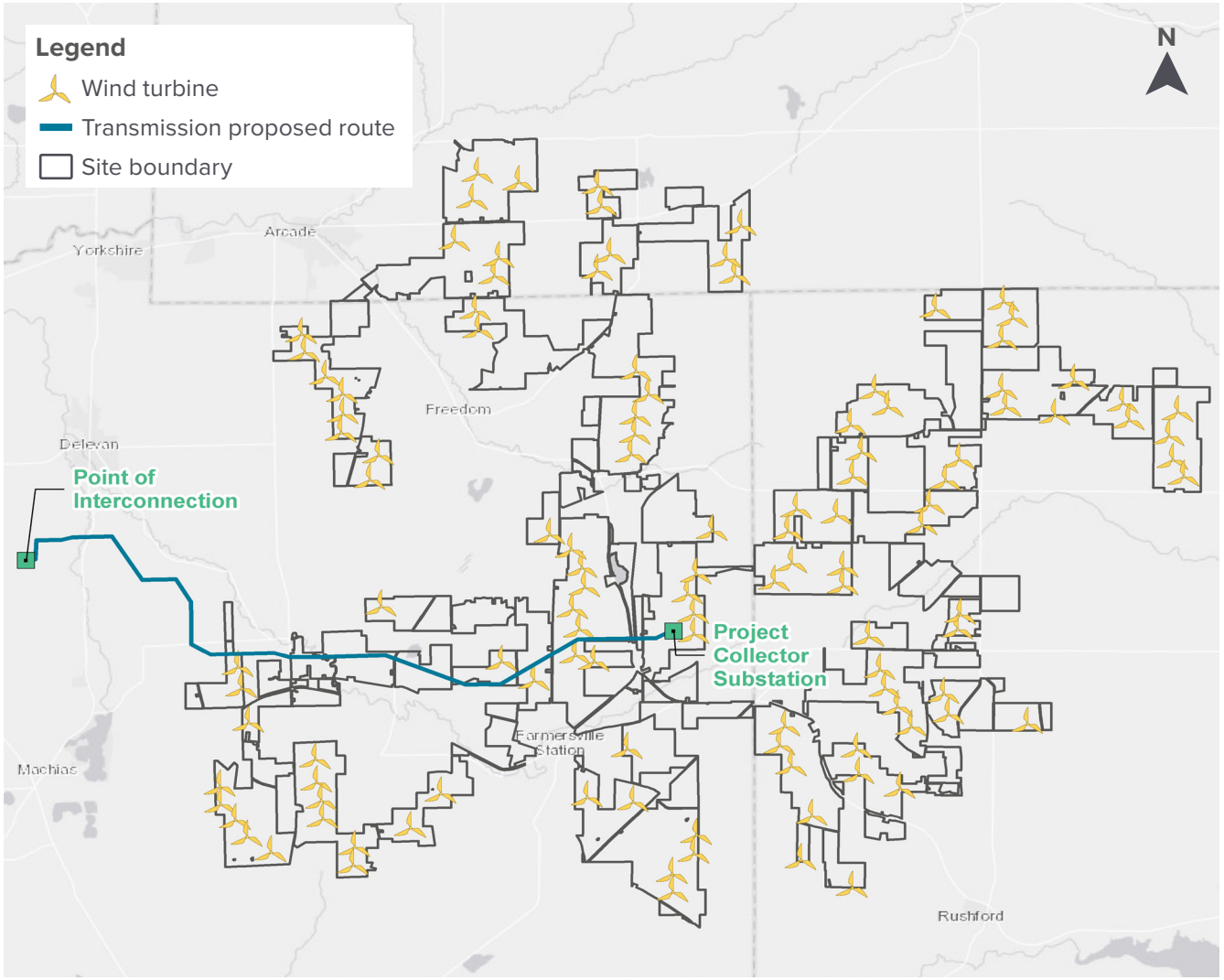


Figure 4-2. Alle-Catt Wind project site plan.

Development status

Alle-Catt Wind is a 340 MW wind project in the development stage. Construction is expected to commence in Q4 2022 with a proposed commercial operation date of Q3 2024. Alle-Catt Wind received its Certificate of Environmental Compatibility and Public Need pursuant to Article 10 of the Public Service Law (Case 17-F-0282) in June 2020 and has submitted its Article VII Application in February 2021 (Case 21-T-0059). Alle-Catt Wind filed an interconnection request with NYISO in January 2017. Its queue position is number 0596. Its system reliability impact study is complete, and it participated in Class Year 2019 and accepted its cost allocation.

Technology and equipment

Alle-Catt Wind has permitted 116 onshore wind turbine locations. It is currently considering at least four wind turbine models and will likely settle on a combination of models to meet siting and project goals. The transmission facility consists of a new 10-mile overhead 345 kV electric transmission line connecting the project's 34.5/345 kV collector substation to a newly built three-breaker ring bus 345 kV switchyard substation. This is the point of interconnection, also referred to as Lime Lake Switchyard. The switchyard will connect to the existing 345 kV overhead line between the Stolle Road and Five Mile Road Substations owned by National Grid.

Local zoning and existing land use

The existing land use for the facility site and the surrounding area is primarily zoned as Agricultural/Rural, with smaller areas zoned Residential, Industrial, and Land Conservation. The facility site is classified as approximately 45% agricultural land and 45% forested land, with the remaining 10% comprised of shrub/scrub, open water, and developed (residential or commercial) areas. The setting is rural, and the site has primarily been used for agriculture. Two existing wind farms are in vicinity of the site.

Site ownership or lease

Alle-Catt Wind has secured, through lease and option, all land required to develop and operate the full 340 MW project over the entire contract tenor. Almost 37,000 acres have been signed across 300 parcels.

Injection point and generator lead line right of way

Alle-Catt Wind has secured, through lease or option, approximately 95% of the lands to host transmission infrastructure including an interconnection point switchyard and a 10-mile transmission line. It is targeting to complete late-stage negotiations with the remaining parcels by Q2 2021. The proposed injection point switchyard (Lime Lake Switchyard) will be located on land to be owned by Alle-Catt Wind and transferred to National Grid following construction. The transmission facility's sole purpose is to operate as a generator lead (or interconnection line) to deliver electricity produced by the project to the National Grid transmission system.

4.3. Horseshoe Solar

Resource site plan and proposed route to the injection point

Horseshoe Solar	
Developer	Invenergy
Location	Livingston County, NY
Capacity	180 MW
Status	Development stage (expected COD: Q4 2023)
Technology	Bifacial panels on single-axis trackers
Land use	77% agricultural land and 20% forested land
Land control	Secured, through lease of option, 4,600 acres across 25 parcels
Interconnection	NYISO Queue position 0710; completed SRIS and entered Class Year 2021
MSG classification	Total panel area of 1,305 acres with 715 acres located within MSG Groups 1-4

Table 4-3. Horseshoe Solar resource summary matrix.

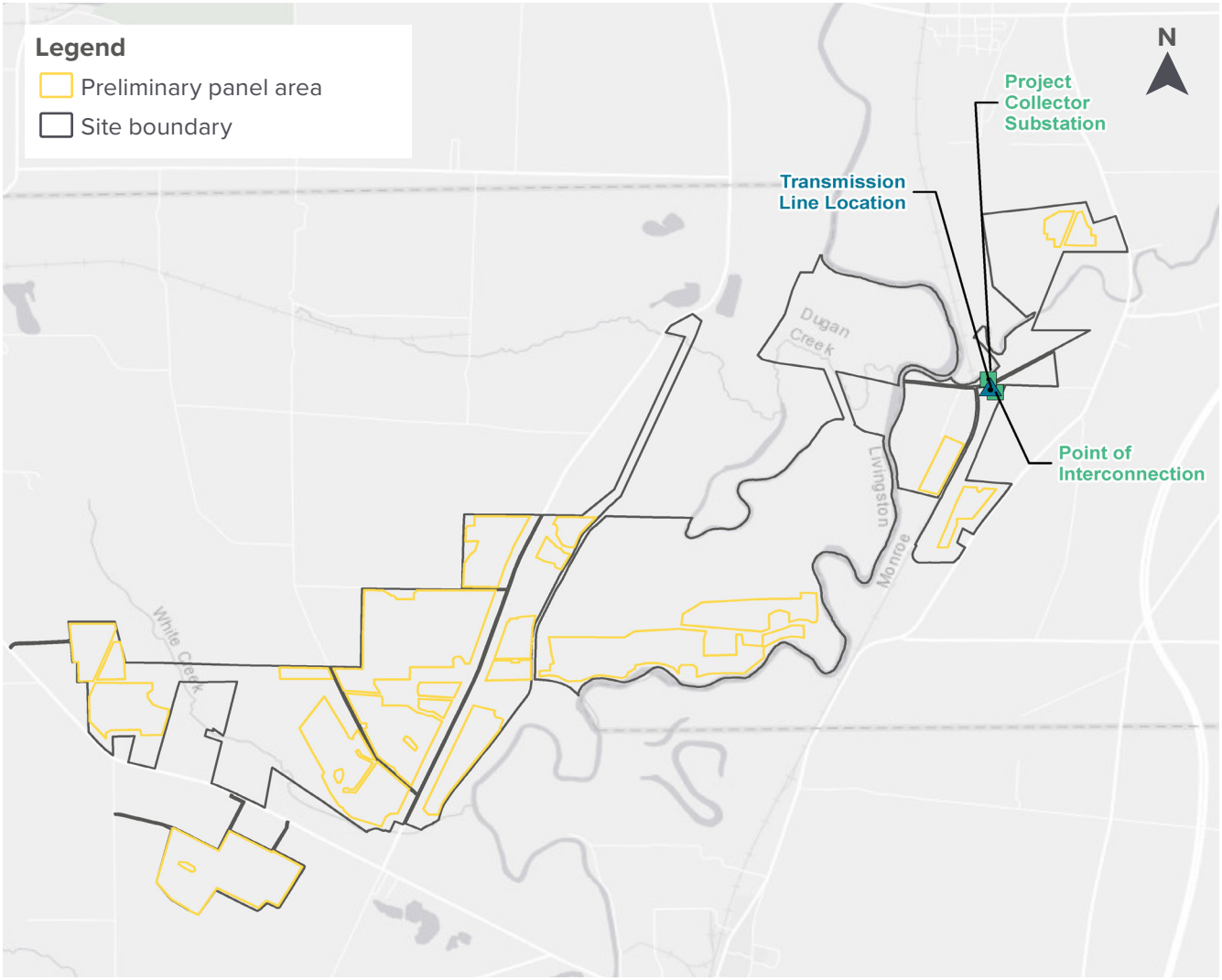


Figure 4-3. Horseshoe Solar project site plan.

Development status

Horseshoe Solar is a 180 MW solar project in the development stage. Construction is expected to commence in Q2 2022, with a proposed commercial operation date of Q4 2023. Horseshoe Solar submitted its Article 10 Application in July 2020 (Case 18-F-0633), which also includes the transmission line and associated facilities, and is anticipating a completeness determination in Q2 2021. Horseshoe filed an interconnection request with NYISO in May 2018. Its queue position is number 0710. Its system reliability study is complete, and it has entered Class Year 2021.

Technology and equipment

Horseshoe Solar is currently proposing to use bifacial solar panels mounted on single-axis trackers. The transmission facility consists of a very short (~400 ft) overhead 115 kV electric transmission line connecting the project's 34.5/115 kV collector substation to National Grid's existing 115 kV Golah Substation.

Local zoning and existing land use

The facility site and surrounding area is primarily zoned agriculture/ rural residence and residential, with smaller areas zoned industrial, land conservation, and commercial. The facility site is classified as approximately 77% agricultural land and 20% forested land, with the remainder comprised of shrub/scrub, open water and developed. The setting is rural, and the site has primarily been used for agriculture. Several stone quarries and one community solar project are near the site.

Ownership or lease

Horseshoe Solar has secured, through lease, easement, or option, all lands proposed to host all required solar facilities and construction areas to develop and operate a 180 MW solar project over the entire contract tenor. Approximately 4,600 acres have been signed across 25 parcels.

Generator lead line right of way

Horseshoe Solar has secured, through option agreements, all lands required to host transmission infrastructure. The ~400 ft transmission line will cross a public road and Horseshoe Solar has purchase options for the property on each side. The proposed injection point is National Grid's existing 115 kV Golah Substation. Horseshoe Solar has a purchase option for the adjacent parcel to provide for the expansion of Golah Substation to construct a new breaker position for its interconnection.

Mineral Soil Group (MSG) classification

The total panel area is approximately 1,305 acres, and 715 acres is located within MSG Groups 1-4. Horseshoe Solar's Tier 1 contract pre-dates NYSERDA's requirement for solar projects constructed on MSG Groups 1-4 to make an agricultural mitigation payment. However, Horseshoe Solar intends to implement co-utilization in the form of solar grazing for vegetation maintenance.

4.4. Number Three Wind

Resource site plan and proposed route to the injection point

Number Three Wind	
Developer	Invenergy
Location	Lewis County, NY
Capacity	104 MW
Status	Construction stage (expected COD: Q3 2022)
Technology	27 on shore wind turbines [22 Vestas (V150-4.2) and 5 GE (GE 2.3-116)]
Land use	62% agricultural land and 27% forested land
Land control	Secured, through lease or option, 10,000 acres across 160 parcels
Interconnection	NYISO Queue position 0531; completed SRIS and participated in Class Year 2019 and accepted its cost allocation

Table 4-4. Number Three Wind resource summary matrix.

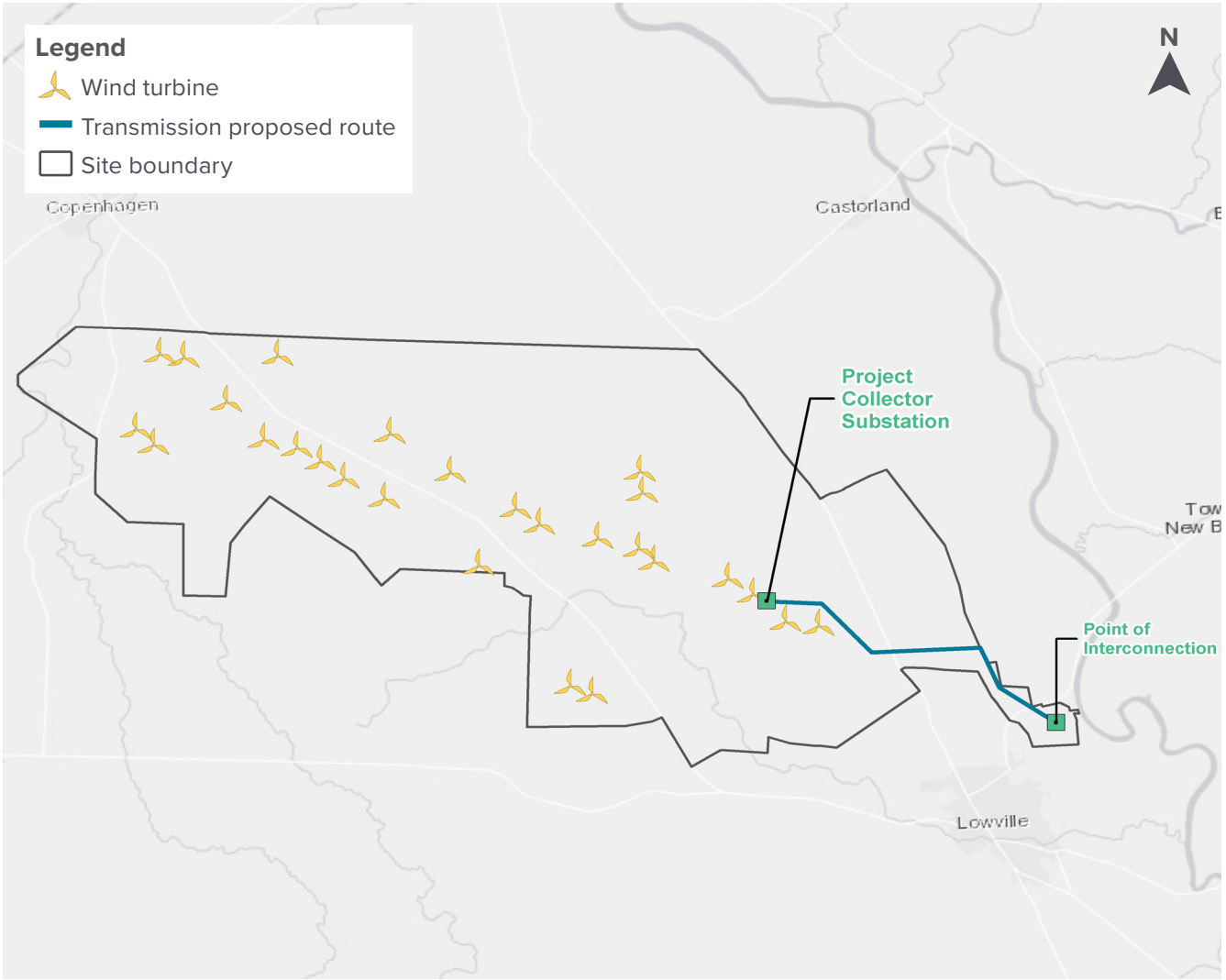


Figure 4-4. Number Three Wind project site plan.

Development status

Number Three Wind is a 104 MW wind project in the construction stage. Tree clearing commenced in March 2021 and full civil construction is anticipated to begin in July 2021, with an anticipated commercial operation date as of Q3 2022. Number Three Wind received its Certificate of Environmental Compatibility and Public Need pursuant to Article 10 of the Public Service Law (Case 16-F-0328) in November 2020, which also included the transmission line and associated facilities. Number Three Wind filed an interconnection request with NYISO in January 2016. Its queue position is number 0531. Its system reliability study is complete, and it participated in Class Year 2019 and accepted its cost allocation.

Technology and equipment

Number Three Wind has permitted 31 onshore wind turbine locations. It has selected a combination of turbines (27 total) as its final build, with 22 turbines being Vestas wind turbines (V150-4.2) and the remaining 5 being GE wind turbines (GE 2.3-116). The transmission facility consists of a new 3.7-mile 115 kV electric transmission line out of which around 1.2 miles is underground connecting the project's 34.5/115 kV collector substation to a newly built 5-breaker ring bus 115 kV switchyard substation. This is the point of interconnection, also referred to as the Waters Road Station. The switchyard will connect to the existing 115 kV overhead lines running between the Taylorville and Boonville Substations owned by National Grid.

Local zoning and existing land use

The Project Area is primarily zoned Agricultural, Residential, and Vacant land. The land cover classification is approximately 62% agricultural land, 27% forested land, with the remaining 11% consisting of scrub/shrub, grasslands, and developed areas. The setting is rural, and the site has primarily been used for agriculture. Two existing wind farms border the site on the west and north.

Ownership or lease

Number Three Wind has secured, through lease or option, all land required to develop and operate the full 104 MW wind project over the entire contract tenor. More than 10,000 acres have been signed across 160 parcels.

Generator lead line right of way

Number Three Wind has secured, through option or agreement, all lands to host transmission infrastructure, including the interconnection switchyard and a 3.7-mile transmission line. The proposed injection point switchyard (Waters Road Station) will be located on land to be owned by Number Three Wind and transferred to National Grid following construction. The transmission facility's sole purpose is to operate as a generator lead (or interconnection line) to deliver electricity produced by the project to the National Grid transmission system.

4.5. Canisteo Wind

Resource site plan and proposed route to the injection point

Canisteo Wind	
Developer	Invenergy
Location	Steuben County, NY
Capacity	250 MW
Status	Development stage (expected COD: Q2 2023)
Technology	117 onshore wind turbines with five turbine models
Land use	48% agricultural land and 42% forested land
Land control	Secured, through lease or option, 95% of lands to host transmission infrastructure
Interconnection	NYISO Queue position 0519; completed SRIS and participated in Class Year 2019 and accepted its cost allocation

Table 4-5. Canisteo Wind resource summary matrix.

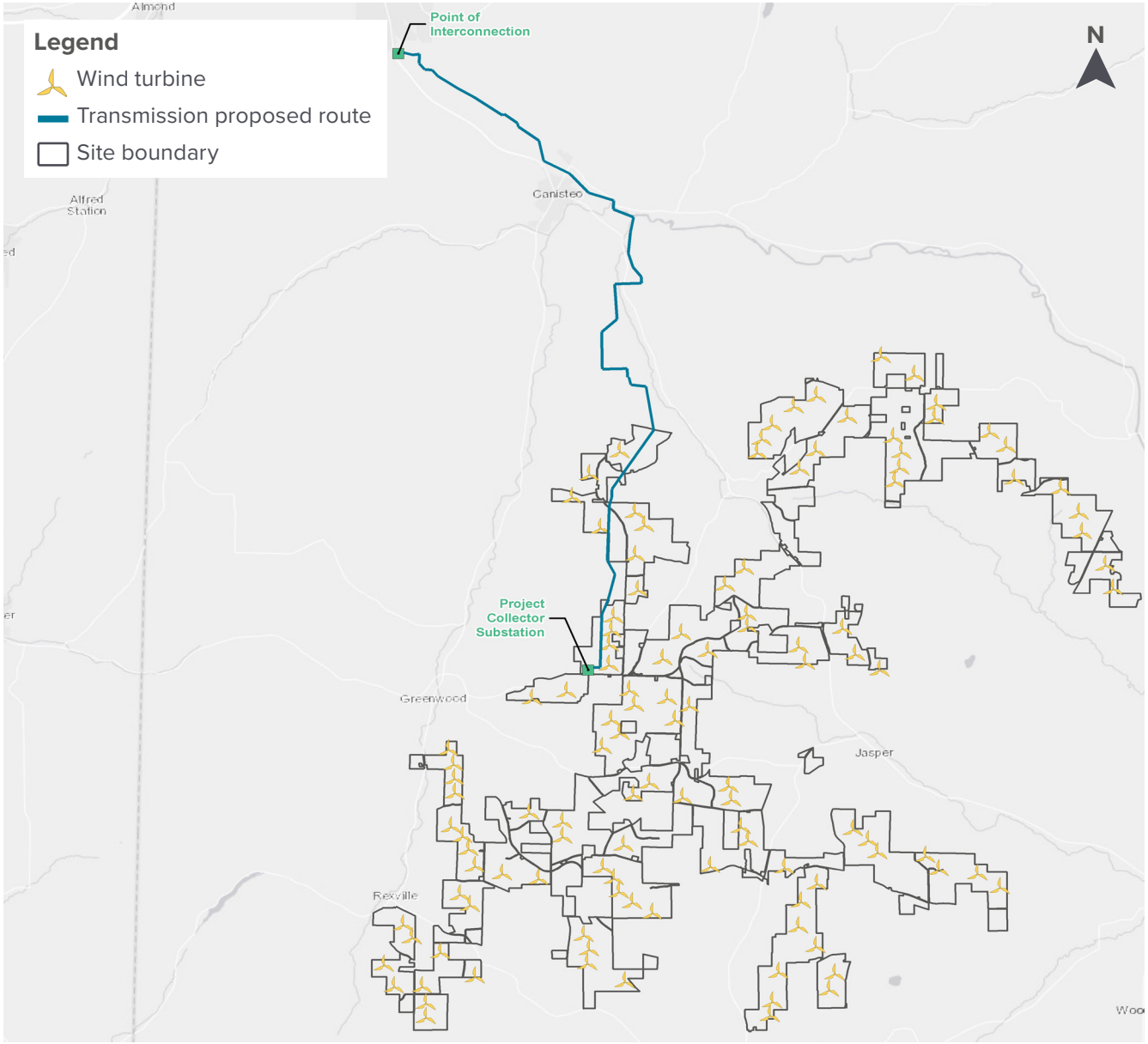


Figure 4-5. Canisteo Wind project site plan.

Development status

Canisteo Wind is a 250 MW wind project in the development stage. Construction is expected to commence in Q1 2022, with a proposed commercial operation date of Q2 2023. Canisteo Wind received its Certificate of Environmental Compatibility and Public Need pursuant to Article 10 of the Public Service Law (Case 16-0772) in March 2020 and had its Article VII Application (Case 19-T-0041) deemed compliant November 2019. Canisteo Wind filed an interconnection request with NYISO in October 2015. Its queue position is number 0519. Its System Reliability Impact Study (SRIS) is complete, and it participated in Class Year 2019 and accepted its cost allocation.

Technology and equipment

Canisteo Wind has permitted 117 onshore wind turbine locations. It is currently considering at least 5 wind turbine models and will likely settle on a combination of models to meet siting and project goals. The transmission facility consists of a new 14.6 mile overhead 115 kV transmission line connected to the project's 34.5 /115 kV collector substation to the existing Bennett Substation owned by NYSEG.

Local zoning and existing land use

The facility site and surrounding area is primarily zoned residential, agricultural, and vacant. The land cover classification is approximately 48% open land (crop, pasture, successional fields) and 42% forested land, with the remainder consisting of scrub/shrub and developed areas. The setting is rural and the site has primarily been used for agriculture. Three existing wind projects are within the vicinity of the site, including Invenergy's own Marsh Hill wind project operates within the site footprint.

Ownership or lease

Canisteo Wind has secured, through lease or option, all land required to develop and operate the full 290.7 MW wind project over the entire Contract Tenor. Over 38,000 acres have been signed across approximately 480 parcels.

Generator lead line right of way

Canisteo Wind has secured, through option or agreement, approximately 95% of the lands to host transmission infrastructure, including a 14.6-mile transmission line. It is targeting to complete late-stage negotiations with the remaining parcels by Q2 2021. The proposed injection point switchyard (Bennett Substation) is owned by NYSEG. The transmission facility's sole purpose is to operate as a generator lead (or interconnection line) to deliver electricity produced by the project to the transmission system.

4.6. Bull Run Wind

Resource site plan and proposed route to the injection point

Bull Run Wind	
Developer	Invenergy
Location	Clinton County, NY
Capacity	449 MW
Status	Development stage (expected COD: Q3 2024)
Technology	139 onshore wind turbines with models ranging from 2.3-5.6 MW
Land use	65% forested land and 19% agricultural land
Land control	Secured, through lease or option, 33,000 acres across 240 parcels
Interconnection	NYISO Queue position 0497 and 0521; completed SRIS and participated for both queue positions and it has entered 0521 into Class Year 2021

Table 4-6. Bull Run Wind resource summary matrix.

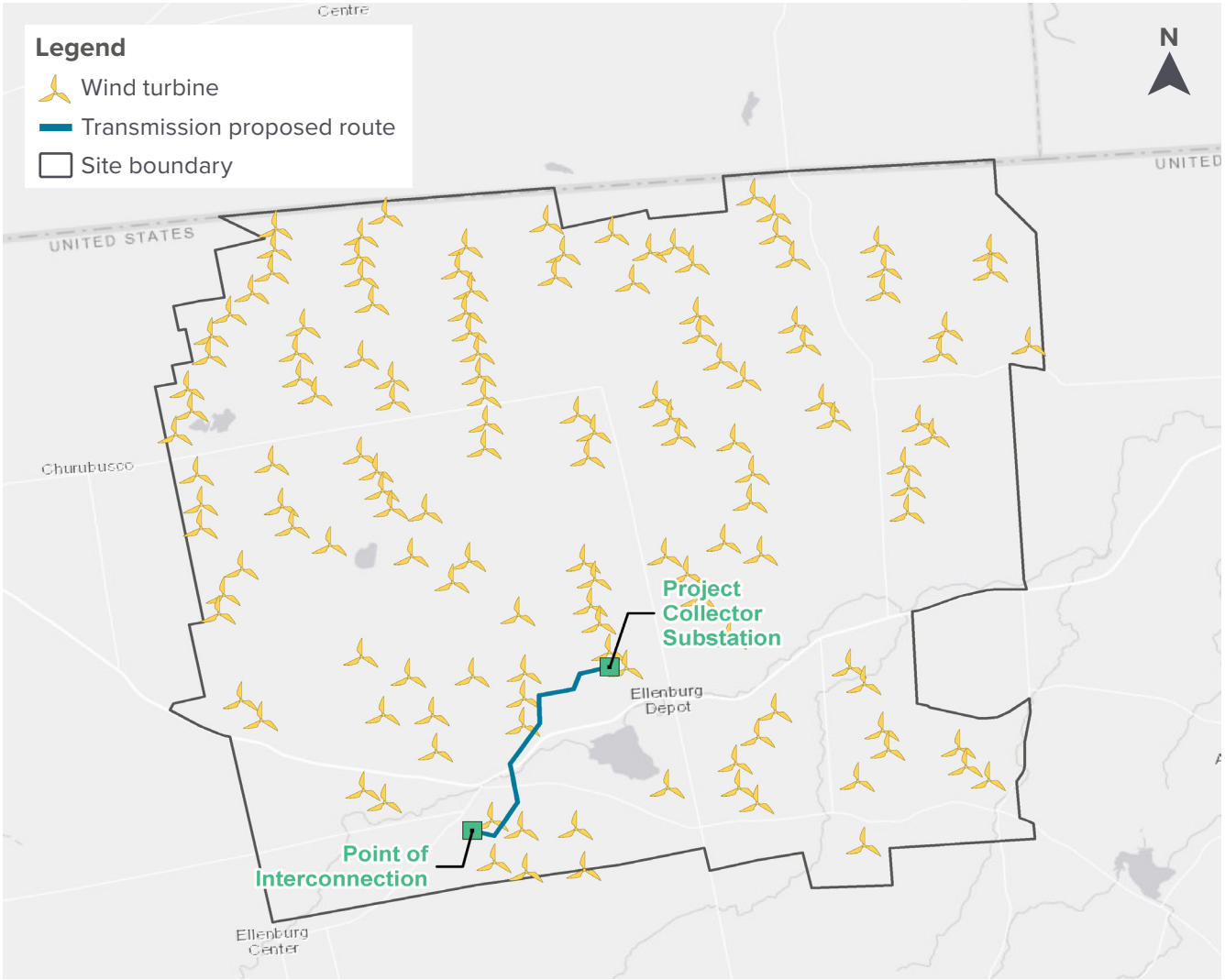


Figure 4-6. Bull Run Wind project site plan.

Development status

Bull Run Wind Energy is a 449 MW wind project in the development stage. Construction is expected to commence in Q4 2022, with a proposed commercial operation date of Q3 2024. Bull Run Wind submitted its application for a Certificate of Environmental Compatibility and Public Need pursuant to Article 10 of the Public Service Law (Case 15-F-0377) in August 2019. Bull Run Wind filed two interconnection requests with NYISO in April 2015 and December 2015. Its queue position numbers are 0497 and 0521. Its system reliability studies are complete for both queue positions and it has entered 0521 (for the full 449 MW) into Class Year 2021.

Technology and equipment

Bull Run Wind Energy is applying to permit up to 139 onshore wind turbine locations and is considering turbine models ranging from 2.3-5.6 MW to meet siting and project goals. The transmission facility consists of a 3.3 mile overhead 230 kV electric transmission line connecting the project's 34.5/230 kV collector substation to a newly built switching station, which will connect to the existing NYPA Patnode-Duley 230 kV and Ryan-Plattsburgh 230kV lines.

Local zoning and existing land use

The facility site and surrounding area is primarily zoned residential, agricultural, and vacant. The land cover classification is approximately 65% forested land and 19% agricultural land, with the remaining 16% consisting of wetlands, scrub/shrub, grasslands, and developed areas. The setting is rural, and the site has primarily been used for agriculture, logging, and recreational purposes. Six existing wind projects are within 10 miles of the site, while one directly borders the project to the west. There are also two existing community scale solar projects within the vicinity of the site.

Ownership or lease

Bull Run Wind Energy has secured, through lease or option, nearly all land required to develop and operate the full 449 MW wind project. Almost 33,000 acres have been signed across approximately 240 parcels.

Generator lead line right of way

Bull Run Wind Energy has secured, through option or agreement, all lands to host transmission infrastructure, including an interconnection point switchyard and a 3.3-mile transmission line. The Proposed injection point switchyard will be located on land to be owned by Bull Run Wind and transferred to NYPA following construction. The transmission facility's sole purpose is to operate as a generator lead (or interconnection line) to delivery electricity produced by the Project to the transmission system.

4.7. Verona Solar

Resource site plan and proposed route to the injection point

Verona Solar	
Developer	Invenergy
Location	Oneida County, NY
Capacity	350 MW
Status	Development stage (expected COD: Q4 2024)
Technology	Bifacial panels on single-axis trackers
Land use	56% agricultural land, 22% forested land, and 16% wetlands
Land control	[redacted]
Interconnection	NYISO Queue position 0871 and 0873; its feasibility study is complete, and it expects to enter Class Year 2022
MSG classification	50% (~740 acres) of the preliminary panel area is classified within MSG soil groups 1-4

Table 4-7. Verona Solar resource summary matrix.

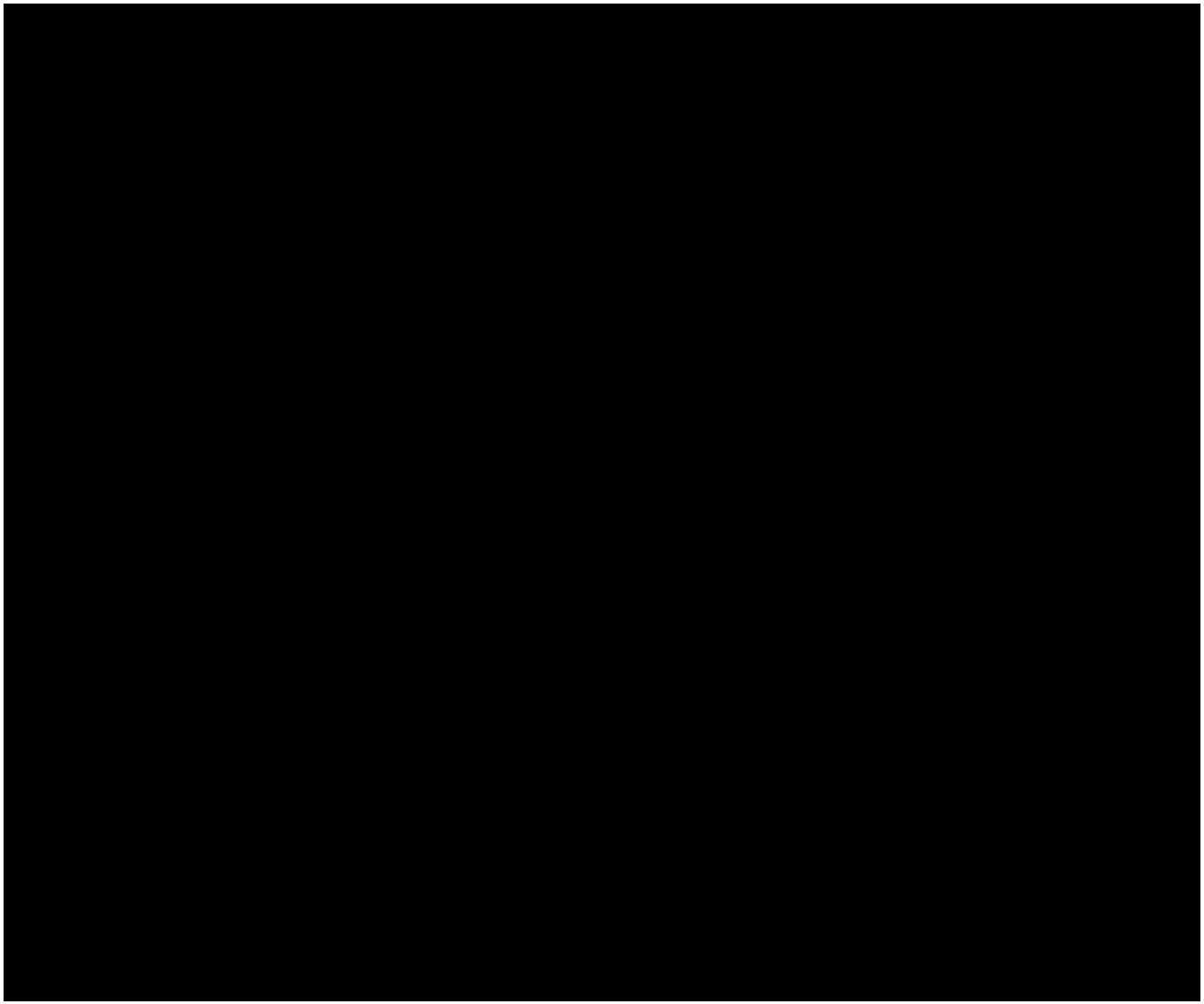


Figure 4-7. Verona Solar project site plan.

Development status

Verona Solar is a 350 MW solar project in the development stage. Construction is expected to commence in Q2 2023, with a proposed commercial operation date of Q4 2024. Verona Solar submitted its Public Involvement Program Plan Q1 2020 pursuant to Article 10 of the Public Service Law (Case 19-F-0777) and continues to consult with Project stakeholders. Verona Solar anticipates transitioning into the new 94c process and submitting a Project Application in late 2021. [redacted] Verona Solar filed two interconnection requests with NYISO in June 2019. Its queue positions are numbers 0871 and 0873. Its feasibility study is complete, and it expects to enter Class Year 2022.

Technology and equipment

Verona Solar will likely propose bifacial panels on single-axis trackers, but this may change depending on PV technology available at later stages of development. Verona Solar is planning to connect to NYPA's existing Edic to Clay 345 kV line via a newly built switchyard. The 34.5/345 kV collector substation is expected to be adjacent to the point of interconnection, resulting in a very short transmission line.

Local zoning and existing land use

The Project Area is primarily zoned as rural development. The Project Area's land cover classification consists primarily of agricultural land (56%), forested areas (22%), and wetlands (16%). The remaining 6% consists of scrub/shrub, grasslands, and developed areas. Verona Solar is at a relatively early development stage and may refine the Project Area as development progresses. The setting is rural, and the site has primarily been used for agriculture.

Ownership or lease

[redacted]

Generator lead line right of way

[redacted]

Mineral Soil Group (MSG) classification

Approximately 50% (~740 acres) of the preliminary panel area is classified within MSG soil groups 1-4. Verona Solar is currently in early development stages and anticipates panel areas may change as development progresses. Verona Solar will continue considering mineral soil groups and agricultural districts when designing and selecting final locations for Project facilities.

4.8. Twinleaf Solar

Resource site plan and proposed route to the injection point

Twinleaf Solar	
Developer	Invenergy
Location	Lewis County, NY
Capacity	75 MW
Status	Early development stage (expected COD: Q4 2024)
Technology	Bifacial panels on single-axis trackers
Land use	[redacted]
Land control	Negotiating land agreements, secured 1,200 acres across 10 parcels
Interconnection	NYISO Queue position 1141 filed in March 2021
MSG classification	40% (~115 acres) of the preliminary panel area is classified within MSG soil groups 1-4

Table 4-8. Twinleaf Solar resource summary matrix.

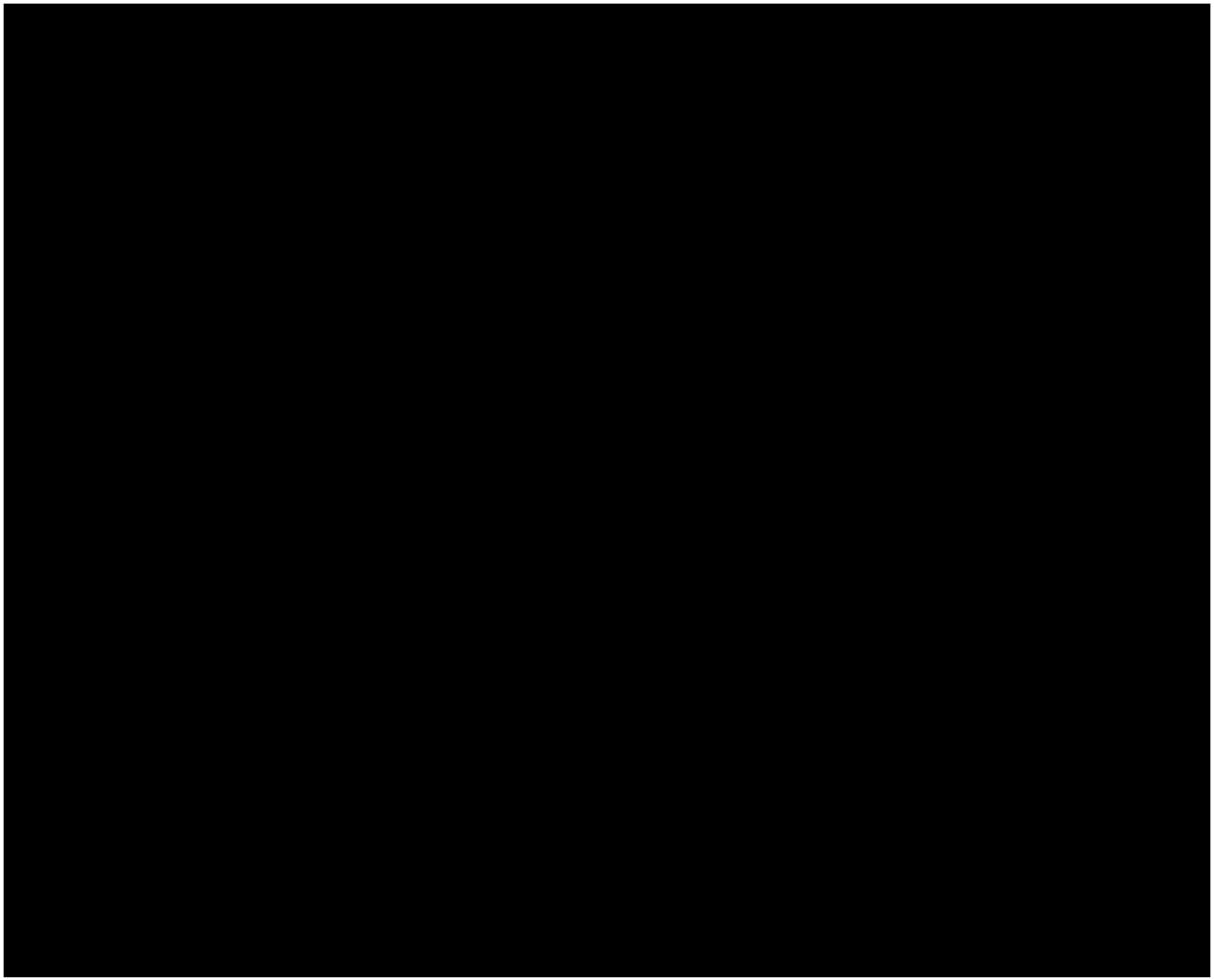


Figure 4-8. Twinleaf Solar project site plan.

Development status

Twinleaf Solar is a 75 MW solar project in the early development stages and is undertaking studies to prepare for the submission of an Application under the 94c process in 2022. Construction is expected to commence in Q4 2023 with a proposed commercial operations date of Q4 2024. Twinleaf filed an interconnection request with NYISO in March 2021. Its queue position is number 1141.

Technology and equipment

Twinleaf Solar will likely propose bifacial panels on single-axis trackers, but this may change depending on PV and racking technology available at later stages of development. Twinleaf Solar is planning to connect to National Grid's Coffeen St. - Taylorville 115 kV line via a newly built switchyard. The 34.5/115 kV collector substation is expected to be adjacent to the point of interconnection, resulting in a very short transmission line.

Local zoning and existing land use

The Project Area is not zoned. The Project Area's land cover classification consists primarily of forested areas (59%), agricultural land (24%), and wetlands (8%). The remaining 9% consists of scrub/shrub, grasslands, open water, and developed areas. Twinleaf Solar is at a relatively early development stage and may refine the Project Area as development progresses. The setting is rural, and the site has primarily been used for agriculture.

Ownership or lease

[redacted]

Generator lead line right of way

[redacted]

Mineral Soil Group (MSG) classification

Twinleaf Solar is currently in early development stages and anticipates panel areas may change as development progresses. Twinleaf Solar will continue considering mineral soil groups and agricultural districts when designing and selecting final locations for Project facilities. Approximately 40% (~115 acres) of the preliminary panel area is classified within MSG soil groups 1-4.

4.9. Taproot Solar

Resource site plan and proposed route to the injection point

Taproot Solar	
Developer	Invenergy
Location	Montgomery County, NY
Capacity	205 MW
Status	Early development stage (expected COD: Q4 2025)
Technology	Bifacial panels on single-axis trackers
Land use	61% agricultural land, 25% forested land, and 8% wetlands
Land control	[redacted]
Interconnection	NYISO Queue position 1140 filed in March 2021
MSG classification	12% (~180 acres) of the preliminary panel area is classified within MSG soil groups 1-4

Table 4-9. Taproot Solar resource summary matrix.

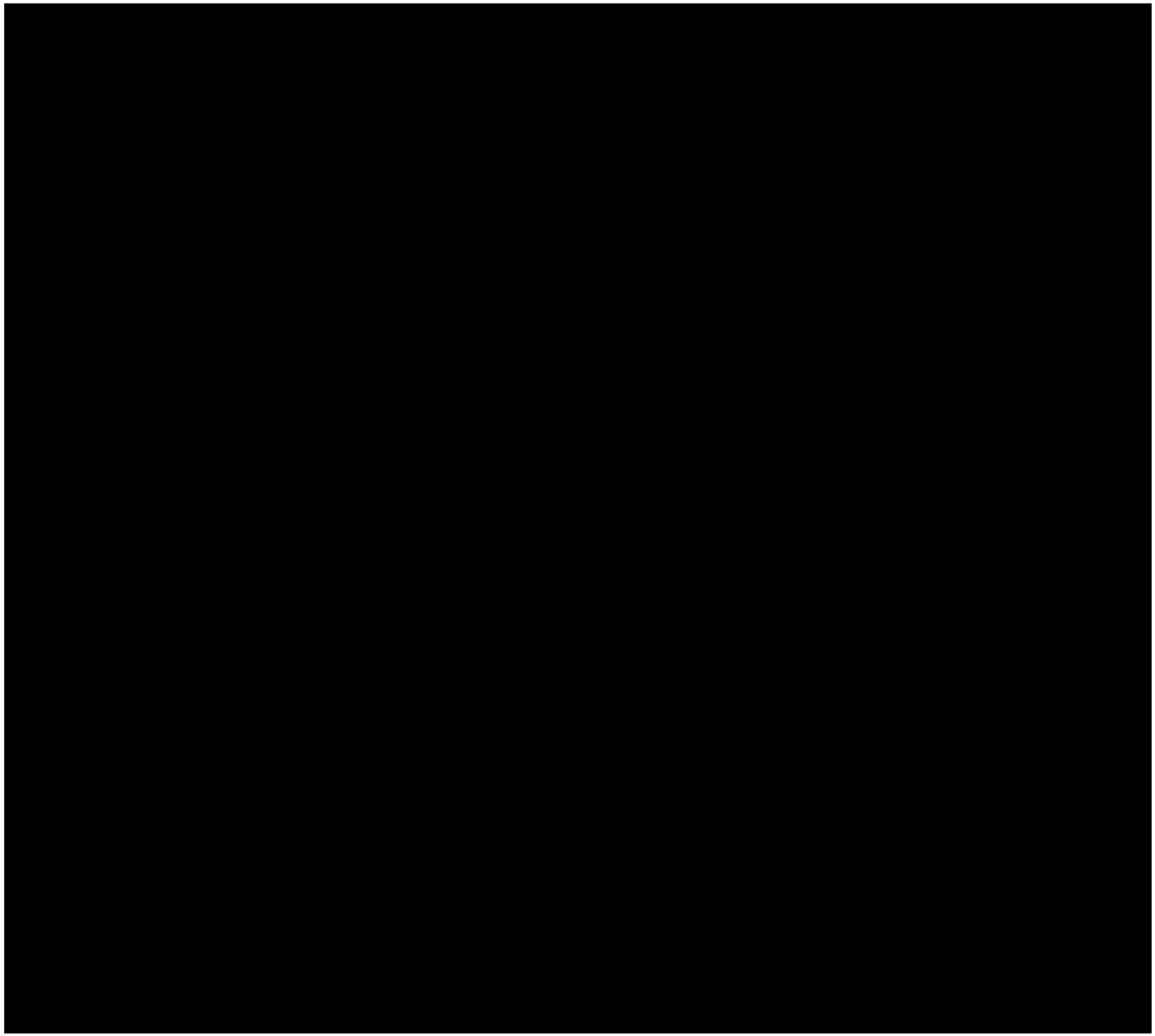


Figure 4-9. Taproot Solar project site plan.

Development status

Taproot Solar is a 205 MW solar project in the early development stages and is undertaking studies to prepare for the submission of an Application under the 94c process in 2022. Construction is expected to commence in Q2 2024 with a commercial operations date of Q4 2025. Taproot filed an interconnection request with NYISO in March 2021. Its queue position is number 1140.

Technology and equipment

Taproot will likely propose bifacial panels on single-axis trackers, but this may change depending on PV technology available at later stages of development. Taproot Solar is proposing to interconnect to National Grid's existing Edic - New Scotland 345 kV line via a newly built switchyard. The 34.5/345 kV collector substation is expected to be adjacent to the point of interconnection, resulting in a very short transmission line.

Local zoning and existing land use

The Project Area is primarily zoned as agricultural/rural residential. The Project Area's land cover classification consists primarily of agricultural land (61%), forested areas (25%), and wetlands (8%). The remaining 6% consists of scrub/shrub, grasslands, and developed areas. Taproot is at a relatively early development stage and will refine the Project Area as development progresses. The setting is rural, and the site has primarily been used for agriculture. One other solar project is near the Project Area.

Ownership or lease

[redacted]

Generator lead line right of way

[redacted]

Mineral Soil Group (MSG) classification

Taproot is currently in early development stages and anticipates panel areas may change as development progresses. Taproot will continue considering mineral soil groups and agricultural districts when designing and selecting final locations for Project facilities. Approximately 12% (~180 acres) of the preliminary panel area is classified within MSG soil groups 1-4.

4.10. Wintergreen Solar

Resource site plan and proposed route to the injection point

Wintergreen Solar	
Developer	Invenergy
Location	Montgomery County, NY
Capacity	75 MW
Status	Early development stage (expected COD: Q3 2025)
Technology	Bifacial panels on single-axis trackers
Land use	60% agricultural land, 25% forested land, and 9% wetlands
Land control	[redacted]
Interconnection	NYISO Queue position 1138 filed in February 2021
MSG classification	17% (~140 acres) of the preliminary panel area is classified within MSG soil groups 1-4

Table 4-10. Wintergreen Solar resource summary matrix.

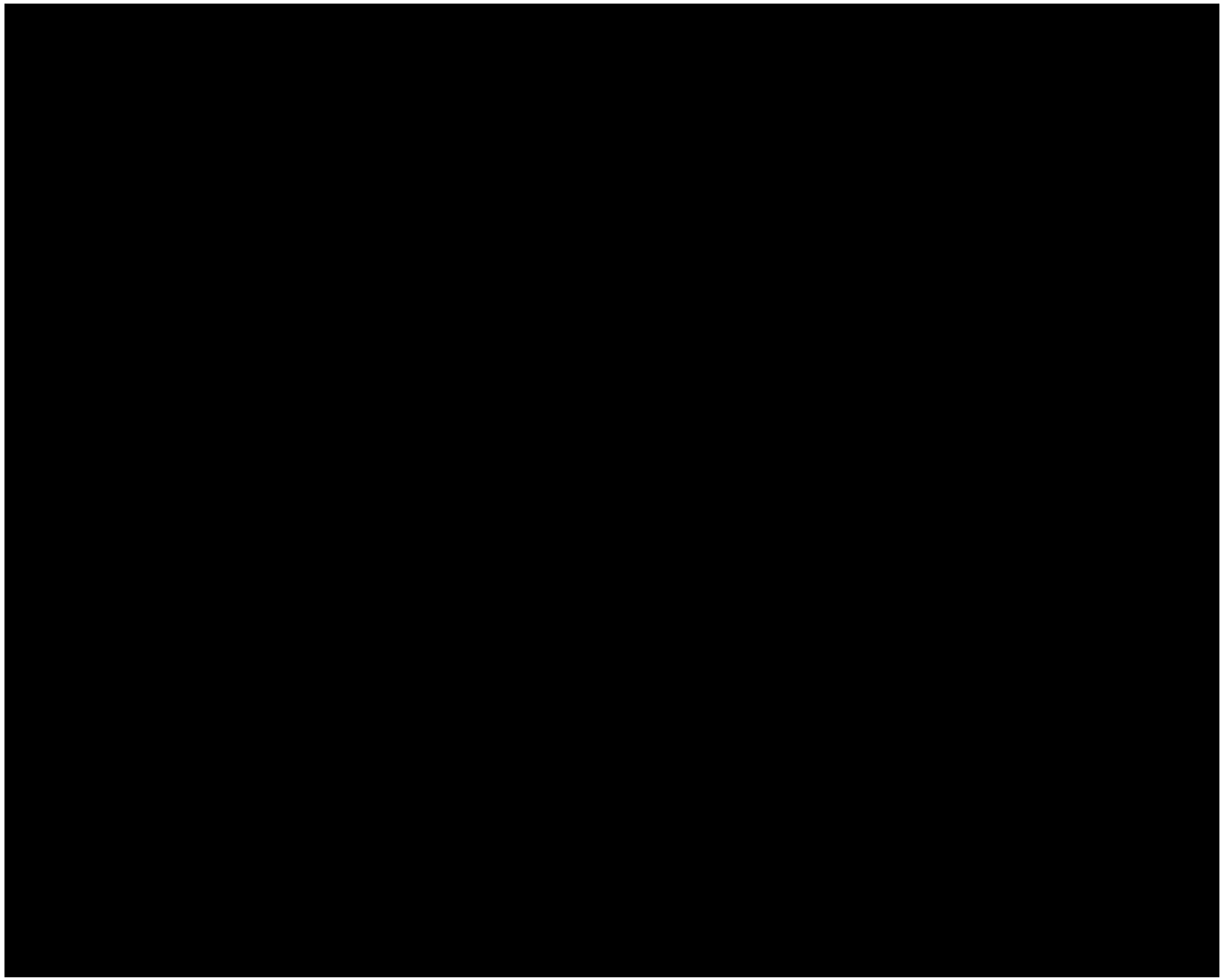


Figure 4-10. Wintergreen Solar project site plan.

Development status

Wintergreen Solar is a 75 MW solar project in the early development stages and is undertaking studies to prepare for the submission of an Application under the 94c process in 2022. Construction is expected to commence in Q4 2024 with a commercial operations date of Q3 2025. Wintergreen filed an interconnection request with NYISO in February 2021. Its queue position is number 1138.

Technology and equipment

Wintergreen Solar will likely propose bifacial panels on single-axis trackers, but this may change depending on PV technology available at later stages of development. Wintergreen Solar is currently considering the existing Marshville 115 kV substation as the point of interconnection. The 34.5/115 kV collector substation is expected to be adjacent to the point of interconnection, resulting in a very short transmission line.

Local zoning and existing land use

The Project Area is primarily zoned as rural residential. The Project Area's land cover classification consists primarily of agricultural land (60%), forested areas (25%), and wetlands (9%). The remaining 5% consists of scrub/shrub and developed areas. Wintergreen is at a relatively early development stage and may refine the Project Area as development progresses. The setting is rural, and the site has been primarily used for agriculture. One other solar project is near the Project Area.

Ownership or lease

[redacted]

Generator lead line right of way

[redacted]

Mineral Soil Group (MSG) classification

Wintergreen is currently in early development stages and anticipates panel areas may change as development progresses. Wintergreen will continue considering mineral soil groups and agricultural districts when designing and selecting final locations for Project facilities. Approximately 17% (~140 acres) of the preliminary panel area is classified within MSG soil groups 1-4.

4.11. Orangeville Solar

Resource site plan and proposed route to the injection point

Orangeville Solar	
Developer	Invenergy
Location	Wyoming County, NY
Capacity	75 MW
Status	Early development stage (expected COD: Q3 2025)
Technology	Bifacial panels on single-axis trackers
Land use	58% agricultural land, 32% forested land, and 5% developed
Land control	[redacted]
Interconnection	NYISO Queue position 1137 filed in February 2021
MSG classification	47% (~470 acres) of the preliminary panel area is classified within MSG soil groups 1-4

Table 4-11. Orangeville Solar resource summary matrix.

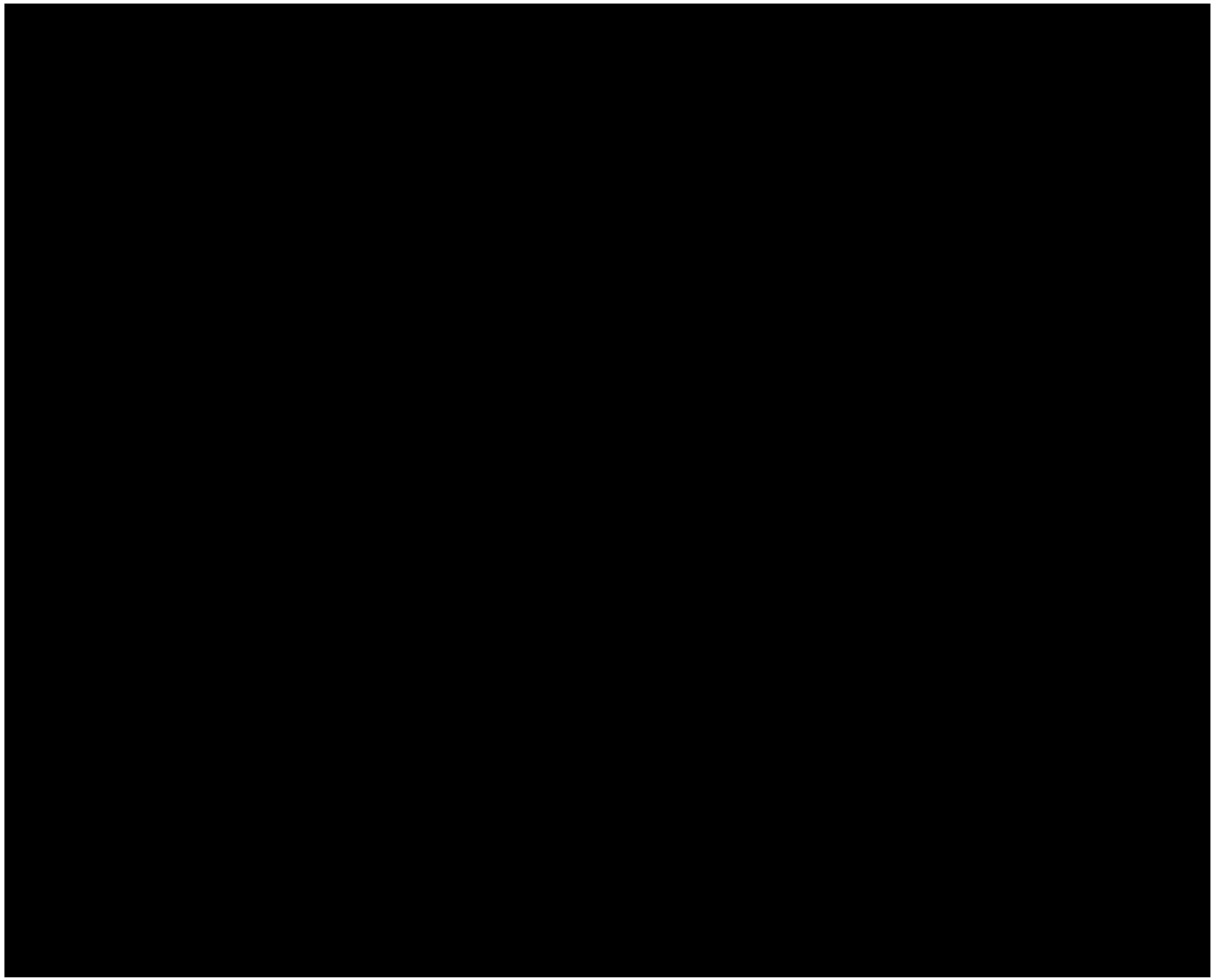


Figure 4-11. Orangeville Solar project site plan.

Development status

Orangeville Solar is a 75 MW solar project is in the early development stages and is undertaking studies to prepare for the submission of an Application under the 94c process in 2022. Construction is expected to commence in Q3 2024 with a commercial operations date of Q3 2025. Orangeville filed an interconnection request with NYISO in February 2021. Its queue position is number 1137.

Technology and equipment

Orangeville Solar will likely propose bifacial panels on single-axis trackers, but this may change depending on PV technology available at later stages of development. Orangeville Solar is currently considering the Orangeville 230 kV substation and the Wethersfield 230 kV substation as potential points of interconnection. The 34.5/230 kV collector substation is expected to be adjacent to the selected point of interconnection, resulting in a very short transmission line.

Local zoning and existing land use

The Project Area is primarily zoned as agricultural. The Project Area's land cover classification consists primarily of agricultural land (58%), forested areas (32%), and developed areas (5%). The remaining 5% consists of wetlands and shrub/scrub. Orangeville Solar is at a relatively early development stage and may refine the Project Area as development progresses. Invenergy's Orangeville Wind project is within the vicinity of the Orangeville Solar Project.

Ownership or lease

[redacted]

Generator lead line right of way

[redacted]

Mineral Soil Group (MSG) classification

Orangeville Solar is currently in early development stages and anticipates panel areas may change as development progresses. Orangeville solar will continue considering mineral soil groups and agricultural districts when designing and selecting final locations for Project facilities. Approximately 47% (~470 acres) of the preliminary panel area is classified within MSG soil groups 1-4.

4.12. Seventy Seven Solar

Resource site plan and proposed route to the injection point

Seventy Seven Solar	
Developer	Invenergy
Location	Wyoming County, NY
Capacity	100 MW
Status	Early development stage (expected COD: Q4 2024)
Technology	Bifacial panels on single-axis trackers
Land use	66% agricultural land, 26.5% forested land, and 5% developed
Land control	[redacted]
Interconnection	NYISO Queue position 1139 filed in February 2021
MSG classification	32% (~430 acres) of the preliminary panel area is classified within MSG soil groups 1-4

Table 4-12. Seventy Seven Solar resource summary matrix.

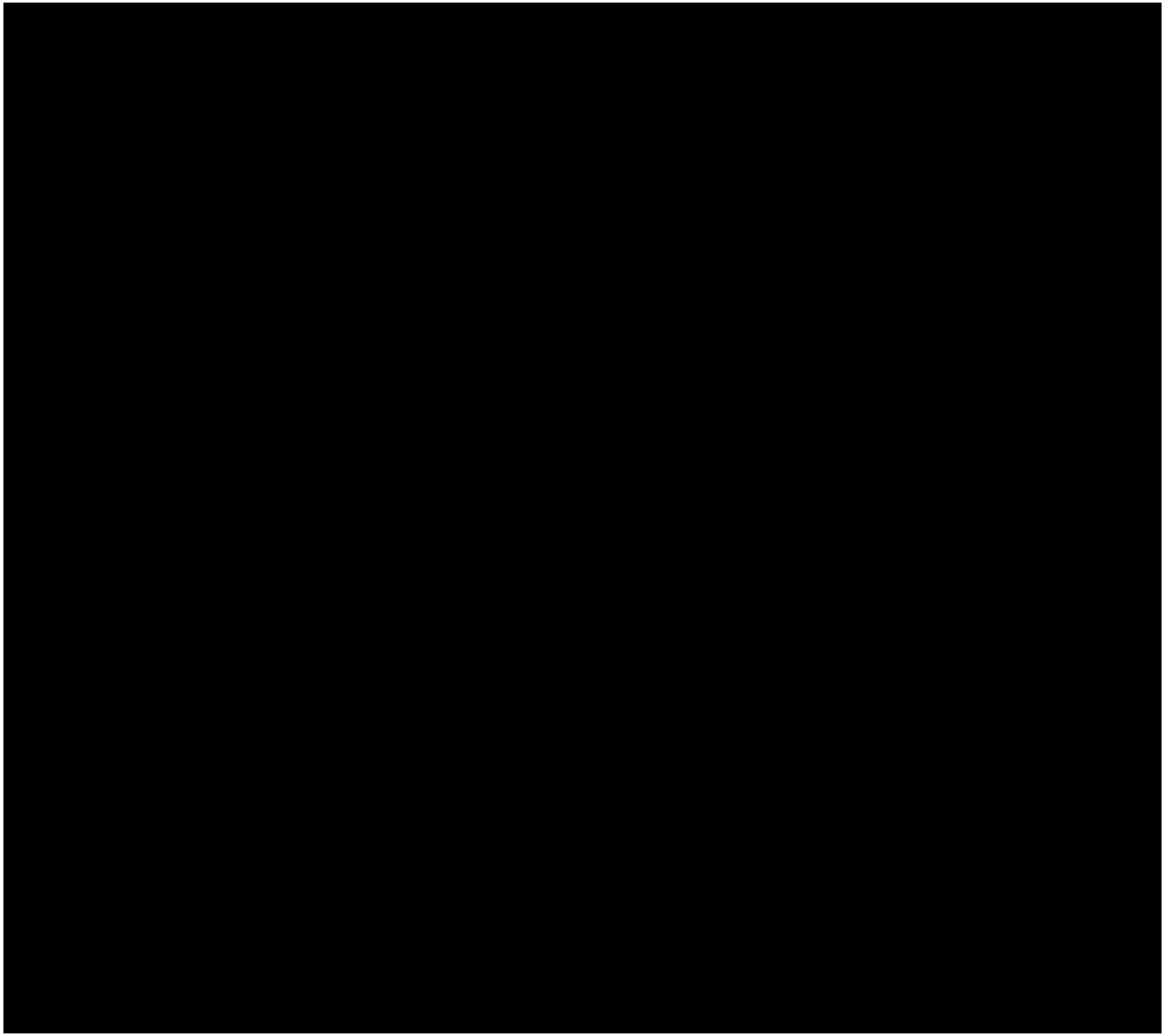


Figure 4-12. Seventy Seven Solar project site plan.

Development status

Seventy Seven Solar is a 100 MW solar project in the early development stages, and is undertaking studies to prepare for the submission of an Application under the 94c process Q4 2021. Construction is expected to commence in Q3 2023 with a commercial operations date of Q4 2024. Seventy Seven filed an interconnection request with NYISO in February 2021. Its queue position is number 1139.

Technology and equipment

Seventy Seven Solar will likely propose bifacial panels on single-axis trackers, but this may change depending on PV technology available at later stages of development. Seventy Seven Solar is proposing the Stony Creek 230 kV substation as the point of interconnection. The 34.5/230 kV collector substation is expected to be adjacent to the point of interconnection, resulting in a very short transmission line.

Local zoning and existing land use

The Project Area is primarily zoned as agricultural. The Project Area's land cover classification consists primarily of agricultural land (66%), forested areas (26.5%), and developed areas (5%). The remaining 2.5% consists of wetlands and shrub/scrub. Seventy Seven Solar is at a relatively early development stage and may refine the Project Area as development progresses. Invenergy's Sheldon Wind project is within the vicinity of the proposed Seventy Seven Solar project.

Ownership or lease

[redacted]

Generator lead line right of way

[redacted]

Mineral Soil Group (MSG) classification

Seventy Seven Solar is currently in early development stages, and anticipates panel areas may change as development progresses. 77 Solar will continue considering mineral soil groups and agricultural districts when designing and selecting final locations for Project facilities. Approximately 32% (~430 acres) of the preliminary panel area is classified within MSG soil groups 1-4.

4.13. Bull Run Solar

Resource site plan and proposed route to the injection point

Bull Run Solar	
Developer	Invenergy
Location	Clinton County, NY
Capacity	170 MW
Status	Development stage (expected COD: Q3 2025)
Technology	Bifacial panels on single-axis trackers
Land use	44% agricultural land, 38% forested land, and 14% wetlands
Land control	[redacted]
Interconnection	NYISO Queue position 0686 filed in January 2018 and have completed the SRIS and currently undertaking the Facilities Study
MSG classification	52% (~290 acres) of the preliminary panel area is classified within MSG soil groups 1-4

Table 4-13. Bull Run Solar resource summary matrix.

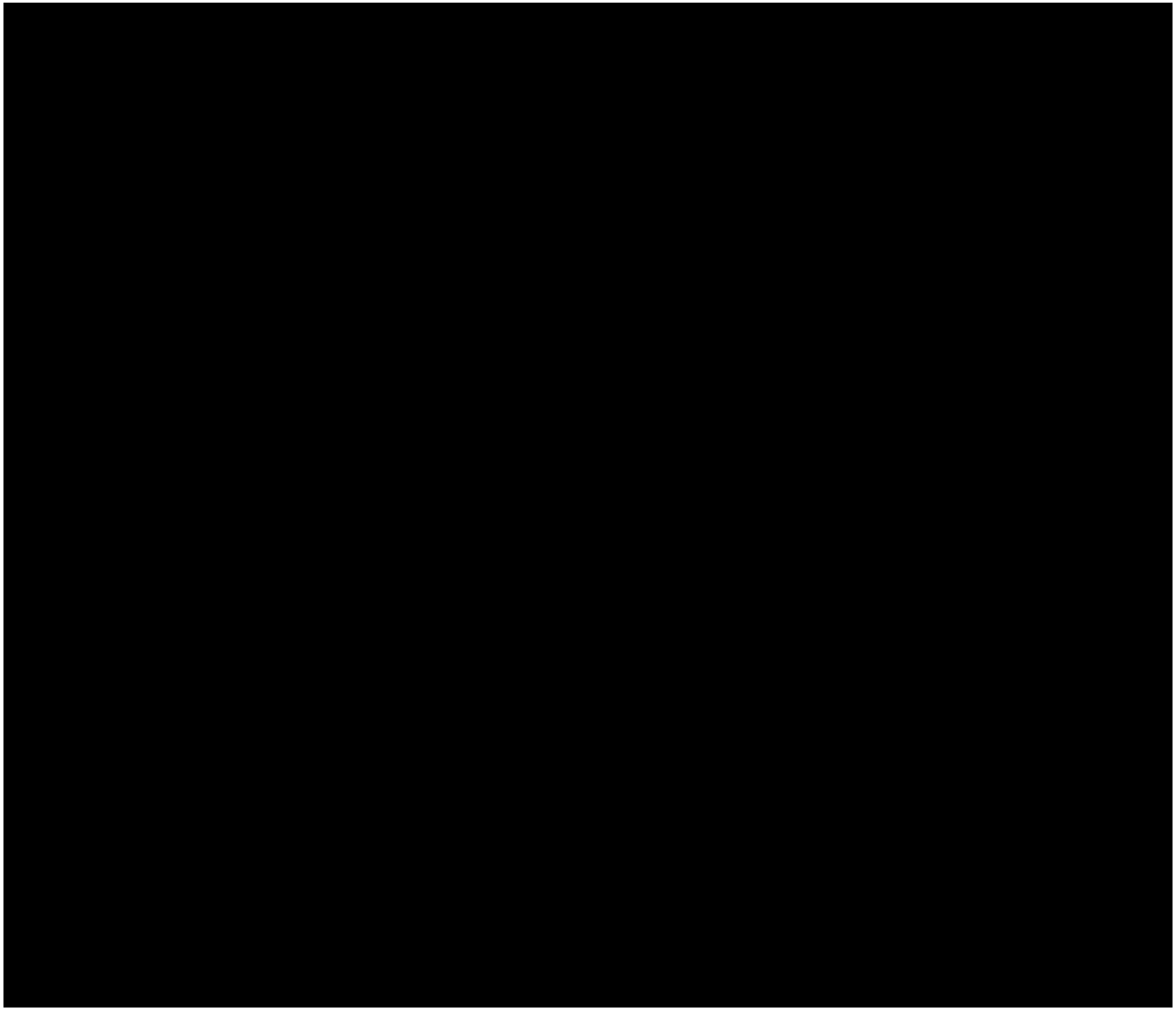


Figure 4-13. Bull Run Solar project site plan.

Development status

Bull Run Solar is an up to 170 MW solar project in the development stage, although its capacity may be reduced to 75 MW depending on final turbine selection and design of Bull Run Wind. Construction is expected to commence in Q4 2024, with a proposed commercial operation date of Q3 2025. Bull Run Solar submitted its Public Involvement Program Plan in May 2018 pursuant to Article 10 (Case 18-F-0189) and continues to consult with Project stakeholders. Bull Run Solar anticipates submitting a Project Application under the 94c process in 2022. Bull Run Solar filed an interconnection request with NYISO in January 2018. Its queue position is number 0686.

Technology and equipment

Bull Run Solar will likely propose bifacial panels on single-axis trackers, but this may change depending on PV technology available at later stages of development. Bull Run Solar is proposing NYPA's Patnode – Duley 230 kV line as the point of interconnection. This is part of the point of interconnection that is proposed for Bull Run Wind and it is anticipated that Bull Run Solar would tie into the same switchyard.

Local zoning and existing land use

The Project Area is primarily zoned residential, agricultural, and vacant. The Project Area's land cover classification consists primarily of agricultural land (44%), forested areas (38%), and wetlands (14%). Bull Run Solar is at an early development stage and may refine the Project Area as development progresses. The setting is rural, and the site has primarily been used for agriculture, logging and recreational purposes. Six existing wind projects and two community scaled solar projects are within 10 miles of the site.

Ownership or lease

[redacted]

Generator lead line right of way

[redacted]

Mineral Soil Group (MSG) classification

Bull Run Solar is currently in early development stages and anticipates panel areas may change as development progresses. Bull Run Solar will continue considering mineral soil groups and agricultural districts when designing and selecting final locations for Project facilities. Approximately 52% (~290 acres) of the preliminary panel area is classified within MSG soil groups 1-4.

4.14. Ball Hill Wind

Resource site plan and proposed route to the injection point

Ball Hill Wind	
Developer	Northland Power
Location	Chautauqua County, NY
Capacity	107 MW
Status	Construction stage (expected COD: Q4 2022)
Technology	25 onshore wind turbines [22 Vestas (V150-4.3) and 3 Vestas (V136-4.2)]
Land use	41% agricultural, 56% forested
Land control	Secured, through lease and easement, 6,000 acres across 170 parcels
Interconnection	NYISO Queue position 0505; completed SRIS and participated in Class Year 2017

Table 4-14. Ball Hill Wind resource summary matrix.

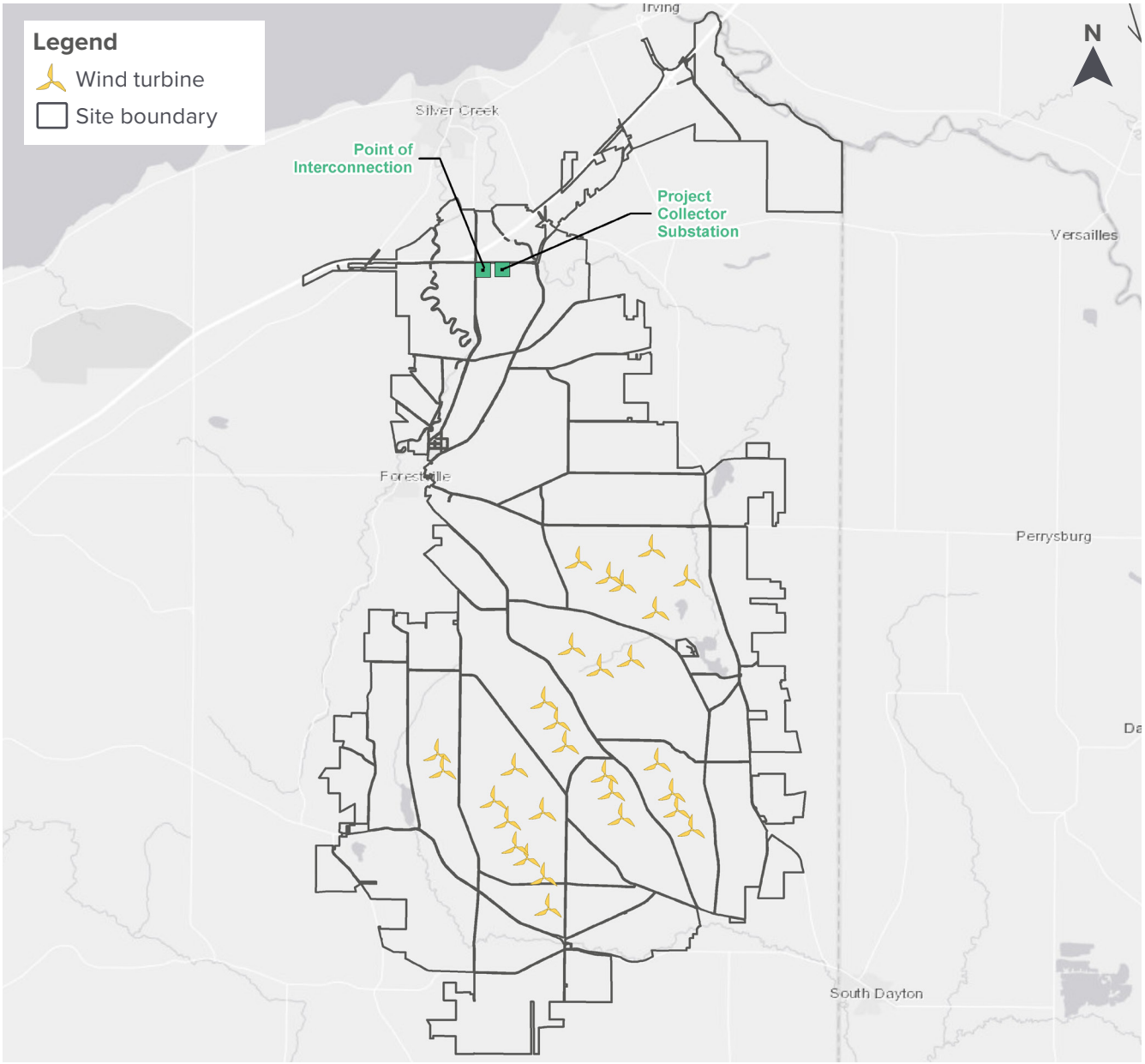


Figure 4-14. Ball Hill Wind project site plan.

Development status

Ball Hill Wind is a 107 MW wind project in development and will be entering the construction stage this year. Tree Clearing activities commenced in February 2021 and full civil construction is anticipated to begin in June 2021, with an anticipated commercial operation date in the fourth quarter of 2022. Ball Hill Wind has obtained its special use permit (SUP) and New York State Environmental Quality Review Act (SEQRA) permits from the Towns of Villenova and Hanover. Ball Hill filed an interconnection request with NYISO in June 2015. Its queue position number is 0505. Its system reliability study is complete, and it participated in Class Year 2017 and accepted its cost allocation.

Technology and equipment

Ball Hill Wind has permitted 29 onshore wind turbine locations. It has selected a combination of 25 turbines as its final build, with 22x Vestas V150-4.3 and 3 Vestas V136-4.3 MW turbines. The transmission facility consists of a new 25.6-mile 34.5 kV, mostly underground electric transmission line connected to the project's 34.5/230 kV collector substation to connect to National Grid's 230 kV system between Dunkirk and Gardenville via three-breaker ring bus arrangement.

Local zoning and existing land use

The existing land use for the Ball Hill Wind is primarily zoned as Agricultural (41%), Forested (56%), and Vacant land (3%). The setting is rural, and the site has primarily been used for agriculture.

Ownership or lease

Ball Hill has secured through lease and easement all land required to develop and operate the 107.2 MW wind project over the entire contract tenor. More than 6,000 acres have been signed across 170 parcels.

Generator lead line right of way

Ball Hill Wind has secured, through easement or agreement, all lands to host transmission infrastructure, including the interconnection switchyard and a 25.6-mile transmission line. The proposed injection point switchyard will be located on land to be owned by Ball Hill Wind and transferred to National Grid following construction. The transmission facility's sole purpose is to operate as a generator lead (or interconnection line) to deliver electricity produced by the project to the National Grid transmission system.

4.15. Bluestone Wind

Resource site plan and proposed route to the injection point

Bluestone Wind	
Developer	Northland Power
Location	Broome County, NY
Capacity	111 MW
Status	Construction stage (expected COD: Q4 2022)
Technology	26 onshore wind turbines [Vestas (V150-4.3)]
Land use	2% agricultural, 63% residential, and 33% vacant land
Land control	Secured, through lease and easement, 8,000 acres across 200 parcels
Interconnection	NYISO Queue position 0579; completed SRIS and participated in Class Year 2017

Table 4-15. Bluestone Wind resource summary matrix.

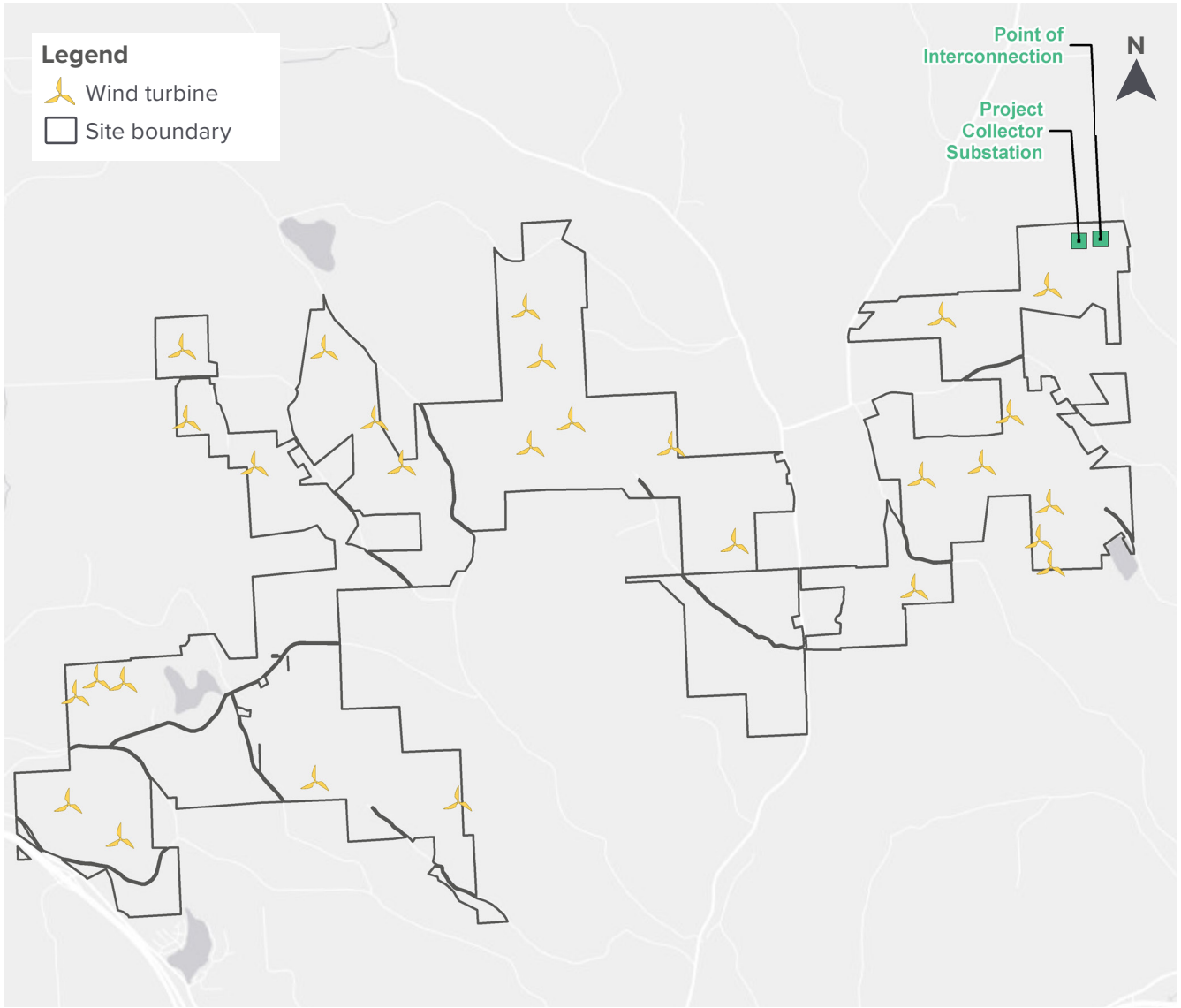


Figure 4-15. Bluestone Wind project site plan.

Development status

Bluestone Wind is a 111 MW wind project in development and will be entering the construction stage this year. Tree Clearing activities commenced in January 2021 and full civil construction is anticipated to begin in May 2021, with an anticipated commercial operation date in the fourth quarter of 2022. Bluestone Wind Received its Certificate of Environmental Compatibility and Public Need pursuant to Article 10 of the Public Service Law (Case 16-F-0559) in December of 2019 which also included the transmission lines and associated facilities. Bluestone filed and interconnection request with the NYISO in September 2016. Its Queue position is 0579. Its system reliability study is complete, and it participated in Class Year 2017 and accepted its cost allocation.

Technology and equipment

Bluestone Wind has permitted 27 onshore wind turbine locations. It has selected 26 turbines as its final build all being a single model of Vestas V150-4.3 MW turbines. A 34.5/115 kV collector substation will be connected to a second substation adjacent to the point of interconnection using 200 feet of overhead 115 kV transmission line. The second substation will connect to NYSEG's 115 kV system between Afton - Stilesville 115kV via three-breaker ring bus arrangement.

Local zoning and existing land use

The existing land use for the Project Area is primarily zoned Residential (63%), Vacant (33%), and Agricultural (2%) land. The setting is rural, and the site has primarily been used for agriculture.

Ownership or lease

Bluestone has secured through lease and easement all land required to develop and operate the 111.8 MW wind project over the entire contract tenor. More than 8,000 acres have been signed across 200 parcels.

Generator lead line right of way

Bluestone Wind has secured, through option or agreement, all lands to host transmission infrastructure, including the interconnection switchyard, a collection system substation and overhead transmission lines to the interconnection. The proposed injection point switchyard will be located on land to be owned by Bluestone Wind and transferred to NYSEG following construction.

4.16. High Bridge Wind

Resource site plan and proposed route to the injection point

High Bridge Wind	
Developer	Northland Power
Location	Chenango County, NY
Capacity	103 MW
Status	Late development stage (expected COD: Q3 2023)
Technology	24 onshore wind turbines [Vestas (V150-4.3)]
Land use	10% agricultural, 26% forested, 21% residential land, and 34% vacant land
Land control	Secured, through lease and easement, 5,000 acres across 45 parcels
Interconnection	NYISO Queue position 0706; completed SRIS and participated in Class Year 2017

Table 4-16. High Bridge Wind resource summary matrix.

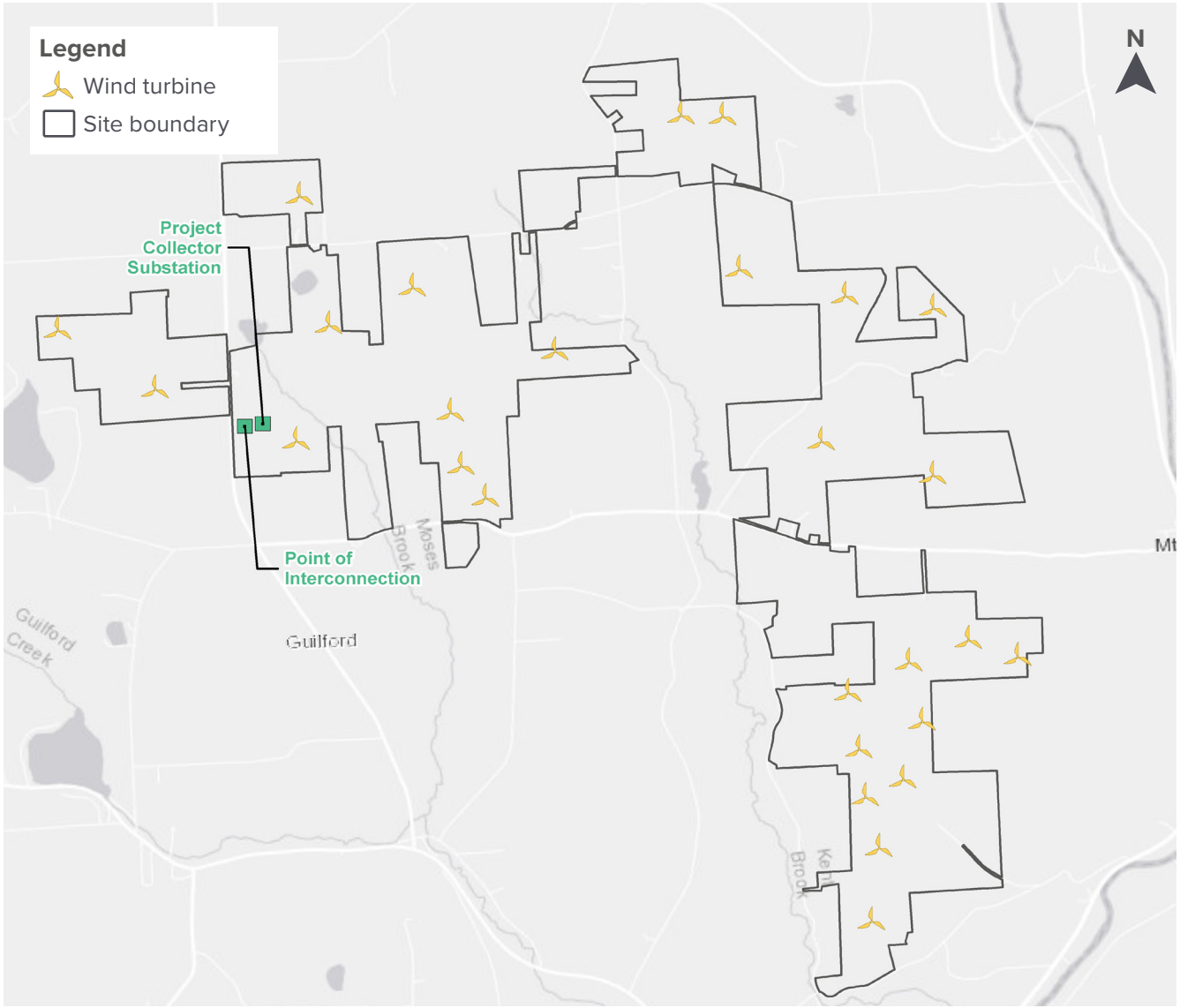


Figure 4-16. High Bridge Wind project site plan.

Development status

High Bridge Wind is a 103 MW wind project in late development stage. Tree clearing is expected to begin in Q1 2022 with full civil construction is anticipated to begin in Q2 2022, with an anticipated commercial operation date of Q3 2023. High Bridge Wind received its Certificate of Environmental Compatibility and Public Need pursuant to Article 10 of the Public Service Law (Case 18-F-0262) in March of 2021 which also included the transmission lines and associated facilities. High Bridge filed and interconnection request with the NYISO in April 2018. Its Queue position is 0706. Its system reliability study is complete and participated in Class Year 2017 and accepted its cost allocation.

Technology and equipment

High Bridge Wind has permitted 25 onshore wind turbine locations. It has selected 24 turbines as its final build all being a single model Vestas V150-4.3 MW turbines. A 34.5/115 kV collector substation will be co-located with a 10 MW lithium-ion battery storage system. A point of interconnect substation will be constructed adjacent to NYSEG's existing Jennison to East Norwich 115 kV transmission line.

Local zoning and existing land use

The existing land use for the Project Area is primarily zoned Vacant (34%), Forested (26%), Residential (21%), and Agricultural (10%) land. The setting is rural, and the site has primarily been used for agriculture.

Ownership or lease

High Bridge Wind has secured, through option or agreement, all lands to develop the project and host transmission infrastructure, including the interconnection switchyard, a collection system substation and overhead transmission lines to the interconnection. Over 5,000 acres have already been signed across approximately 45 parcels. The proposed injection point switchyard will be located on land to be owned by High Bridge Wind and transferred to NYSEG following construction.

Generator lead line right of way

High Bridge Wind filed an interconnection request with NYISO for 100.8 MW in April 2018. Its queue position number is 0706. The System Impact Study and Facilities Studies are complete. High Bridge Wind participated in Class Year 2017 and accepted its cost allocation of $10,726,500 to obtain ERIS and CRIS. This cost includes its direct interconnect facilities (Collector substation and transformer). No other System Upgrade Facilities are required.

4.17. Bald Mountain Solar

Resource site plan and proposed route to the injection point

Bald Mountain Solar	
Developer	Boralex
Location	Washington County, NY
Capacity	20 MW
Status	Development stage (expected COD: Q4 2022)
Technology	Bifacial panels on single-axis trackers
Land use	100% active agricultural fields
Land control	Negotiating land agreements, secured 249 acres across 9 parcels
Interconnection	NYISO Queue position 0855 filed in May 2019 and have completed the SRIS and the Facilities Study
MSG classification	Most portions of the preliminary panel area are classified within MSG soil groups 1-4

Table 4-17. Bald Mountain Solar resource summary matrix.

Figure 4-17. Bald Mountain Solar project site plan.

Development status

Bald Mountain Solar is a 20 MW solar project in the development stage. Construction is expected to commence in Q4 2022 with a commercial operation date of Q4 2022. Bald Mountain filed an interconnection request with NYISO in May 2019. Its queue position is number 0855. A system reliability study was completed in April 2020, and the facilities study was completed in October 2020.

Technology and equipment

Bald Mountain Solar is currently proposing to use bifacial solar panels mounted on single-axis trackers. The connecting substation will be located directly adjacent to the injection point. Less than 200 feet of interconnection line will be constructed to connect the substation to the existing transmission line.

Local zoning and existing land use

The parcels hosting the project are currently active agricultural fields. The parcels surrounding the project are a mix of active agricultural fields, mixed-use residential, and forested areas.

Ownership or lease

Bald Mountain Solar has secured, through lease or option, all lands proposed to host all required solar facilities and construction areas to develop and operate a 20 MW solar project over the entire contract tenor. Approximately 249 acres have been signed across 9 parcels.

Generator lead line right of way

Bald Mountain Solar has secured, through option agreements, all lands required to host transmission infrastructure. The Developer has site control of the point of interconnection via a binding option to lease. Land Rights have been secured for the project and point of interconnection.

Mineral Soil Group (MSG) classification

Bald Mountain Solar is in Fulton County Agricultural District 1 and portions of the Project are underlain by MSG Groups 1-4.

4.18. West River Solar

Resource site plan and proposed route to the injection point

West River Solar	
Developer	Boralex
Location	Saratoga County, NY
Capacity	20 MW
Status	Development stage (expected COD: Q2 2024)
Technology	Bifacial panels on single-axis trackers
Land use	100% active agricultural fields
Land control	Negotiating land agreements, secured 831 acres across 9 parcels
Interconnection	No active Queue position with NYISO. Expected to be filed in May 2021.
MSG classification	Most portions of the preliminary panel area are classified within MSG soil groups 1-4

Table 4-18. West River Solar resource summary matrix.

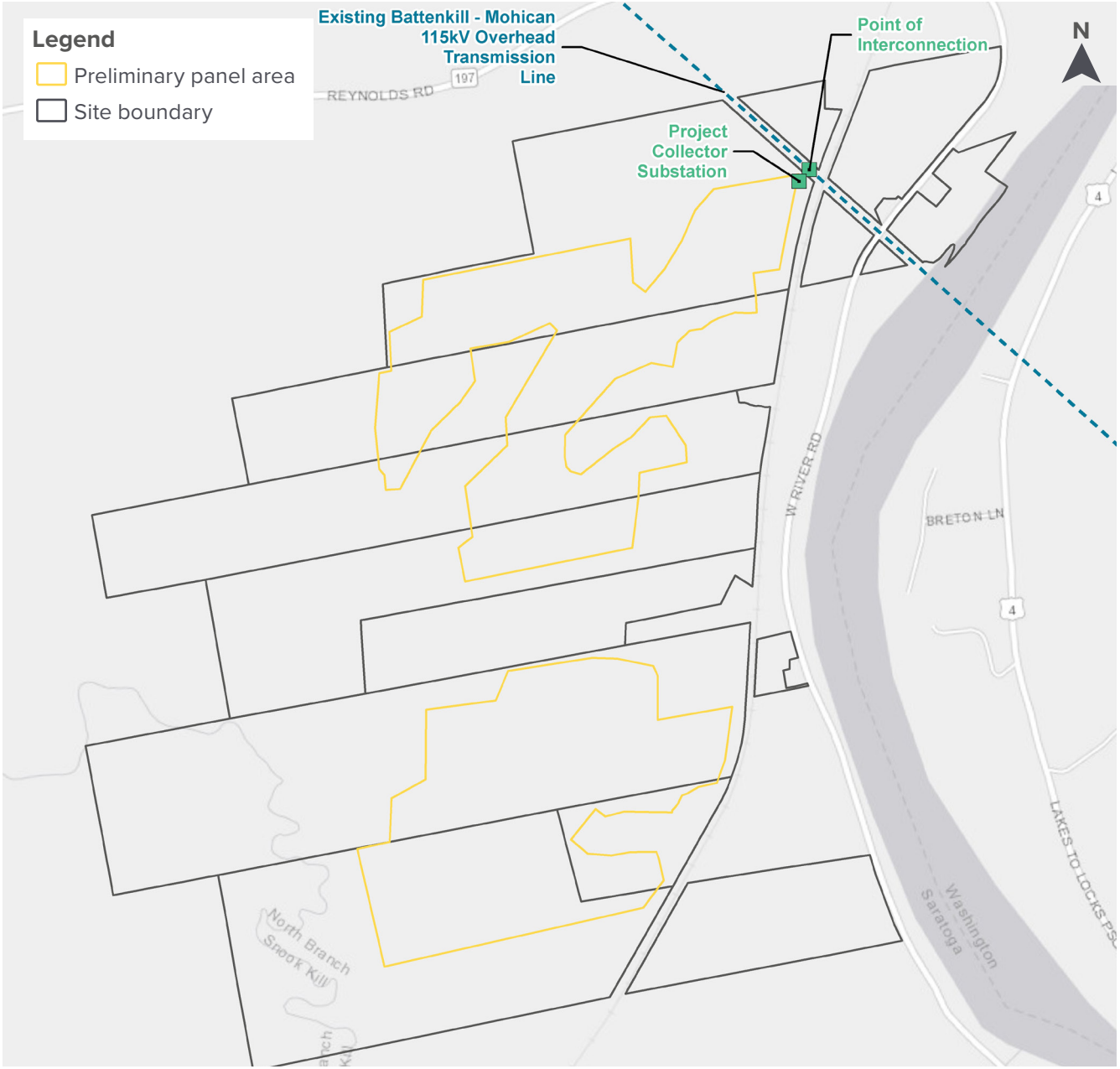


Figure 4-18. West River Solar project site plan.

Development status

West River Solar is a 20 MW solar farm in the early development stages. Construction is expected to commence in the first quarter of 2023 with a commercial operation date within the second quarter of 2024. West River Solar expects to file an interconnection request with NYISO in May 2021. It does not currently have a queue assigned.

Technology and equipment

West River Solar is currently proposing to use bifacial solar panels mounted on single-axis trackers. West River Solar will be interconnected to the NYISO controlled grid. The injection point and point of interconnection have not yet been determined.

Local zoning and existing land use

The parcels hosting the project are currently active agricultural fields and tree nurseries. The parcels surrounding the Project are a mix of active agricultural fields, mixed-use residential, and forested areas.

Ownership or lease

West River Solar has secured, through lease or option, all lands proposed to host all required solar facilities and construction areas to develop and operate a 20 MW solar project over the entire contract tenor. Approximately 831 acres have been signed across 9 parcels.

Generator lead line right of way

West River Solar has secured, through option agreements, all lands required to host transmission infrastructure. The Developer has site control of the point of interconnection via a binding option to lease. Land Rights have been secured for the project and point of interconnection.

Mineral Soil Group (MSG) classification

West River Solar is in Fulton County Agricultural District 1 and portions of the project are underlain by MSG Groups 1-4.

4.19. Sandy Creek Solar

Resource site plan and proposed route to the injection point

Sandy Creek Solar	
Developer	Boralex
Location	Jefferson County, NY
Capacity	20 MW
Status	Development stage (expected COD: Q4 2023)
Technology	Bifacial panels on single-axis trackers
Land use	100% active agricultural fields
Land control	Secured, through lease or option, 667 acres across 7 parcels
Interconnection	NYISO Queue position 0843 filed in May 2019 and is currently undertaking the SRIS
MSG classification	0.26% of the preliminary panel area is classified within MSG soil group 1; 33% is classified within MSG soil group 2; and 35% is classified within MSG soil group 3

Table 4-19. Sandy Creek Solar resource summary matrix.

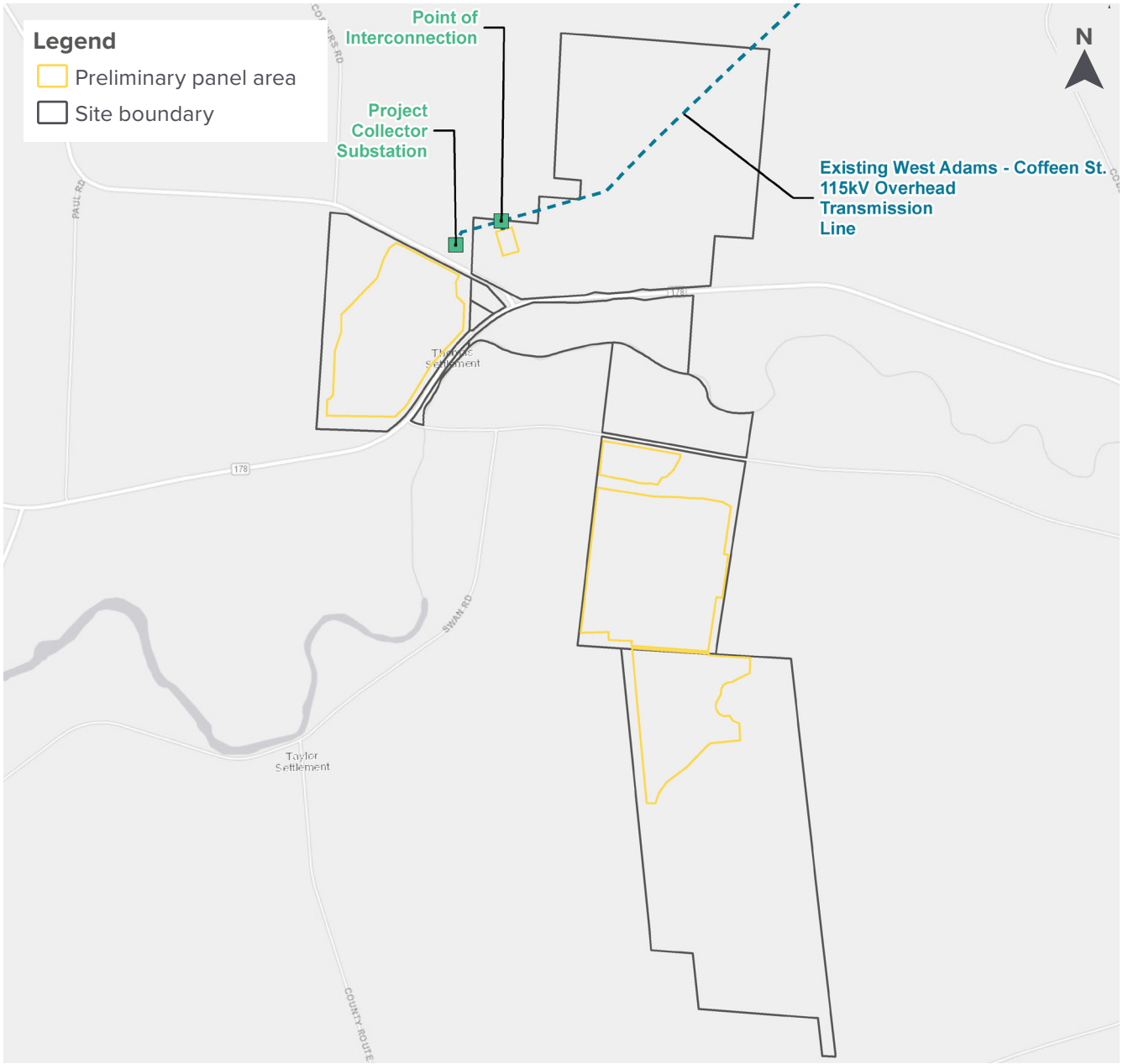


Figure 4-19. Sandy Creek Solar project site plan.

Development status

Sandy Creek Solar is a 20 MW solar farm in the development stage. Construction is expected to commence within the fourth quarter of 2022 with a COD expected to be within the third quarter of 2023. Sandy Creek filed an interconnection request with NYISO in May 2019. Its queue position is number 0843. A System Impact Study is currently in progress for the project and is expected to be completed in April 2021.

Technology and equipment

Sandy Creek Solar is currently proposing to use bifacial solar panels mounted on single-axis trackers. Sandy Creek Solar will be interconnected to the NYISO controlled grid. The connecting substation will be located adjacent to the injection point. Less than 200 feet of interconnection line will be constructed to connect the substation to the existing transmission line.

Local zoning and existing land use

The parcels hosting the project are currently active agricultural fields. The parcels surrounding the project are a mix of active agricultural fields, mixed-use residential, and forested areas.

Ownership or lease

Sandy Creek Solar has secured, through lease or option, all lands proposed to host all required solar facilities and construction areas to develop and operate a 20 MW solar project over the entire contract tenor. Approximately 667 acres have been signed across 7 parcels.

Generator lead line right of way

Sandy Creek Solar has secured, through option agreements, all lands required to host transmission infrastructure. The Developer has site control of the point of interconnection via a binding option to lease. Land Rights have been secured for the project and point of interconnection.

Mineral Soil Group (MSG) classification

Portions of the project are underlain by MSG Groups 1 (0.26%), 2 (33%), and 3 (35%).

4.20. Greens Corners Solar

Resource site plan and proposed route to the injection point

Greens Corners Solar	
Developer	Boralex
Location	Jefferson County, NY
Capacity	120 MW
Status	Development stage (expected COD: Q4 2023)
Technology	Bifacial panels on single-axis trackers
Land use	100% agricultural residential land
Land control	Secured, through lease or option, 2,373 acres across 26 parcels
Interconnection	NYISO Queue position 0864 filed in May 2019 and have completed the SRIS and entered Class Year 2021.
MSG classification	The project area overlaps with MSG Groups 1-4. Boralex is in process to complete the feasibility assessment.

Table 4-20. Greens Corners Solar resource summary matrix.

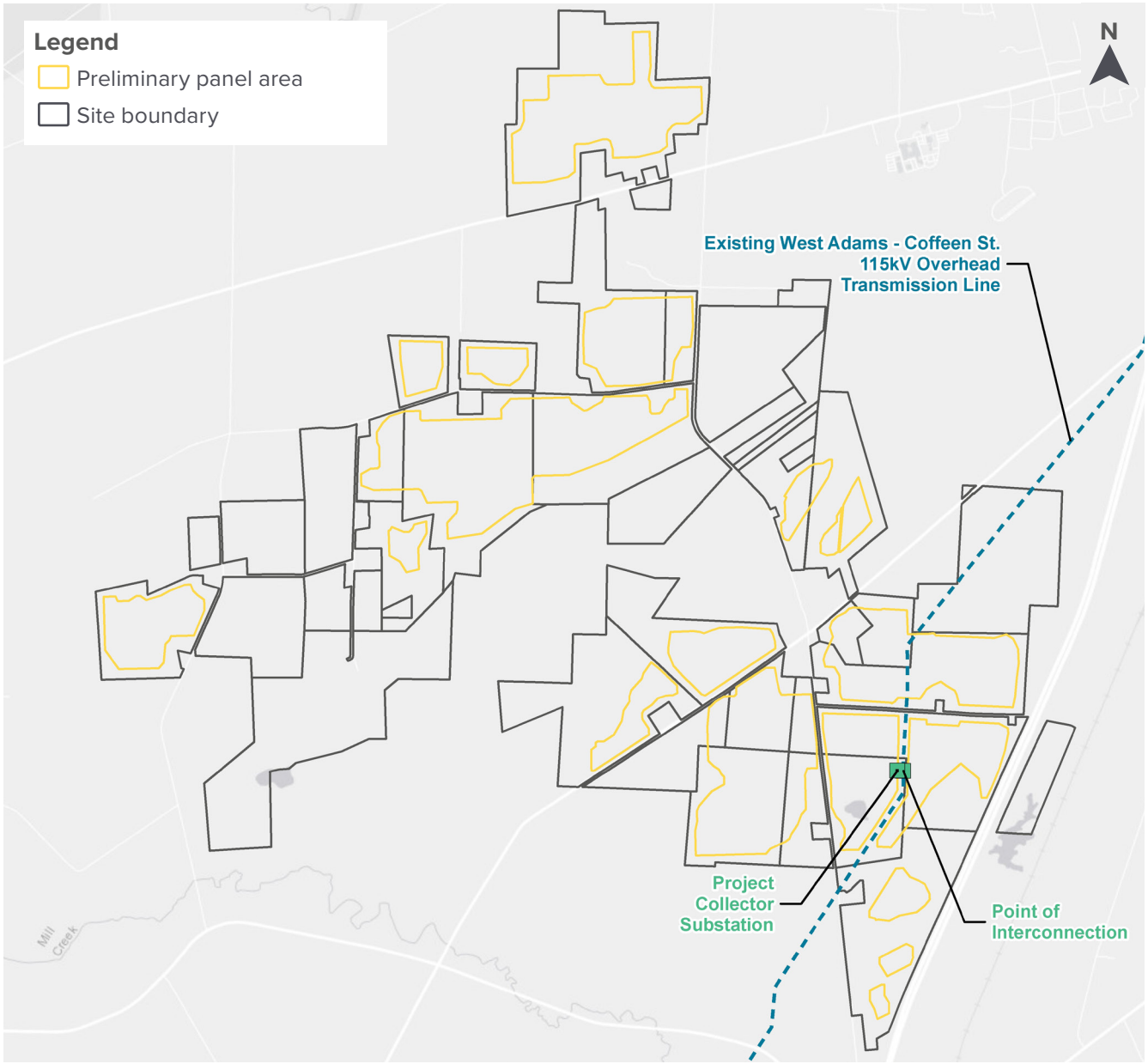


Figure 4-20. Greens Corners Solar project site plan.

Development status

Greens Corners Solar is a 120 MW solar farm in the development stage. Construction is expected to commence within the fourth quarter of 2022, with a proposed commercial operation date within the fourth quarter of 2023. Greens Corners Solar filed an interconnection request with NYISO in May 2019. Its queue position number is 0864. Its system reliability study is complete, and it has entered Class Year 2021.

Technology and equipment

Greens Corners Solar is currently proposing to use bifacial solar panels mounted on single-axis trackers. The project will connect to the existing National Grid 115kV transmission line Coffeen – West Adams Line #2, which intersects the project area.

Local zoning and existing land use

Greens Corners Solar is located in the Town of Hounsfield and the Town of Watertown, Jefferson County in a rural area used primarily for agricultural purposes and recreation. Within the Town of Hounsfield the project is in the Agricultural and Residential, Industrial, and Multi-Use zoning districts. Within the Town of Watertown the project is in the R-1 Residential zoning district. Greens Corners Solar is a permitted use within these zones in each Town. The project area and surrounding land uses include a mix of industrial, agricultural production, rural residential development, and sparsely forested areas. The area is characterized by rolling topography, with gently sloped areas transected by small streams and/or wetlands in the low-lying areas between elevated landforms.

Ownership or lease

Greens Corners Solar has secured, through lease or option, all lands proposed to host all required solar facilities and construction areas to develop and operate a 120 MW solar project over the entire contract tenor. Approximately 2,373 acres have been signed across 26 parcels. Please see land control summary table and documentation demonstrating site control via binding option to lease.

Generator lead line right of way

Greens Corners Solar has secured, through option agreements, all lands required to host transmission infrastructure. The Developer has site control of the point of interconnection via a binding option to lease. Land Rights have been secured for the project.

Mineral Soil Group (MSG) classification

The project area overlaps with MSG Groups 1-4. Boralex is working with an agronomist to complete a feasibility assessment of various agricultural co-utilization practices being considered for the site. An agricultural co-use plan will be submitted with the 94-c application.

4.21. Sky High Solar

Resource site plan and proposed route to the injection point

Sky High Solar	
Developer	Boralex
Location	Onondaga County, NY
Capacity	20 MW
Status	Development stage (expected COD: Q1 2023)
Technology	Bifacial panels on single-axis trackers
Land use	49% agricultural land and 51% forested land
Land control	Secured, through lease or option, 655 acres across 3 parcels
Interconnection	NYISO Queue position 0545 filed in May 2016 and have completed the SRIS and the Facilities Study
MSG classification	<0.2% (<1.5 acres) of the preliminary panel area is classified within MSG soil groups 1-4

Table 4-21. Sky High Solar resource summary matrix.

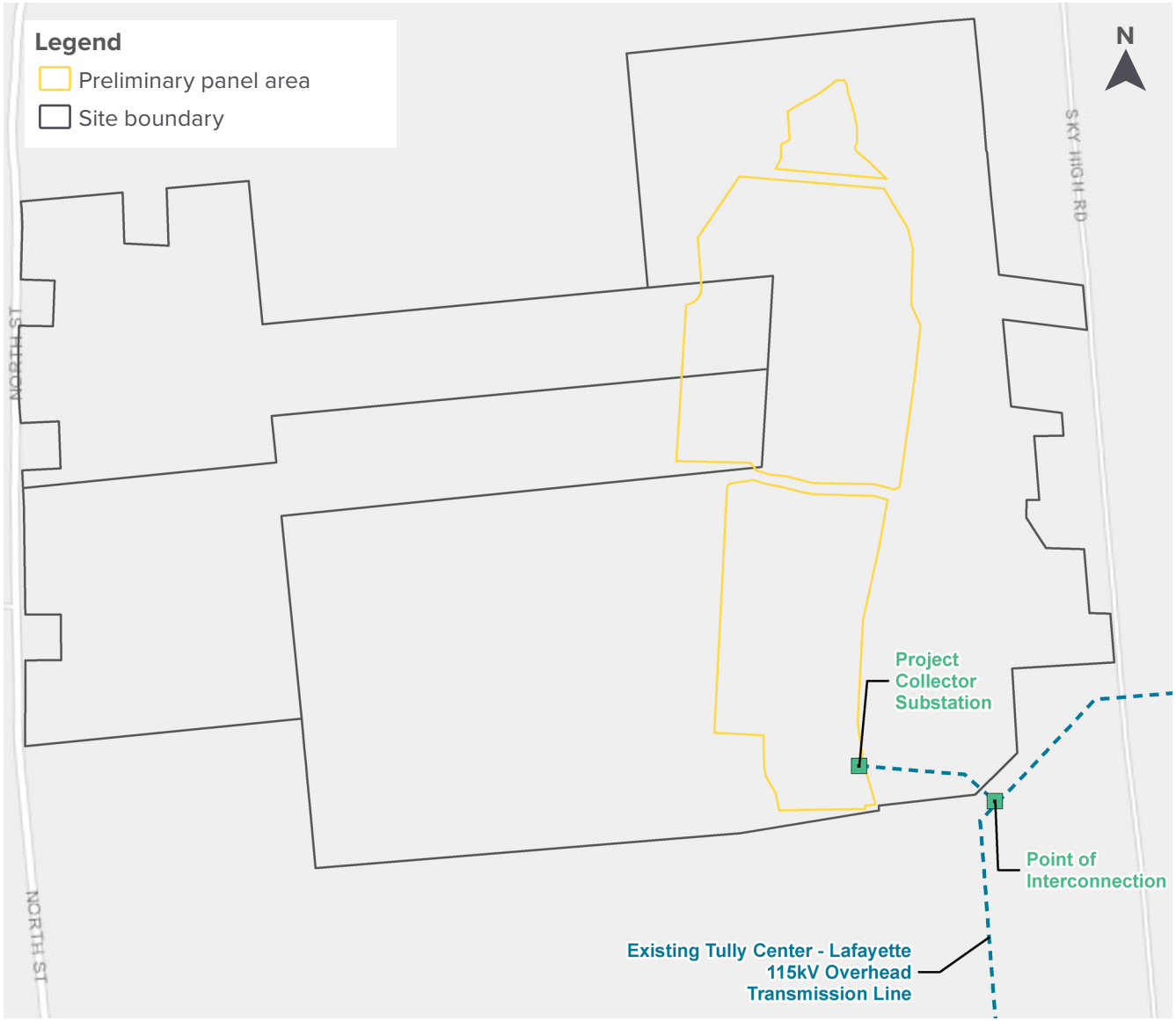


Figure 4-21. Sky High Solar project site plan.

Development status

Sky High Solar is a 20 MW solar farm in the development stage. Construction is expected to commence within the second quarter of 2021, with a proposed commercial operation date of within the first quarter of 2023. Sky High Solar filed an interconnection request with NYISO in May 2016. Its queue position is number 0545. Its system reliability study and facilities study are complete, and it has entered Class Year 2021.

Technology and equipment

Sky High Solar is currently proposing to use bifacial solar panels mounted on single-axis trackers. The connecting substation will be located directly adjacent to the injection point. Approximately 600 ft of interconnection line will be constructed to connect the project substation to the existing transmission.

Local zoning and existing land use

The project site consists of agricultural fields, hunting food plots, an overgrown tree farm, and forested areas. The Sky High facility site is classified as approximately 49% agricultural land and 51% forested land. The project site is surrounded by agricultural fields, tree farm, ponds, rural residential areas, and forested areas.

Ownership or lease

Sky High Solar has secured, through lease or option, all lands proposed to host all required solar facilities and construction areas to develop and operate a 20 MW solar project over the entire contract tenor. Approximately 655 acres have been signed across 3 parcels. Please see land control summary table and documentation demonstrating site control via binding option to lease.

Generator lead line right of way

Sky High Solar has secured, through option agreements, all lands required to host transmission infrastructure. The Developer has site control of the point of interconnection via a binding option to lease. Land Rights have been secured for the project.

Mineral Soil Group (MSG) classification

A review of the New York State Agriculture and Markets (NYSDAM) database confirmed that the Study Area is not within a mapped Agricultural District. After a preliminary investigation, there is a small area (less than approximately 1.5 acres) at the southern project boundary that is underlain by MSG Groups 1-4. However, the specific location and extent of these soils, and the final project footprint, will be confirmed through additional evaluation.

4.22. Baron Winds Phase I

Resource site plan and proposed route to the injection point

Baron Winds Phase I	
Developer	RWE
Location	Steuben County, NY
Capacity	121 MW
Status	Late development stage (expected COD: Q4 2022)
Technology	32 onshore wind turbines [24 Vestas (V150-4.2) and 8 SGRE (SGRE114-2.625)]
Land use	63% agricultural land, 20% residential land, and 12% vacant land
Land control	Secured, through lease or option, 6,800 acres across 307 parcels for Phase I
Interconnection	NYISO Queue position 2487; participated in Class Year 2017 and accepted its cost allocation

Table 4-22. Baron Winds Phase I resource summary matrix.

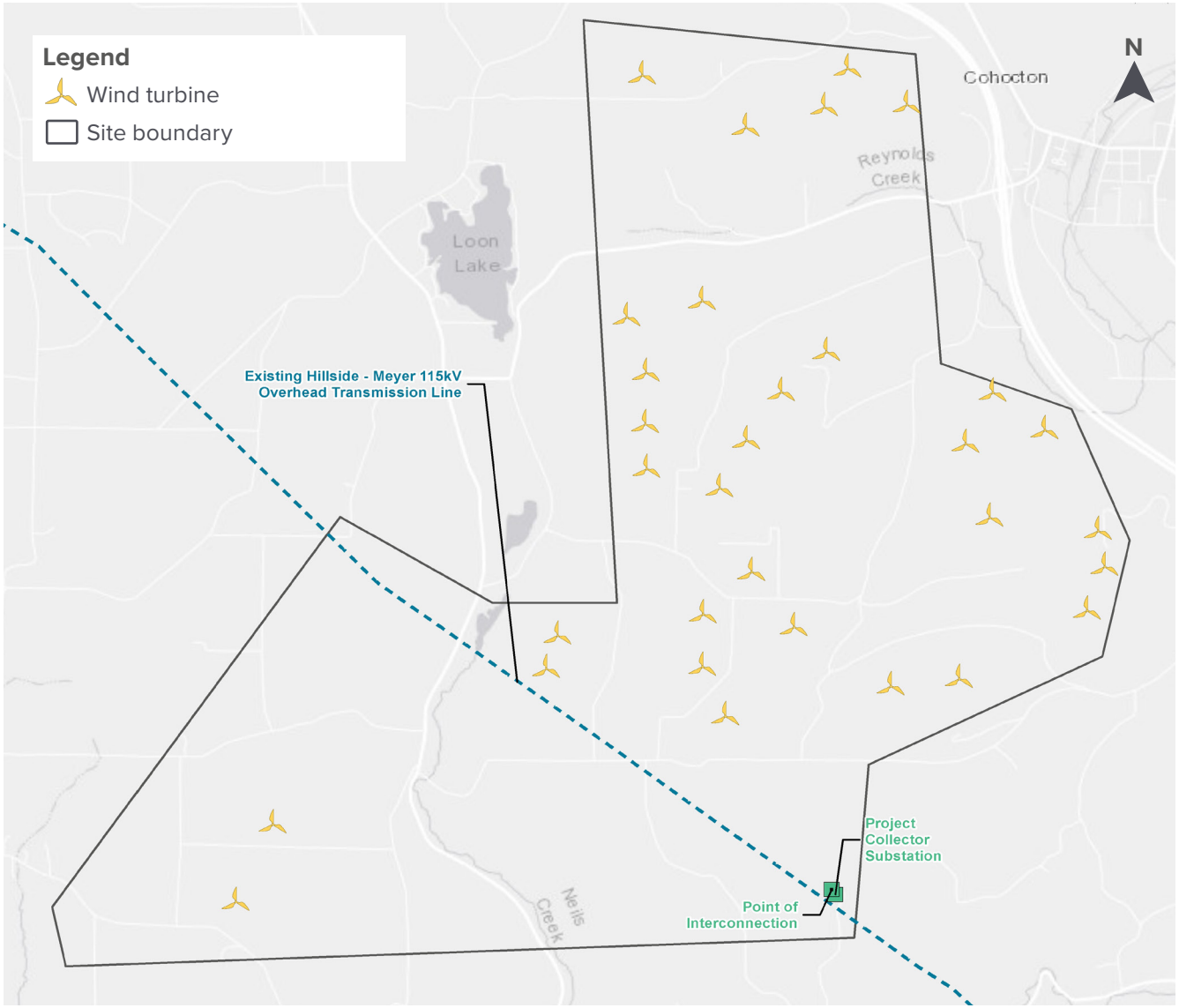


Figure 4-22. Baron Winds Phase I project site plan.

Development status

Baron Winds Phase I is a 121 MW wind project in the late development stage. Construction is expected to commence within the third quarter of 2021, with a proposed commercial operation date within the fourth quarter of 2022. Baron Winds received its Certificate of Environmental Compatibility and Public Need pursuant to Article 10 of the Public Service Law in September 2019. It has a signed Interconnection Agreement with NYSEG and NYISO as of February 2020, and which was amended in February 2021. Its queue position is number 2487. It participated in Class Year 2017 and accepted its cost allocation.

Technology and equipment

Baron Winds Phase I is planning to construct 32 onshore wind turbine locations, consisting of 24 Vestas wind turbines (V150-120mHH-4.2MW) and 8 SGRE safe harbor turbines (SGRE114-93mHH-2.625MW) for a total capacity of 121 MW. The transmission facility consists of a new 700-foot underground 230 kV electric transmission line connecting the project's 34.5/230 kV collector substation to an existing but expanded four-breaker ring bus Canandaigua Substation owned and operated by NYSEG.

Local zoning and existing land use

The facility site and the surrounding area is primarily used for agriculture (63%), residential (20%), and vacant (12%) lands. There is an existing wind farm to the east of the proposed Baron Winds Project.

Ownership or lease

Baron Winds Phase 1 has secured, through lease and option, all land required to develop and operate the 121.8 MW project over the entire contact tenor. Over 6,800 acres have been signed across 307 parcels for Phase I.

Generator lead line right of way

Baron Winds has secured, through lease and option, 100% of the lands to host the transmission infrastructure. Baron Winds will design and construct the facilities needed for the point of interconnection in the Canandaigua Substation, using a NYSEG-approved contractor, and then transfer those facilities to NYSEG per the project's Interconnection Agreement.

4.23. Heritage Wind

Resource site plan and proposed route to the injection point

Heritage Wind	
Developer	Apex
Location	Orleans County, NY
Capacity	198 MW
Status	Development stage (expected COD: Q4 2023)
Technology	Onshore wind turbines [Vestas (V162-5.6), Nordex (N149-4.8), and GE (GE158-5.5)]
Land use	77% agricultural land, 20% residential land, and 3% vacant land
Land control	Secured 10,760 acres across 130 land agreements
Interconnection	NYISO Queue position 0571; participated in Class Year 2021 and accepted its cost allocation

Table 4-23. Heritage Wind resource summary matrix.

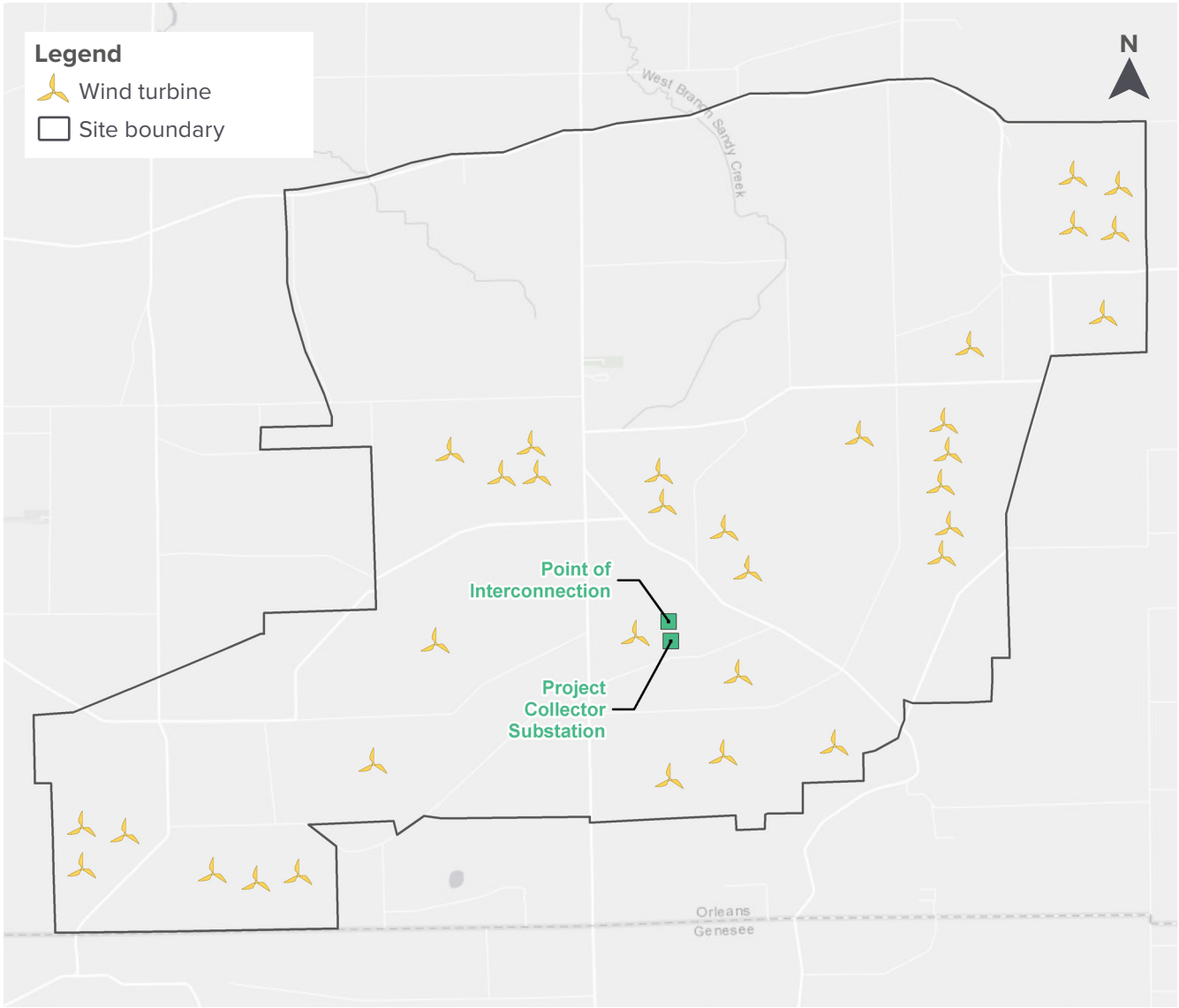


Figure 4-23. Heritage Wind project site plan.

Development status

Heritage Wind is a 198 MW wind project in the development stage with an anticipated commercial operation date of Q4 2023. Heritage Wind is currently seeking a Section 94-c Siting Permit, which is expected in January 2022, with 90-day appeal period to follow. Heritage received a draft permit in March 2021. Heritage Wind expects the Federal Aviation Agency Determination of No Hazard (FAA-DNH) in Q2 2021. Heritage Wind filed an interconnection request with NYISO. Its queue position is number 0571. Heritage Wind participated in Class Year 2021 and has accepted its cost allocation of $3.7 Million.

Technology and equipment

Heritage Wind is currently being permitted as a 184.8 MW project and will be uprated to a 198 MW project at a later date. While a specific turbine has not yet been selected for Heritage Wind, the following models are being considered: Vestas 162-5.6, Nordex N149-4.8, and GE 158-5.5.

Local zoning and existing land use

The existing land use for the facility site and the surrounding area is primarily zoned as Agricultural with smaller areas zoned residential and vacant. Heritage Wind site is classified as approximately 77% agricultural land and 20% residential land, with the remaining 3% comprised of vacant land.

Ownership or lease

Heritage Wind has secured, through lease, all land required to develop and operate the 198 MW project over the entire contract tenor. More than 10,760 acres of land have been signed across 130 land agreements.

Generator lead line right of way

A 200.1 MW queue position has been filed for interconnection into Niagara Mohawk's Lockport-Mortimer 115 kV Lines #113 and #114. Heritage Wind entered Class Year 2021 in March 2021. Generator Interconnection Agreement (GIA) execution is expected in Q2 2023 with anticipated COD in Q4 2023. Congestion in this area is relatively low and is not impacted by other regional markets. An on-site parcel for the necessary substation has been acquired under a purchase option and is directly adjacent to the point of interconnection.

4.24. Prattsburgh Wind

Resource site plan and proposed route to the injection point

Prattsburgh Wind	
Developer	Terra-Gen
Location	Steuben County, NY
Capacity	147 MW
Status	Development stage (expected COD: Q4 2023)
Technology	40 onshore wind turbines with models ranging from 2 to 6.8 MW
Land use	75% agricultural land and 25% forest, recreational, and other land
Land control	Secured 14,820 acres across 109 parcels
Interconnection	NYISO Queue position 0801; entered in Class Year 2021

Table 4-24. Prattsburgh Wind resource summary matrix.

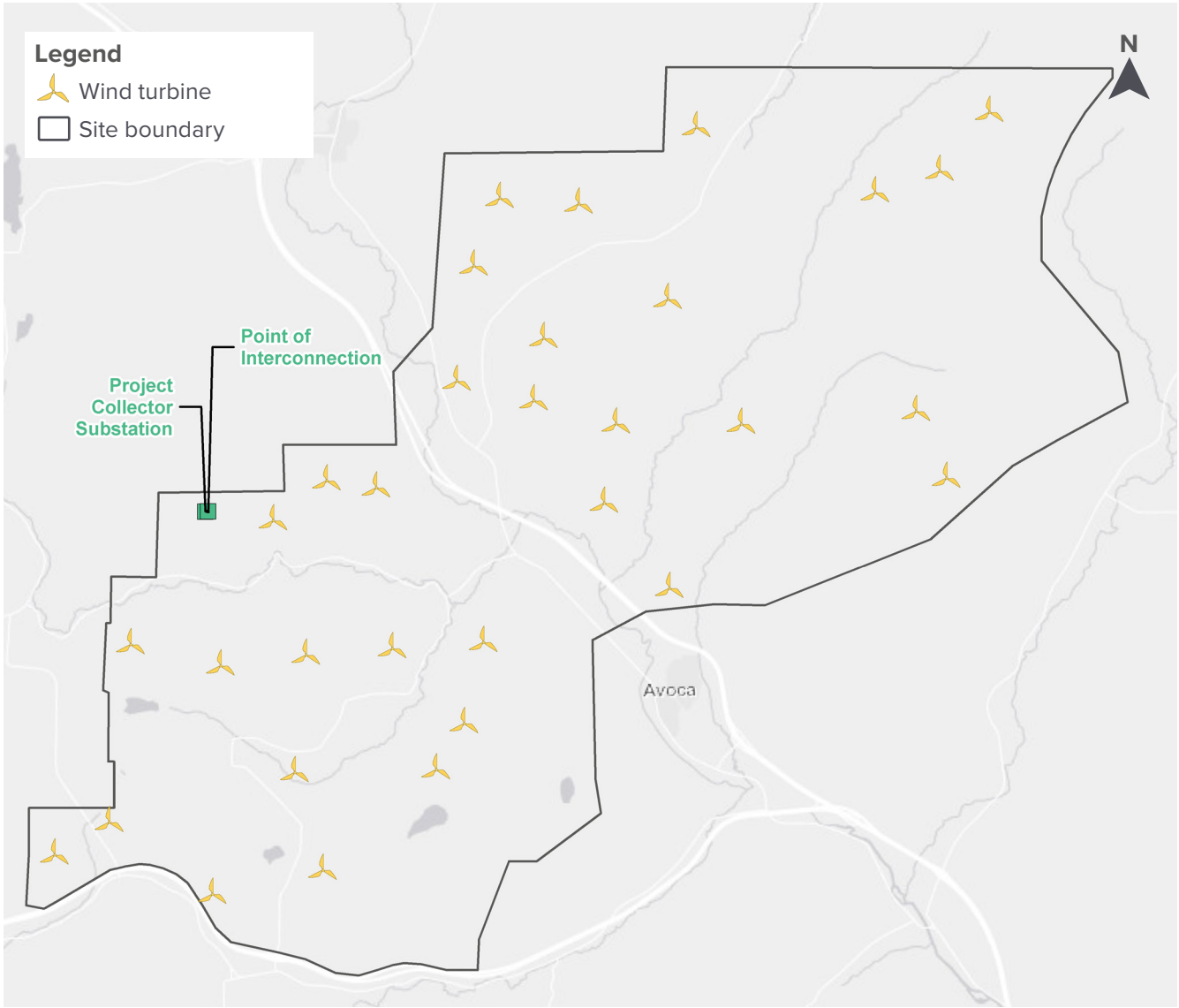


Figure 4-24. Prattsburgh Wind project site plan.

Development status

Prattsburgh Wind is a 147 MW wind project in the development stage, permitting and design, with an expected commercial operation date of Q4 2023. Prattsburgh Wind is seeking a Section 94-c permit. Prattsburgh Wind filed an interconnection request with NYISO. Its queue position is number 0801 and it has entered Class Year 2021.

Technology and equipment

Prattsburgh Wind will permit approximately 40 wind turbine locations. It will use a mix of turbines ranging between 2 MW and 6.8 MW. Prattsburgh Wind will interconnect into the Meyer – Avoca 230 kV transmission line and will build a new point of interconnection.

Local zoning and existing land use

The existing land use for the facility site and the surrounding areas is primarily zoned agricultural and recreational. The Prattsburgh Wind site is classified as approximately 75% agricultural land and 25% forested, recreational and other land. The setting is rural and there are wind farms close to the area.

Ownership or lease

Prattsburgh Wind has secured approximately 90% of the land required to develop and operate the 147 MW project over the entire contract tenor. More than 14,820 acres of land have been signed across 109 parcels.

Generator lead line right of way

Prattsburgh Wind has full site control of the collector substation parcel and has optional parcels for an additional collector substation if needed.

4.25. Additional projects

While not included in the proposed list of project Resources, Clean Path New York has engaged in preliminary discussions with several project developers regarding participation of additional Tier 4-eligible projects. If awarded a Tier 4 REC contract, Clean Path New York would work with these developers to secure the participation of these projects to maximize the offered Resources and ensure a reliable and resilient generation portfolio. These projects include those listed in Tables 4-25 and 4-26 below.

Solar

Northland Power

Partner	Location	Capacity (MW)	Commercial Operation Date
Alfred Oak Solar	Allegany County, NY	100	December 2024
Christmiller	Livingston County, NY	20	December 2023
Cowens Corner Solar	Cattaraugus County, NY	20	December 2023
Pennsylvania Hill	Steuben County, NY	100	December 2024
Scotch Settlement	Jefferson County, NY	100	December 2024
Sunwine Solar	Chautauqua County, NY	75	December 2024
Vineyard Volts Solar	Chautauqua County, NY	20	December 2023
West River	Allegany County, NY	100	December 2024

Table 4-25. Additional Northland Power solar projects.

Boralex

Partner	Location	Capacity (MW)	Commercial Operation Date
Chalk Solar	Fulton County, NY	20	December 2023
Easton Solar	Washington County, NY	30	December 2023
Fort Edward Solar Farm	Washington County, NY	100	December 2024
NY38B Solar	Jefferson County, NY	45	December 2024
NY48 Diamond Solar	Herkimer County, NY	60	December 2025
NY115 Solar	Oneida County, NY	130	December 2025
NY125 A & B Solar	Franklin County, NY	375	December 2025
NY128 Solar	Fulton County, NY	50	December 2025

Table 4-26. Additional Boralex solar projects.

Hydroelectric

Boralex

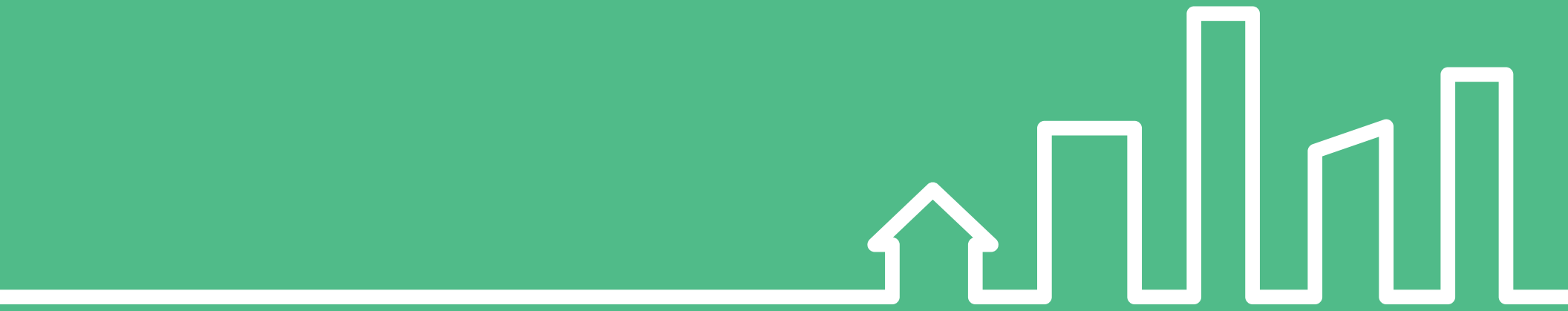
Boralex has independently submitted data regarding Supplier Energy and Supplier GHG baselines and received baseline determinations back from NYSERDA. Any participation by these projects in Clean Path New York will conform with these baseline determinations to ensure the Tier 4 eligibility of any generation from these projects (listed in Table 4-27 below).

Partner	Location	Capacity (MW)
Hudson Falls	South Glens Falls, NY	44
Fourth Branch	Waterford, NY	3
South Glens Falls	South Glens Falls, NY	15
Middle Falls	Middle Falls, NY	2

Table 4-27. Additional Boralex hydroelectric projects.

Section 5

Delivery plan



5 Delivery plan

5.1. Capability to deliver energy and Tier 4 RECs to Zone J

Clean Path New York will deliver energy and Tier 4 renewable energy credits to the New York Control Area (NYCA) Zone J via a new 1,300 MW transmission line utilizing high-voltage direct current (HVDC) technology, referred to in this proposal as "New Transmission". Energy from a portfolio of renewable resources located throughout Upstate New York will be delivered across the NYISO system via existing high-voltage AC lines (HVAC) to a converter station adjacent and connecting to the 345kV Fraser Substation in Zone E. There it will be withdrawn from the high-voltage AC transmission system, transmitted across the HVDC line to a second converter station [redacted] and directly connected via high-voltage AC lines to the 345kV Rainey Substation to inject the energy into NYCA Zone J. A detailed description of the proposed New Transmission line and the proposed route is provided under Section 5.10, "Information regarding the New Transmission", below.

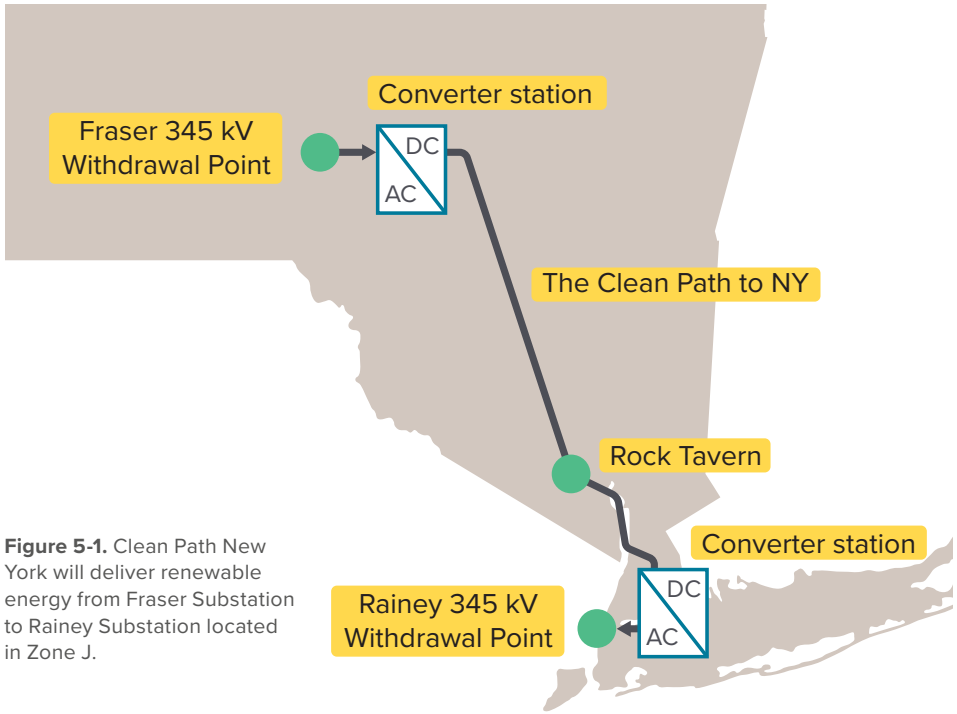


Figure 5-1. Clean Path New York will deliver renewable energy from Fraser Substation to Rainey Substation located in Zone J.

Clean Path New York will coordinate delivery of renewable Resources from Upstate New York to Zone J through an independent entity. This entity, Clean Path New York LLC (see the organizational charts in Section 3 for more details on the structure), will own a significant portion of the generation assets and will contract with third-party generation assets to ensure a cost-effective, robust, and reliable generation mix. In operation, Clean Path New York LLC will obtain RECs from resources owned by third parties via index REC purchase contracts which settle at the zonal hub for each resource. These contracts are consistent with existing Tier 1 index REC structures.

5.2. Firmness of delivery path, contract arrangement, and transmission rights

Clean Path New York is offering more than 3,400 MW of exclusively New York renewable generation to support this proposal. Clean Path New York LLC will:

- Directly own Tier 4-qualifying wind and solar generation assets

- Potentially contract with NYPA's Blenheim-Gilboa pumped storage facility
- Contract with third-party owned Tier 4-qualifying wind and solar resources to procure those resources' environmental attributes via REC purchase agreement
- Contract with an energy manager and/or energy service company to provide the following services:
  - Forecast day ahead and hourly load
  - Document hourly matching via metered flows to support monthly reconciliation with NYSERDA via New York Generation Attribute Tracking System (NYGATS) for REC payments

Clean Path New York LLC will hold Transmission Services Agreements with NYPA and Clean Path New York Infrastructure LLC to provide for transmission of energy and RECs from Fraser Substation to Rainey Substation and injection into Zone J. These contracts will be structured as capacity agreements, providing NYPA and Clean Path New York Infrastructure LLC with the secure stream of revenue required to construct and maintain the New Transmission line at a guaranteed availability level.

5.3. Hourly energy matching

The fundamental means by which Clean Path New York will verify deliveries and effectuate contract settlement with NYSERDA will be hourly matching of each Resource's actual production metered at its Injection Point with deliveries over the New Transmission line metered at its Delivery Point. If the production from Resources exceeds the deliveries over the New Transmission line in a given hour, Clean Path New York will determine which resources' production will be matched to the delivery to qualify for Tier 4. Excess RECs not matched for Tier 4 delivery will be either sold to NYSERDA separately under the resource's Tier 1 REC contract, if that resource holds such a contract, otherwise energy will be sold on a merchant basis. For each monthly settlement period with NYSERDA, Clean Path New York will provide a table listing, for each hour of the month, the number of MWh delivered to Zone J at the Delivery Point, the number of MWh injected by each resource at its Injection Point, and the number of MWhs matched from each resource to equal the delivered quantity. A simplified example is provided in Table 5-1 below.

Day	Hour Ending	New Transmission Line Delivery	Project 1 Injection (a)	Project 1 Match (b)	Project 2 Injection (c)	Project 2 Match (d)	Tier 4 Total (b + d)
01	01:00	1300 MWh	600 MWh	600 MWh	550 MWh	550 MWh	1150 MWh
01	02:00	1300 MWh	700 MWh	700 MWh	600 MWh	600 MWh	1300 MWh
01	03:00	1300 MWh	750 MWh	750 MWh	650 MWh	550 MWh	1300 MWh
01	04:00	1000 MWh	750 MWh	750 MWh	650 MWh	250 MWh	1000 MWh
01	05:00	500 MWh	750 MWh	500 MWh	650 MWh	0 MWh	500 MWh

Table 5-1. An example table that will be provided for each monthly settlement period with NYSERDA.

This hourly matching procedure complies with the requirements of the Tier 4 Order, Section 7.6.5 of the RFP, and Section 3.01 of the standard form Tier 4 REC contract.[1] Clean Path New York believes this is the most appropriate method to verify deliveries and effectuate contract settlement. While we have considered additional contractual arrangements and NYISO tariff mechanisms to provide additional evidence or firmness of delivery, we believe such structures would add cost and/or complexity to the process without providing any real benefit to NYSERDA or the state.

For example, the NYISO tariff contains a mechanism for firm point-to-point (PTP) transmission. While securing firm PTP mechanism might superficially appear to provide greater certainty than energy from a given resource bring delivered to the Withdrawal Point of the New Transmission line, firm PTP transmission rights are a purely financial instrument. The NYISO market has no mechanism for physically scheduling energy. Furthermore, firm PTP transmission can only be purchased around the clock and would therefore not be useful during hours when intermittent resources are not generating, adding significant cost without benefit. Clean Path New York notes based on its own analysis that NYISO control of the new transmission will by definition be best for rate payers in New York, this is based on integrating the New Transmission asset as a controllable transmission line into its economic dispatch to optimize generation and energy flows, the benefits of such integration is evident in the material reduction in transmission congestion and GHG remission.

Such an approach will require Clean Path New York to cede operational control of the New Transmission line to the NYISO resulting in a utilization risk of the New Transmission that cannot be mitigated by Clean Path New York and hence risk allocation resulting from the operational decisions of the NYISO need to be managed to ensure success of the Tier-4 program as well as structure financeable projects to enable such success.

Similarly, the NYISO market has provisions for bilateral energy transactions. However, these transactions are also purely financial and are typically between generation and load. Bilateral energy transactions have been used to facilitate REC sales from NYISO to ISO-NE, but this is because energy must be scheduled across the RTO interface, and energy marketers charge generators a significant premium on the transaction. Such an arrangement should not be necessary to deliver RECs internally in the NYISO.

To accommodate the complexities of operating the NYISO's first intrastate HVDC transmission line while ensuring the most economic outcome for ratepayers across New York State, control of the Clean Path New York New Transmission line will rest with the NYISO. The NYISO will adhere to security-constrained economic dispatch of the New Transmission line. As outlined in Sections 5.4 and 5.7 in more detail, Clean Path New York is leading an effort at the NYISO Budget & Priorities Working Group for the NYISO to prioritize resources to develop and implement new market rules for operation of the New Transmission line that will ensure high utilization of the line with renewable assets.

Clean Path New York is proposing to leverage NYPA's Blenheim-Gilboa pumped storage facility to provide storage of renewable energy and RECs. Blenheim-Gilboa provides a unique opportunity to balance intermittent renewable generation to maximize utilization of the New Transmission, in alignment with NYSERDA's goals to increase market opportunities for storage to serve as a transmission asset while at the same time increasing the utilization and value to NYPA and the NYISO system of a very large existing storage asset. It is important to note that Blenheim-Gilboa is already an important capacity and storage resource for NYISO, and any operation of the facility for that purpose will take first precedent. We note that NYISO recently updated its energy storage market rules, and this proposal assumes that the implementation of those new rules does

[1] Based on Clean Path New York's understanding of the provisions outlined in Section 7.6.5 of the RFP, and Section 3.01 of the standard form Tier 4 REC contract, the Delivery Verification Plan does not contemplate losses upstream of the Delivery Point and as such, any losses upstream of the Delivery Point have not been incorporated into this bid.

not unreasonably prohibit the ability of Blenheim Gilboa to operate outside of NYISO-designated capacity events. Currently, Blenheim-Gilboa's capacity and storage related market obligations comprise a very small percentage of annual hours, leaving a significant opportunity for Clean Path to increase the utilization of the facility.

Clean Path New York will actively work with NYPA to coordinate the scheduling of Blenheim-Gilboa in order to maximize the utilization of the New Transmission line with the Resources under Clean Path New York control. NYPA will complete scheduling of dispatchable resources, along with monitoring and settling of energy flows across the New Transmission line as illustrated in Figure 5-2.

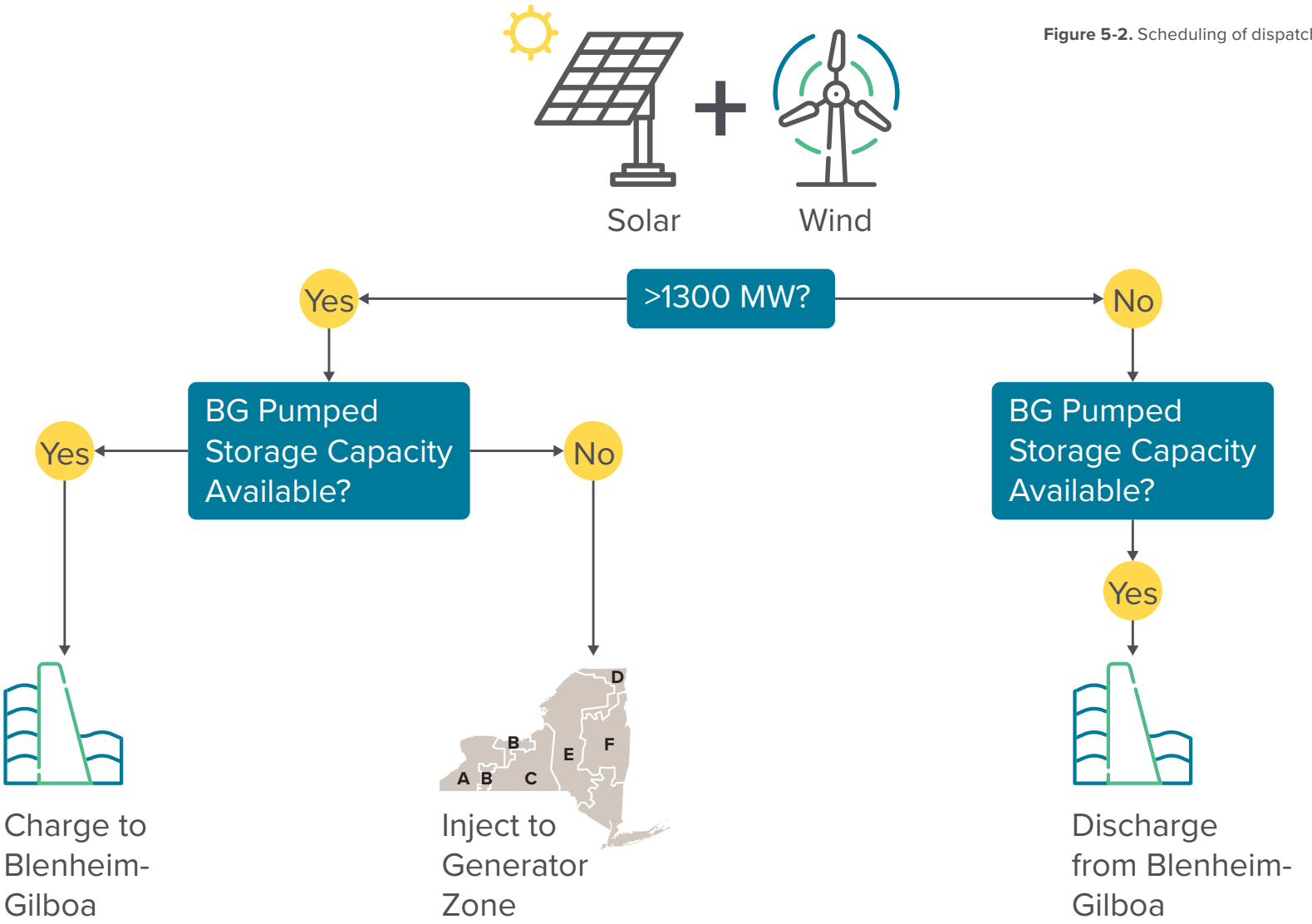


Figure 5-2. Scheduling of dispatchable resources.

Day ahead

Our approach to the day ahead scheduling will be as follows:

1. Clean Path New York will receive expected hourly generation schedules from the intermittent resources included in Clean Path New York's generation portfolio.
2. Clean Path New York will receive the hourly energy dispatch to Zone J on the New Transmission line as determined by NYISO.
3. Clean Path New York will reconcile expected intermittent generation with New Transmission line energy dispatch to Zone J and Blenheim-Gilboa in the following manner:
   - If, in any hour, the scheduled renewable generation is less than the projected New Transmission line energy dispatch to Zone J, Clean Path New York will request that NYPA schedule discharge from the pumped storage facility in Blenheim-Gilboa, subject to available storage volumes and discharge capacity, up to the availability of the New Transmission line. Maximum utilization of the New Transmission line will be the objective. Our proposed portfolio of Resources provides sufficient energy availability to maximize the utilization.
   - If, in any hour, the scheduled renewable generation is more than the projected New Transmission line energy dispatch to Zone J, Clean Path New York will request that NYPA schedule charge to the pumped storage facility in Blenheim-Gilboa, subject to available storage volumes and charge capacity. If charging to Blenheim-Gilboa is insufficient to utilize all of the excess generation, any remaining generation from Resources would "spill" onto each generation's local zone. For resources holding Tier 1 agreements with NYSERDA for the same generation asset, the RECs associated with this excess generation would be compensated under the terms of that agreement.

Real time

During real time dispatch and performance, the following steps will be considered:

1. Clean Path New York will receive updated day-of generation schedules from the intermittent resources included in Clean Path New York's generation portfolio, along with updated day-of New Transmission line scheduled energy dispatch to Zone J from the NYISO.
2. Clean Path New York will reconcile expected intermittent generation with New Transmission line availability and request that NYPA modify dispatch commands to Blenheim-Gilboa consistent with the methodology outlined above to account for any deviations between day-ahead schedules and real-time performance.

As illustrated in Figure 5-3 on the next page, this active energy management approach, coupled with numerous resources and flexibility, would result in substantially increased utilization of the New Transmission line that will ensure delivery of renewable resources to Zone J at the lowest cost.

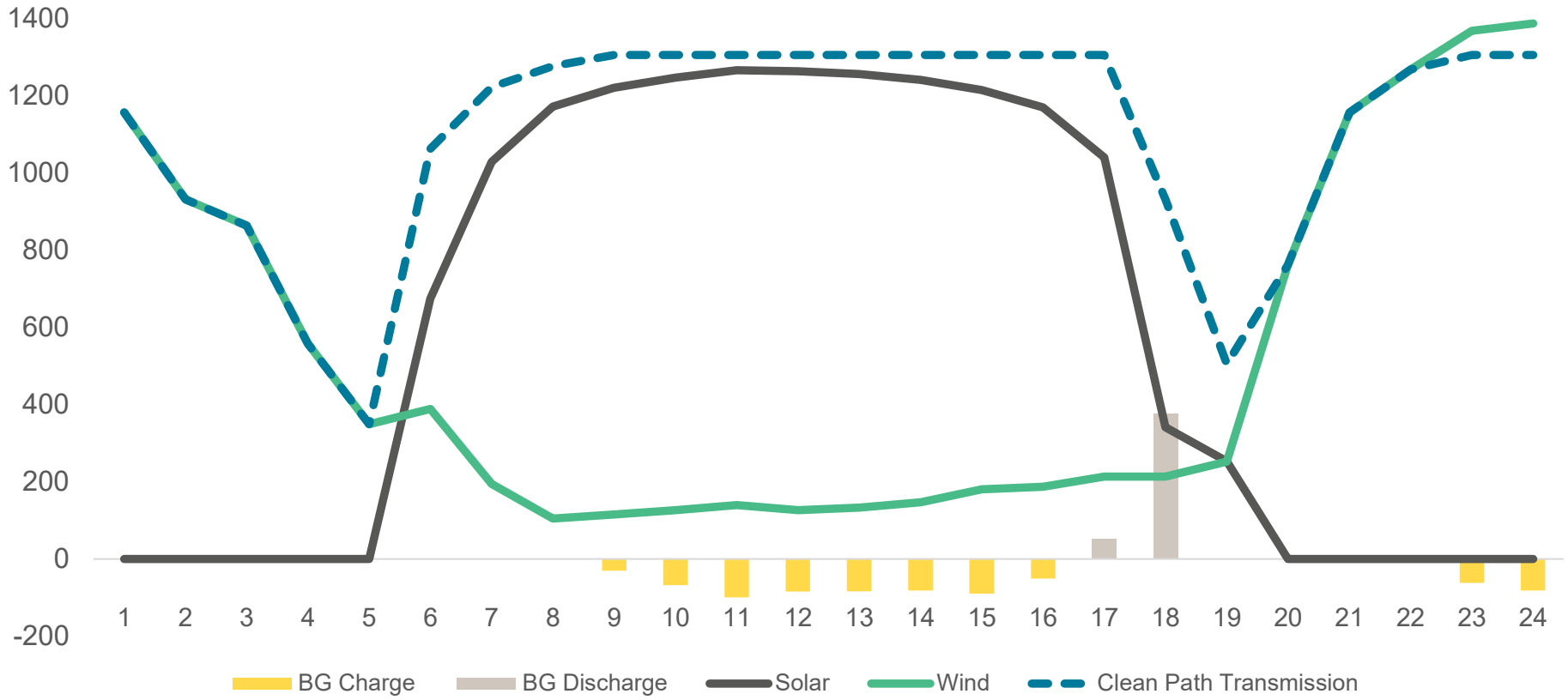


Figure 5-3. Example of hourly energy dispatch and line utilization.

5.4. Risk mitigation of unavailability, curtailment, and underutilization of New Transmission

The project will deploy several layered tactics to mitigate the impact of any risks that would limit the potential of the New Transmission line to deliver renewable energy to Zone J. Next we discuss the risk mitigation of unavailability, curtailment, and underutilization.

Availability

Physical availability

The New Transmission has been designed to achieve very high availability. Weather, including lighting, wind, falling trees, ice, or extreme temperatures, is by far the leading cause of New Transmission outages. Animals or vehicular accidents can also cause outages. Because the entire HVDC line will be underground, these outage risks are virtually eliminated. Additionally, HVDC converter station technology is highly reliable and achieves very high operating availability. Clean Path New York will secure availability guarantees from the converter station suppliers to mitigate the risk of outages of those systems.

Furthermore, the involvement of experienced transmission owners and operators from NYPA and Invenergy will help ensure the physical availability of the New Transmission line. NYPA has used its deep design and operating expertise to develop the New Transmission line with reliability in mind from the start. Each party has the experience to identify and plan for contingencies that could risk the continuity of reliable operations. Furthermore, performance guarantees related to availability and losses embedded in the Transmission Services Agreement will ensure that incentives are aligned between NYPA, Clean Path New York Infrastructure LLC, and Clean Path New York LLC to maximize the New Transmission line performance.

Economic availability

At present, NYISO market rules do not contemplate the operation of an HVDC transmission line that both sources from and sinks into the NYCA. Clean Path New York was the first participant among the NYISO working group members to identify a gap in the NYISO's tariff regarding the treatment of an intrastate HVDC transmission asset. Clean Path New York led efforts to encourage the NYISO to develop the needed market rules by proposing to the Budget & Priorities Working Group on March 24, 2021 that the NYISO staff prioritize those rules by the NYISO's Budget & Priorities Working Group to prioritize the development of such market rules in calendar year 2022. Amongst the rules to be developed, Clean Path New York is proposing that the New Transmission line be dispatched into Zone J in a manner that accounts for the value of Tier 4 RECs via a price signal that would help ensure that the line is dispatched by the NYISO in harmony with the goals of the Tier 4 program. This measure is in accordance and consistent with existing treatment of renewable resources and the principles of economic dispatch while providing a level of certainty regarding energy flows across the line into Zone J.

Utilization

Ensuring utilization of the New Transmission line is among the highest priorities for the project. Tactics to increase line utilization include these:

Generation mix

Clean Path New York has assembled an unparalleled portfolio of more than 3,400 MW of exclusively New York renewable generation to support this proposal. Clean Path New York is confident this portfolio represents the largest volume of in-state renewables of any project and highest utilization of any intrastate transmission line, resulting in optimum project economics while also maximizing in-state economic benefits. The advantages of this large portfolio are further amplified by leveraging the state's largest storage resource, Blenheim-Gilboa, as described in detail in Section 9. Because wind has a much more diverse generating profile than solar, in addition to a significantly higher net capacity factor, a large quantity of wind is essential to a cost effective and successful Tier 4 project. Selecting generation resources with sufficient capacity, zonally diversified, with no more than 30% of capacity in any one zone. This will help to reduce overall basis risk to Clean Path New York and will also provide resource diversity to the portfolio. This will naturally lead to a high utilization factor and lower delivered cost. Through its development process, Clean Path New York simulated thousands of different generation portfolios to bracket the optimal mix and has assembled a collection of resources that closely aligns with that solution set. Furthermore, Clean Path New York will secure, via acquisition or contract, additional generation resources that can be called upon in the event of nonperformance by one or more selected generation resources. Additionally, Clean Path New York will prioritize selection of generation resources with executed Tier 1 REC agreements with aggregate capacity of 2,000 MW, as these projects will be able to monetize the environmental attributes that cannot deliver directly to Zone J or storage assets, as well as Tier 1 contracted assets are likely to have lower costs due to a lower risk of losing production tax credit monetization. While the portfolio is expected to produce a minimal amount of generation in excess of the project's capacity, the preferential selection of Tier 1 assets will facilitate the participation of generation resources and reduce the levelized cost of generation. A summary of the Tier-1 contracted assets is provided in Table 5-2 on the next page.

Project	Developer	Capacity	Technology	Tier-1 contract
Alle-Catt Wind	Invenergy	340 MW	Wind	✓
Horseshoe Solar	Invenergy	180 MW	Solar PV	✓
Number Three Wind	Invenergy	104 MW	Wind	✓
Ball Hill Wind	Northland	107 MW	Wind	✓
Bluestone Wind	Northland	111.8 MW	Wind	✓
High Bridge Wind	Northland	103.2 MW	Wind	✓
Bald Mountain Solar	Boralex	20 MW	Solar PV	✓
West River Solar	Boralex	20 MW	Solar PV	✓
Sandy Creek Solar	Boralex	20 MW	Solar PV	✓
Greens Corners Solar	Boralex	120 MW	Solar PV	✓
Sky High Solar	Boralex	20 MW	Solar PV	✓
Baron Winds Phase I	RWE	121.8 MW	Wind	✓
Heritage Wind	Apex	198 MW	Wind	✓
Prattsburgh Wind	Terra-Gen	147 MW	Wind	✓

Table 5-2. Tier-1 contracted assets.

Energy management
An active energy management strategy executed by a manned control center can correct for deviations from the planned dispatch in real time and ensure that resources are effectively and efficiently utilized.

Storage
The pumped storage facility at Blenheim-Gilboa will offer the project a significant degree of flexibility with respect to dispatch of the New Transmission line. With a charge/discharge capacity of 1,160 MW and a storage capacity of up to 12,000 MWh, Blenheim-Gilboa will retain the value of intermittent, in-state renewables while improving the utilization of the New Transmission line. More information about Blenheim-Gilboa is provided in Section 9, Energy Storage Operation Plan.

Curtailment
In the event of curtailment of the New Transmission line, the facility at Blenheim-Gilboa can provide long-duration storage of the intermittent resources that would otherwise be injected directly into New York City. This flexibility offers the project another tool to reduce risks which would otherwise limit its capacity.

5.5. Assumptions related to unmitigated risk of unavailability, curtailment, and underutilization
Our bid price includes operational risks considered and related to unavailability, curtailment, or underutilization of the New Transmission line. In commercial operation, Clean Path New York will assume the risks outlined in Table 5-3 on the next page.

Additionally, Clean Path New York will be required to cede operational control of the New Transmission line to the NYISO, which does not currently have market rules governing the operation of internal controllable lines. This arrangement results in a risk that cannot be mitigated, is out of the control of Clean Path New York, and has not been factored into the bid price. Clean Path New York may need to discuss risk allocation with regards to New Transmission line unavailability resulting from the operational decisions of the NYISO. Clean Path New York believes accepting this risk would make any intrastate (and perhaps even out of state) Tier 4 project unfinanceable.

Risk	Description
Unavailability (physical)	Inability of the New Transmission line to meet its technical capacity due to outage or derating resulting from physical factors associated with the New Transmission line or either converter station (e.g., outage due to preventative maintenance at a converter station, New Transmission line outage due to damage)
Curtailment	Reduction of generation resource output as directed by the New York Independent System Operator (e.g., NYISO directs a wind farm operating at 200 MW to reduce output to 150 MW to maintain system reliability)
Under-utilization	Inability of the generation Resources to meet the full availability of the New Transmission line (e.g., the sum of all generation Resources is 743 MW and New Transmission line availability is 1,300 MW)

Table 5-3. Assumptions related to risk of unavailability, curtailment, and underutilization.

Any reduction in the full technical availability of New Transmission capacity of the line to inject power into Zone J is wholly subject to the discretion of the NYISO and outside the control of Clean Path New York. Clean Path New York is engaging NYISO stakeholders to contemplate revision of the market rules for internal controllable lines to remove the challenges such projects would otherwise confront. If selected for award, Clean Path New York will continue to work with NYSERDA to develop an alternative structure through which to address this risk. This proposed structure, which would be narrowly defined to address the issue of New Transmission line unavailability resulting from the operational decisions of the NYISO outside of Clean Path New York's control, is outlined in detail in Appendix 5, Tier 4 REC Standard Form Purchase and Sale Agreement memorandum.

5.6. Assumptions regarding compensation under Tier 1 for undeliverable RECs

Clean Path New York will prioritize the selection of generation resources with executed Tier 1 REC agreements as these projects will be able to monetize the environmental attributes that cannot be delivered directly to New York City or storage assets (i.e., RECs associated with spilled power). For Tier 1 resources, where RECs cannot be delivered to New York City and cannot be used to charge Blenheim-Gilboa, the RECs associated with this excess generation would be compensated under the terms of their existing Tier 1 agreements with NYSERDA.

5.7. Demonstrating delivery by providing capacity to Zone J and New Transmission UDRs

Clean Path New York does not believe it is possible for an intrastate HVDC project to commit to demonstrating delivery by providing capacity into Zone J over New Transmission due to the lack of necessary market rules and structures. Below we provide a description and background on the existing regulatory structure followed by a discussion of the need for market rules for controllable lines internal to NYCA.

Unforced Capacity Deliverability Rights (UDRs) are rights associated with a specific controllable and schedulable transmission facility (hereinafter, a “controllable transmission facility or project”) with a terminus in a NYISO Locality. External UDRs are associated with controllable transmission facilities connecting the NYCA to an External Control Area. Internal UDRs are associated with controllable transmission facilities connecting a non-constrained region in the NYCA with a NYISO Locality.

External UDRs allow capacity external to a NYISO Locality to be treated as if it were physically located in that NYISO Locality, thereby facilitating the delivery of capacity into that NYISO Locality. Indeed, several currently operating controllable transmission projects, including the Cross Sound Cable and Linden VFT transmission projects, have been awarded external

UDRs that enable the delivery of capacity physically located outside of the NYCA over their transmission facilities into a NYISO Locality.

However, while the construct of internal UDRs exists within the NYISO open access transmission tariff (OATT), the NYISO market rules that are necessary for the implementation of these internal UDRs do not exist. Moreover, the NYISO market rules necessary to contemplate operation of an intra-NYCA controllable transmission facility do not currently exist.

Clean Path New York is taking a leadership role with the NYISO to enhance the market rules that will enable accommodating the complexities of operating the NYISO's first intrastate HVDC transmission line while ensuring the most economic outcome for ratepayers across New York State. This mainly entails that the control of the project's New Transmission will rest with the NYISO. Clean Path New York has initiated conversations with the Interconnection, Market Design, and Market Operations teams at the NYISO to discuss the path forward for development and implementation of new market rules associated with intra-NYCA controllable transmission facilities. Clean Path New York is also leading an effort currently before the NYISO Budget & Priorities Working Group for the NYISO to prioritize resources to develop and implement new market rules for operation of the New Transmission line that will ensure high utilization of the line with renewable assets.

These rules are necessary not only for Clean Path New York, but for any intra-NYCA controllable transmission facility, including any other intra-NYCA New Transmission facilities being offered in response to NYSERDA's Tier 4 RFP solicitation. These intra-NYCA controllable transmission facilities will be vital to unlocking the potential of upstate renewable generation resources to serve downstate loads, which is why Clean Path New York has taken the lead in working with NYISO to develop a framework for its operation.

Certainty about the market treatment of an intra-NYCA controllable transmission facility will influence the New Transmission interconnection approach under the NYISO OATT taken by Clean Path New York. In order to achieve Unforced Capacity (UCAP), and thus offer capacity deliverable in Zone J, any controllable transmission line must secure both UDRs and Capacity Resource Interconnection Service (CRIS) rights. However, the absence of NYISO market rules governing treatment of an intra-NYCA controllable transmission facility leaves open the question of whether or not such a transmission facility could secure local UDRs. Without UDRs, such a transmission facility would be ineligible for CRIS rights, which are awarded through a Class Year Deliverability Study.

At present, the interconnection request for Clean Path New York is based on pursuing Attachment P for NYISO OATT. The interconnection process under Attachment P is nominally followed for all intra-NYCA transmission projects subject to the operational control of the NYISO. It does not contemplate project participation in a Class Year Deliverability Study, the request for UDRs, or the award of CRIS rights.

Following the development and implementation of NYISO new market rules governing intra-NYCA controllable transmission facilities, and prior to execution of an interconnection agreement, Clean Path New York could elect to withdraw from Attachment P and proceed under Attachment X to the NYISO OATT in order to request CRIS . The interconnection process under Attachment X contemplates project participation in a Class Year Deliverability Study and award of CRIS rights. This, together with new market rules, could allow Clean Path New York to request UDRs and offer UCAP.

5.8. Explanation of production profile and delivery match profile

See Section 5.3, "Hourly energy matching", above for more details.

5.9. For dispatchable resources, factors that will determine the dispatch and delivery of energy to Zone J

See Section 5.3, "Hourly energy matching", above for more details.
Our proposal currently assumes no UDRs given the market rules. If circumstances change, Clean Path New York will share the net benefit with NYSERDA through as an offset against the RECs.

5.10. Information regarding the New Transmission

New Transmission overview

The New Transmission system spans approximately 174 miles. It connects Fraser Substation in Delaware County, Zone E as the withdrawal point to Rainey Substation, Queens County in Zone J as the delivery point. The route runs overland within existing rights-of-way and public streets and underwater within the Hudson River and Harlem River. Table 5-4 provides a summary of the New Transmission.

Fraser Substation to Rainey Substation	
Facility name	Clean Path New York
Entity responsible	Clean Path New York Infrastructure LLC
Withdrawal point	345kV Fraser Substation in Zone E
Delivery point	345kV Rainey Substation in Zone J
Development stage	Development ready
MW capability	1,300 MW
Commercial Operation Date	June 30, 2026

Table 5-4. Details of the New Transmission.

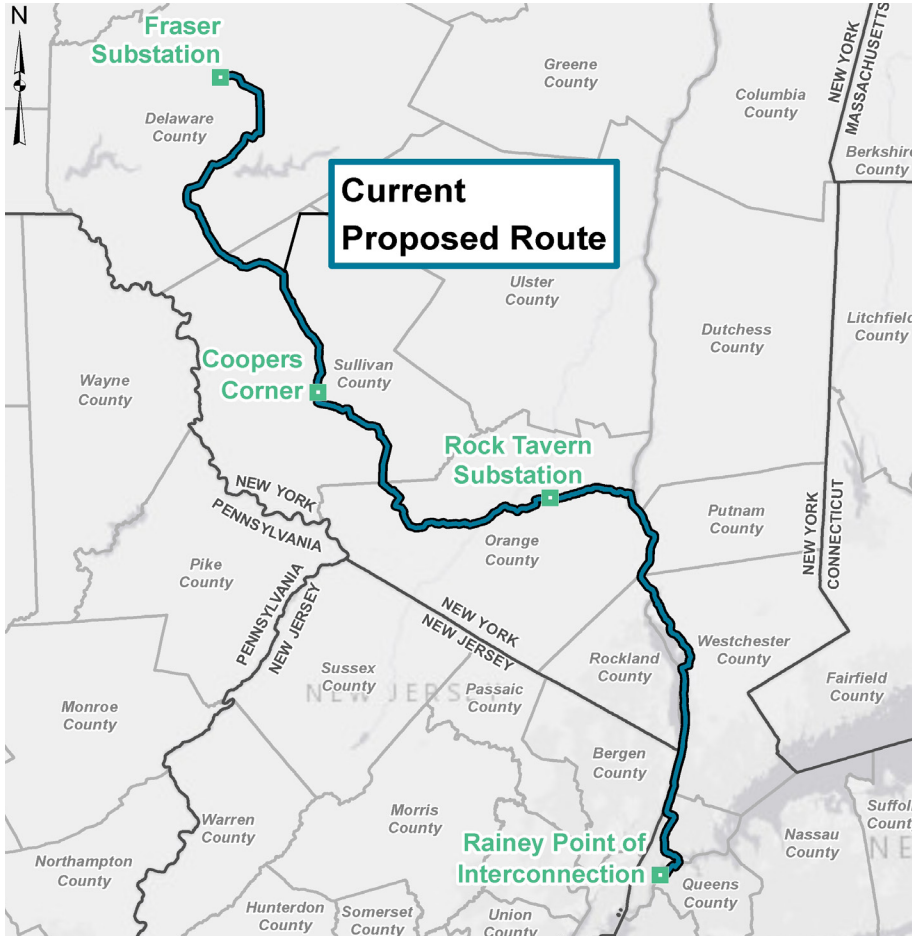


Figure 5-4. Proposed route overview map.

New Transmission technology

The New Transmission line will utilize state-of-the-art technology based on an HVDC voltage source converter (VSC) with the capability of delivering a capacity of 1,300 MW. A +/- 400 kV operating voltage was selected as the optimal voltage to maximize capacity. See Section 14 for more details with regards to the added flexibility using an HVDC line.

The HVDC link will be configured as a symmetrical monopole. In this configuration a single transformer secondary feeds a single pole, the center of the DC bus of each converter station is usually grounded, and the converter stations are connected to two transmission links at equal and opposite potentials: the positive pole and the negative pole. A schematic of the New Transmission line is shown in Figure 5-5 on the next page.

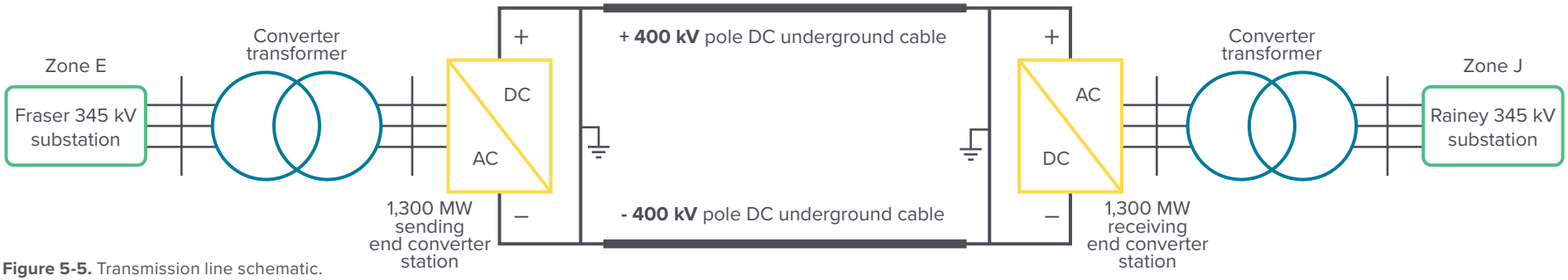


Figure 5-5. Transmission line schematic.

The proposed technology deploys insulated gate bipolar transistors to switch the DC voltage. This commutates the DC voltage to the expected AC voltage of the grid to which it is delivering power. The transistors operate based on information provided by the control systems, increasing the control of real and reactive power with reactive compensation capabilities.

The project will include two VSC HVDC stations located at each end of the transmission link: Fraser in Zone E and Zone J. At the withdrawal point, the New Transmission line will use the NYSEG Fraser 345 kV yard by installing a new breaker in a spare bay position in the existing breaker-and-a-half substation. At the delivery point, it is planned to connect to the CECONY Rainey Substation by installing two new breakers and expanding the existing ring bus to meet the CECONY operations procedures and reliability standards.

The symmetrical monopole link will include a buried section of two 2,500 mm^2 underground cross-linked polyethylene (XLPE) HVDC cables. A fiber optic communication link will connect both converter stations, with submarine portions of single-core 2500 mm^2 armored copper XLPE cable in the Hudson, Harlem, and East Rivers, to Zone J. XLPE cabling provides better performance at high and low temperatures.

Our proposed route

A key strategy for defining our proposed primary route was to utilize existing public ROW and utility corridors to minimize community impacts and disruptions and to also streamline the permitting and regulatory process. Additionally, our proposed route was selected based on an extensive and thorough iterative process that involved assessing publicly available GIS data, USGS topographic information, land use information, geologic data, property tax map parcel information, existing utility/infrastructure data, and other pertinent data. This process included hosting numerous workshops and consultations with internal and external project stakeholders to solicit feedback and refine the primary proposed route.

Alternatives/back-up routes were also identified during this process to proactively plan for challenges that could be encountered along the primary route for several high-risk areas. Clean Path New York will continue this process as additional data is gathered during future field investigations and detailed engineering. The proposed route, assessment process, and primary alternatives are further described below.

Clean Path New York's proposed New Transmission route originates at the existing Fraser Substation in Delaware County, NY and continues south within the existing New York Power Authority (NYPA) right-of-way (ROW) for approximately 105 miles underground. This ROW segment offers a competitive, cost effective, and low risk approach to create the energy highway needed to deliver the Tier-4 RECs into New York City.

[redacted]

A map book for the proposed route is attached as Appendix 6 to the proposal.

The proposed route is composed of the following major construction components:

- Underground segments with focus on the following sub-segments:
  - Existing transmission ROW
  - Public road ROW in Orange County
  - Public road ROW in Westchester County
  - Public road ROW in the Bronx
  - Public road ROW in Queens
- Submarine segments with focus on the following sub-segments:
  - Hudson River
  - Harlem River
  - East River
- Total number of onshore horizontal directional drills (HDDs)
- Total number of landfall approaches
- Steep slope and bedrock along the route

Below are the key criteria and guiding principles that were used to develop the proposed route.

Utilizing existing utility corridors/right-of-way

A key consideration for developing a proposed route was utilizing existing utility corridors/ROW. Benefits of siting the proposed routes within existing utility corridors/ROW include the following:

- Reduced/eliminated ROW acquisition costs for permanent easements.
- Reduced impacts to previously disturbed land and potential utility interference conflicts.
- Minimization of landowner negotiations for private properties.
- Preferred siting by regulatory agencies, resulting in improved permitting certainty.
- Improved constructability and production rates: Using existing utility corridors and public ROWs should limit environmental and other impacts.
- Reduced restoration costs: Existing utility corridors are typically vegetated areas with limited hardscape/pavement, resulting in reduced restoration costs compared to road installations.

All the underground cable will consist of duct bank with two eight-inch conduits for the 400 kV DC cables and one four-inch conduit for the fiber optic cable, as shown conceptually in Figure 5-6. Segments that are in the public ROW will have concrete-encased duct banks while segments within the NYPA Marcy South transmission line ROW will have sand-encased duct banks. This approach will help secure the DC cables while meeting the permitting requirements.

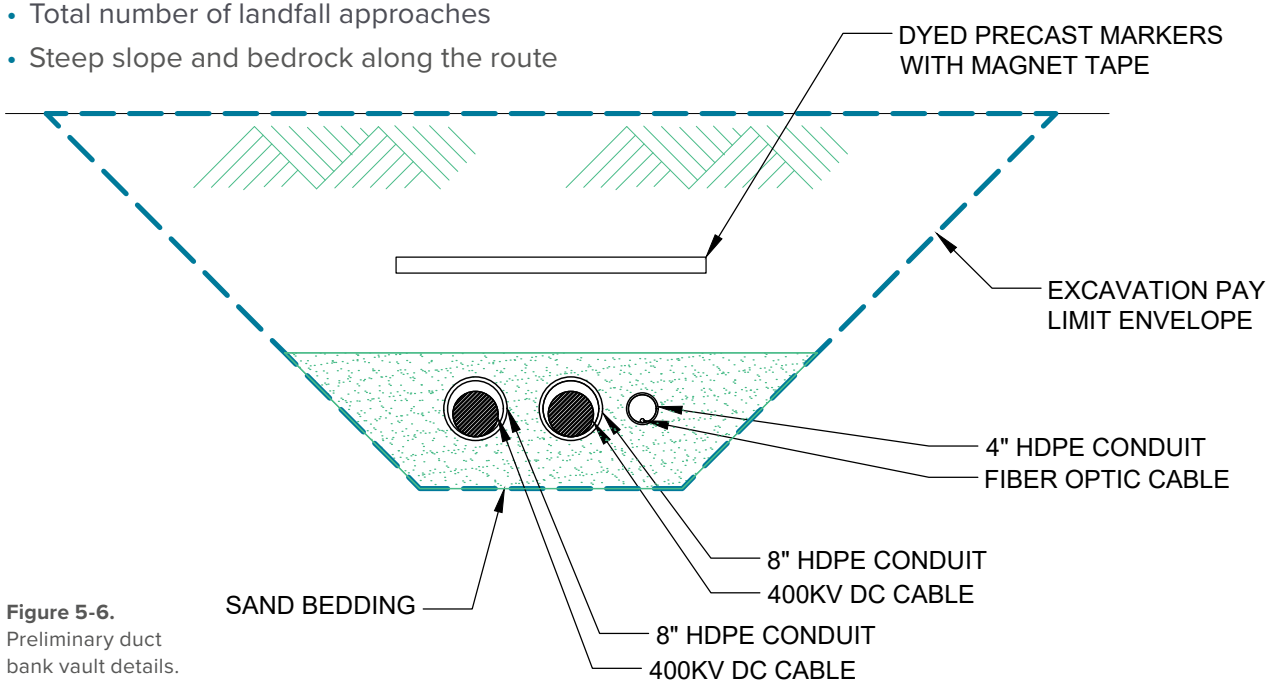


Figure 5-6.
Preliminary duct bank vault details.

Minimizing public/project stakeholder impacts

A key component of the route selection is minimizing impacts to the public and project stakeholders, including businesses, public emergency services, public transportation, recreational areas, and utilities. The density of the population/development along the project route corridor varies from rural to highly developed/urban areas. Clean Path New York has also conducted meetings with agencies such as NYISO, NYSDOT, NYSDEC, OGS, and USFWS which were key to understanding key requirements, schedule drivers and the impact of key permitting requirements in developing a realistic and achievable target commercial operation date. Outcomes from conversations with the agencies were weaved into the development and have informed key development decisions.

Minimizing street work

Street work should be avoided to reduce impacts on pedestrian and vehicle traffic and to enhance safety during construction to the extent feasible. Other benefits of avoiding street work include faster production rates, wider construction corridors, and lower project costs. Avoiding existing utilities and minimizing street work are related concepts. Township and county roadways typically contain gas, sewer, water, stormwater, telecommunications, and electric utilities.

Minimizing environmental/cultural/endangered species impacts

A key consideration in routing is minimizing impacts to wetlands, waterbodies, cultural/historical areas, endangered species, and other environmental resources. Avoiding these areas will improve the overall project, including lower construction costs and mitigation fees, improved constructability, improved public perception, and potentially improved permit certainty and timelines. Similar projects were required to adjust their proposed route alignment due to the presence of shortnose sturgeon within the Hudson River. Avoiding the breeding area of this endangered species was an important consideration for determining the proposed route.

Maximizing space

Maximizing space is accomplished by locating the route within wider ROW corridors. Wide corridors are typically needed to allow for adequate construction workspace and access to the site for installation of the project.

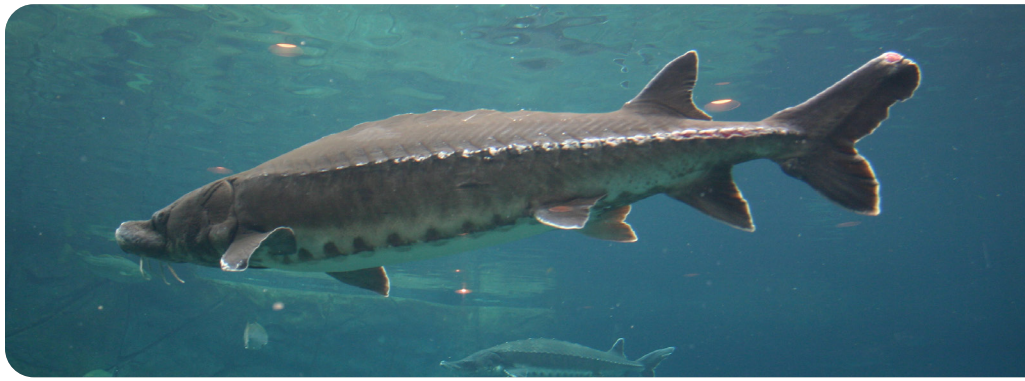


Figure 5-7. Impacts to the environment, such as the endangered shortnose sturgeon found in the Hudson River, will be considered and minimized.

At this conceptual stage of the design, not all field conditions are known. It is inevitable that site constraints and issues will be identified as field surveys are completed during the detailed design. By routing in wider ROW corridors, constraints not currently known may be mitigated during detailed design with minor modifications to the route alignment and/or construction workspace. If the space is not available, the minor modifications become more challenging to implement.

Trenchless and HDD consideration

Trenchless crossings are required across the route. These were evaluated to minimize impact while addressing site-specific risks. Our review identified the high-risk trenchless crossings to support the selection of the proposed route.

Submarine routing evaluation

The proposed route includes submarine routing through sections of the Hudson, Harlem, and East Rivers. At the time of submitting this proposal, the proposed route for these in-water sections was developed through a desktop-level mapping assessment using publicly available data such as National Oceanic and Atmospheric Administration (NOAA) navigation charts, New York State Department of Environmental Conservation (NYSDEC) Hudson River estuary data and maps, historical aerials, and US Army Corps of Engineers historical bathymetry surveys. Additionally, we have met with a variety of state and local agencies for initial routing feedback and have adjusted the route as a result of those conversations.

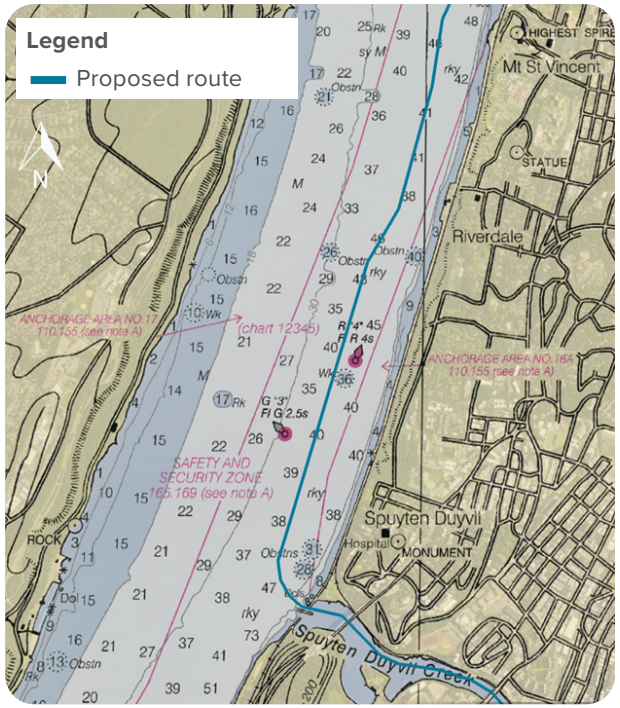


Figure 5-8. NOAA navigation chart.

The mapping assessment evaluated physical conditions such as water depths, riverbed slopes, substrate data (where available), NOAA-charted obstructions, navigation aids and channels, existing cables and pipelines, anchorage areas, and relic structures. Where possible, given the available data reviewed, the proposed alignment avoids areas of high risk and challenging physical conditions.

The cable is proposed to be installed within a trench below the riverbed, using burial tools such as a cable plow, self-propelled trencher, or similar. Additional cable protection such as marine mattresses or riprap armor may be required where a sufficient burial depth is not achievable (i.e., in areas with bedrock) and/or where the cable must cross existing buried utility lines (cables and pipelines).

Typical cable-laying vessels and equipment can likely be utilized in the deeper sections of the rivers, which are usually greater than 30 feet deep at Mean Lower Low Water. Specialty shallow-draft vessels and/or barges and support equipment will likely be utilized in segments with physical constraints such as shallow water less than 30 feet deep at Mean Lower Low Water and narrow and/or low bridges.

Detailed in-situ data collection efforts, including geophysical and bathymetric surveys, are planned along the proposed route to support route refinement efforts. These surveys will further identify riverbed conditions, strata, and uncharted obstructions. This new data will also be used to inform additional studies such as a riverbed mobility assessment, navigation hazard assessment, and a Cable Burial Risk Assessment, which will refine the proposed alignment. The Cable Burial Risk Assessment will involve a detailed analysis of the anthropogenic and natural conditions along the proposed alignment and will be used to quantify risks and aid in the selection of the proposed cable burial depths within each waterway.

Subsea landfall evaluation

The upland, shoreline, and nearshore physical conditions of the proposed landfalls between each section of in-water routing were based on publicly available information such as historical aerials and NOAA navigation charts.

Within each landfall region, multiple sites were evaluated for both trenchless and trenched construction methods. Each site was assessed against criteria that evaluated physical conditions such as available upland workspace, proximity to residential areas, access for construction equipment, presence and type of shoreline stabilization structures, interference with vessel navigation, nearshore obstructions, and distance to deep water. Impacts to the overall cable alignment length and upland routing requirements were also considered.

The alternative landfall sites were narrowed down to locations that are anticipated to simplify construction and reduce overall project risk as best as possible at this level of assessment. Additional data collection efforts and coordination with agencies and landowners will be conducted for each proposed landfall site, to aid in refining the landfall alignments.

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ROW acquisition status and site control

The proposed ROW for the New Transmission requires minimal to no acquisitions. As explained above, the proposed route will largely utilize existing NYPA transmission Marcy South ROW between the withdrawal point at Fraser and Rock Tavern. From Rock Tavern to the Rainey Substation, the path will utilize public ROW including the Hudson River.

Clean Path New York have secured 40 acres through an option agreement between NYPA and the Linda S. Brodeur Revocable Trust to develop and operate the northern converter station located in at the withdrawal point near Fraser, a copy of the Option Agreement for Purchase of Real Property is provided under Appendix 26. The option is for an adjacent lot near the 345 kV Fraser substation. A copy of the agreement can be made available at NYSERDA's request.

Status of transmission service agreement, operating agreement between Clean Path New York LLC, and Clean Path New York Infrastructure LLC

Clean Path New York LLC will execute a Transmission Services Agreement with NYPA and Clean Path New York Infrastructure LLC to define the commercial terms and conditions under which Clean Path New York will utilize the New Transmission line and compensate the transmission owners. These agreements will include standard commercial terms, as well as standards of performance regarding availability and efficiency to ensure full utilization of the New Transmission line.

Scheduling coordinator entity and operating agreement terms

As noted above, any intra-NYCA controllable transmission facility must be operated by the NYISO in order to ensure system reliability and economic dispatch. While Clean Path New York is advocating the adoption of market rules that could change this arrangement, at present operational control would remain with the NYISO. However, as outlined above, Clean Path New York LLC will contract for energy management services necessary to coordinate scheduling of dispatchable resources, along with monitoring and settling of energy flows across the New Transmission line to ensure consistent utilization. This contract would be negotiated as a simple fee-for-service arrangement with an energy management provider such as Invenergy Services or another energy provider.

NYISO market participant entity for Resources

Clean Path New York LLC or a subsidiary will be the NYISO market participant with respect to the project Resources. Clean Path New York LLC will utilize an Index REC structure comparable to the one devised by NYSERDA for the contracts signed with project Resources, which offers generators better price certainty and lower energy costs. The generator contracts will be settled at each resource's zonal hub, leaving generators as the market participants to clear energy capacity payments and Clean Path New York to pay the net REC cost to generators to secure the environmental attributes.

Capacity utilization plan

As explained above, the operational control exercised by NYISO will adhere to a security-constrained, economic dispatch of the New Transmission line consistent with standard practice. While the sum of the Resources may at times be less than the capacity of the New Transmission line, it is highly likely that the NYISO will utilize the full capacity of the line to reduce congestion costs across the bulk transmission system. In fact, PowerGEM has estimated that in 2030, the project will reduce congestion costs by $5.6 billion for ratepayers in New York. A PowerGEM detailed report is provided under Appendix 7.

$5.6 billion

reduction in congestion costs for ratepayers in New York

New Transmission capacity allocation among Resources and managing Resources excess capacity

When the energy manager reconciles the energy flows across the New Transmission line, priority of allocation will follow ascending generator strike price, comparable to a nominal generation stack. The lowest-cost generator, in any hour, will receive an allocation up to its generation capacity in that hour, followed by the next highest cost generator. The energy manager will follow this approach whether the energy production from the Resources exceeds or falls short of the New Transmission in any hour. In the event that energy production exceeds the capacity of the New Transmission line, the energy manager will direct charging to the pumped storage facility at Blenheim-Gilboa, subject to storage availability and pumping capacity. See Section 5.3, "Hourly energy matching", above for more details on managing the excess capacity.

5.11. Rights to capability of the New Transmission

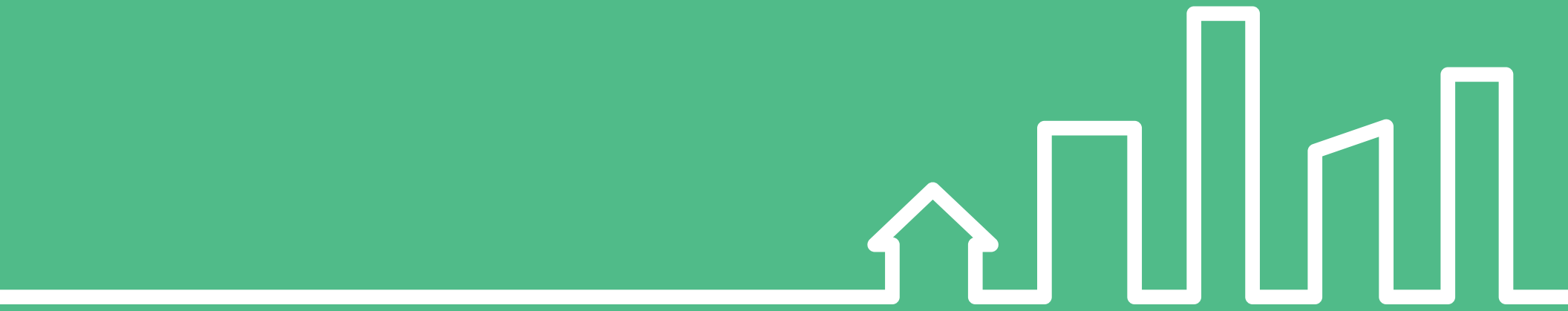
As the NYISO will exercise operational control of the line, Clean Path New York will not have exclusive rights to the capability of the New Transmission line. Clean Path New York will coordinate the utilization and allocation. Additionally, Clean Path New York is currently engaging NYISO stakeholders to contemplate revision of the market rules.

5.12. Conditionality of acceptance of other proposal(s)

The proposal is not conditional upon acceptance by NYSERDA of other proposal(s) proposing to utilize the same New Transmission.

Section 6

Baseline verification plan

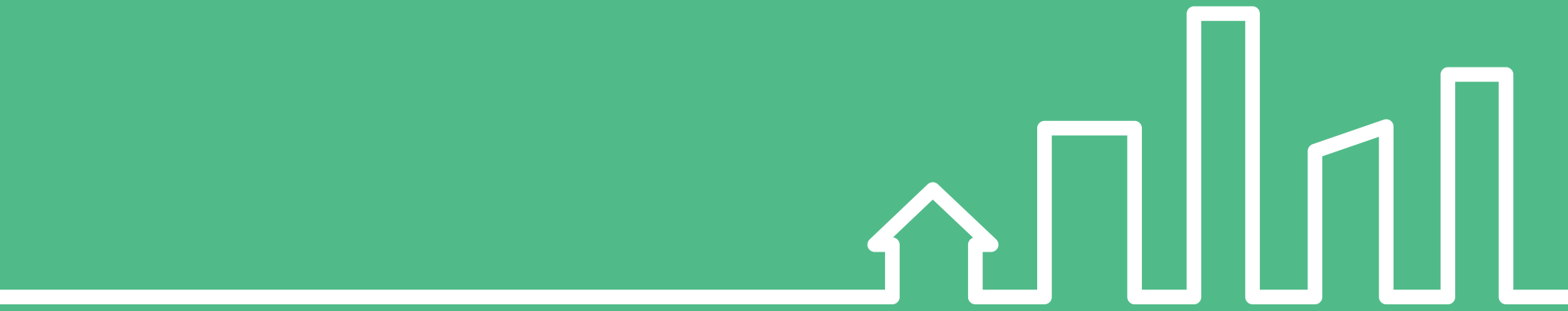


6 Baseline verification plan

No hydroelectric power is being offered; therefore, this section is not applicable.

Section 7

Interconnection plan



7 Interconnection plan

7.1. Resource interconnection application status, queue position and information regarding interconnection request, studies undertaken and estimates of system upgrade costs

The resources included in the Clean Path New York portfolio provided in this proposal have all filed interconnection requests with NYISO, with the exception of one 20 MW resource that will file its request soon.

For each resource in the portfolio, the subsections below provide information related to the NYISO interconnection application for its injection point, including queue position, studies undertaken, and cost estimate for system upgrades where applicable.

Under Appendix 8 we have included the Class Year 2017 Facilities Study and under Appendix 9 the Class Year 2019 Facilities Study, which includes cost estimates for the resources that participated in the 2017 and 2019 class years. Other resources participating in the 2021 class year have good-faith cost estimates derived from their System Reliability Impact Studies.

Supporting information and completed NYISO and interconnection studies for the below resources are classified as critical energy/electric infrastructure information and are not included in this bid. Those are available for NYSERDA upon request.

340 MW

Alle-Catt Wind

Alle-Catt Wind filed an interconnection request with NYISO in January 2017. Its queue position is number 0596. Its System Reliability Impact Study and Facilities Study are complete. Alle-Catt participated in Class Year 2019 and accepted its cost allocation of $60,946,010 to obtain ERIS and CRIS. This cost includes its direct interconnect facilities (the Lime Lake Switchyard) and associated remote end upgrades, as well as a phase angle regulator at the 230 kV Hillside Substation to maintain transfer capability between PJM and NYISO. The upgrade cost estimate for Alle-Catt Wind is provided in the 2019 Class Year study. Alle-Catt's Facilities Study contains detailed cost estimates and CEII material. It can be provided to NYSERDA if requested, and with proper confidentiality provisions in place as required by NYISO.

180 MW

Horseshoe Solar

Horseshoe Solar filed an interconnection request with NYISO in May 2018. Its queue position is number 0710. Its System Reliability Impact Study is complete. Horseshoe Solar has entered Class Year 2021 to obtain ERIS and CRIS. Horseshoe Solar's System Reliability Impact Study includes a good-faith cost estimate for its interconnection of $6,350,000, but also contains CEII material. It can be provided to NYSERDA if requested, and with proper confidentiality provisions in place as required by NYISO.

Number Three Wind

104 MW

Number Three Wind filed an interconnection request with NYISO in January 2016. Its queue position is number 0531. Its System Reliability Impact Study and Facilities Study are complete. Number Three Wind participated in Class Year 2019 and accepted its cost allocation of $19,951,600 to obtain ERIS and CRIS. This cost includes its direct interconnect facilities (the Waters Road Station) and associated remote end upgrades. No other system upgrade facilities are required. The upgrade cost estimate for Number Three Wind is provided in the 2019 Class Year study. Number Three Wind facilities study contains detailed cost estimates but also CEII material. It can be provided to NYSERDA if requested, and with proper confidentiality provisions in place as required by NYISO.

Canisteo Wind

290 MW

Canisteo Wind filed an interconnection request with NYISO in October 2015. Its queue position is number 0519. Its System Reliability Impact Study and Facilities Study are complete. Canisteo Wind participated in Class Year 2019 and accepted its cost allocation of $1,730,109 to obtain ERIS and CRIS. This cost includes its direct interconnect facilities (the Bennett Station) and elective System Upgrade Facilities. The upgrade cost estimate for Canisteo Wind is provided in the 2019 Class Year study. Canisteo Wind facilities study contains detailed cost estimates but also CEII material. It can be provided to NYSERDA if requested, and with proper confidentiality provisions in place as required by NYISO.

Bull Run Wind

449 MW

Bull Run Wind filed two interconnection requests with NYISO: one in April 2015 for up to 303.6 MW under queue position 0497 and the other in December 2015 for an additional 145.4 MW under queue position 0521, totaling a combined 449 MW. The System Reliability Impact Studies for both queue positions are complete. Bull Run Wind has entered queue position 0521 into Class Year 2021 to obtain ERIS and CRIS. Bull Run Wind system reliability impact studies include a good-faith cost estimate for its interconnection of $9,643,000, but also contains CEII material.

Verona Solar

350 MW

Verona Solar filed two interconnection requests with NYISO in June 2019. Its queue position numbers are 0871 and 0873. Its feasibility studies are complete, and the System Reliability Impact Studies for both positions are underway and are expected to be complete in Q3 2021. Verona expects to enter Class Year 2022 to obtain ERIS and CRIS. Verona Solar's feasibility studies for queue positions 0871 and 0873 are attached under Appendix 10, which includes a preliminary cost estimate of $23,000,000 for its interconnection facility upgrades. Note that the cost estimates are for the same interconnection facility and are not additive. Only one POI switchyard would be built for the two queue positions.

Twinleaf Solar

75 MW

Twinleaf Solar filed an interconnection request with NYISO in March 2021. Its queue position is number 1141. Because it has sufficient site control, Twinleaf Solar has elected to skip the feasibility study and move directly into the System Reliability Impact Study. The scoping meeting has been held and the study is expected to commence shortly. Twinleaf expects to enter Class Year 2022 to obtain ERIS and CRIS. Based on cost estimates for similar facilities, Twinleaf Solar estimates that its interconnection upgrades will cost approximately $12,000,000.

Taproot Solar

205 MW

Taproot Solar filed an interconnection request with NYISO in March 2021. Its queue position is number 1140. Because it has sufficient site control, Taproot Solar has elected to skip the feasibility study and move directly into the System Reliability Impact Study. The scoping meeting has been held and the study is expected to commence shortly. Taproot Solar plans to enter Class Year 2022 to obtain ERIS and CRIS. Based on cost estimates for similar facilities, Taproot Solar estimates that its interconnection upgrades will cost approximately $23,000,000.

Wintergreen Solar

75 MW

Wintergreen Solar filed an interconnection request with NYISO in February 2021. Its queue position is number 1138. The scoping meeting has been held and the feasibility study is expected to commence shortly. Wintergreen Solar plans to enter Class Year 2023 to obtain ERIS and CRIS. Based on cost estimates for similar facilities, Wintergreen Solar estimates that its interconnection upgrades will cost approximately $6,000,000.

Orangeville Solar

75 MW

Orangeville Solar filed an interconnection request with NYISO in February 2021. Its queue position is number 1137. The scoping meeting has been held and the feasibility study is expected to commence shortly. Orangeville expects to enter Class Year 2023 to obtain ERIS and CRIS. Based on cost estimates for similar facilities, Orangeville Solar estimates that its interconnection upgrades will cost approximately $2,000,000.

Seventy Seven Solar

100 MW

Seventy Seven Solar filed an interconnection request with NYISO in February 2021. Its queue position is number 1139. Because it has sufficient site control, Seventy Seven has elected to skip the feasibility study and move directly into the System Reliability Impact Study. The scoping meeting has been held and the study is expected to commence shortly. Seventy Seven Solar expects to enter Class Year 2022 to obtain ERIS and CRIS. Based on cost estimates for similar facilities, Seventy Seven Solar estimates that its interconnection upgrades will cost approximately $2,000,000.

Bull Run Solar

170 MW

Bull Run Solar filed an interconnection request with NYISO in January 2018. Its queue position is number 0686. Its System Reliability Impact Study is complete. Bull Run Solar plans to enter Class Year 2022 to obtain ERIS and CRIS. Bull Run Solar's system reliability impact studies include a good-faith cost estimate for its interconnection of $5,000,000.

Ball Hill Wind

107 MW

Ball Hill Wind filed an interconnection request with NYISO in June 2015. Its queue position number is 0505. The System Reliability Impact Study and Facilities Study are complete. Ball Hill Wind participated in Class Year 2017 and accepted its cost allocation of $15,975,700 to obtain ERIS and CRIS. This cost includes its direct interconnect facilities (collector substation and transformer). No other system upgrade facilities are required.

Bluestone Wind

111 MW

Bluestone Wind filed an interconnection request with NYISO for 124.5 MW in September 2016. Its queue position number is 0579. The System Reliability Impact Study and Facilities Study are complete. Bluestone Wind participated in Class Year 2017 and accepted its cost allocation of $12,524,882 to obtain ERIS and CRIS. This cost includes its direct interconnect facilities (collector substation and transformer). No other system upgrade facilities are required.

High Bridge Wind

103 MW

High Bridge Wind filed an interconnection request with NYISO for 100.8 MW in April 2018. Its queue position number is 0706. The System Reliability Impact Study and Facilities Study are complete. High Bridge Wind participated in Class Year 2017 and accepted its cost allocation of $10,726,500 to obtain ERIS and CRIS. This cost includes its direct interconnect facilities (collector substation and transformer). No other system upgrade facilities are required.

20 MW

Bald Mountain Solar

Bald Mountain Solar filed an interconnection request with NYISO for 20 MW in May 2019. Its queue position number is 0855 and is subject to the small generator interconnection procedures. Its System Reliability Impact Study is complete. Bald Mountain Solar is currently participating in the Expedited Deliverability Study-2 to secure CRIS and will secure ERIS via the completion of the Facility Study process. Bald Mountain Solar planned key milestones include those listed in Table 7-1 below.

Bald Mountain Solar	
Interconnection Agreement	Expected August 2021
Interconnection engineering/ construction	Expected April 2022
Interconnection In-Service Date	Expected November 2022

Table 7-1. Bald Mountain Solar planned key milestones.

20 MW

West River Solar

West River Solar is preparing to submit a new interconnection request and does not currently have a queue number assigned. West River Solar capacity will be 20 MW and will be subject to the small generator interconnection procedures. It plans to secure ERIS via the completion of the Facility Study process. West River Solar planned key milestones include those listed in Table 7-2.

West River Solar	
Interconnection request	Expected to be submitted in May 2021
System Reliability Impact Study	Expected January 2022
Facilities Study	Expected July 2022
Interconnection Agreement	Expected October 2022
Interconnection engineering/ construction	Start date January 2023
Interconnection in-service date	Expected May 2024
Generator Commercial Operation Date	Expected June 2024

Table 7-2. West River Solar planned key milestones.

20 MW

Sandy Creek Solar

Sandy Creek Solar filed an interconnection request with NYISO for 20 MW in May 2019. Its queue position number is 0843. It is subject to the small generator interconnection procedures and is currently in the process of completing the System Reliability Impact Study. Sandy Creek Solar will secure ERIS via the completion of the Facility Study process. It also expects to participate in the Expedited Deliverability Study-4 in late 2021 to secure CRIS. Sandy Creek Solar planned key milestones include those listed in Table 7-3 on the next page.

Sandy Creek Solar	
System Reliability Impact Study	Expected to be completed May 2021
Facilities Study	Expected to be completed October 2021
Interconnection Agreement	Expected to be executed January 2022
Interconnection engineering/ construction	Start date expected April 2022
Interconnection in-service date	Expected March 2023

Table 7-3. Sandy Creek Solar planned key milestones.

Greens Corners Solar

120 MW

Greens Corners Solar filed an interconnection request with NYISO for 120 MW in May 2019. Its queue position number is 0864. Greens Corners has completed its System Reliability Impact Study. Greens Corners has entered Class Year 2021 to obtain ERIS and CRIS. Greens Corners Solar planned key milestones include those listed in Table 7-4.

Greens Corners Solar	
Interconnection Agreement	Expected to be executed July 2022
Interconnection engineering/ construction	Expected October 2022
Interconnection in-service date	Expected August 2023
Generator Commercial Operation Date	Expected September 2023

Table 7-4. Greens Corners Solar planned key milestones.

Sky High Solar

20 MW

Sky High Solar filed an interconnection request with NYISO for 20 MW in October 2016. Its queue position number is 0545. Sky High Solar will secure ERIS via the completion of the Facility Study process and is expected to participate in the Expedited Deliverability Study-3 in late 2021 to secure CRIS. Sky High Solar has also executed the Interconnection Agreement. The detailed engineering work is scheduled to start in the next four to six weeks as of submitting this proposal. Sky High Solar's in-service date is expected to be in December 2022.

Baron Winds Phase I

121 MW

Baron Wind filed an interconnection request with NYISO in November 2012. Its queue position number is 0396. Baron Winds has an executed Interconnection Agreement in place, No. 2487, with NYISO and NYSEG, dated February 24, 2021. Baron Winds participated in Class Year 2017 and has accepted its cost allocation of $2,922,144, and has the same amount posted as security with NYSEG for its proposed connection facilities.

Heritage Wind

147 MW

Heritage Wind filed an interconnection request with NYISO. Its queue position number is 0571. Heritage Wind completed its System Reliability Impact Study and Facility Study. Heritage Wind participated in Class Year 2021 and has accepted its cost allocation of $3.7 Million. Heritage is expected to post a $16.8 million security in Q3 2022, this security will be fully refunded by COD. Its expected interconnection costs are $10.5M to self-build the switchyard and $3.7M for network upgrades. The Generator Interconnection Agreement (GIA) execution is expected in Q2 2023 with an anticipated commercial operation date in Q4 2023.

Prattsburgh Wind

Prattsburgh Wind filed an interconnection request with NYISO. Its queue position number is 0801. Prattsburgh Wind participated in Class Year 2021.

147 MW

7.2. New transmission interconnection application status

Clean Path New York has filed an interconnection request with the NYISO for a connection between the 345 kV Fraser substation as the withdrawal point and the 345 kV Rainey substation as the delivery point. The scoping meeting will be held in the near future. Pending NYISO Operating Committee approval of the SIS scope, the study is likely to commence this summer, and is anticipated to be completed later this year, followed by the Facilities Study which would be expected to be completed in 2022. Clean Path New York elected to seek interconnection under Attachment P, largely to allow its Facilities Study to be completed expeditiously and outside of the Class Year process. If any upgrades are contingent on the final settlement results of the currently ongoing Class Year, those upgrades and contingencies will be identified in Clean Path New York's Facilities Study. By contrast, under Attachment X, projects are unable to enter a Class Year until their System Reliability Impact Study is complete, which would add significant delay and risk.

Clean Path New York has identified Mott Haven as an alternative delivery point as illustrated in Section 05 and submitted an interconnection request with the NYISO in 2021. Clean Path New York's strategy is to obtain an alternative delivery point to provide flexibility and allow for reasonable management of the risks and potential costs of interconnecting within New York City. Similar to Rainey and as explained in Section 7.4 below, Mott Haven is not expected to induce any system reinforcement requirements.

While no studies by NYISO have been completed at this stage, as discussed in Section 7.4, Clean Path New York has engaged PowerGEM to complete reliability studies according to applicable NYISO interconnection standards. The full results of PowerGEM's analyses can be found in Appendix 7.

7.3. New transmission quantity of UDRs expected

There are currently no rules in the NYISO tariff regarding the participation of internal HVDC lines within the NYISO market construct, and no rules for providing capacity delivery rights for internal HVDC lines via internal UDRs. Clean Path New York does not currently expect to deliver any unforced capacity (UCAP) into Zone J. Moreover, Clean Path New York does not believe that any internal HVDC line can reasonably expect to be awarded UDRs and to be able to offer UCAP under the current NYISO market rules.

As discussed in more detail in Section 5 of this proposal, Clean Path New York has taken a lead role at the NYISO Budget & Priorities Working Group in advocating for a priority project for the development of the necessary additions and modifications to the NYISO tariff, manuals, and models to support the participation of internal HVDC lines in the NYISO market construct. Clean Path New York will continue to work to get the project prioritized for 2022. Assuming the project is prioritized, during the stakeholder process to develop these rules, Clean Path New York will vigorously advocate for market rules that will enable the project to be awarded UDRs and deliver UCAP to Zone J.

When NYISO approves and implements those market rules, Clean Path New York will pursue CRIS rights, as long as doing so does not substantially impact the project's overall schedule and cost. In the event that Clean Path New York is awarded UDRs at any point during its project life, Clean Path New York will promptly notify NYSERDA. If, at any point during the term of the NYSERDA Tier 4 REC PSA, Clean Path New York receives Zone J capacity market revenues, the $/MWh equivalent would be deducted from the strike price as set forth in the Tier 4 REC PSA.

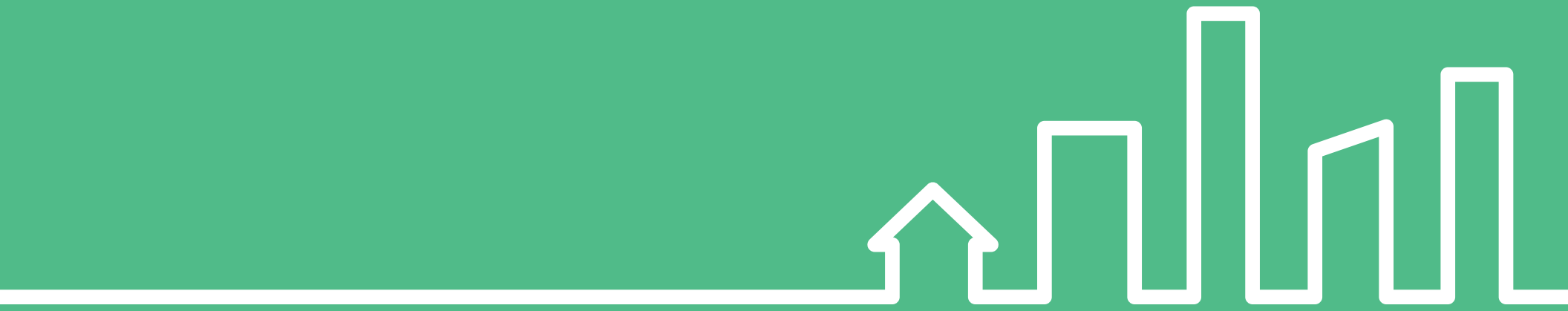
7.4. Transmission system upgrades needed to interconnect the new transmission at the withdrawal point and delivery point

Clean Path New York has completed a steady-state analysis in accordance with standard NYISO reliability analysis practice and guidelines. An analysis report prepared by PowerGEM is provided under Appendix 7. In the reliability part of the study, monitored elements within the study area were checked for thermal overloads against their Rate A (pre-contingency conditions) or Rate B (post-contingency conditions). Voltage limits were assessed, pre-contingency and post-contingency, in accordance with established NYISO criteria. In general, voltages at buses rated 230 kV and above were checked against an acceptable range of 0.95 pu to 1.05 pu, whereas bus voltages for the 115 kV and 138 kV portion of the system were checked against an acceptable range of 0.90 pu to 1.05 pu.

The results indicate that the addition of the new transmission line has no adverse impact on steady-state system performance under N-1 contingency conditions (over 750 contingencies considered) and no system reinforcements are needed. Additionally, the N-1-1 analytical results (considered over 350 single-element first level outages) show that the new transmission line does not have an adverse impact on steady-state system performance. Thermal transfer limit analysis shows that the addition of the new transmission line increases the general ability of the system to transfer power from north to south.

Section 8

Energy resource assessment



8 Energy resource assessment

8.1. Available energy resource data for each resource

As illustrated in Section 4 and reiterated in Section 5, the vast majority of project resources identified by Clean Path New York reflect mature projects that have been in development for years and have already been awarded contracts through NYSERDA's Renewable Energy Standards solicitation for Tier 1 RECs. Accordingly, these projects have robust and reliable estimates of energy production that support the aggregate delivery profiles provided here.

Clean Path New York energy resource data was developed for each technology as follows:

For wind resources, where energy production estimates are particularly sensitive to the details of geography, we developed estimates by analyzing data from on-site meteorological towers gathered over a period of three to five years. We then coupled this data with the power curve data obtained from wind turbine OEMs for the specific resources to arrive at the energy production estimate.

For solar resources, we developed estimates either through site-specific solar irradiance forecasts or by analyzing data from on-site solar irradiance sensor deployed for a period of one year. This data was then coupled with the panel yield and loss data from solar array OEMs for the specific resources to arrive at the energy production estimate.

8.2. Projection of net annual energy production and a 12 x 24 P(50) energy generation at the resources' injection point

Projection of net annual energy production and the 12 x 24 P(50) energy generation for each resource is provided under Appendix 11.

8.3. Schedule of planned maintenance outages for each resource

Clean Path New York has elected to work only with developers that have deep experience in the development of utility-scale renewable projects. These developers understand the importance of proper design to ensuring reliable operation, diligent practices for startup and commissioning to ensure a smooth transition to commercial operation, and assiduous monitoring and maintenance procedures to ensure that performance issues are identified and corrected promptly. Adherence to these protocols will minimize the need for maintenance outages to correct deficiencies in operation.

Key among these practices is execution of a preventative maintenance plan for each project. By technology, these plans include the following:

Wind turbines

Each wind turbine will undergo semiannual and annual maintenance outages for preventative maintenance. Maintenance items will include, but are not limited to, the following:

- Cleaning and inspection of mechanical components including the gearbox, shaft coupling, bearings, seals, frames, and bolts
- Cleaning and inspection of electrical components including the generators, cables, converters, circuit breakers, and control cabinets
- Lubrication of gearboxes and bearings
- Infrared testing of electrical components
- Testing of electrical insulation, generator winding resistance, rotor AC drop voltage (as needed)

Planned maintenance outages will occur twice per year and last approximately 8 to 10 hours per turbine per outage. The outages will be staggered and managed to minimize overall downtime and optimize the resource availability.

Solar photovoltaic arrays

Each solar photovoltaic (PV) array will undergo semiannual and annual maintenance outages for preventative maintenance. Maintenance items will include, but are not limited to, the following:

- Visual inspection of general site conditions including fences, shading, vegetation, animal damage, or erosion
- Cleaning of arrays (condition-based)
- Visual inspection of electrical connections and ground connections
- Inverter preventative maintenance per manufacturer's operating guidelines
- Tracker verification and preventive maintenance per manufacturer's operating guidelines

Planned maintenance outages will occur at least once per year and last approximately four hours per inverter per outage. (Outages may not impact site output depending on site overbuild and time of day.) The outages will be conducted on the panels and associated system to minimize overall downtime and optimize the resource availability.

Outages for planned maintenance have already been incorporated into the projections for resource production outlined in Offer Data Form Table III-1. Thus scheduled maintenance of generation will not affect the expected monthly quantities of Tier 4 deliveries into Zone J. Degradation of solar PV array production is projected at 0.4% per annum and will lead to a slight reduction in expected monthly quantities of Tier 4 deliveries into Zone J over the Contract Delivery Term, from 7,496,113 MWh in Year 1 of commercial operation to 7,166,022 MWh in Year 25 of commercial operation.

7,496,113
MWh of monthly quantities of Tier 4 deliveries into Zone J (Year 1 of commercial operation)

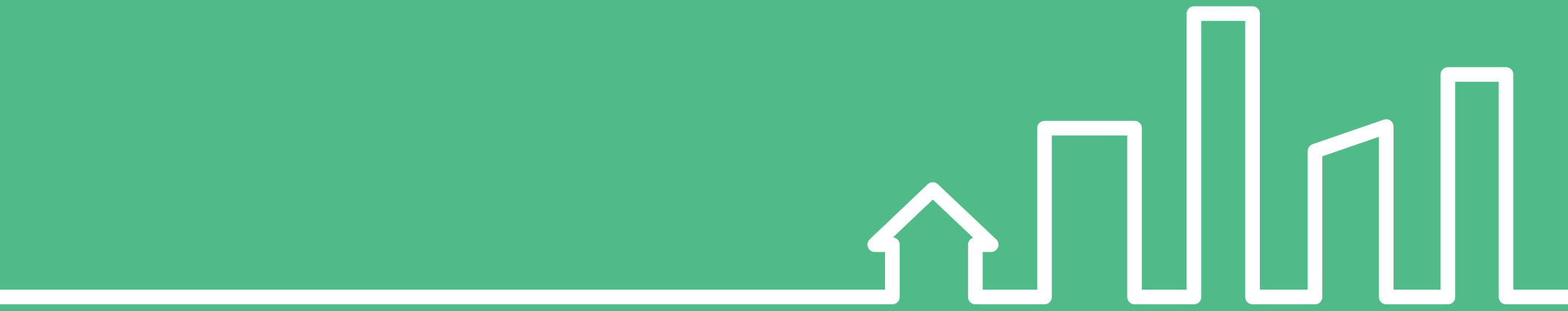
7,166,022
MWh of monthly quantities of Tier 4 deliveries into Zone J (Year 25 of commercial operation)

8.4. Assumed level of curtailment and any projected impacts

Clean Path New York retained PowerGEM to conduct power system analysis and production cost modeling necessary to accurate the impact of generation and transmission resources over the course of the project. The modeling indicates that wind resource production will be curtailed by an average of 4.6% in 2030, and solar resource production will be curtailed by an average of 8.6%. These curtailment estimates are incorporated into the projections for resource production outlined in Offer Data Form Table III-1. A copy of the PowerGEM report is provided under Appendix 7.

Section 9

Energy storage operation plan



9 Energy storage operation plan

9.1. Assumptions used in preparing the energy profile and deployment strategy

As New York's grid transitions toward 70% renewables by 2030 and zero emissions by 2040, energy storage will play a critical role. While battery storage technology has received much of the focus, studies show that high renewables integration will require longer duration storage,[1] and pumped storage has been described as 'the heavy artillery'[2] that will be needed for renewable penetration. Fortunately for New York State, NYPA owns and operates Blenheim-Gilboa, one of the largest pumped storage facilities in the country. Clean Path New York proposes an innovative structure to integrate this facility with its renewable portfolio and store excess renewable generation. This would result in a dramatic increase in the utilization of Blenheim-Gilboa, unlocking its potential to facilitate the high renewable penetration required to meet New York's goals, while at the same time increasing the production of Tier 4 RECs from the Project.

Figure 9-1. The Blenheim-Gilboa project is located on Schoharie Creek.

In coordination with NYPA, Clean Path New York will use the Blenheim-Gilboa pumped storage facility to both maximize the contribution of wind and solar generation and to improve the new transmission line utilization. Sited approximately 30 miles northeast of the Fraser Substation, the Blenheim-Gilboa pumped storage facility can generate 1,160 MW from four pump-turbine sets that draw on a reservoir that can store up to 12,000 MWh. Blenheim-Gilboa provides a unique opportunity to balance intermittent renewable generation to maximize utilization of the new transmission, in alignment with NYSERDA's goals to increase market opportunities for storage to serve as a transmission asset while at the same time increasing the utilization and value to NYPA and the NYISO system of a very large existing storage asset.

Clean Path New York will actively work with NYPA to coordinate the scheduling of Blenheim-Gilboa to maximize the utilization of the transmission line with the Resources under Clean Path New York control. NYPA will complete scheduling of dispatchable resources,

[1] National Renewable Energy Laboratory, 2021. "The Four Phases of Storage Deployment: A Framework for the Expanding Role of Storage in the U.S. Power System." Golden, CO. NREL/TP-6A20-77480. Available at: https://www.nrel.gov/docs/fy21osti/77480.pdf.

[2] *Utility Dive*, Oct 13, 2020. "To batteries and beyond: In a high-renewables world, pumped hydro storage could be 'the heavy artillery'" Available at: https://www.utilitydive.com/news/to-batteries-and-beyond-in-a-high-renewables-world-pumped-hydro-storage-c/584958/

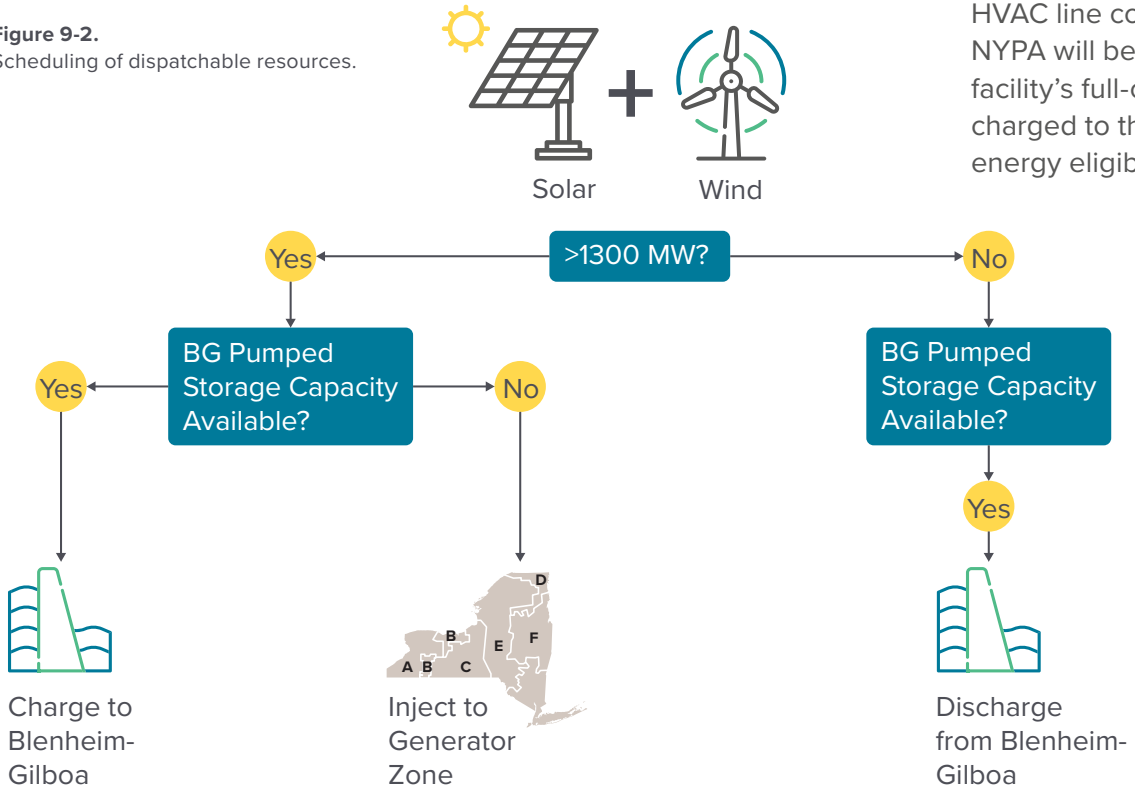
along with monitoring and settling of energy flows across the transmission line as illustrated in Figure 9-2. During scheduling and dispatch of project resources, if generation is expected to exceed available capacity of the transmission line, Clean Path New York will request that NYPA charge Blenheim-Gilboa, subject to the available storage volume and charging capacity. Conversely, if generation is expected to fall short of the available capacity, Clean Path New York will request that NYPA discharge from Blenheim-Gilboa, subject to the available storage volume and discharging capacity.

The pumped storage facility at Blenheim-Gilboa also gives Clean Path New York and the NYISO another degree of flexibility in determining system dispatch. If, any time period, the NYISO determines that the transmission line is not fully dispatching energy into Zone J, Blenheim-Gilboa can be used to store any generation that would have otherwise been delivered into Zone J. As the NYISO conducts system planning over the coming years and determines how to accommodate increasing penetration of renewable resources, this flexibility will become increasingly important.

9.2. Energy discharge eligible for Tier 4 RECs

The robust metering regime deployed at the Blenheim-Gilboa pumped storage facility, monitored by the energy manager, will account for any excess generation transmitted to or from the project along the 345 kV HVAC line connecting the Fraser and Blenheim-Gilboa Substations. NYPA will be responsible for testing and verification of the storage facility's full-cycle efficiency, which will be used to derate the energy charged to the facility and maintain an accurate account of the stored energy eligible for Tier 4 RECs.

Figure 9-2.
Scheduling of dispatchable resources.



9.3. System facility operating parameters and specifications

The Blenheim-Gilboa Project is located on Schoharie Creek within the towns of Blenheim and Gilboa, approximately two river miles downstream from the New York Department of Environmental Conservation's Gilboa Dam (Figures 9-3 and 9-4).

The project consists of the following:

1. Earth and rock fill embankment dike 2.25 miles long and 30 feet wide, maximum height 110 feet, constructed at Brown Mountain and forming the 399-acre upper reservoir (operating at the maximum and extreme minimum elevations of 2,003 feet and 1,955 feet National Geodetic Vertical Datum of 1929 [NGVD 29], respectively) with 15,085 acre-feet of usable storage and dead storage of 3,706 acre-feet below elevation 1,955 feet NGVD 29
2. Emergency spillway 655 feet long with asphaltic concrete crest 25 feet wide at elevation 2,005 feet NGVD 29 and a capacity of 10,200 cubic feet per second (cfs)
3. Intake system that includes (i) hexagonal intake cover 125 feet wide, supported by six vertical concrete piers, and trash racks attached to the outside of the piers with a clear spacing of 5.25 inches, (ii) concrete-lined vertical shaft 1,042 feet long and 28 feet in diameter, in the bottom of the upper reservoir, (iii) horizontal, concrete-lined rock tunnel 906 feet long, and (iv) concrete-lined manifold 460 feet long that distributes flow to four 12-foot-diameter steel-lined penstocks, each with a maximum length of about 1,960 feet, to four pump-turbines located at the powerhouse
4. Multilevel powerhouse 526 feet long, 172 feet wide, and 132 feet high located along the east bank of the lower reservoir at the base of Brown Mountain, containing four reversible pump turbines that each produce approximately 290 MW in generation mode and have a total maximum discharge of 12,800 cfs during generation and 10,200 cfs during pumping

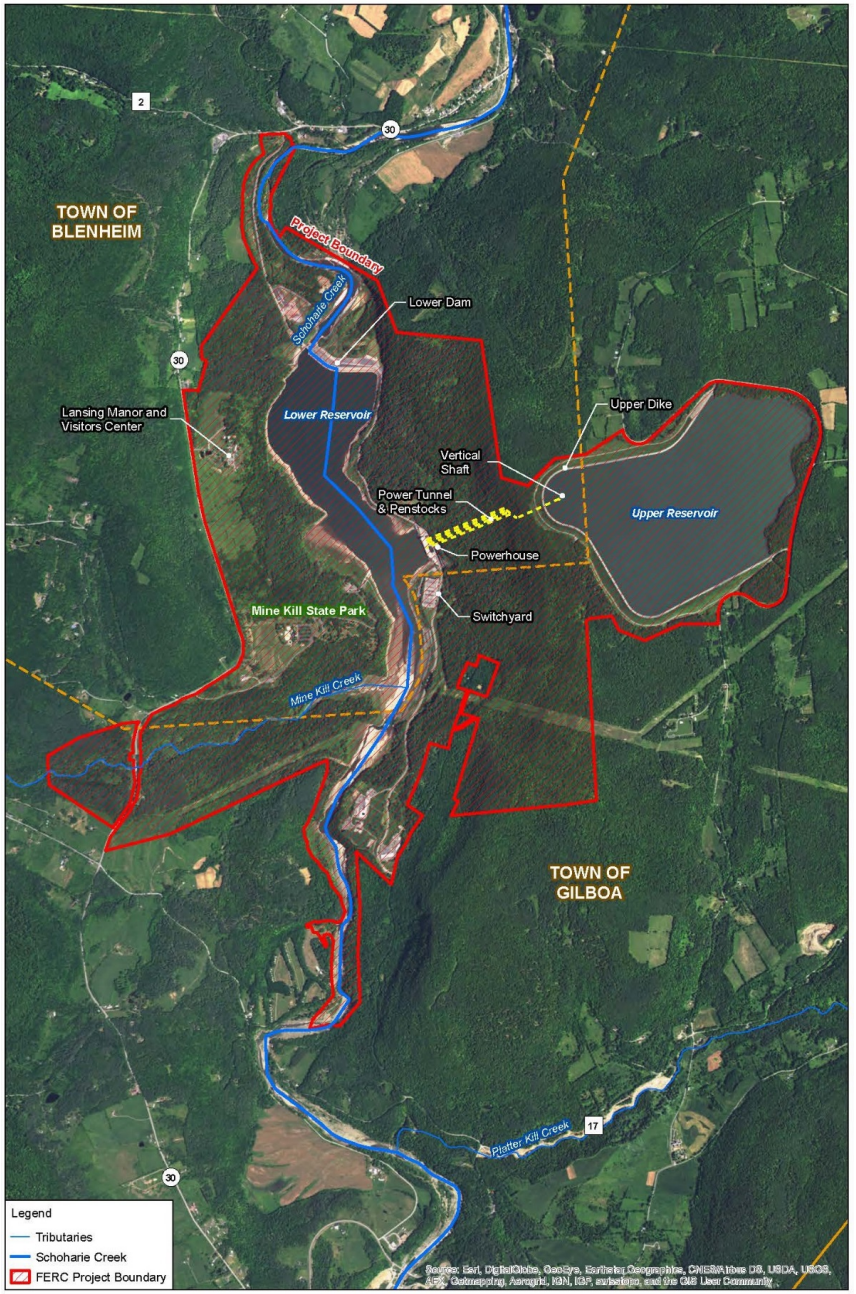
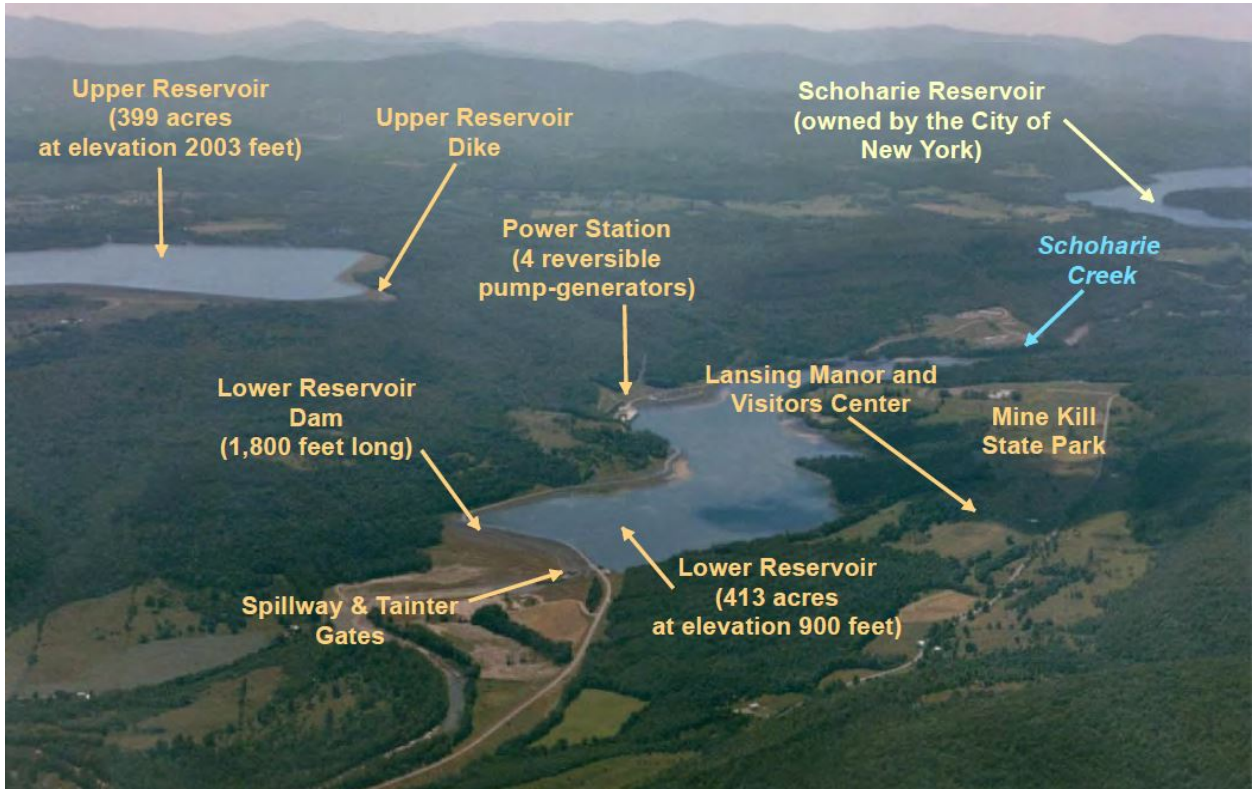


Figure 9-3. Blenheim-Gilboa project boundary, Schoharie County, New York.

Figure 9-4. Aerial view of Blenheim-Gilboa project facilities.



5. Powerhouse trash racks, including a bottom trash rack with a clear spacing of 5.625 inches and four upper trash racks with a clear spacing of 5.25 inches
6. Central-core, rock-filled lower dam 1,800 feet long with a maximum height of 100 feet that impounds Schoharie Creek to form the 413-acre lower reservoir (operating at the maximum and minimum elevations of 900 feet and 860 feet NGVD 29, respectively) with 12,422 acre-feet of usable storage and dead storage of 3,745 acre-feet below 860 feet NGVD 29
7. Three Taintor gates 38 feet wide by 45.5 feet high at the west end of the lower dam
8. Concrete spillway structure 425 feet long and 134 feet wide with a crest elevation of 855 feet NGVD 29
9. Concrete stilling basin 238 feet long and 68.5 feet deep
10. Low-level outlet with four discharge valves of 4-, 6-, 8-, and 10-inch diameters for release of 5 to 25 cfs, and two 36-inch-diameter Howell-Bunger valves to release a combined flow of 25 to 700 cfs
11. Switchyard on the eastern bank of Schoharie Creek adjacent to the powerhouse
12. Appurtenant facilities

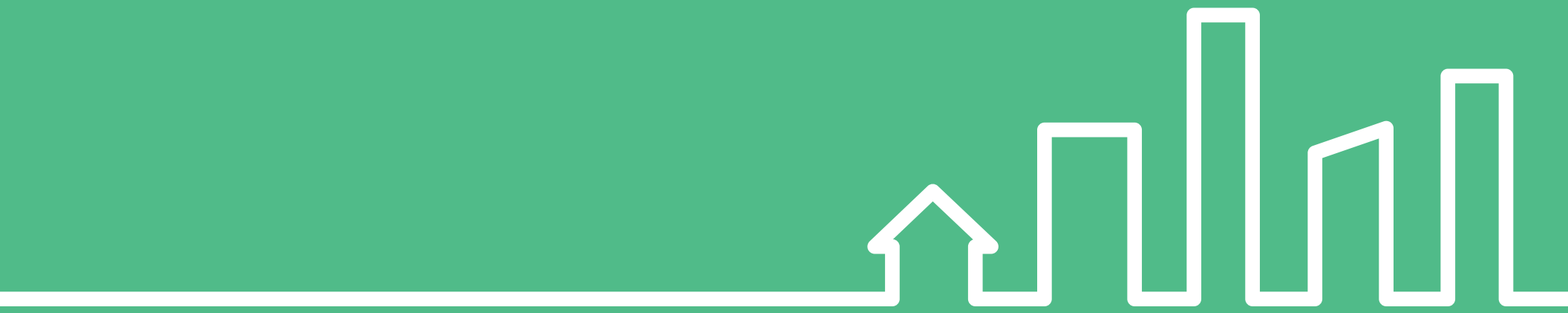
A Lifecycle Extension Modernization (LEM) program completed in 2010, combined with a regular preventative maintenance and equipment inspection program, will ensure reliable and consistent production from the Blenheim-Gilboa pumped storage facility for years to come.

9.4. Intended deployment and dispatch of the storage system

A description of the intended deployment and dispatch of the storage system over the contract term, as well as how the deployment provides operating flexibility and/or peak coincidence benefits, is addressed in Section 9.1 above. Blenheim-Gilboa will give Clean Path New York and the NYISO another degree of flexibility in determining system dispatch specifically managing the line utilization in conjunction with the level of resources generation available. This added flexibility will enable NYISO a better management of intermittent generation and maintaining system reliability.

Section 10

Business entity and financing plan



10 Business entity and financing plan

10.1. Financeability of project and long-term contract implications

The 25-years Tier-4 REC purchase agreement awarded through this RFP process will provide a level of certainty for a long term revenue stream and will be considered one of the key underwriting agreements to enable the financing of generation projects not currently contracted under Tier 1 and the New Transmission. The majority of the cost associated with Clean Path New York is upfront capital cost. As such Clean Path New York will require a known ongoing revenue stream over a long period to recoup the substantial upfront capital required for the project. Without a long-term contract from NYSERDA, the project would need to sell into the market on a merchant basis, which would introduce significant volatility into the revenue stream for the project. Additionally, NYSERDA is the only buyer at scale for renewable energy delivered into Zone J, which is a key attribute of the project. The contract with NYSERDA therefore both monetizes a key value associated with the project and ensures long term certainty of revenue, both of which are critical to the ability to finance the various components of the project.

10.2. Business entity structure and information on shareholders supporting the project

NYPA and Forward Power (a 50/50 joint venture between energyRe[1] and Invenergy Renewables), the "Partners," have entered into a partnership to develop Clean Path New York. The Partners have structured the project through the creation of multiple entities to both develop and manage the New Transmission, the Resources and enter into a Tier 4 purchase agreement with NYSERDA. Figure 10-1 below illustrates the structure and provides an organization chart showing the relationship among project participants.

The financial strength of the Partners is described in greater detail in the following responses.

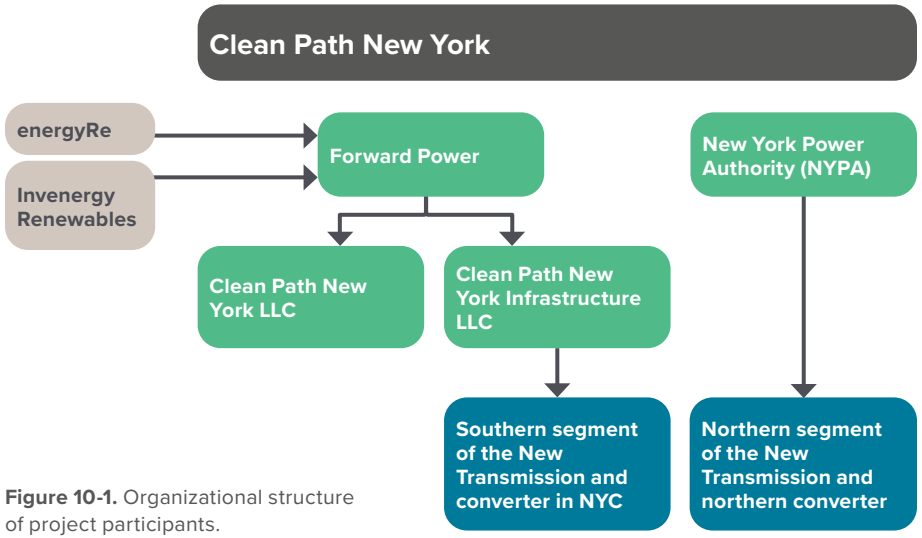


Figure 10-1. Organizational structure of project participants.

[1] energyRe is an independent company founded by the principals of related.

Clean Path New York LLC is a newly formed limited liability company owned by Forward Power. Clean Path New York LLC will own and manage the majority of the offered Resources, is the bidding entity for Clean Path New York, and will be the counter-party of the NYSERDA Tier 4 REC purchase agreement. While Clean Path New York LLC is a new entity, its members have significant experience and management capability to develop and operate the project. Each member has successfully developed projects of similar scale and complexity from early stages through to commercial operation, as described in this section.

On the transmission side of the project, Clean Path New York is supported by two entities: NYPA and Clean Path New York Infrastructure LLC. NYPA will develop and/or own the northern segment of the transmission system, including the converter station and the interconnection facility at the withdrawal point near Fraser Substation in Delaware County, NY and the balance of the transmission infrastructure located within its Marcy-South corridor and corresponding right-of-way, which ends at the Rock Tavern Substation in Orange County, NY.

Clean Path New York Infrastructure LLC will be owned by Forward Power. It will develop and own the southern segment of the transmission system, including the converter station and the associated interconnection facility at the Rainey Substation in Queens, NY and the balance of the transmission infrastructure located underground and under the Hudson and Harlem Rivers between Rock Tavern and Rainey.

The business model for Clean Path New York LLC is driven by energy market revenues, a delivery service agreement, and Tier 4 REC revenue. The commercial structure is illustrated in Figure 10-2.

Clean Path New York is enabled through a series of discrete transactions by independent business entities tied together through contractual relationships. As previously stated, Clean Path New York LLC will be the counter-party to NYSERDA's Tier 4 REC contract. This entity will do the following:

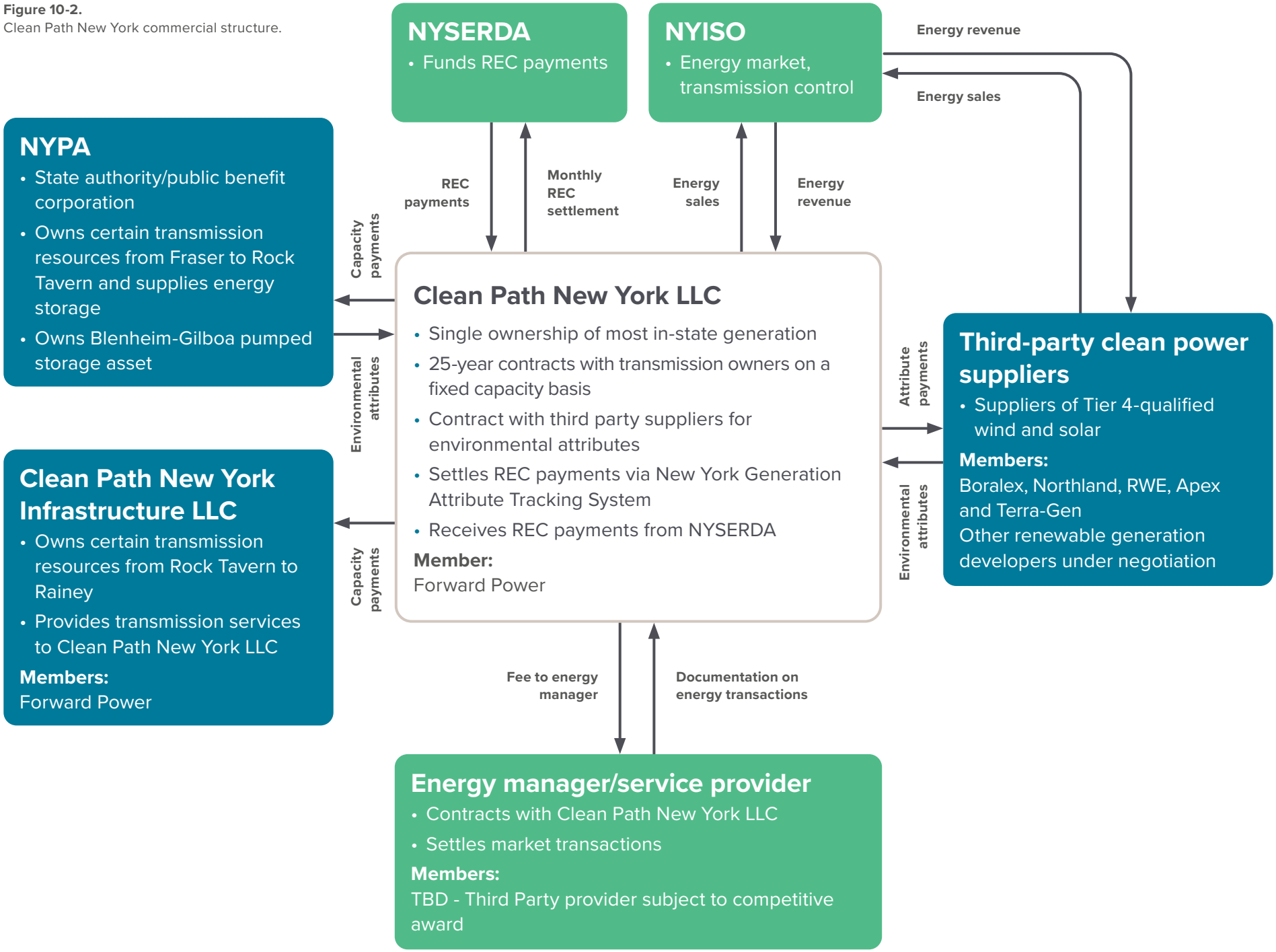
- Directly own Tier 4-qualifying wind and solar generation assets
- Sell the power from those resources to the NYISO
- Contract with NYPA's Blenheim-Gilboa pumped storage facility
- Contract with third-party-owned Tier 4-qualifying wind and solar resources to procure those resources' environmental attributes via REC purchase agreement
- Contract with NYPA and Clean Path New York Infrastructure LLC for transmission services from the Fraser Substation to the Rainey Substation
- Contract with an energy manager and/or energy service company to provide the following services:
  - Forecast day ahead and hourly load
  - Document hourly matching via metered flows to support monthly reconciliation with NYSERDA via New York Generation Attribute Tracking System (NYGATS) for REC payments

NYPA and Clean Path New York Infrastructure LLC will develop and own the northern and southern segments of the new HVDC transmission system connecting the 345 kV NYSEG-owned Fraser substation (withdrawal point) to the 345 kV Rainey Substation (delivery point) owned by Consolidated Edison Company of New York, Inc. (CECONY). These entities will hold transmission service agreements with Clean Path New York LLC.

NYPA intends to enter into a service agreement with Clean Path New York LLC to sell energy storage services associated with its Blenheim-Gilboa pumped storage facility.

Clean Path New York LLC will enter into REC purchase agreements with third-party owned Tier 4-qualified, clean power suppliers of wind and solar will enter into REC purchase agreements with Clean Path New York LLC to sell the environmental attributes associated with their Tier 4-qualified generation. These generators will sell their power to NYISO in exchange for energy revenues.

Figure 10-2.
Clean Path New York commercial structure.



Regulatory considerations

Clean Path New York is aware of the Public Service Commission's Vertical Market Power Guidelines and their potential application to this Project. In its Order Granting Certificate of Public Convenience and Necessity in Case 18-E-0765, Petition of NextEra Energy Transmission New York, Inc. for an Order Granting Certificate of Public Convenience and Necessity Pursuant to Section 68 of the Public Service Law on February 11, 2021, the Commission determined that the rebuttable presumption of vertical market power can be overcome where (i) there is a low risk to ratepayers of the improper exercise of market power, (ii) the risks can be reduced via mitigation measures, and (iii) the project will have significant benefits.

Clean Path New York believes that this Project satisfies these requirements for similar reasons as set forth in that matter. First, the transmission line will be operationally controlled and dispatched by the NYISO, and the generation owned or controlled by Clean Path New York is intermittent with relatively low capacity factors. Both the Public Service Commission and the Federal Energy Regulatory Commission will have oversight over Clean Path new York and the New Transmission line. For these reasons, Clean Path New York would not have the ability to exercise market power. Second, Clean Path New York is willing to develop a code of conduct to separate its transmission and generation operations, file annual reports with the Commission on affiliate transactions and line outages, notify the Commission of changes to the code of conduct, maintain the transmission line in accordance with god utility practice, and file periodic reports on future supply side projects in New York. Third, the significant public benefits that justify the transmission line were established in the Commission's adoption of Tier 4. See Case 15-E-0302, Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and Clean Energy Standard, Order Adopting Modifications to the Clean Energy Standard (issued October 15, 2020) at 77-103.

Nevertheless, Clean Path New York is aware of the requirements the Commission has imposed in other proceedings where it has upheld the rebuttable presumption. In the event the Commission disagrees with Clean Path New York's position, Clean Path New York is prepared to take steps consistent with Commission precedent to allay any vertical market power concerns.

10.3. JV owners and interests and proposer's right to submit a proposal

The Partners have entered into a Joint Bidding Agreement to document the agreement to jointly bid into this solicitation. This Joint Bidding Agreement outlines roles and responsibilities of the Parties as well as confirms the agreement to bid. Upon award, the Partners will enter into definitive documentation to confirm the contractual details of each of the independent relationships. Additionally, Clean Path New York LLC has entered into term sheets with the majority of third party Resources confirming certain economic terms, as well as their approval to be included in this proposal. Such documentation can be made available to NYSERDA upon request.

10.4. Financing plan

Financing mechanism

Existing financial structure and projected financial structure

[redacted]

Expected sources of debt and equity financing

[redacted]

Agreements entered with respect to equity ownership/any other financing arrangement

[redacted]

$11 billion

The **total construction costs** for Clean Path New York are expected to be approximately $8.5 billion for directly developed generation Resources and New Transmission, with the balance coming from third-party developers of new wind and solar resources.

10.5. Project financing experience

The Partners have significant experience in financing projects having raised capital for complex generation and transmission projects in the past.

Forward Power will lead the financing efforts for both the Resources and the southern segment of the New Transmission. Through its parent companies, namely Invenergy Renewables, Forward Power has extensive experience in project financing. Invenergy Renewables will leverage these existing relationships to fund construction and project debt. Invenergy Renewables has successfully worked with various financial institutions including those listed in Figure 10-4.

Table 10-1 on the next page provides a sample of Invenergy's successfully financed projects.

Projected capital structure

[redacted]

Figure 10-3. Projected capital structure for Clean Path New York, LLC.

Figure 10-4. Invenergy has successfully worked with numerous financial institutions.

Project name	Location	Type and size	Date of construction and financing	Form of debt and equity financing	Status of the project
AEP North Central Wind Energy Facilities: Traverse, Maverick, and Sundance	Oklahoma	Traverse: 999 MW Wind Maverick: 287 MW Wind Sundance: 199 MW Wind	December 2020 (Sundance & Maverick) March 2021 (Traverse)	[redacted]	Traverse and Maverick: under construction Sundance: operating
Lackawanna Energy Center	Jessup, PA	1,485 MW Natural gas combined cycle	December 2016	[redacted]	Operating
Energia del Pacifico	El Salvador	378 MW “LNG-to-power" natural gas-fired power plant / offshore floating storage and regasification unit	November 2019 (thermal plant) February 2021 (FSRU)	[redacted]	Under construction
High Sheldon Wind	Wyoming County, NY	112.5 MW Wind	December 2008	[redacted]	Operating
Orangeville Wind	Wyoming County, NY	94 MW Wind	June 2013	[redacted]	Operating
Marsh Hill Wind	Steuben County, NY	16 MW Wind	June 2014	[redacted]	Operating
Shoreham Solar Commons	Brookhaven, NY	25 MW Solar	July 2017	[redacted]	Operating

Table 10-1. Projects successfully financed by Invenergy.

NYPA will arrange for financing its portion of Clean Path New York associated with the northern segment of the New Transmission. NYPA has a long history of developing, constructing and operating a broad spectrum of low-carbon energy infrastructure assets. On April 27, 1931, New York Governor Franklin D. Roosevelt signed the Power Authority Act creating the New York Power Authority calling for a "self-supporting organization devoted to public purpose." To undertake such investments, NYPA utilizes its own cash equity built steadily through the responsible operations of its assets in addition to raising capital in the municipal debt markets, traditionally through the issuance of long-dated revenue bonds. It is important to note that NYPA operates and makes all of these investments without reliance on tax-payer funding, and in a manner that is financially sustainable in addition to fulfilling its purpose and Mission. A prime example of NYPA's sustainable finance in practice was its 2020 debt issuance. In April 2020, NYPA issued $1.1 billion in bonds, including $800 million in certified green bonds. Through this issuance, the company was able to lock-in one of the lowest financing rates in its history in order to fund a number of strategic, mission critical investments in low-carbon infrastructure related to its core transmission business.

The 2020 debt issuance included more that $625 million in proceeds that will go toward major transmission projects across New York State to overhaul and upgrade the existing backbone transmission network owned by NYPA, to construct new transmission lines to address congestion, and to extend the life of and modernize existing infrastructure. This will help to assure reliability, improve asset management, and lower the lifecycle operating costs.

Examples of these projects include:

- Moses-Adirondack Transmission Line Upgrade (the Smart Path Reliability Project)
- Marcy-to-New Scotland Transmission Line
- Niagara Transmission Life-extension & Modernization program

$1.1 billion

in bonds issued by NYPA in 2020

Figure 10-5. NYPA's Smart Path Project.

10.6. Evidence of financial resources

Evidence of financial resources are summarized below. More details can be found in the associated appendices.

NYPA

NYPA is the largest public power company in the U.S. and has an AA/Aa2 credit rating. NYPA generates $2.4 billion in annual revenue on average. The company benefits from the essentiality of the services it provides for key governmental customers across the state, flexible regulatory construct and strong contractual framework unpinning revenues, low operating risk, and a diversified asset portfolio. In April 2021 NYPA celebrated its 90th anniversary of being a financial independent company serving NYS's energy needs. NYPA's audited financial statements and rating agency reports exemplify the strength of their financial resources.

Invenergy

Over nearly two decades, Invenergy has completed more than $42 billion in transactions, and the its deep bench of financiers is unparalleled in the renewable energy development sector. Invenergy proficiently structures project financing and maintains strong relationships with a wide range of partners including international and domestic banks, multilateral development banks, export credit agencies and pension funds. In the fourth quarter of 2019 alone, Invenergy closed more than $3 billion in project financing; and Invenergy has been recognized with Power Finance & Risk Borrower of the Year or Deal of the Year awards in 2017, 2016, 2013 and 2012.

energyRe

The principals of energRe have substantial resources and a successful track record investing and raising capital for large scale development and infrastructure projects. A core strength of energyRe is its ability to creatively and efficiently finance projects in order to maximize the value to all stakeholders. Its financing approaches have historically included a variety of different sources including the following: general and limited partner equity, conventional construction and permanent debt, taxable and tax-exempt bonds, tax credits, preferred equity and multiple other sources. energyRe have an extensive network of debt and equity relationships that include many of the world's largest banks, insurance companies, pension funds, sovereign wealth funds and other financial institutions. We have historically sourced between $5 and $10 billion of debt and equity capital per year and have done so at scale across economic cycles. Additional details regarding energRe's financial resources and capabilities can be made available upon request.

10.7. Role of Federal Production Tax Credit or Investment Tax Credit

[redacted]

Wind projects
60% Federal Production Tax Credit

Solar projects
26% Federal Investment Tax Credit

10.8. Audited financial statements and annual reports

Three years audited financial statements for the partners are provided as follows:

NYPA. 2018, 2019, and 2020 Financial Statements are provided under Appendix 12.

Invenergy. 2018, 2019, and 2020 Financial Statements are provided under Appendix 13.

energyRe. energyRe has no published audited financial statements at this stage. Additional details regarding energRe's financial resources, its parent companies and capabilities can be made available upon request.

10.9. Credit ratings from Standard & Poor's and Moody's

Credit ratings for each of the Partners are listed in Table 10-2 below.

Partner	Credit rating
NYPA	AA (by Fitch Ratings), AA (by S&P), and Aa2 (by Moody's).
Invenergy	As a privately-owned company, Invenergy does not have a credit rating.
energyRe	As a privately-owned company, energyRe does not have a credit rating.

Table 10-2. Credit ratings of each Partner.

10.10. Partners' board of directors, officers, and trustees for the past three years

NYPA

NYPA Trustees are as follows: John R. Koelmel (Chair) ● Eugene L. Nicandri (Vice Chair) ● Tracy B. McKibben ● Anthony Picente, Jr. ● Michael Balboni ● Dennis Trainor

Current NYPA officers include: Gil C. Quinones (President and CEO) ● Joseph Kessler (EVP and COO) ● Kristine Pizzo (EVP and Chief Human Resources and Administration Officer) ● Justin E. Driscoll (EVP and General Counsel) ● Adam Barsky (EVP and CFO) ● Sarah Orban Salati (EVP and CCO) ● Robert Piascik (SVP and Chief Information and Technology Officer) ● Yves Noel (SVP and Chief Strategy Officer) ● Daniella Piper (Chief Transformation Officer and Regional Manager, Western New York) ● Phil Toia (President, NYPA Development

Invenergy

Invenergy's core senior executive team includes the following: Michael Polsky (Founder and CEO) ● Jim Murphy (President and CEO) ● Jim Shield (EVP and CCO) ● Bryan Schueler (EVP and CDO) ● Bill Bradley (EVP and General Counsel)

energyRe

The energyRe officers are as follows: Stephen M. Ross (Chairman) ● Jeff T. Blau (President) ● Bruce A. Beal, Jr. (Executive Vice President) ● David Zussman (Executive Vice President) ● Richard L. O'Toole (Executive Vice President) ● Glenn A. Goldstein (Vice President) ● Charles O'Byrne (Vice President) ● David Zussman (Treasurer) ● Richard L. O'Toole (Assistant Secretary).

10.11. Ability and plan to provide the required security

As demonstrated in the sections above, the Partners have the financial strength and the required facilities to provide the required securities. Typically, for projects under long-term power sale contracts like this one, the Clean Path New York Partners will provide credit support to backstop their obligations. The typical credit support structure is based upon providing cash, a performance bond, or an irrevocable standby letter of credit from an issuer with a senior unsecured debt rating equivalent to A- (S&P) or A3 (Moody's) or better. To address these needs, the Partners maintain credit facilities with a number of investment grade financial institutions. For previous agreements, the Partners have posted sufficient security to NYSERDA.

10.12. Credit issues and credit rating downgrade events

NYPA. In October of 2020 Moody's downgraded NYPA's revenue bonds to Aa2 from Aa1 with a stable outlook.

Invenergy. None.

energyRe. None.

10.13. Pending litigation or disputes

NYPA. None.

Invenergy. The following ongoing litigations are related to a few of the offered Resources owned by Invenergy Renewables:

- *Orangeville: Rohauer v. Invenergy LLC*, Supreme Court of New York No. 46066; *Slowinski v. Invenergy LLC*, Supreme Court of New York No. 46911; *Andre et al v. Invenergy LLC*, Supreme Court of New York No. 46912. Three related actions asserting claims arising from the Orangeville Wind project. Claims include typical wind farm "nuisance" claims – noise and vibrations, shadow flicker, property values. Rohauer and Andre were removed to federal court and consolidated for purposes of discovery. Slowinski is still pending in Wyoming County Supreme Court.
- Alle-Catt: *Coalition of Concerned Citizens, et al, and Town of Farmersville v. New York State Board on Electric Generation Siting, et al*, New York Supreme Court, Appellate Division, 4th Department, No. OP 20-01406. Consolidated Article 78 proceedings appealing the issuance of the project's state Article 10 permit.
- *Alle-Catt Wind Energy LLC v. Town of Farmersville, et al*, New York Supreme Cattaraugus County, Civil No. 89872. Article 78 and declaratory judgment action challenging the Town's effort to terminate a project road use agreement.
- *Alle-Catt Wind Energy LLC v. Town of Farmersville, et al*, U.S. District Court, Western District of New York, Case No.: 1:20-cv-01785-GWC. Declaratory judgment action challenging Town's effort to terminate MET tower permit

energyRe. None, however the parent company has an expansive enterprise of affiliate businesses that are engaged in typical volume of commercial litigation that is commensurate with typical business of this size.

10.14. Expected operating life of the proposed project and depreciation period for all substantial physical aspects

The GAAP depreciable life is assumed to be 30 years for the majority of the wind and solar equipment & facilities. The New Transmission would be depreciated over a range of 40 to 60 years depending on the sub-asset classes within the overall line and converter stations.

The operating life of the assets is expected to be as follows:

40 years
Solar design life

35 years
Wind design life

40 years
New Transmission design life

10.15. Listing of proposer's affiliated entities and JVs transacting business in energy sector

NYPA. NYPA does not have any affiliated entities.

Invenergy. Invenergy Renewables LLC and its subsidiaries develop, own, and operate large-scale sustainable energy generation and storage facilities in the Americas, Europe, and Asia. A high-level organization chart is provided in Figure 10-6 below.

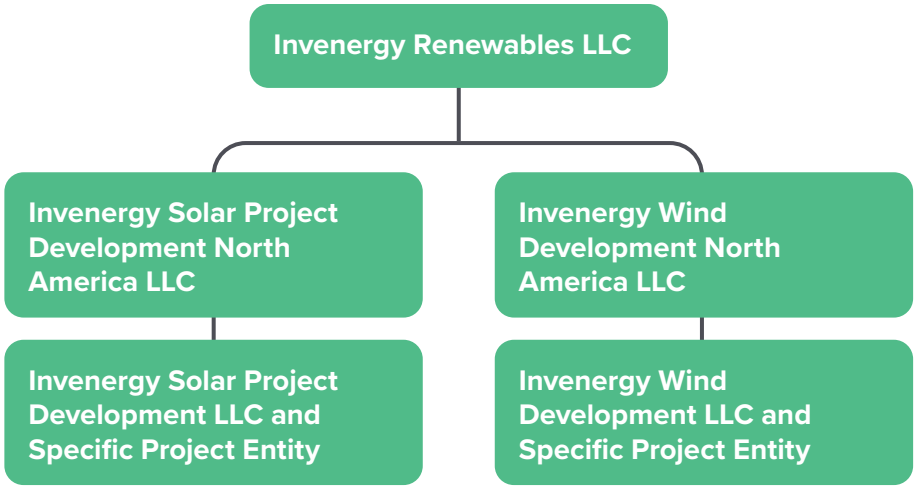


Figure 10-6. Invenergy Renewables LLC and its subsidiaries.

Other Invenergy entities include the following:

- Invenergy LLC and its subsidiaries serve as holding companies which retain nearly all of the personnel which support Invenergy's development, ownership and operation of large-scale sustainable energy generation, transmission and storage facilities in the Americas, Europe, and Asia.
- Invenergy Clean Power and its subsidiaries build, own and operate natural gas power generation and co-generation assets that serve as flexible, high-efficiency resources for power grids and industrial energy users. Invenergy Clean Power has operating or late-stage development assets in Canada, El Salvador, Mexico, and the United States.
- Invenergy Transmission and its subsidiaries develop transmission infrastructure to bring clean energy to market. Invenergy Transmission is currently advancing development of a transmission project in Uruguay, a transmission line across the Midwest U.S. and several other early-stage development projects across the United States.
- Invenergy Solutions and its subsidiaries help customers develop tailored solutions to achieve their energy goals through multi-technology on-site energy infrastructure, offsite renewable supply and the sophisticated software to manage those systems.
- Invenergy Clean Water and its subsidiaries are tackling the next sustainability challenge with an emerging water infrastructure and desalination business. Invenergy Clean Water is currently advancing development opportunities in the United States and Mexico.

energyRe. energyRe does not have any affiliated entities.

10.16. Litigation, disputes, claims, complaints, or failure to satisfy contract obligations related to the purchase or sale of energy, capacity, or RECs

NYPA. None.

Invenergy. None.

energyRe. None.

10.17. Confirm that proposer/agents of proposer are not currently under investigation and have not in the last four years been convicted or found liable for any act prohibited by State or Federal law in any jurisdiction involving conspiracy, collusion or other impropriety with respect to offering on any contract, or have been the subject of any debarment action

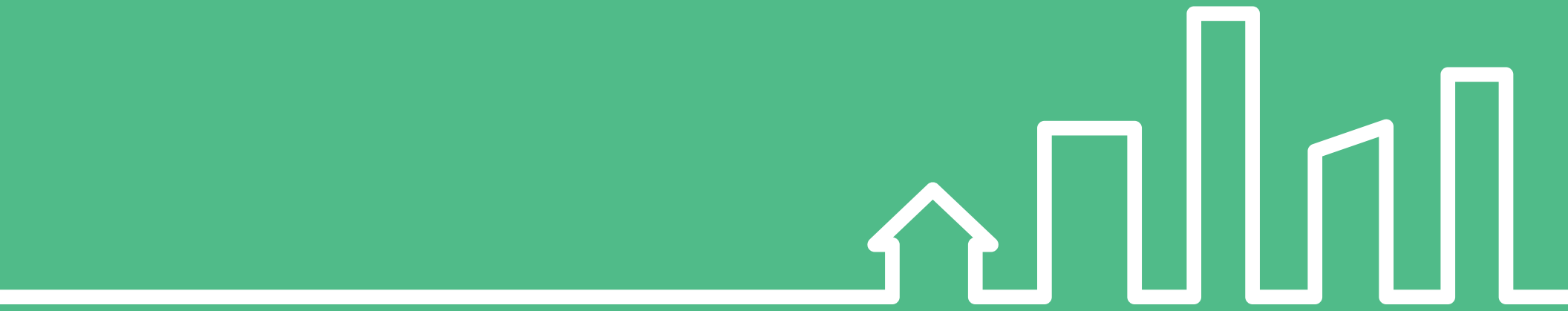
NYPA. None.

Invenergy. None.

energyRe. None.

Section 11

Permitting plan



11 Permitting plan

The New Transmission component of Clean Path New York is the main driver for the schedule and for achieving the targeted Commercial Operation Date explained in Section 13. More specifically, the critical path for this component includes the NYSDPS Article VII permitting and construction phase. The Resources offered within the portfolio of Resources are expected to achieve commercial operation date one to four years before the completion of the New Transmission. Hence we have focused on a diligent assessment of its permitting requirement.

In the subsections herein we provide a detailed explanation of the New Transmission permitting plan. Toward the end of the section we provide a status update of the Resources Portfolio permitting plan and progress. The portfolio of Resources offered by Clean Path New York reflects mature projects that have been in development for years and have already been awarded contracts through NYSERDA's Renewable Energy Standards solicitation for Tier 1 RECs. Accordingly, these projects have already made significant progress in obtaining some of the major permits.

11.1. Introduction to New Transmission permitting plan

Clean Path New York has prepared a Preliminary Permitting Plan in support of the proposed Clean Path New York project. In general, the purpose of this plan is to describe the environmental review program, identify environmental and land use conditions in the vicinity of the proposed project, and identify potential environmental review, permitting, and mitigation (refer to Section 12) considerations that will likely need to be addressed during the development and construction of the project.

Specific to the RFP requirements, this plan identifies:

1. A comprehensive list of permits anticipated for the project
2. Applicable environmental assessment or impact documents that may be required to support the project
3. Government agencies responsible for permits, consultations, or approvals
4. The current status of all agency consultations to date
5. The anticipated timelines for said permits, consultations, and approvals

These items are summarized in Tables 11-1 and 11-2. However, additional detail and discussion is provided throughout the plan, which has been provided as Section 11.7.

11.2. New Transmission comprehensive listing of permits

Please refer to Tables 11-1 and 11-2 below. Specific details regarding permits, consultations, and approvals are found within Section 11.7 below.

11.3. New Transmission listing of environmental assessment or impact statements

Please refer to Tables 11-1 and 11-2 below. Specific details regarding permits, consultations, and approvals are found within Section 11.7 below.

11.4. New Transmission listing of governmental agencies responsible for permits

Please refer to Tables 11-1 and 11-2 below. Specific details regarding government agencies responsible for permits, consultations, or approvals are found within Section 11.7 below.

11.5. New Transmission status of permit applications

Please refer to Tables 11-1 and 11-2 below.

11.6. New Transmission anticipated timelines for permits, licenses, EA/EIS

Please refer to Tables 11-1 and 11-2 below.

State and federal permitting

Permit, approval, or consultation (11.2/11.3)	Agency(s) and contact information (11.4)	Approval process	Anticipated timelines (11.6)	Status of permit applications (11.5)	Notes/thresholds/status
State approvals/consultations					
New York State Public Service Law, Article VII, §120 et seq., 16 NYCRR Parts 85-88 Certificate of Environmental Compatibility and Public Need under Article VII Environmental Management and Construction Plan Water Quality Certification, Section 401 of the Clean Water Act Certificate of Public Convenience and Necessity under PSL Section 68	New York State Department of Public Service, Public Service Commission (PSC or DPS) Secretary to the Commission Empire State Plaza Agency Building 3 Albany, NY 12223-1350 Phone: 518.474.6530 Email: secretary@dps.ny.gov	Article VII applies to the siting of major utility transmission facilities (submarine and onshore cable connection), lines 125 kV and overextending a distance of one mile or more. Article VII application is a robust procedure that involves alternatives analysis, public and stakeholder involvement, environmental studies, purpose and need statements, and other information. PSC issues approval.	Estimated 20 months for application phase and one year for Environmental Management and Construction Plan approval (may be partially concurrent)	Consultation initiated in Q1 2021; estimated time of submission is CY 2022.	Section 401 delegates authority to NYSDEC to issue a 401 Water Quality Certification for all projects that require a federal permit (such as a Section 404 Permit). However, under Article IIV regulations, the DPS will issue the water quality certification.
New York Independent Systems Operator (NYISO) Consultation re: design and operational criteria	NYISO 10 Krey Boulevard Rensselaer, NY 12144 Phone: 518.356.6000	NYISO typical interconnection process includes several procedures including but not limited to these: • NYISO TPAS/OC approval of System Impact Study Scope • System impact study completed and approved by NYISO • Facilities study completed and approved • Class Year 2021 completed and settled • Interconnection Service Agreement	Varies	Estimated time of submission is CY 2022	
New York Fish and Wildlife Law, New York Environmental Conservation Law (ECL) (Article 11 requirements will be incorporated into Article VII process)	NYS Department of Environmental Conservation Natural Heritage Program NYSDEC-DFWMR New York Natural Heritage Program 625 Broadway, 5th Floor Albany, NY 12233-4757 http://www.dec.ny.gov/animals/31181.html Phone: 518.402.8935	Conduct initial online review of NYS database (Environmental Resources Mapper) to determine if general area is identified as potential habitat for a state-listed species. If yes, then submit letter to Natural Heritage Program to request an official letter for recorded rare, threatened, and endangered species in or near the project site. A response is typically 3 to 4 weeks and remains valid for one year. If necessary: Undertake studies in consultation with NYSDEC and USFWS (see below).	3-4 weeks typically required for initial Natural Heritage Program response.	Consultation initiated in Q1 2021; estimated time of submission is CY 2022.	Article 11 of the ECL prohibits "taking" of state-listed threatened and endangered species or habitat occupied by such species. “Take” is defined very broadly. Status: Online review identified no state listed species or critical habitat on or near the project. Article 11 requirements will be folded into the Article VII process and may be applied to this project if there is a possibility of disturbing a listed species. Listed grassland birds are the primary species of concern for a solar project.

Table 11-1. State and federal permitting matrix.

State and federal permitting

Permit, approval, or consultation (11.2/11.3)	Agency(s) and contact information (11.4)	Approval process	Anticipated timelines (11.6)	Status of permit applications (11.5)	Notes/thresholds/status
New York State Parks, Recreation, and Historic Preservation Law, § 14.09	New York State Office of Parks, Recreation, and Historic Preservation/ State Historic Preservation Cultural Resources Information System https://cris.parks.ny.gov Peebles Island State Park P.O. Box 189 Waterford, NY 12188-0189	Initiate project review in online Cultural Resources Information System (CRIS) If requested by New York State Office of Parks, Recreation, and Historic Preservation (OPRHP): • Archaeological Survey • Historic Resources Survey • State Historic Preservation Office review, determination of effect If effect determined, then: • Mitigation plan • Memorandum of Agreement (MOA)	6-12 months, depending on State Historic Preservation Office review and any subsequent requests for additional information or studies	Consultation initiated in Q2 2021; estimated time of submission is CY 2022	Consultation with OPRHP regarding a project's potential effect on historic and archeological resources is required under Section 14.09 of the NYS Parks, Recreation, and Historic Preservation Law for any projects requiring state funding or a state agency approval. Similarly, OPRHP consultation is required under Section 106 of the National Historic Preservation Act for any projects that receive federal funding or require approval by a federal agency.
Tidal Wetland Permit, ECL Article 25 New York, Tidal Wetlands Act, 6 NYCRR Part 661 Floating object permit/Letter of No Objection Temporary revocable consent pursuant to Title 6 of NYCRR and ECL Articles 3, 9, 11, and 51	NYSDEC Region 4 (Delaware Counties) Region 4 Sub-office 65561 State Highway 10 Stamford, NY 12167-9503 Contact: Martha Bellinger Division of Environmental Permits Phone: 607.652.7741 NYSDEC Region 3 (Sullivan, Orange, Rockland, Dutchess, Putnam, and Westchester Counties) 21 South Putt Corners Road New Paltz, NY 12561 Contact: John Petronella Division of Environmental Permits Phone: 845.256.3054 NYSDEC Region 2 (New York City) 1 Hunter's Point Plaza 47-40 21st Street Long Island City, NY 11101 Contact: Stephan Watts Division of Environmental Permits Phone: 718.482.4997	Wetland and stream permitting at the state level will occur through the unified Article VII process; however, the NYSDEC will be consulted throughout the process. Typical consultation process includes the following: • Review NYSDEC protected wetlands/streams mapping • Conduct wetland/stream delineations (Note: Wetland delineations cannot occur with snow cover) • Prepare/submit to NYSDEC regions Wetland Delineation Reports with a request for boundary line confirmation • Meet NYSDEC representative on site to review boundary lines • Adjust wetland boundary lines and modify maps as necessary • Submit final map to the NYSDEC Regions for validation • Schedule pre-submittal consultation meetings with NYSDEC Regional offices • Prepare Best Management Practice work plan for wetland and subaquatic work (Water Quality Plan, Sediment Control Plan, Dredging Plan, etc.) for inclusion in the Article VII Environmental Management and Construction Plan	Permit review varies depending on type and extent of wetland or stream impacts. Typically, 3-6 months, but will be integrated into the Article VII process.	Consultation initiated in Q1 2021; estimated time of submission is CY 2022.	Articles 15 and 24 provide protection to specific streams and wetlands that are under state jurisdiction. Typical Articles 15 and 24 requirements will be incorporated into the Article VII process. Work plan and impact avoidance measures to be integrated in the Environmental Management and Construction Plan.
NYS Agriculture and Markets Law, § 305(4) NYS Soil and Water Conservation/Soil and Water Districts	NYS Department of Agriculture and Markets 10B Airline Drive Albany, NY 12235 Phone: 518.457-3738, 800.554.4501	Consultation with the New York State Department of Agriculture and Markets is expected to be required, particularly if prime agricultural lands or designated agricultural districts will be impacted. If the project is utilizing state funding, a Notice of Intent will need to be completed to address agricultural impacts occurring within a county Agricultural District, and agricultural protection and restoration measures will need to be discussed during the environmental review process.	Typically, 3-6 months	Consultation initiated in Q2 2021	Proposed construction of nonagricultural structures within a designated agricultural district requires that a Notice of Intent be filed with New York State Department of Agriculture and Markets. To be coordinated with the Article VII process.

Table 11-1 (continued). State and federal permitting matrix.

State and federal permitting

Permit, approval, or consultation (11.2/11.3)	Agency(s) and contact information (11.4)	Approval process	Anticipated timelines (11.6)	Status of permit applications (11.5)	Notes/thresholds/status
State Pollutant Discharge Elimination System (SPDES) Permit for Stormwater Discharges DEC General Permit No. GP-0-20-001	NYSDEC Division of Water 625 Broadway Albany, NY 12233-3505 http://www.dec.ny.gov/chemical/43133.html#Forms	• Develop/prepare Stormwater Pollution Prevention Plan (SWPPP) • Note: Preparation of the SWPPP requires close to final engineering plans (e.g., grading plans) • Submit Notice of Intent (NOI) to NYSDEC prior to final site plan approval • Will also require local approval in MS4 municipalities	2 months upon filing Notice of Intent (NOI)	To be initiated prior to issuance of final approvals.	Required for construction activities that result in disturbance of more than one acre of land. The SPDES program (and the MS4 review) are the delegation of the NPDES program and are thus not supplanted by Article VII. Therefore, the substantive reviews will occur as part of the Article VII process but filing of the NOI will be required separately from the Environmental Management and Construction Plan to satisfy SPDES/NPDES.
NYS Highway Law, Article 3, § 52 NYS Department of Transportation (NYSDOT) Highway Work Permit New York State Vehicle and Traffic Law § 385 Accommodation of Utilities Within State Highway Right of Way (17 NYCRR, Part 131)	NYSDOT Region 9 (Otsego, Delaware, and Sullivan counties) 44 Hawley Street Binghamton, NY 13901 Nicolas Choubah, PE, Regional Director Phone: 607.721.8116 NYSDOT Region 8 (Ulster, Dutchess, Orange, Putnam, Rockland, and Westchester Counties) Eleanor Roosevelt State Office Building 4 Burnett Boulevard Poughkeepsie, NY 12603 Lance MacMillan, PE, Regional Director Phone: 845.431.5750 NYSDOT Region 11 (New York City) Hunters Point Plaza 47-40 21st Street Long Island City, NY 11101 Craig Ruyle, Regional Director Phone: 718.482.4526	If activity will be conducted in the right-of-way for a State Route, an application for a Highway Work Permit is required. The required forms depend on the type of activity: installation of a driveway, utility work, drainage features, or other.	Varies	Anticipated after issuance of local discretionary approvals or approval of the Environmental Management and Construction Plan.	The use of New York State highway right-of-way must be carried out and completed in accordance with terms and conditions of a highway work permit issued by the NYSDOT. Anyone who plans to do work on any part of the state highway system, its properties or right-of-way, must obtain a permit. This is to ensure that work done on the right of way, and the finished projects, meet the standards and policies of public safety, highway laws and regulations, preservation and function of the highway, and that the work is in the best interests of the traveling public as well as the owner of the project.
New York State Department of State Office of Planning and Development Coastal Zone Management Program Federal/state consistency determination	New York State Dept. of State Consistency Review Unit 99 Washington Avenue One Commerce Place, Suite 1010 Albany, NY 12231-0001 Email: cr@dos.ny.gov Phone: 518.474.6000 Alternate: 518.474.6572	Consistency review is the tool that enables the Dept. of State to manage coastal uses and resources while facilitating cooperation and coordination with involved state, federal, and local agencies. Both the Hudson and Harlem Rivers are Designated Waterways under the jurisdiction of the Coastal Zone Management Program. Process is initiated with submittal of Joint Application for Permits to NYSDOS.	Varies	Consultation initiated in Q2 2021; estimated time of submission is CY 2022	

Table 11-1 (continued). State and federal permitting matrix.

State and federal permitting

Permit, approval, or consultation (11.2/11.3)	Agency(s) and contact information (11.4)	Approval process	Anticipated timelines (11.6)	Status of permit applications (11.5)	Notes/thresholds/status
New York State Office of General Services Application for State Submerged Lands Easement	Office of General Service, Bureau of Land Management Corning Tower 26th Floor Empire State Plaza Albany, NY 12242 Email: LandUnderWater@ogs.ny.gov Phone: 518.474.2195	Structures and utilities, including fill, located in, on, or above state-owned lands now or formerly underwater are regulated under the Public Lands Law. Permission may be required to build on these lands, including docks, boathouses, or marinas, or to install utilities over or through. Application through Joint Application Form. Easement acquisition requirements will be determined by the Office of General Service. Process is initiated with submittal of Joint Application for Permits to NYS Office of General Service.	Typically, 3-6 months	Consultation initiated in Q2 2021; estimated time of submission is CY 2022	
Federal permits					
§ 404 & 408 of the Clean Water Act (Individual or Nationwide permits) § 10 of the Rivers and Harbors Act	US Army Corps of Engineers New York District Regulatory Branch, Rm 16-400 26 Federal Plaza New York, NY 10278-0090 Phone: 917.790.8511 (Eastern Permit Section, NYC area) Phone: 917.790.8411 (Western Permit Section, all other counties) Email: cenan.publicnotice@usace.army.mil	Review National Wetlands Inventory (NWI) maps (completed). Status: NWI mapped wetlands and streams identified on and near project. Conduct site reconnaissance to determine the presence/absence of any mapped or unmapped wetland resources. Anticipated to be needed: • Conduct on-site wetland/stream delineations. • Prepare/submit to Army Corps of Engineers a wetland delineation report with a request for a jurisdictional determination • Meet Army Corps of Engineers representative on site to review boundary lines. • Adjust wetland boundary lines and modify maps as necessary. • Prepare/submit joint application for permit to Army Corps of Engineers for individual or nationwide permit. – Provide record of US Fish and Wildlife Service (USFWS) consultation – Provide record of State Historic Preservation Office consultation – Army Corps of Engineers issues permit	Nationwide permit typically 6-8 months Individual permit typically 12-18 months 408 permit can be up to 18+ months	Consultation initiated in Q1 2021 To be filed concurrently with Environmental Management and Construction Plan process	Section 404 regulates placement of dredged or fill materials in federal jurisdictional waters/wetlands (i.e., wetlands that have connectivity to navigable waters of the US) by requiring application for a permit to the Army Corps of Engineers. As part of their review of a permit application, the Army Corps of Engineers is required to comply with the Endangered Species Act and Section 106 of the National Historical Preservation Act, which requires consultation with the USFWS and State Historic Preservation Office. It is likely an individual permit will be required.
Endangered Species Act, §7, §9, and §10 Migratory Bird Treaty Act 16 (U.S.C. 703-711 and § 3 of Executive Order 13186, 50 CFR 10.13, regulations 40 CFR Parts 13 21 Migratory Bird Permits Bald and Golden Eagle Protection Act Fish and Wildlife Consultation under §2 of the Fish and Wildlife Coordination Act Coastal Barrier Resource System	US Fish & Wildlife Service (USFWS) New York Field Office 3817 Luker Road Cortland, NY 13045 Phone: 607.753.9334 Fax: 607.753.9699 Email: FW5ES_NYFO@fws.gov	Consult with USFWS to determine species that may be present within the project area. Consultation valid for 90 days and can be updated online as needed. Compare habitat of listed species to habitat at the project. • If impact to federally listed threatened and endangered species habitat is expected, species-specific surveys may be required. • If species-specific survey identifies that the project is likely to adversely affect threatened and endangered species, project may require submission of an application for an Incidental Take Permit. • If so, requires preparation of a Habitat Conservation Plan.	USFWS response occurs the same day as official inquiry Not anticipating need for federal Incidental Take Permit or Habitat Conservation Plan	Unofficial inquiry conducted Report identified one species: Indiana Bat. However, the project is outside the critical habitat for this species.	Section 7 requires federal agencies to consult with USFWS prior to approving or funding an undertaking to ensure that undertaking is not likely to jeopardize federally listed threatened and endangered species' critical habitat. Section 9 prohibits activities that directly or indirectly affect threatened and endangered species. Section 10 Authorizes the USFWS to issue permits to incidentally take threatened and endangered species.

Table 11-1 (continued). State and federal permitting matrix.

State and federal permitting

Permit, approval, or consultation (11.2/11.3)	Agency(s) and contact information (11.4)	Approval process	Anticipated timelines (11.6)	Status of permit applications (11.5)	Notes/thresholds/status
§106 of the National Historic Preservation Act (see NYS Parks, Recreation, and Historic Preservation Law, § 14.09, above)	See NYS Parks, Recreation, and Historic Preservation Law, §14.09	See NYS Parks, Recreation, and Historic Preservation Law, §14.09	3-6 months	Consultation will be initiated in Q2 2021	See NYS Parks, Recreation, & Historic Preservation Law, §14.09
US Department of Agriculture, Natural Resource Conservation Service	New York State Natural Resource Conservation Service Office 441 S. Salina Street, Suite 354 Syracuse, NY 13202 Phone: 315.477.6505	Consultation required if Wetland Reserve Program lands are identified on proposed route	Varies	Consultation will be initiated in Q2 2021	
National Park Service Easement	National Park Service 1849 C Street NW Washington, DC 20240 David Vela, Deputy Director Phone: 202.208.6843	Easement required for utilities to pass over, across or through a National Park System (e.g., Appalachian Trail) as per 54 U.S.C. 100902 (a) and (b)	Varies	Consultation will be initiated in Q2 2021	
Native American Tribal Groups Consultation	To be confirmed by New York State Historic Preservation Office	National Historic Preservation Act of 1966, 16 U.S.C. et seq., § 106	Varies	Consultation to be initiated as part in Q2, 2021	
US Coast Guard (USCG) Aids to Navigation Consultation	USCG Jason Tama, Commander, Sector New York 408 Atlantic Avenue Boston, MA 02110	Private and/or temporary aids-to-navigation may be required for areas in the Hudson River and/or Harlem River Consultation typically initiated following issuance of project approvals	Varies	Consultation will be initiated in Q2 2021	
National Oceanic and Atmospheric Administration (NOAA Fisheries), National Marine Fisheries Service	Greater Atlantic Regional Fisheries Office National Marine Fisheries Service 55 Great Republic Drive Gloucester, MA 01930 Phone: 978.281.9300	Section 7 Consultation regarding endangered and protected species under National Marine Fisheries Service jurisdiction Essential Fish Habitat	Varies	Consultation initiated in Q21 2021	

Table 11-1 (continued). State and federal permitting matrix.

Potential municipal land use controls, permits, and approvals

County	Municipality	Zoning regulations	Public utility defined use	Site plan approval	Special use permit	Zoning variance	Wetland/ aquatic permit	Floodplain permit	MS4 approval	LWRP
Delaware County	***Towns***									
	Colchester	N/A	N/A	N/A	N/A	N/A	N/A	✓	N/A	N/A
	Delhi	✓	✓	✓	✓	✓	N/A	N/A	N/A	N/A
	Hancock	N/A	N/A	✓	N/A	N/A	N/A	✓	N/A	N/A
	Hamden	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sullivan County	***Towns***									
	Bethel	✓	✓	✓	✓	✓	N/A	✓	N/A	N/A
	Callicoon	✓	N/A	✓	✓	✓	N/A	✓	N/A	N/A
	Forestburgh	✓	N/A	✓	✓	✓	N/A	✓	N/A	N/A
	Fremont	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Liberty	✓	✓	✓	✓	✓	N/A	✓	N/A	N/A
	Mamakating	✓	✓	✓	✓	✓	N/A	✓	✓	N/A
	Rockland	✓	✓	✓	✓	✓	✓	✓	N/A	N/A
	Thompson	✓	✓	✓	✓	✓	N/A	✓	N/A	N/A
	Villages									
	Monticello	✓	✓	✓	✓	✓	N/A	✓	N/A	N/A
Orange County	***Towns***									
	Deerpark	✓	✓	✓	✓	✓	N/A	N/A	N/A	N/A
	Cornwall	✓	✓	✓	✓	✓	✓	✓	✓	N/A
	Goshen	✓	✓	✓	✓	✓	N/A	✓	✓	N/A
	Greenville	✓	N/A	✓	✓	✓	✓	✓	N/A	N/A
	Hamptonburgh	✓	✓	✓	✓	N/A	N/A	✓	✓	N/A
	Highlands	✓	N/A	✓	✓	✓	N/A	✓	✓	N/A
	Mount Hope	✓	✓	✓	✓	✓	N/A	✓	✓	N/A
	New Windsor	✓	✓	✓	✓	✓	N/A	✓	✓	N/A
	Walllkill	✓	✓	✓	✓	✓	N/A	✓	✓	N/A
	Wawayanda	✓	✓	✓	✓	✓	N/A	✓	✓	N/A
	Cities									
	Middletown	✓	✓	✓	✓	✓	N/A	✓	✓	N/A
	Villages									
	Cornwall-on-Hudson	✓	✓	✓	✓	✓	N/A	✓	✓	N/A

Table 11-2. Local permitting matrix.

Potential municipal land use controls, permits, and approvals

County	Municipality	Zoning regulations	Public utility defined use	Site plan approval	Special use permit	Zoning variance	Wetland/ aquatic permit	Floodplain permit	MS4 approval	LWRP
Dutchess County	***Towns***									
	Fishkill	✓	N/A	✓	✓	✓	✓	✓	✓	N/A
Putnam County	***Towns***									
	Phillipstown	✓	✓	✓	✓	✓	✓	✓	✓	N/A
Rockland County	***Towns***									
	Stony Point	✓	N/A	✓	✓	✓	✓	✓	✓	✓
West-chester County	***Towns***									
	Cortlandt	✓	✓	✓	✓	✓	✓	✓	✓	N/A*
	Greenburgh	✓	✓	✓	✓	✓	✓	✓	✓	N/A
	Mount Pleasant	✓	N/A	✓	✓	✓	✓	✓	✓	N/A
	Ossining	✓	N/A	✓	✓	✓	✓	✓	✓	N/A
	Cities									
	Peekskill	✓	N/A	✓	✓	N/A	N/A	✓	✓	N/A
	Yonkers	✓	✓	✓	✓	✓	N/A	✓	✓	N/A
	Villages									
	Buchanan	✓	✓	✓	✓	✓	✓	✓	✓	N/A*
	Croton-on-Hudson	✓	N/A	✓	N/A	✓	✓	✓	✓	✓
	Ossining	✓	N/A	✓	✓	✓	N/A	✓	✓	✓
Bronx, New York, Queens	***Cities***									
	New York	✓	✓	✓	✓	✓	✓	✓	✓	✓

Note: It is noted that local permits and approvals are generally limited to stormwater pollution prevention plan (SWPPP) and MS4 Plan approvals as the Article VII process pre-empts local approvals. Regardless, Clean Path New York will work with the local governments throughout the permitting process to incorporate their input into the planning process and to obtain local permits when possible. N/A indicates that local regulation information could not be found on public websites.

* Currently developing a joint LWRP, draft is anticipated in the first quarter of 2021,

Table 11-2 (continued). Local permitting matrix.

11.7. New Transmission project permitting plan

Project description and location

The proposed project involves the construction of a high-voltage direct current (HVDC) transmission line that will extend from the Fraser Substation in the Delaware County, New York, to the Rainey Substation in Queens County, New York (see Figure 11-1 below). The project will include a combination of underground and subaquatic cable transmission line segments and supporting interconnection components. A description of the proposed transmission line segments is provided in Table 11-3; supporting interconnection infrastructure are described in Table 11-4.

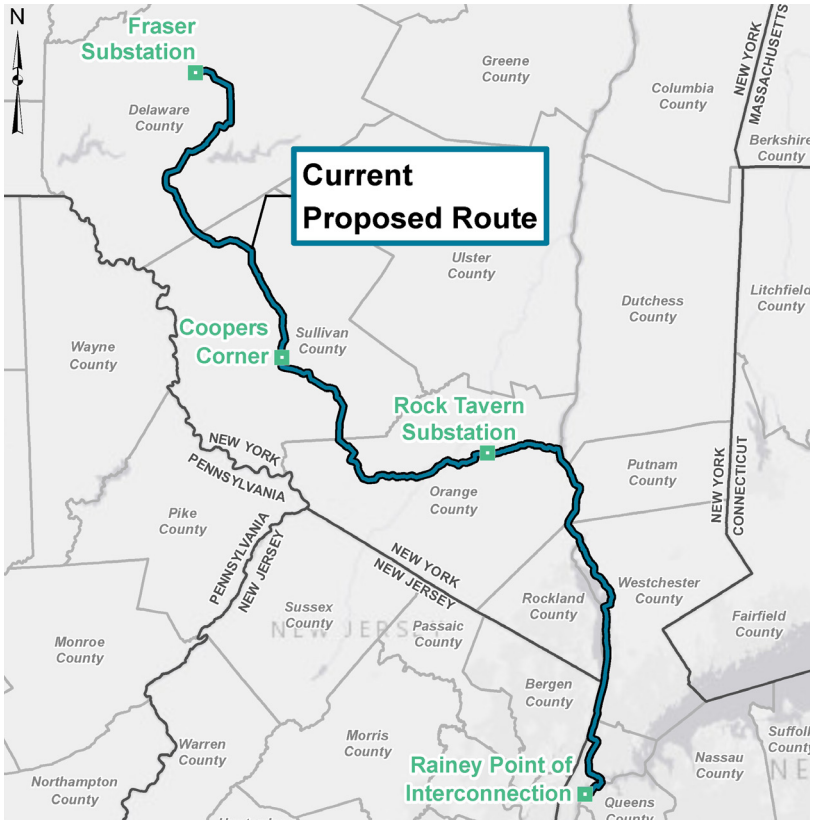


Figure 11-1. Proposed route overview map.

Transmission line segment	Length (miles)	General description of proposed action	Work within existing ROW	Work setting
Fraser Substation to Rock Tavern Substation	105	New underground construction	Yes	Terrestrial; existing transmission line ROW
Rock Tavern Substation to Hudson River (Town of New Windsor)	11	New underground construction	Yes	Terrestrial; public roadways and ROWs
Hudson River (Town of New Windsor) to Buchanan Substation	17	New underground construction	No	Submarine; Hudson River
Buchanan Substation to Hudson River (Village of Ossining)	11	New underground construction	Yes	Terrestrial; public roadways and ROWs
Hudson River (Village of Ossining) to Harlem River	20	New underground construction	No	Submarine; Hudson River
Harlem River to Rainey Substation	10	New underground construction	Mixed	Submarine: Harlem River, East River; Terrestrial: public roadways and ROWs
Total	**±174 miles**			

Table 11-3. Transmission line segments.

Interconnection infrastructure	Location
Alternating current (AC) to direct current (DC) converter station	Adjacent to Fraser Substation
DC to AC converter station	[redacted]
CECONY interconnection [Primary Point of Interconnection (POI)]	Rainey Substation

Table 11-4. Supporting interconnection infrastructure.

For the purposes of this permitting plan, the project was defined as a 150-foot-wide corridor centered on the proposed transmission line route (see Figure 11-1). The project crosses 35 municipalities and eight counties including New York City (Bronx and Queens) and is made up primarily of existing transmission line ROWs, active agricultural fields, fallow/successional fields, public roads and developed areas, and wetlands/waterbodies. Further information on land use within the project site is provided in subsequent sections of this plan.

Content of this plan

This plan identifies and describes the regulatory and permitting processes that may be applicable to the project. It also evaluates the potential environmental review and permitting issues that may be identified during the development of the project, with a primary focus on wetland and water resources, flood plains, ecological resources, land use, and cultural resources that will require impact avoidance discussion and permitting under Article VII. The plan also includes general conclusions and pertinent supporting materials provided in Appendices 14 and 15.

Regulatory review and permitting process

Permitting plan approach

Successful projects require engaging regulatory agencies and other stakeholders in honest, open, and meaningful dialogue early and often throughout the life of a project. Identifying the least environmentally intrusive and permittable project is the goal of such a program. Existing relationships between Clean Path New York and agency staff and other stakeholders are important; however, Clean Path New York is committed to building relationships of trust specific to this project.

Building trust with agency personnel and other stakeholders will take time and dedication on the part of Clean Path New York. The permitting approach outlined herein has been successfully utilized on Article VII infrastructure projects in the state of New York. The following plan strives to build understanding and acceptance of this project among the stakeholders who may participate in, or influence the project. To accomplish this goal Clean Path New York will do the following:

- Coordinate with permitting agencies and other stakeholders with regulatory jurisdiction of the project. Nongovernmental organizations will be identified to determine potential project concerns and address them as appropriate.
- Coordinate activities with key internal disciplines: land and right-of-way, communication, regulatory, and engineering to quickly respond to agency and other stakeholder input.
- Meet early with nongovernmental organizations and special interest groups, including potential project opponents, to hear their concerns and express to them that Clean Path New York is interested in their input. These discussions often allow Clean Path New York to alleviate and minimize concerns. Clean Path New York will attempt to meet early with potential project opponents when concerns can be readily addressed in the project planning.
- Inform agency personnel ahead of project milestones.

Early identification of issues, concerns, and opponents is extremely important and often results in a more positive outcome for all parties. Being proactive allows Clean Path New York to work with regulators and other stakeholders to identify meaningful solutions to environmental concerns. At a minimum, Clean Path New York will adhere to the following overarching principles when conducting consultation for the project.

Proactivity. Clean Path New York will communicate early and often with agency personnel and stakeholders.

Transparency. Clean Path New York will provide appropriate information to ensure agency personnel and other stakeholders have the data required to provide meaningful input.

Credibility and professionalism. Clean Path New York will share accurate and timely information to build relationships of trust and establish credibility.

Responsiveness. Clean Path New York values input received and will ensure that input is considered. Clean Path New York will be responsive to information requests and questions and will communicate in an appropriate manner when information is available.

Flexibility. Clean Path New York will be flexible in its engagement process to accommodate the needs of individual regulatory bodies and stakeholders.

Respect. Clean Path New York will respect all who may be interested in or who are affected by the project.

State and local permitting

The project is considered a major electric transmission facility under Article VII of the New York State Public Service Law due to the fact that it is greater than 10 miles in length and has over 100 kV design capacity, therefore an application for a Certificate of Environmental Compatibility and Public Need (Certificate) will need to be submitted to the New York State Public Service Commission (PSC).

The New York State Legislature enacted Article VII in 1970 to establish a single forum for reviewing the need for, and environmental impact of, certain major electric and gas transmission projects. Article VII was intended to be a "one-stop" permitting process covering all required state and local permits and is discussed in more detail below.

Article VII of the New York State Public Service Law

Article VII of the Public Service Law governs the siting of major utility transmission facilities in the state. The law requires a full review of the need for a project and the environmental impacts of its siting, design, construction, and operation. The law also establishes a process for community engagement, allowing the public to participate with state and local representatives in the review of the Article VII Application (PSC, 2021)[1] Clean Path New York is fully aware of these requirements and have extensive experience shepherding projects through this process.

The format of the application for this project will follow the Regulations for Electric Transmission and Gas Transmission Lines Ten Miles or Longer, Chapter 1, Subchapter G, Certificates of Environmental Compatibility and Public Need (16 NYCRR Parts 85 through 88). It is anticipated that the following exhibits will be applicable:

- **Exhibit 1:** General Information Regarding Application
- **Exhibit 2:** Location of Facilities
- **Exhibit 3:** Alternatives
- **Exhibit 4:** Environmental Impact

[1] New York State Public Service Commission (PSC). 2021. The Certification Review Process for Major Electric and Fuel Gas Transmission Facilities. Available at: https://www3.dps.ny.gov/W/PSCWeb.nsf/96f0fec0b45a3c6485257688006a701a/a021e67e05b99ead85257687006f393b/$FILE/19336071.pdf/Article%20VII%20Guide%20Web%2011-17%20Final.pdf (Accessed April 2021).

- **Exhibit 5:** Project Design Drawings
- **Exhibit 6:** Economic Effects of Proposed Facility
- **Exhibit 7:** Local Ordinances
- **Exhibit 8:** Other Pending Filings
- **Exhibit 9:** Cost of Proposed Facilities
- **Exhibits E1 through E6** (Transmission Line Description, Engineering Justification, Underground Construction, Construction, Effects on Communications, Effects on Transportation)

The application for this project will be filed with the PSC and reviewed by the New York State Department of Public Service staff to determine completeness. If the application lacks required information, Clean Path New York will be informed of the deficiencies and will submit supplemental information until it is deemed complete.

Once the application is deemed complete, Public Statement Hearing(s) will be scheduled to solicit feedback and a Procedural Conference will be held to determine the procedural path of the application. Following a public comment period, evidentiary hearings (if required), and the settlement of issues, a Certificate will be issued via a PSC Order. This Certificate will contain conditions on how the project can be constructed to avoid adverse environmental impacts. To grant a Certificate, either as proposed or modified, the PSC must determine the following:

- The facility avoids or minimizes to the extent practicable any significant adverse environmental impact
- The basis of the need for the facility
- The nature of the probable environmental impact
- The facility avoids or minimizes to the extent practicable any significant adverse agricultural impact
- What part, if any, of the line shall be constructed underground
- The extent to which the facility conforms to the long-range plan for the electric power grid and interconnected utility systems to serve the electric system with economy and reliability
- That the location conforms with applicable state and local laws, except that the Commission may refuse to apply local laws determined to be unreasonably restrictive in view of the existing technology, cost, economics or needs of the consumers
- That the construction and operation of the facility is in the public interest

Clean Path New York will develop an Environmental Management and Construction Plan, along with other post-certification filings, as required. The Environmental Management and Construction Plan is the primary post-certification filing; however, the development of this plan may be initiated during the certification process. It will address how the project will be constructed and how each Certificate condition will be achieved. It is anticipated that the Environmental Management and Construction Plan for this project would minimally consist of the following; however, additional elements may be added as identified through the consultation process:

- Narrative report
- Plan and profile drawings
- Stormwater Pollution Prevention Plan (SWPPP)
- Construction methods
- Environmental Best Management Practice plans (typical plans listed below)
  - Maintenance and protection of traffic plans
  - Wetland and stream crossing plan
  - Habitat avoidance work plans
  - Subaquatic work plans
  - Agricultural plan
  - Cultural resources mitigation plan
  - Unanticipated discovery plan
  - Noise mitigation plan
  - Vegetation management plan

Once the Environmental Management and Construction Plan is approved by the PSC, public notifications will be required and a Notice to Proceed will be issued prior to the commencement of construction

(PSC, 2021).

Coastal Zone Consistency Review

The New York State Department of State manages coastal uses and resources, while facilitating cooperation and coordination with involved state, federal, and local agencies through the use of the Coastal Zone Consistency Review process. The "consistency" of a proposed activity with the New York State Coastal Management Plan is determined through a set of coastal policies and procedures designed to enable appropriate economic development while advancing the protection and preservation of ecological, cultural, historic, recreational, and aesthetic values (DOS, 2021a).[2]

The Coastal Management Plan has established statewide coastal zone boundaries in accordance with the requirements of the Coastal Zone Management Act of 1972. Approximately 60 miles of the proposed project is located within New York's Coastal Area Boundary. Because the project will require wetland permitting from the US Army Corps of Engineers and consultation with the New York State Department of Environmental Conservation (NYSDEC), it will be subject to consistency review by the DOS. The DOS requires the following materials be submitted in any application for Consistency Certification:

- Completed and signed federal consistency assessment form, which includes a signed consistency certification and a written analysis of the proposed activity's consistency with enforceable state coastal policies.
- Copies of the application materials for a federal permit, license, or other approval, including the following:
  - Detailed description of the proposed activity, its associated facilities, and coastal effects
  - Map(s) showing the specific geographic location of the proposed facility
  - Site map(s) and diagram(s) drawn to scale showing all components of the activity and their location on the site
  - Written statement on the purpose and need for the activity
  - Written analysis of alternatives to the proposed activity considered which support the selection of the proposed alternative
  - Any other supporting documentation submitted with the federal application
- Copy of the final Environmental Impact Statement, if required by the federal agency or by a state agency having jurisdiction over the proposed activity.
- Copies of all applications and related correspondence submitted to involved state agencies for permits, licenses, etc. (e.g., New York State Office of General Services, State Historic Preservation Office, DEC, PSC).

Clean Path New York has preliminarily prepared much of this documentation and will submit all necessary data and information

The **Waterfront Revitalization of Coastal Areas and Inland Waterways Act** offers local governments the opportunity to participate in the Coastal Management Plan on a voluntary basis by preparing and adopting **Local Waterfront Revitalization Programs** (LWRPs) (DOS, 2021b).[3] LWRPs provide local governments the opportunity to conduct a more detailed implementation of the Coastal Management Plan using existing zoning and site plan review processes. Any village, town, or city located along New York State's coast or designated inland waterway can prepare or amend an existing LWRP.

[2] New York State Department of State (DOS). 2021a. Consistency Review. Office of Planning & Development. Available at: https://www.dos.ny.gov/opd/programs/consistency/index.html. (Accessed April 2021).

[3] New York State Department of State (DOS). 2021b. Local Waterfront Revitalization Program. Office of Planning & Development. Available at: https://www.dos.ny.gov/opd/programs/lwrp.html#:~:text=The%20Waterfront%20Revitalization%20of%20Coastal,provides%20more%20detailed%20implementation%20of (Accessed April 2021).

is received, the DOS so it can begin its consistency review of the proposed project.

The Village of Croton-on-Hudson, the Village of Ossining, the City of Peekskill, the Town of Stony Point, and the City of New York are the only five municipalities intersecting the project that have an LWRP approved by the New York Secretary of State. Although not currently enacted, the Town of Cortlandt and the Village of Buchanan are currently developing a joint LWRP, with the goal of having a draft prepared in the second quarter of 2021. For all other municipalities within the project that lack an approved LWRP, the action will fall under the jurisdiction of the DOS (DOS, 2021b).

Lands under water

Most navigable waters, including the beds of navigable waters, are owned by the state of New York and are held in trust by the Office of General Services. The Office of General Services has the authority to regulate public and private use of the state's underwater lands in a manner that is consistent with the public interest in navigation, commerce, recreation, etc. In addition, structures and utilities, including fill, located in, on, or above state-owned lands now or formerly underwater, are regulated under the Public Lands Law (Office of General Services, 2021).[4]

The Office of General Services requires an easement to install utilities above or below lands now or formerly under the waters of state-owned waterbodies. Clean Path New York will provide notice of filing an easement application at least 20 days prior to filing an easement application with the Office of General Services. The notice will be provided to the following:

- The city, town, or village in which the proposed project is located
- The owners of any properties immediately adjacent to the project area
- The owners of any properties immediately adjoining the shorefront where any project cable, conduit, or pipeline will enter or leave the water

Clean Path New York's easement Application for Use of Land Underwater to the Office of General Services will contain the following applicable supplemental materials:

- Joint Application for Permit form
- Plan and profile showing the proposed work or structures
- Map of the project showing the location of proposed structure(s), the upland property of the applicant and those of adjoining properties along the waterfront
- Metes and bounds description of the land applied for, including the desired width of the proposed easement
- Certified copy of the deed(s) adjacent upland or the consent of the owner of such adjacent upland
- Copy of adjoining shorefront deed(s) and a copy of the applicable tax map section
- Completed environmental assessment form

Additionally, pursuant to Section 1301 of the New York State Charter and Title 22 of the New York City Administrative Code, the New York City Department of Small Business Services (SBS) is responsible for issuing waterfront permits for all maritime and non-maritime construction related to improvement or maintenance for all city-owned waterfront properties. New permit applications consist of a completed SBS Intake Checklist and PW1 form, three sets of drawings, and other required information and forms for review by SBS. Once the project's applications are reviewed by the Waterfront Permits Unit, objections, if any, will be resolved by Clean Path New York. Upon final acceptance from the SBS, a PW2 form and current ACORD Insurance Certificates will be submitted for a work permit (Office of General Services, 2021). As noted previously, the Article VII process pre-empts local permitting authority; however, Clean Path New York with work with local governments throughout the permitting process to incorporate their input into the planning process and to obtain local permits when possible.

Federal permitting

[4] New York State Office of General Services (OGS). 2021. Lands Now or Formerly Underwater. Available at: https://ogs.ny.gov/real-estate/lands-now-or-formerly-underwater (Accessed April 2021).

Clean Water Act

Federal wetland/stream permits from the Army Corps of Engineers would likely be required for any unavoidable impacts to jurisdictional wetlands and streams resulting from the construction or operation of the project.[5] The installation of structures, caisson foundations, manholes, buried cable, culverts, access roads, and other fill in jurisdictional wetlands would be considered an impact.

The project is situated within the New York City District of the Army Corps of Engineers, coordination with this office will be required to obtain permit(s). The recently issued Nationwide Permit 57 (Electric Utility Line and Telecommunications Activities) may be applicable if project-related impacts to federal jurisdictional wetlands can be kept under 0.5 acres for each single and complete project (e.g., crossing).

However, project disturbance at individual locations are anticipated to exceed this threshold and therefore an Individual Permit is anticipated. In addition to the Individual Permit (Section 404), the project crosses Section 10 navigable waters which may be subject to Section 408 permitting requirements. The time frame of 12 to 24 months to obtain an Individual Permit and Section 408 Permit approvals is reasonably foreseeable.

The Army Corps of Engineers is obligated to consider the project's potential effect on cultural resources in accordance with Section 106 of the National Historic Preservation Act. This would require consultation with the State Historic Preservation Office, Native American Tribal Nations, and any other applicable parties requesting status during Section 106 Consultation. Consultation with the US Fish and Wildlife Service (USFWS) to assure compliance with Section 7 of the Endangered Species Act would also be required. See the completed Permitting Matrix (Table 11-1) for additional information.

State Pollutant Discharge Elimination System

The National Pollutant Discharge Elimination System (NPDES) regulations authorize states, tribes, or territories to administer the NPDES program locally. New York has an authorized State NPDES program, referred to as the State Pollutant Discharge Elimination System (SPDES). This is a federally delegated process, so approval takes place outside the context of Article VII.

If a given activity disturbs more than one acre of soil (which will be the case for the project), the project will be required to seek authorization to construct in accordance with the SPDES general permit for construction issued by DEC (DEC, 2021a).[6] The permit application must address stormwater management and associated sediment and erosion control measures. These permits can be issued relatively quickly following submittal of an SWPPP and associated Notice of Intent (NOI). Additionally, the DEC SPDES general permit is further implemented at the local level in municipalities designated as being under municipal separate storm sewer system (MS4) regulations. Work within MS4 communities (see Local Law Matrix, Table 11-2) requires SWPPP review and approval by a locally designated MS4 authority (e.g., Town Engineer).

National Environmental Policy Act

The National Environmental Policy Act (NEPA) requires federal agencies to assess the environmental effects of their proposed actions prior to making decisions. All agencies carrying out major federal actions are responsible for complying with the requirements of NEPA. The USACE will likely be the lead agency and will complete the necessary level of NEPA review to issue their permits. Clean Path New York will work through the required NEPA process, concurrent with the Article VII process.

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[5] Please note that State wetland and stream permits are required if projects impact wetlands or streams under DEC jurisdiction in accordance with Article 15 and Article 24 of the Environmental Conservation Law. However, these permits are not issued when the Article VII process is utilized; rather, Clean Path New York will consult with these agencies to ensure protective measures for these resources are incorporated into the Article VII process.

[6] New York State Department of Environmental Conservation (NYSDEC). 2021a. State Pollutant Discharge Elimination System (SPDES) Permit Program. Available at: https://www.dec.ny.gov/permits/6054.html (Accessed April 2021).

Other federal permits

Other federal permits, consultations, and approvals may be required as indicated in the Permitting Matrix (Table 11-1).

Significant resources/issues

The resource/issue evaluation conducted to support this plan addresses water resources, flood zones, ecological resources, land use regulations, agricultural land, cultural resources, and environmental justice concerns within and/or adjacent to the proposed project. Clean Path New York will continue to refine this evaluation during agency consultation to minimize environmental conflicts associated with the project.

Data collection

Existing mapping and databases were reviewed to identify significant resources and potential permitting issues in the vicinity of the proposed project.

Sources of information included the following:

- US Geological Survey topographic mapping
- Natural Resources Conservation Service web soil survey
- National Register of Historic Places listed sites and historic landmarks
- DEC freshwater wetland mapping
- USFWS National Wetlands Inventory (NWI) mapping
- Federal Emergency Management Agency (FEMA) National Flood Hazard Layer
- DEC state lands/DEC geographic information system (GIS) database
- State and National Registers of Historic Places
- US Geological Survey 2016 National Land Cover Database
- DEC Environmental Resource Mapper and New York Nature Explorer online databases
- USFWS Information for Planning and Consultation website

Watershed	River systems
Hudson River watersheds	Lower Hudson (HUC 2030101)
	Hudson-Wappinger (HUC 2020008)
	Rondout (HUC 2020007)
	Bronx (HUC 2030102)
Long Island Sound	Northern Long Island (HUC 2030201)
Delaware River watersheds	East Branch Delaware (HUC 2040102)
	Middle Delaware-Mongaup-Brodhead (HUC 2040104)
	Upper Delaware (HUC 2040101)

Table 11-5. Watersheds over the length of the project.

Watersheds, wetlands, and streams

Watersheds

Over its 174-mile length, the project intersects eight different watersheds. These watersheds outlet to the Atlantic Ocean through three different river systems, as detailed in Table 11-5.

A portion of the project occurring in Delaware County passes through the New York City water supply watershed. Certain development activities within New York City's Delaware System Reservoir Basin are regulated by the NYC Department of Environmental Protection (NYCDEP). The NYCDEP has regulatory authority over the following types of actions that may be applicable to the project:

- Construction of a paved driveway or other impervious surfaces adjacent to a stream
- Crossing, diverting, or piping a stream
- Construction of a house or other structure adjacent to a stream or watercourse

Figure 11-2. The Hudson River is a vital waterway stretching from Upstate New York to New York City.

- A land clearing or land grading project, involving two or more acres, located at least in part within the limiting distance of 100 feet of a watercourse or wetland, or within the limiting distance of 300 feet of a reservoir, reservoir stem, or controlled lake or on a slope exceeding 15%

Additionally, the NYCDEP requires that a SWPPP be prepared and submitted to the department for review and approval when the following development activities, which may be applicable to the project, are proposed within the watershed (NYCDEP, 2011):[8]

- Plans for development or sale of land that will result in the disturbance of five or more acres of total land area as described in the definition of "larger common plan of development or sale" in Table 1 of the General Permit No. GP-0-10-001. See Watershed Regulations § 18-39(b)(3)(I).
- Construction of a subdivision. See Watershed Regulations § 18-39(b)(3)(ii).
- Construction of a new industrial, institutional, municipal, commercial, or multifamily residential project that will result in creation of an impervious surface totaling over 40,000 square feet in size. See Watershed Regulations § 18-39(b)(3)(iii).
- A land clearing or land grading project, involving two or more acres, located at least in part within the limiting distance of 100 feet of a watercourse or wetland, or within the limiting distance of 300 feet of reservoir, reservoir stem, or controlled lake or on a slope exceeding 15%. See Watershed Regulations § 18-39(b)(3)(iv).
- Construction of an impervious surface for a new road, as required by paragraph (a)(6) of Section 18- 39. See Watershed Regulations § 18-39(b)(3)(vii).
- Construction of an impervious surface in the West of Hudson watershed within a village, hamlet, village extension, or area zoned for commercial or industrial uses, as required by paragraph (a)(8) of Section 18-39. See Watershed Regulations § 18-39(b)(3)(viii).
- Up to 25% expansion of an existing impervious surface at an existing commercial, institutional, municipal, or industrial facility within the limiting distance of 100 feet of a watercourse or wetland, as required in subdivision (a)(4)(iii) of Section 18-39 See Watershed Regulations § 18- 39(b)(3)(ix).

[8] New York City Department of Environmental Protection (NYCDEP). 2011. Applicants Guide to Stormwater Pollution Prevention Plan. Available at: https://www1.nyc.gov/assets/dep/downloads/pdf/watershed-protection/regulations/AppGuide_SWPPP2-2011_Final.pdf (Accessed April 2021).

Streams and surface waters

Under Article 15 of the Environmental Conservation Law (Protection of Waters), the DEC has regulatory jurisdiction over any activity that disturbs the bed or banks of protected streams. Small lakes and ponds with a surface area of ten acres or less, located within the course of a stream, are considered part of a stream and are subject to regulation under the stream protection category of Article 15. However, it is noted that Article 15 requirements will be incorporated into the Article VII process and the DEC will not issue a separate Article 15 permit.

Protected streams have been assigned the following classifications or standards: AA, AA(t), A, A(T), B, B(T), or C(T) (6 NYCRR Part 701). A classification of AA or A indicates that the best use of the stream is as a source of water supply for drinking, culinary, or food processing purposes; primary and secondary contact recreation; and fishing. The best usages of Class B waters are primary and secondary contact recreation and fishing. The best usage of Class C waters is fishing. Streams designated (T) indicate that they support trout, while those designated (TS) support trout spawning.

The DEC also classifies marine waters. A classification of SA indicates a best usage for shell fishing for market purposes, swimming and other recreation, and fishing. A classification of SB indicates a best usage for swimming and other recreation, and fishing. A classification of SC indicates a best usage for fishing. A classification of SD indicates a best usage for fishing, but these waters may not support fish propagation (DEC, 2021b).[8]

DEC stream classification maps indicate that 107 state-protected streams (i.e., streams with C(T) classification or higher) intersect the project, including eight streams that are designated Class A/A(T)/AA(T), 53 that are designated class B/B(T)/B(TS), 27 that are designated C(T)/C(TS), and 18 that are designated SB. A county-level summary of state-protected streams crossed by the project is provided below. Impacts to the bed or banks of these streams will require state approval, as described above.

- **Delaware County:** approximately 3,255 feet of Class C(T)/C(TS) streams
- **Dutchess County:** approximately 31 feet of Class B streams
- **Orange County:** approximately 1,153 feet of Class A/A(T) streams, 6,847 feet of Class B streams, and 140 feet of Class C(T) streams
- **Putnam County:** approximately 7,032 feet of Class B streams
- **Rockland County:** approximately 1,871 feet of Class SB streams
- **Sullivan County:** approximately 156 feet of Class AA(T) streams, 4,966 feet of B/B(T)/B(TS) streams, and 1,235 feet of C(T)/C(TS) streams
- **Westchester County:** approximately 729 feet of Class B Streams and 3,202 feet of Class SB streams

Mapped wetlands

The Freshwater Wetlands Act (Article 24 and Title 23 of Article 71 of the Environmental Conservation Law) gives the DEC jurisdiction over state-protected wetlands and areas within 100 feet of state-protected wetlands (100-foot Regulated Adjacent Areas). The Freshwater Wetlands Act requires the DEC to map all state-protected wetlands (typically over 12.4 acres) to allow landowners and other interested parties a means of determining where state jurisdictional wetlands exist (DEC, 2021c).[9] However, similar to the process noted for Article 15 requirements, Article 24 requirements will be incorporated into the Article VII process and the DEC will not issue a separate Article 24 permit. Review of DEC freshwater wetland mapping indicates that 25 state-regulated wetlands occur within or near the project. A summary of state-regulated wetlands crossed by the project by county is provided below and additional information is provided in Table 11-6.

[8] NYSDEC. 2021b. Protections of Waters Program. Available at: https://www.dec.ny.gov/permits/6042.html (Accessed April 2021).

[9] NYSDEC. 2021c. Freshwater Wetlands Program. Available at: https://www.dec.ny.gov/lands/4937.html (Accessed April 2021).

Wetland-ID	Class	Acres	Latitude	Longitude	County
CO-1	2	1.8	41.4792	-74.7304	Orange
CO-2	2	0.6	41.4834	-74.1102	Orange
GO-20	2	2	41.4403	-74.3379	Orange
GO-23	3	2.7	41.4476	-74.2865	Orange
GO-30	2	2.3	41.4264	-74.3623	Orange
MB-18	1	1.5	41.4666	-74.2227	Orange
MB-20	3	0.2	41.4668	-74.1872	Orange
MB-22	3	0.2	41.4675	-74.1807	Orange
MB-23	3	0.2	41.4678	-74.1753	Orange
MB-30	3	1.2	41.4527	-74.2442	Orange
MD-17	4	0.6	41.4246	-74.4858	Orange
MD-18	2	1.9	41.4229	-74.4558	Orange
OT-18	3	0.8	41.4247	-74.5459	Orange
OT-19	2	2.5	41.4231	-74.499	Orange
OT-5	2	5.4	41.4799	-74.5749	Orange
HA-5	3	1.4	41.9043	-74.9229	Sullivan
LM-18	2	3.3	41.8986	-74.866	Sullivan
LW-30	2	0.01	41.7565	-74.7602	Sullivan
LW-28	2	1.4	41.764	-74.7667	Sullivan
MO-62	2	15.4	41.6364	-74.6945	Sullivan
RO-7	3	1.3	41.90432	-74.923	Sullivan
WL-19	2	3.8	41.7069	-74.7529	Sullivan
WL-31	3	1.2	41.68441	-74.7623	Sullivan
WL-7	2	3.5	41.7324	-74.7593	Sullivan
H-3	1	3.3	41.1904	-73.8791	Westchester

Table 11-6. DEC-mapped wetlands crossed by the project.

- **Orange County:** approximately 24 acres of DEC-mapped wetlands
- **Sullivan County:** approximately 31.3 acres of DEC-mapped wetlands
- **Westchester County:** approximately 3.2 acres of DEC-mapped wetlands

A review of USFWS NWI mapping (USFWS, 2021a;[10] Appendix 14, Figure 3) indicates 240 NWI features or streams are crossed by the project. A summary of NWI-mapped features crossed by the project by county is provided below.

- **Bronx County:** approximately 73.6 acres of NWI features
- **Delaware County:** approximately 7.6 acres of NWI features
- **Dutchess County:** approximately 8.7 acres of NWI features
- **New York County:** approximately 96.7 acres of NWI features
- **Orange County:** approximately 187.1 acres of NWI features
- **Putnam County:** approximately 70.3 acres of NWI features
- **Queens County:** approximately 4.8 acres of NWI features
- **Rockland County:** approximately 26.1 acres of NWI features
- **Sullivan County:** approximately 33 acres of NWI features
- **Westchester County:** approximately 367.4 acres of NWI features

Federal wetland/stream permits will be required for any unavoidable impacts to jurisdictional wetlands and streams associated with the project construction (see Permitting Matrix, Table 11-1). Timeframes and required studies to obtain these permits has been considered and incorporated into the project schedule.

Flood zones

According to the FEMA website, Special Flood Hazard Areas are defined as areas that will be inundated by a flood event having a 1% chance of being equaled or exceeded in any given year (i.e., base flood or 100-year flood). Special Flood Hazard Areas are labeled as Zones A, AO, AH, A1-A30, AE, A99, AR, AR/AE, AR/AO, AR/A1-A30, AR/A, V, VE, and V1-V30. Moderate flood hazard areas, labeled Zones B or X, are the areas between the limits of the base flood and the 0.2%-annual-chance (i.e., 500-year) flood (FEMA, 2021).[11]

[10] United States Fish and Wildlife Services (USFWS). 2021a. Wetlands Mapper. National Wetlands Inventory. Available at: https://www.fws.gov/wetlands/data/mapper.html (Accessed April 2021).

[11] Federal Emergency Management Agency (FEMA). 2021. Flood Zones. Available at: https://www.fema.gov/glossary/flood-zones (Accessed April 2021).

Clean Path New York avoided flood zones to the degree possible during preliminary routing. In total, approximately 45 miles of the proposed transmission line are located within a Special Flood Hazard Area and approximately 92 miles are located within a moderate flood hazard area (see Figure 4 in Appendix 14). However, it is noted that of these higher-risk areas, the majority of the mileage is attributable to subaquatic portions of the project A more in-depth description of FEMA flood zones within the project is provided below.[12]

- **Bronx County:** Approximately 17,330 feet of the reported footage below constitutes subaquatic footage within the Hudson (14,042 feet), East (3,125 feet), and Harlem Rivers (163 feet).
  - Approximately 3,456 feet are within an AE flood zone.
  - Approximately 856 feet are within an VE flood zone.
  - Approximately 16,879 feet are within open water.
  - Approximately 1,505 feet are within an X flood zone.
  - Approximately 1,876 feet are within a 0.2% annual chance flood hazard.
- **Dutchess County:** Approximately 2,579 feet of the reported footage below constitutes subaquatic footage within the Hudson River.
  - Approximately 2,579 feet of the project corridor is within a mapped AE Zone associated with the Hudson River.
- **New York County:** Approximately 32,098 feet of the reported footage below constitutes subaquatic footage within the Hudson River.
  - Approximately 31,658 feet of the project corridor are within a mapped AE Zone associated with the Harlem River.
  - Approximately 440 feet are within open water.
- **Orange County:** Approximately 43,320 feet of the reported footage below constitutes subaquatic footage within the Hudson River.
  - Approximately 1,687 feet are within an A flood zone.
  - Approximately 59,434 feet are within an AE flood zone.
  - Approximately 184,177 feet are within an X flood zone.
  - Approximately 2,688 feet are within a 0.2% annual chance flood hazard.
- **Putnam County:** Approximately 19,550 feet of the reported footage below constitutes subaquatic footage within the Hudson River.
  - Approximately 19,550 feet of the project corridor are within a mapped AE Zone associated with the Hudson River.
- **Rockland County:** Approximately 6,369 feet of the reported footage below constitutes subaquatic footage within the Hudson River.
  - Approximately 6,639 feet of the project corridor are within a mapped AE Zone associated with the Hudson River.
- **Queens County:** Approximately 1,314 feet of the reported footage below constitutes subaquatic footage within the East River.
  - Approximately 1,466 feet are within an AE flood zone.
  - Approximately 390 feet are within an VE flood zone.
  - Approximately 13,951 feet are within an X flood zone.
  - Approximately 4,214 feet are within a 0.2% annual chance flood hazard.
- **Sullivan County.**
  - Approximately 1,019 feet are within an A flood zone,
  - Approximately 1,771 feet are within an AE flood zone,
  - Approximately 223,752 feet are within an X flood zone,
  - Approximately 1,151 feet are within a 0.2% annual chance flood hazard.
- **Westchester County:** Approximately 106,278 feet of the reported footage below constitutes subaquatic footage within the Hudson River.
  - Approximately 109,282 feet are within an AE flood zone.[13]
  - Approximately 51,038 feet are within an X flood zone.
  - Approximately 1,712 feet are within a 0.2% annual chance flood hazard.

[12] Based on publicly available online mapping. In instances where a county (such as Delaware County) is missing, it should not be assumed that one is not present. Not all FEMA maps have been digitized and additional document review will be required during planning and permitting.

[13] Approximately 90,816 feet of the AE flood zone are within the Hudson River.

To the extent practicable, efforts have been made to minimize siting new aboveground facilities within the floodways. No facilities will be constructed within mapped floodway zones unless it can be demonstrated through hydrologic and hydraulic analyses that the development will not result in any increase in flood levels during the base flood. Generally, floodway impacts will be avoided due to the underground nature of the facility. If work in floodways is required, Clean Path New York will implement best management practices and related erosion control measures to avoid temporary and long-term construction-related impacts. Clean Path New York will obtain local flood plain development permits prior to construction as necessary.

Ecological resources

The USFWS maintains the Information, Planning, and Consultation (IPaC) system, which aided Clean Path New York in identifying potential project conflicts with federally listed threatened and endangered species and habitat areas (USFWS, 2021b).[14] The IPaC mapper was consulted to determine which federally listed threatened, endangered, or candidate species may potentially occur in the vicinity of the project. Additionally, the National Oceanic and Atmospheric Administration (NOAA) threatened and endangered fisheries list was consulted to determine which federally listed aquatic species or habitat may be known to occur within the project.

A summary of our findings is presented in Table 11-7. Clean Path New York will also consult with DEC's Natural Heritage Program to identify state-listed species with the potential to occur near the project.

To support an appropriate level or resolution in the data resulting from querying these databases, the proposed project was broken into five segments based on ecological characteristics and the type of work proposed:

1. Fraser Substation to Rock Tavern Substation
2. Rock Tavern Substation to Hudson River (Town of New Windsor)
3. Hudson River (Town of New Windsor) to Harlem River
4. Harlem River to Mott Haven Substation
5. Mott Haven Substation to Rainey Substation

Listed species	Status	Transmission line segment
Indiana Bat *(Myotis sodalist)*	Endangered	1, 2, 3
Northern Long-eared Bat *(Myotis septentrionalis)*	Threatened	1, 2, 3
Piping Plover *(Charadrius melodus)*	Threatened	3, 4, 5
Red Knot *(Calidris canutus rufa)*	Threatened	5
Roseate Tern *(Sterna dougallii dougallii)*	Endangered	5
Bog Turtle *(Clemmys muhlenbergii)*	Threatened	1
Dwarf Wedgemussel *(Alasmidonta heterodon)*	Endangered	1
Atlantic Sturgeon *(Acipenser oxyrhynchus oxyrhynchus)*	Endangered	3, 4
Shortnose Sturgeon *(Acipenser brevirostrum)*	Endangered	3, 4
Small Whorled Pogonia *(Isotria medeoloides)*	Threatened	1, 2, 3
Seabeach Amaranth *(Amaranthus pumilus)*	Threatened	5

Notes: Transmission line segments for this analysis include (1) Fraser Substation to Rock Tavern Substation, (2) Rock Tavern Substation to Hudson River (Town of Windsor), (3) Hudson River (Town of Windsor) to Harlem River, (4) Harlem River to Mott Haven Substation, and (5) Mott Haven Substation to Rainey Substation.

Table 11-7. Federally listed species with a potential presence in the vicinity of the project.[15]

[14] USFWS. 2021b. Information for Planning and Consultation. Available at: https://ecos.fws.gov/ipac/ (Accessed April 2021).

[15] As identified by the USFWS's the IPaC system.

Figure 11-3. The bog turtle is a threatened species located around the project area.

Permanent loss of habitat is not anticipated as a result of the construction and operation of this project. The design of this project minimizes new disturbance by using existing cleared ROWs and installing new underground transmission lines within previously developed corridors. Furthermore, Clean Path New York is committed to implementing construction-phase activities in a manner that minimizes the disturbance to habitats of federally listed species identified above. Particular attention has been given to minimizing impacts to aquatic habitats as described below.

Aquatic habitat

Throughout the State's coastal area, 250 Significant Coastal Fish and Wildlife Habitats (SCFWHs) have been designated by the DOS's Division of Coastal Resources (DOS, 2021c).[16]

Under the SCFWH program, a site is considered significant if it serves one or more of the following functions:

- Is essential to the survival of a large portion of a particular fish or wildlife population
- Supports populations of species that are endangered, threatened or of special concern
- Supports populations having significant commercial, recreational, or educational value
- Exemplifies a habitat type that is not commonly found in the state or in a coastal region

The proposed transmission line segment running from the Rock Tavern Substation to the Rainey Substation will pass through four SCFWHs identified by the DOS. These identified habitats, along with the approximate distance anticipated to be impacted by the project are detailed below:

- Lower Hudson Reach, 6.7 miles
- Croton River and Bay, 0.3 miles
- Hudson Highlands, 16.2 miles
- Moodna Creek, 0.1 miles

As the proposed project is anticipated to be subject to Coastal Zone Consistency Review under federal and state laws, a habitat impairment test will be required for those sections of the project that are located within the four SCFWHs identified above (DOS, 2021b). Aquatic considerations and potential management methods that may need to be incorporated into the design of the project or be provided as compliance filings to support Article VII and/or federal permitting are summarized in Table 11-8 on the next page.

[16] DOS. 2021c. Significant Coastal Fish & Wildlife Habitats. Office of Planning & Development. Available at: https://www.dos.ny.gov/opd/programs/consistency/scfwhabitats.html (Accessed April 2021).

Table 11-8. Acquatic considerations and management methods.

Consideration	Description	Management method
Time of year work restrictions to avoid adverse impacts to fish habitat	To avoid adverse impacts to habitat (such as sturgeon habitat), considerations will be made to conduct dredging (if needed) during the late summer/fall.	Prepare an Aquatic Work Plan and schedule to demonstrate adherence to time of year restrictions.
Soil dredging and impacts to riverbed	As part of project permitting, considerations for best management practices to be implemented for dredging and/or riverbed disturbance. This plan should include standards and methods for soil removal and coordinating environmental characterization of riverbed soils and identification of disposal sites, as needed.	Prepare a Dredging Plan.
Turbidity during construction	Establish monitoring protocols and standards for measuring total suspended solids during construction activities. Address and outline methods for collecting samples during construction activities and reporting.	Prepare a Water Quality Monitoring Plan.
Enforce conditions and demonstrate compliance with permit conditions	Outline procedures, monitoring, and compliance requirements, including frequent and routine inspections. The plan is intended to ensure compliance with certification conditions, etc., and will communicate procedures and protocols. Define and outline pre-construction training (if needed), agency consultations, and construction standards.	Prepare an Environmental Monitoring and Compliance Plan that summarizes environmental protection requirements that must be implemented to satisfy various permit conditions.
Navigational risk	Initial review indicates the project site does not appear to be located with mapped navigational channels. However, detailed coordination with NOAA and/or the Coast Guard will occur.	If warranted, prepare a Navigational Risk Assessment.

Land use and local laws

Land use

The project extends over 174 miles from the Catskills region of New York to New York City. Both land use and development intensity are highly variable across the project. From the Fraser Substation to the Rock Tavern Substation, the project is primarily located within existing electric utility ROWs on undeveloped or agricultural land. From the Rock Tavern Substation, the project traverses an increasing amount of developed land (i.e., residential and commercial) before reaching the western shoreline of the Hudson River. From this point to the southern terminus at Rainey Substation, the surrounding land uses continue to transition to more intensive development.

Local laws

Pursuant to Public Service Law § 130, no municipal agency approval, permit, or consent is required for the construction or operation of a facility subject to Article VII, unless otherwise required by the PSC. However, Public Service Law § 126(1)(f) requires that the PSC find "that the location of the facility as proposed conforms to the applicable state and local laws and regulations…"

In Exhibit 7 of the Article VII application, Clean Path New York will demonstrate compliance with any applicable substantive local laws or request a waiver. Waivers can be granted by the PSC for laws that are determined to be unreasonably restrictive in view of the existing technology, cost, economics, or needs of the consumers. Clean Path New York will comply with local laws or will request waivers from the PSC where it cannot do so.

Cultural resources

As identified in the Permitting Matrix (see Table 11-1), authorization under Chapter 14.09 of the New York State Historic Preservation Act and Section 106 of the National Historic Preservation Act will be required for the project to support Article VII and any federal wetland permitting.

National Register of Historic Places listings in New York State[17] were reviewed to identify listed sites and state parks within three miles of the project (see Figure 5 in Appendix 14). As with other sensitive resources, Clean Path New York avoided these sites to the degree possible during planning and siting of the project.

Clean Path New York will consult with the State Historic Preservation Office to determine if the New York State Historic Preservation Office Transmission Line Guidance Project Types and Associated Survey Requirements apply to this project and what studies will be required to support the State Historic Preservation Office's review.

It is anticipated that a Phase 1A survey, and a Phase 1B Survey will be required for areas of new ground disturbance. Documentation of the Phase 1B Survey will be provided within the Environmental Management and Construction Plan.

Electric and magnetic fields

Electric and magnetic fields (EMF) are invisible lines of force that surround power lines and are associated with the use of electrical power. Electric fields are produced by voltage and increase in strength as the voltage increases. Magnetic fields result from the flow of current through wires and increase in strength as the current increases. Both electric and magnetic fields decrease rapidly as the distance from the source increases.

Figure 11-4. Gantry Plaza State Park is located in Long Island City and is within three miles of the project site.

[17] Based on October 2018 data provided by the New York State Office of Parks, Recreation and Historic Preservation.

Clean Path New York has completed preliminary EMF analysis associated with portions of the land-based sections of the project. However, additional studies are ongoing for land-based and submarine sections of the project. These studies are being refined as routing and design is completed. Clean Path New York will consult with the PSC regarding input parameters throughout this process. The project will be designed to comply with the PSC's EMF guidelines. Final EMF reports will be made available during the Article VII process.

Environmental justice

A detailed assessment of environmental justice considerations surrounding the project are discussed in Section 15 of this proposal.

Conclusions

Based on the analyses conducted as part of this initial permitting review, the following are several key activities that Clean Path New York will perform to progress the permitting and project:

- **Agency coordination.** The project spans numerous municipalities and is within the jurisdiction of several state or municipal agencies Clean Path New York will demonstrate compliance with local regulations pursuant to Article VII. The variability of local laws, high number of host municipalities, and the need to comply with SPDES and MS4 regulations will require substantial coordination during planning and permitting. Clean Path New York will seek out early engagement with agencies to determine the studies that may be required for the Article VII application and the level of construction detail that will be required to be included in the Environmental Management and Construction Plan.
- **Aquatic ecology and threatened and endangered species.** Portions of the project include subaquatic cable installations in the Hudson River, Harlem River, and East River. Agency correspondence conducted to date has identified Atlantic and shortnose sturgeon habitat occurring, or potentially occurring, within the riverine portions of the project. Clean Path New York will prioritize consultation with USFWS, NOAA, and DEC to determine the extent of habitat, the need for, and potential scope of surveys for each listed species. Additionally, Clean Path New York will consult with the agencies to identify work plans and Best Management Practices to be included in the Environmental Management and Construction Plan. If it is determined that any portion of the project represents "occupied habitat" for any of these species, preparation of a Net Conservation Benefit Plan may be required as part of the Article VII process. In addition, time-of-year restrictions for certain construction activities will likely be required; Clean Path New York will continue to coordinate with these agencies identify and adhere to potential construction constraints and requirements.
- **Cultural resources and visual impacts.** Clean Path New York has attempted to avoid known historic resources during the routing phase of the project. It is anticipated that Phase 1A and Phase 1B surveys will be conducted. Clean Path New York will consult with the State Historic Preservation Office and complete Phase 1A studies early in the development process.
- **Wetlands.** Existing wetland and soils mapping indicates the likelihood of wetlands occurring along the project, including wetland and waterbodies anticipated to be regulated by the Army Corps of Engineers and the state of New York. Clean Path New York will complete reconnaissance-level wetland investigations early in the siting process to design and develop impact avoidance measures, where feasible.

11.8. Resources portfolio permitting plan and progress to date

The Resources in this portfolio share a very similar set of required permits, which differ slightly from one project to the next based on the finer points of the project layout.

The generation projects in this portfolio share a very similar set of required permits, which differ slightly from one project to the next based on the finer points of the project layout. Wind and solar projects have the same permits generally speaking. There are three main categories of permits required- federal, state, and local, commonly with overlapping schedules, but some are dependent on others. Among the many permits needed for renewable energy projects in NYS, the most involved one is Article 10, which several of the projects in this portfolio have been permitted through . The permitting of renewable energy projects over 25 MW has recently been changed from Article 10, to a new program administered by the Office of Renewable Energy Siting, referred to herein as “94-C”. Projects that have not completed Article 10 and wish to transfer into 94-C are able to do so, and some of the projects in this portfolio have or soon will complete that transfer. They also can complete Article 10 and not transfer, if they prefer.

The Article 10 or 94-C permit is the first one undertaken in development, because the precise layout and construction details it eventually specifies informs all the other permits in these tables, from the turbine coordinates sent to FAA, to the stormwater calculations built into the SPDES permit, or the wetland impacts areas to be permitted by USACE. Therefore, in the tables indicating permit status of each project, many of the permits have not been attained because they await completion of the Article 10/94-C process first.

Article VII is a separate permit applicable to transmission lines that meet specific length and voltage minimums. In the case of renewable energy generation projects permitted under Article 10, the generation tie-line (gen-tie) between the generation project area and the point of interconnection to the grid has in certain cases been permitted under Article VII. However, under 94-C, a renewable project does not need to seek a separate permit for its gen-tie line under Article VII, unless it is over 10 miles in length. The gen-tie line is included in the evaluation under 94-C. Projects that have not completed Article 10 and wish to transfer into 94-C are able to do so, and some of the projects in this portfolio have or soon will complete that transfer. They also can complete Article 10 and not transfer, if they prefer.

For projects under 25 MW, Article 10 and 94-C do not apply. Instead the permits are run under the process laid out by the State Environmental Quality Review Act, SEQRA, in which the local town is the lead agency on the proceedings and other agencies and jurisdictions have input but not final determination.

Tables 11-10, 11-11, and 11-12 below list all the federal, state, and local permits and approvals that onshore wind and solar projects over 25 MW nameplate capacity may require. Not every permit is relevant to every project, depending on the specific circumstances. For example, although solar projects do not extend into airspace, and in the past were not subject to FAA review, it has become de rigueur to request Determinations of No Hazard from FAA for large solar arrays, to allay any concerns that they might impact pilot vision due to reflectivity, especially near airports.

Federal agency	Permit name
FAA	Determination of No Hazard/lighting plan approval
FWS	Endangered and Protected Species Consultations
USACE	401/404 Permit

Table 11-10. Federal permits and approvals.

Mitigation plans

Mitigating the environmental impact of any large-scale renewable energy project is an exercise that begins in the very first stages of siting a project, and continues right up until the final plans are agreed to with NYSDEC before construction begins.

When choosing a site for a new project, a developer always starts with screening sites for wetlands, threatened and endangered species, protected lands, and related sources of data that indicate that a particular site hosts a sensitive environmental resource. One of the first steps of developer takes is requesting a letter from the New York State Natural Heritage Program, requesting specific information for a given project area.

Wetland delineations are another one of the early steps of development, to determine where the New York State DEC jurisdictional wetlands are, where the USACE wetlands are, and thus how to site individual facilities within the project area to minimize impacts to Wetlands.

As development progresses, bird and other wildlife surveys are performed to gain greater insight into how the project area is used as habitat, and to inform the specifics of any mitigation plans that are developed as a condition of permit award.

Most of the projects in the portfolio that comprises this proposal are not far along enough in development to have finalized mitigation plans in place with state or federal agencies. The studies that inform them are underway currently. Even for the most advanced projects in this portfolio, the last details of the wildlife mitigation plans are still actively being worked out with NYSDEC and are outside the scope of this discussion. However, all renewable energy projects in this portfolio can only be constructed and operated with the concurrence of NYSDEC to ensure that net conservation benefit plans are in place to ensure that any impacts to wildlife caused by these facilities are more than offset by the benefits provided to the species through the activities in these plans. Beneficial activities include protecting critical habitat, reducing predation, and performing research.

Wetland impacts are first avoided and minimized through careful siting, and any unavoidable impacts are mitigated either through on-site wetland mitigation projects, or through in-lieu fee wetland mitigation projects performed by others. These projects ensure that total area of wetland in the state is increased, not decreased, by the construction of renewable energy projects.

State agency	Permit name
NY Siting Board (Article 10) or Office of Renewable Energy Siting (94-C) 10	Certificate of Environmental Compatibility and Public Need or Permit for a Major Renewable Energy Facility
Article VII	Certificate of Environmental Compatibility and Public Need
Section 68	Certificate of Public Convenience and Necessity
NYSDEC	SPDES General Permit for Construction Activity
NYSDOT	Special Use Permit for Oversize/ Overweight Vehicles
NYSDOT	Highway Work Permit

Table 11-11. State permits and approvals.

Local agency	Permit name
Town Board or Planning Board	SEQRA
Host Towns	Town Road Use Agreements
County Highway Departments	County Road Use Agreements
Host Towns	Town Host Agreement
County IDAs	Town-County-School PILOT Agreement

Table 11-12. Local permits and approvals.

Generation permitting

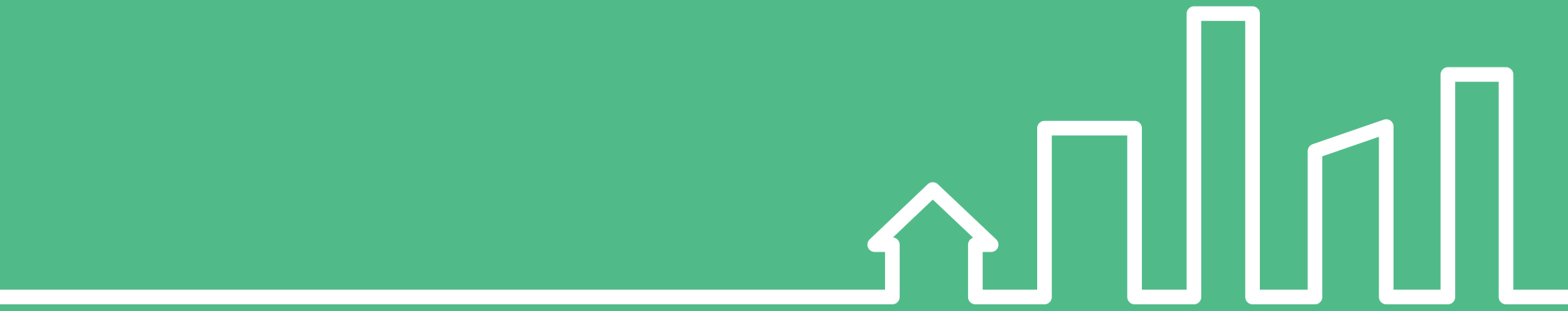
Agency	Permit	Alle-Catt Wind	Bald Mountain Solar	Ball Hill Wind	Baron Winds	Bluestone Wind	Bull Run Wind	Bull Run Solar	Canisteo Wind	Greens Corners Solar	Heritage Wind	High Bridge Wind	Horseshoe Solar	Number 3 Wind	Orangville Solar	Prattsburgh Wind	Sandy Creek Solar	Seventy-Seven Solar	Sky High Solar	Taproot Solar	Twinleaf Solar	Verona Solar	West River Solar	Wintergreen Solar
Federal permits and approvals																								
FAA	Determination of No Hazard/ Lighting Plan Approval	9/1/21	N/A	Yes	Yes	Yes	Yes	12/1/22	Yes	12/1/21	12/1/21	6/1/21	Yes	Yes	12/1/22	12/1/22	N/A	12/1/22	N/A	12/1/22	12/1/22	12/1/22	N/A	12/1/22
FWS	Endangered and Protected Species Consultations	Yes	N/A	Yes	Yes	Yes	6/1/22	6/1/23	Yes	6/1/23	6/1/22	Yes	9/1/22	Yes	6/1/23	6/1/23	N/A	6/1/23	N/A	6/1/23	6/1/23	6/1/23	N/A	6/1/23
USACE	Wetlands Permit	12/1/21	12/1/22	Yes	Yes	Yes	4/1/22	12/1/23	4/1/22	12/1/23	4/1/22	5/1/21	2/1/22	5/1/21	6/1/23	6/1/23	12/1/22	6/1/23	12/1/22	12/1/23	6/1/23	6/1/23	12/1/22	12/1/23
State permits and approvals																								
Article 10	Certificate of Environmental Compatibility and Public Need	Yes	N/A	N/A	Yes	Yes	N/A	N/A	Yes	N/A	N/A	Yes	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Article VII	Certificate of Environmental Compatibility and Public Need	6/1/22	N/A	N/A	N/A	N/A	N/A	N/A	6/1/21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
94-C	Permit for a Major Renewable Energy Facility	N/A	N/A	N/A	N/A	N/A	6/1/22	6/1/23	N/A	6/1/22	3/1/22	N/A	6/1/22	N/A	1/1/23	6/1/23	N/A	1/1/23	N/A	1/1/23	1/1/23	1/1/23	N/A	1/1/23
SEQRA	Environmental Impact Assessment	N/A	6/1/22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6/1/22	N/A	6/1/22	N/A	N/A	N/A	6/1/22	N/A
Section 68	Certificate of Public Convenience and Necessity	12/201	N/A	Yes	Yes	Yes	1/1/23	1/1/23	12/1/21	1/1/23	6/1/22	6/1/21	1/1/23	Yes	1/1/23	1/1/23	N/A	1/1/23	N/A	1/1/23	1/1/23	1/1/23	N/A	1/1/23
NYSDEC	SPDES General Permit for Construction Activity	3/1/22	3/1/23	Yes	Yes	Yes	2/1/23	1/1/24	5/1/22	1/1/23	8/1/22	5/1/22	8/1/22	Yes	1/1/24	3/1/23	2/2/23	2/2/23	2/2/23	4/1/24	2/2/23	2/2/23	2/2/23	1/1/24
NYSDOT	Special Use Permit for Oversize/ Overweight Vehicles	1/1/23	N/A	Yes	1/1/22	Yes	1/1/24	N/A	1/1/22	N/A	1/1/23	1/1/22	N/A	1/1/22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NYSDOT	Highway Work Permit	7/1/21	N/A	Yes	7/1/21	Yes	1/1/24	5/1/23	12/1/21	1/1/23	1/1/23	1/1/22	4/1/22	1/1/22	5/1/23	11/1/23	N/A	11/1/23	N/A	12/1/23	11/1/23	11/1/23	N/A	5/1/23
Local permits and approvals																								
Host Towns	Town Road Use Agreements	Yes	7/1/22	Yes	Yes	Yes	1/1/22	2/1/23	Yes	6/1/22	3/1/22	6/1/21	12/1/22	Yes	1/1/23	6/1/23	7/1/22	1/1/23	7/1/22	8/1/22	1/1/23	1/1/23	7/1/22	1/1/23
County Highway Depts	County Road Use Agreements	6/1/21	7/2/22	Yes	Yes	Yes	6/1/22	6/1/23	Yes	6/1/22	3/1/22	6/1/21	12/1/22	Yes	1/1/23	6/1/23	7/2/22	1/1/23	7/2/22	8/2/22	1/1/23	1/1/23	7/2/22	1/1/23
Host Towns	Town Host Agreement	Yes	7/3/22	Yes	Yes	Yes	6/1/22	6/1/23	Yes	6/1/22	3/1/22	6/1/21	12/1/22	Yes	1/1/23	6/1/23	7/3/22	1/1/23	7/3/22	8/3/22	1/1/23	1/1/23	7/3/22	1/1/23
County IDAs	Town-County-School PILOT Agreement	9/1/21	7/4/22	Yes	Yes	Yes	6/1/22	6/1/23	Yes	6/1/22	3/1/22	6/1/21	12/1/22	Yes	1/1/23	6/1/23	7/4/22	1/1/23	7/4/22	8/4/22	1/1/23	1/1/23	7/4/22	1/1/23

'Yes' is marked where permit has already been attained; Dates are projected likely attainments for permits not yet completed. N/A indicates permits which are not applicable to that project.

Table 11-13. Generation permitting matrix.

Section 12

Environmental mitigation plan



12 Environmental mitigation plan

12.1. Introduction

As noted within this plan, our project team has begun consulting with government agencies. At this stage, these meetings have been primarily focused on introducing the project, preparing for field reviews, and discussing routing opportunities and constraints.

Mitigation considerations are directly correlated with resource impacts. Therefore the primary mitigation concern at this time is to avoid or minimize impacts through routing or construction methods. As the project alignment is finalized through the Article VII siting and consultation process, and resources are clearly identified during field surveys, a detailed mitigation plan will emerge that will address resource impacts.

Despite the preliminary nature of the project, certain mitigation measures and best management practices are likely to emerge regardless of the final alignment. While we acknowledge the need for a more robust and customized mitigation plan in the future, this section provides a high-level and preliminary assessment of anticipated mitigation for specific resources.

The primary mitigation concern at this time is to avoid or minimize impacts through routing or construction methods.

12.2. Specific measures to mitigate adverse environmental and agricultural impacts

Water resources

The construction and operation of the project will result in temporary impacts to wetlands and waterbodies due to the underground installation of the transmission cable. This may include direct impacts, where the cleared construction corridor traverses a wetland or riparian area, and indirect impacts from vegetation clearing and ground disturbance in adjacent uplands. In some instances, permanent conversion of forested wetland to scrub-shrub wetland may occur in areas where vegetation management is needed.

Waterbody resources may be impacted during construction at crossing locations or during extended stretches of in-water installation, such as in the Harlem, Hudson, and East Rivers. Potential short-term water quality impacts may include turbidity, downstream sedimentation, water temperature, temporary water chemistry changes (e.g., pH and dissolved oxygen levels) and localized effects on organisms.

To minimize and mitigate negative impacts to water resources, the project team will develop a Wetland and Waterbody Construction and Mitigation Plan that will detail construction and restoration techniques appropriate to site-specific resource conditions that will be encountered during construction. Additional plans will be developed to address horizontal directional drilling/inadvertent returns, groundwater resources, construction stormwater management, spill prevention and cleanup, and unanticipated discovery of contaminated materials.

Ecological and cultural resources

For the purposes of this document, ecological resources include vegetation and natural communities, wildlife, rare or threatened and endangered species, and geology and soils. Cultural resources include archaeological, prehistoric, and historic resources.

Mitigation requirements pertaining to these resources will be highly dependent on the completion of field surveys and subsequent consultation with agencies. It is premature to postulate specific mitigation measures for these resources. However, we recognize the importance of these resources and will implement the necessary mitigation measures to avoid or minimize impacts. Detailed plans, including unanticipated discovery plans, will be developed with agency input as appropriate.

Land use and zoning

Land use adjacent to the proposed project was evaluated during the siting process to minimize negative impacts to the natural landscape and anthropogenic land uses. Mitigation focused firstly on avoidance and secondly on minimization of impacts at known sensitive areas or designated special-use areas (e.g., agricultural districts, parks, natural or protected areas, trail systems or other intensive recreational areas, residential areas).

Our team recognizes the need to coordinate further with individual land management agencies, cities, towns and villages, to determine whether the proposed transmission facilities minimize conflict with any present or future land uses. This effort will be ongoing throughout the Article VII process and routing will need to be adjusted accordingly. Most upland impacts have been minimized by burying the proposed transmission line within existing utility corridors and roadways. This approach minimizes greenfield construction and associated impacts such as vegetation clearing, visual impacts, habitat fragmentation, and its associated impacts to terrestrial and avian species.

Per Article 42 of the Executive Law entitled Waterfront Revitalization of Coastal Areas and Inland Waterways, the project team has completed an initial review to determine consistency with LWRPs that pertain to the project. In general, it appears the project is consistent with published LWRPs. However, additional consultation with these communities will need to occur as routing is refined, particularly as the Town of Cortlandt and the Village of Buchanan are finalizing their plans. The project team will work with DOS to identify specific construction options beyond routing (e.g., horizontal directional drilling [HDD] installation, revitalization options, landfall siting considerations, habitat protections) to be consistent with the federal Coastal Zone Management Act as outlined in the Coastal Management Program.

To minimize potential construction effects to adjacent landowners, our team will develop a public outreach program that will provide timely information to stakeholders, adjacent property owners, and/or tenants regarding the planned construction activities and schedule. Specific mitigation plans will be developed for Agricultural Districts, recreational areas, and public lands as applicable.

Other considerations

In addition to resource-specific mitigation planning, a broad array of best management practices is common to most large-scale transmission projects that will be implemented upon agreement with agencies and local authorities. Plans may be developed to address, among other things, overland and underwater construction techniques, noise impacts, visual resources, steep slopes, invasive weeds, environmental justice areas, etc. The project team is committed to minimizing impacts to the degree possible and will work with stakeholders to develop robust mitigation options throughout the Article VII process.

Another issue commonly faced by energy projects in New York is opposition by local residents. Past regional transmission projects have generated organized and vocal opposition. It can be assumed that some residents may be concerned with the project's land use and potential impacts and will actively oppose it. Therefore, our team will implement an open and robust community engagement process. We will host a website with project-specific information, attend local board meetings, sponsor local events, host online virtual meetings, and support other similar efforts to engage the public.

12.3. Collaborative work with stakeholders to define mitigation measures

Please refer to Tables 11-1 and 11-2 of the Preliminary Permitting Plan in Section 11 for specific details regarding collaborative work completed to date with stakeholders. Likewise, the anticipated and ongoing approach for stakeholder collaboration is found within Section 11.7 of the Preliminary Permitting Plan.

12.4. Support to New York's 80% GHG reduction by 2050[1]

Clean Path New York offers an impressive portfolio of instate renewable Resources. This additional renewable energy availability is expected to allow for the reduction of fossil-fuel consumption at generation facilities that serve the New York City metropolitan area, resulting in an overall reduction of emissions.

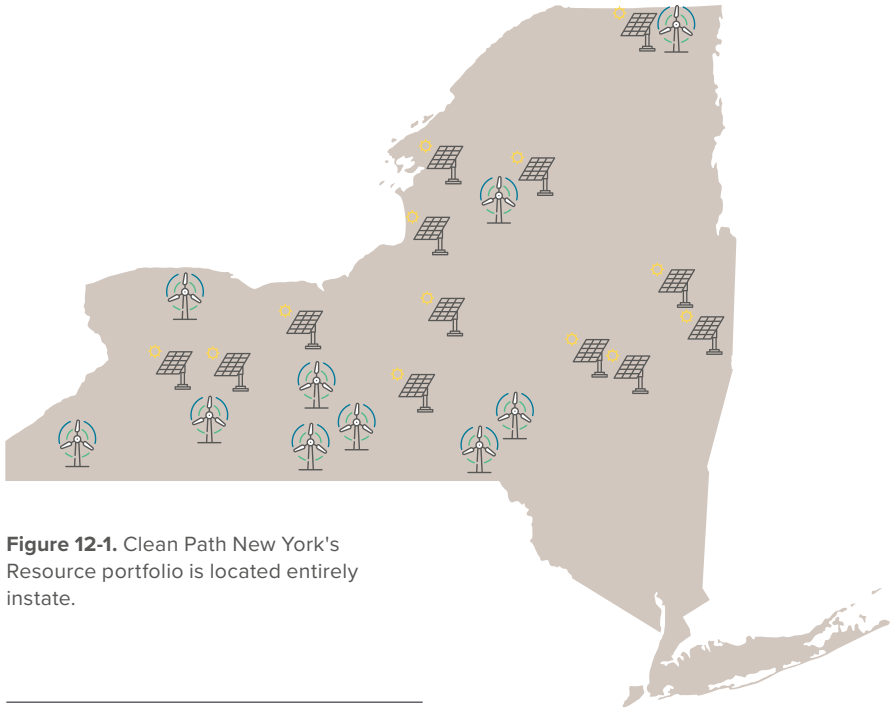


Figure 12-1. Clean Path New York's Resource portfolio is located entirely instate.

Based on modeling performed by PowerGEM and AKRF, Clean Path New York conducted a thorough assessment of the reduced demand for electrical generation and found that the project would result in an average reduction of 4.6 TWh in electricity generation per year that would otherwise be generated through fossil-fuel combustion: approximately 2.6 TWh from the portfolio of Resources and 2.0 TWh from New Transmission to bring renewable energy into New York City.

Our estimates of reductions in annual emissions for carbon dioxide (CO_2), oxides of nitrogen (NO_x), and sulfur dioxide (SO_2) are summarized in Table 12-1. The AKRF report documenting the analysis is provided under Appendix 16.

	2025	2030	2035	*Average*
Baseline				
Power (TWh)	46.4	22.5	15.4	
CO_2 (million ton)	25.4	11.7	7.9	
NO_x (ton)	17,340	7,984	5,428	
SO_2 (ton)	125	57	38	
Proposed Clean Path New York				
Power (TWh)	39.9	18.0	12.5	
CO_2 (million ton)	21.5	9.3	6.4	
NO_x (ton)	14,714	6,385	4,363	
SO_2 (ton)	106	45	30	
Increment				
Power (TWh)	-6.5 (-14%)	-4.4 (-20%)	-2.9 (-19%)	*-4.6*
CO_2 (million ton)	-3.8 (-15%)	-2.3 (-20%)	-1.6 (-20%)	*-2.6*
NO_x (ton)	-2,625 (-15%)	-1,602 (-20%)	-1,065 (-20%)	*-1,764*
SO_2 (ton)	-19 (-15%)	-13 (-22%)	-8 (-20%)	*-13*

Table 12-1. Clean Path New York impact on GHG.

[1] The PowerGEM cases underlying the [AKRF/Appleseed] analysis have Blenheim-Gliboa modeled differently than those used in the rest of the Step Two Proposal. This more conservative modeling of Blenheim-Gliboa slightly understates the emissions reductions of the Clean Path New York project.

Greenhouse gas reduction

In addition to its goal of 70% renewable energy by 2030, New York State has a goal of reducing carbon emissions to at least 85% below 1990 levels by 2050. According to the New York State Department of Environmental Conservation, the state emitted 410 million metric tons of CO_2 equivalent in 1990.[2] This implies that the state must reduce its CO_2 emissions by 349 million metric tons — to 61 metric tons — by 2050.

Assisted by PowerGEM, Clean Path New York conducted extensive modeling of the system to understand the impact of the project on the CO_2 emissions. The modeling assumes the state will meet its goal of 70% renewable energy by 2030.

In 2030 Clean Path New York is expected to reduce New York State's annual CO_2 emissions by 2.5 million tons. This represents an overall 22% reduction in statewide CO_2 emissions from electric generation. Clean Path New York provides consistent incremental CO_2 emissions reductions even when considered in conjunction with a similar-sized HVDC transmission line interconnecting into Zone J from Canada.

22%

reduction in statewide carbon emissions through Clean Path New York

39m

tons reduction in New York State's carbon emissions over 25 years

Clean Path New York provides the targeted CO_2 emissions reductions that are the driving force behind the Tier 4 program. Over 60%, or 1.56 million tons, of these reductions are located in New York City, and 85% of them — 2.13 million tons — are located in the constrained downstate New York capacity zones (Zones G to K). In the 2035 case, with 9 GW of offshore wind interconnecting in Zones J and K, Clean Path New York reduces statewide carbon emissions 22% versus business as usual, for a total of 1.74 million tons.

Clean Path New York achieves these impressive reductions by adding significant in-state renewable Resources and providing the critical transmission infrastructure needed to reduce congestion between upstate and downstate New York. The transmission allows both existing generation and incremental project generation to be dispatched more efficiently — reducing curtailment of renewables upstate, bringing clean power into Zone J, and thereby reducing the output of downstate New York's less-efficient fossil fuel generation.

A project injecting renewable power directly into Zone J from outside New York may provide similar emissions reductions, but would do so by bringing out-of-state renewables into the state, not improving the intrastate transmission system to dispatch New York's own renewables more efficiently. Based on our modeling, a fully utilized 1,200 MW transmission line from Canada into Zone J would increase New York's net electricity imports by 52% in 2030 and 57% in 2035. While such a project will reduce emissions in Zone J, from a system perspective it does so by injecting external renewables into the state, rather than allowing New York State to more efficiently utilize in-state renewables.

[2] https://www.dec.ny.gov/docs/administration_pdf/revexpterms496.pdf

Nitrogen oxides, VOCs, and ozone

NO_x are of principal concern because of their role, together with VOCs, as precursors in the formation of ozone. In addition, current scientific evidence links short-term NO_2 exposures (ranging from 30 minutes to 24 hours) with adverse respiratory effects, which is of particular concern for "susceptible individuals," including people with asthma, children, and the elderly. EPA states that the highest concentrations of outdoor NO_2 are found in large urban regions, such as the Northeast Corridor, Chicago, and Los Angeles, with levels highest near heavily traveled roadways.[3]

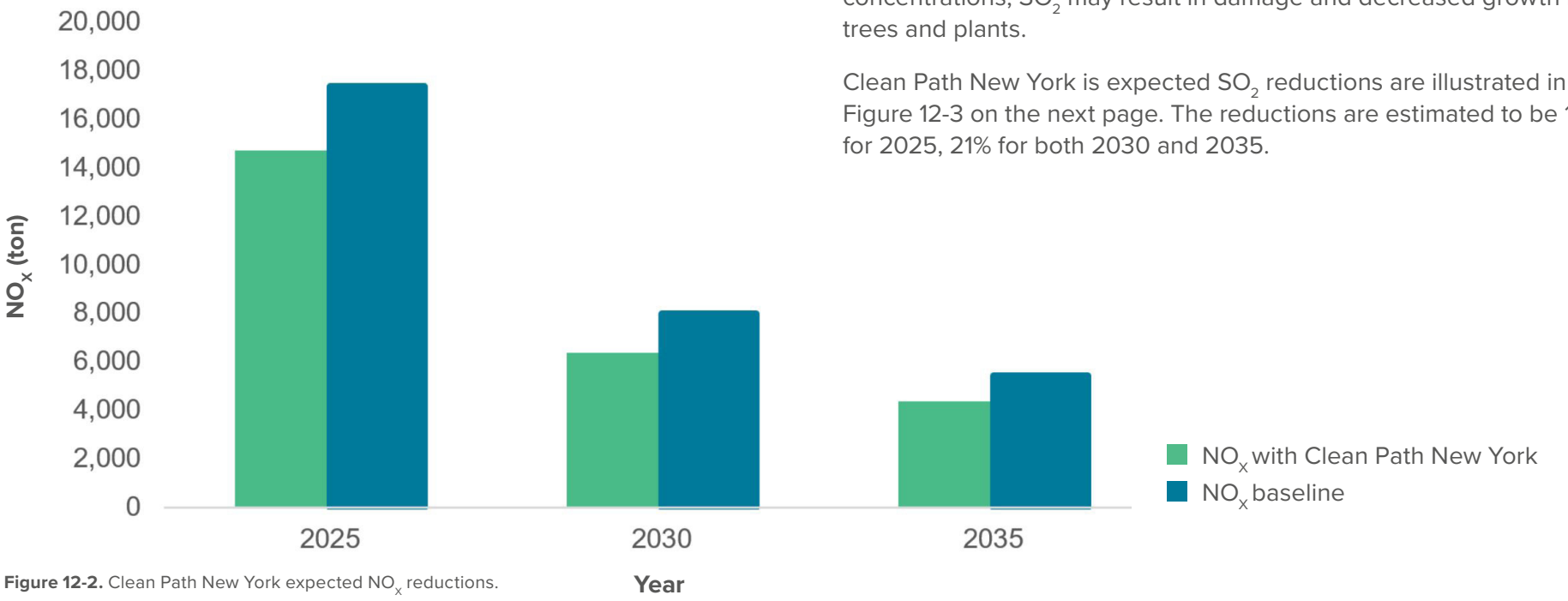


Figure 12-2. Clean Path New York expected NO_x reductions.

Clean Path New York expected NO_x reductions are illustrated in Figure 12-2. The reductions are estimated to be 15% for 2025, 20% for both 2030 and 2035.

Sulfur dioxide

SO_2 emissions are primarily associated with the combustion of sulfur-containing fuels (oil and coal). SO_2 is also of concern as a precursor in the formation of particulate matter (PM) pollution. As with NO_2, current scientific evidence links short-term SO_2 exposures with adverse respiratory effects, which is of particular concern for "susceptible individuals," including people with asthma, children, and the elderly. In addition to impacting human health, EPA has found that at high concentrations, SO_2 may result in damage and decreased growth in trees and plants.

Clean Path New York is expected SO_2 reductions are illustrated in Figure 12-3 on the next page. The reductions are estimated to be 15% for 2025, 21% for both 2030 and 2035.

[3] U.S. EPA. Risk and Exposure Assessment to Support the Review of the NO_2 Primary National Ambient Air Quality Standard. EPA-452/R-08-008a, November 2008, p. 15.

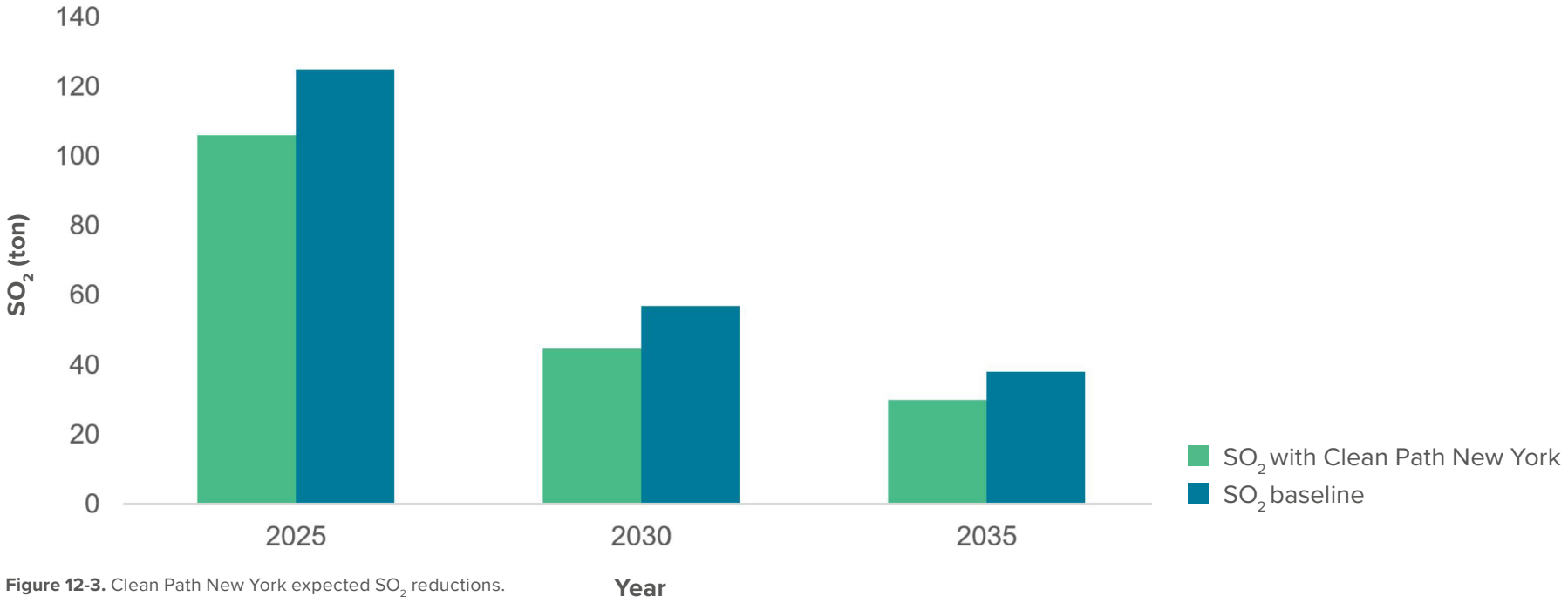


Figure 12-3. Clean Path New York expected SO_2 reductions.

Respirable particulate matter: PM10 and PM2.5

PM is a broad class of air pollutants that includes discrete particles of a wide range of sizes and chemical compositions, as either liquid droplets (aerosols) or solids suspended in the atmosphere. PM is regulated in two size categories: particles with an aerodynamic diameter of less than or equal to 2.5 micrometers (PM2.5) and particles with an aerodynamic diameter of less than or equal to 10 micrometers (PM10, which includes PM2.5).

PM2.5 has the ability to reach the lower regions of the respiratory tract, delivering with it other compounds that adsorb to the surfaces of the particles, and is also extremely persistent in the atmosphere.

162 tons

annual Particulate Matter emissions reduction

While we did not directly project reduced emissions of PM, we used our estimates of fuel consumption to project that annual statewide emissions of PM would be reduced by approximately 162 tons per year.

12.5. Clean Path New York support to CLCPA's strategy

Clean Path New York worked with Appleseed to calculate the beneficial impact of the project, including the avoidance of social costs from reductions in CO_2 and NO_x emissions over a 25-year period. Benefits from project Resources and New Transmission will reduce the health, social, environmental, and economic costs associated with those emissions by more than $8 billion, with at least 40% of those savings concentrated in Disadvantaged Communities, both in New York City and elsewhere in the State. A more detailed analysis and explanation of those outcomes and alignment with CLCPA is also provided under Sections 15 and 16 of this proposal.

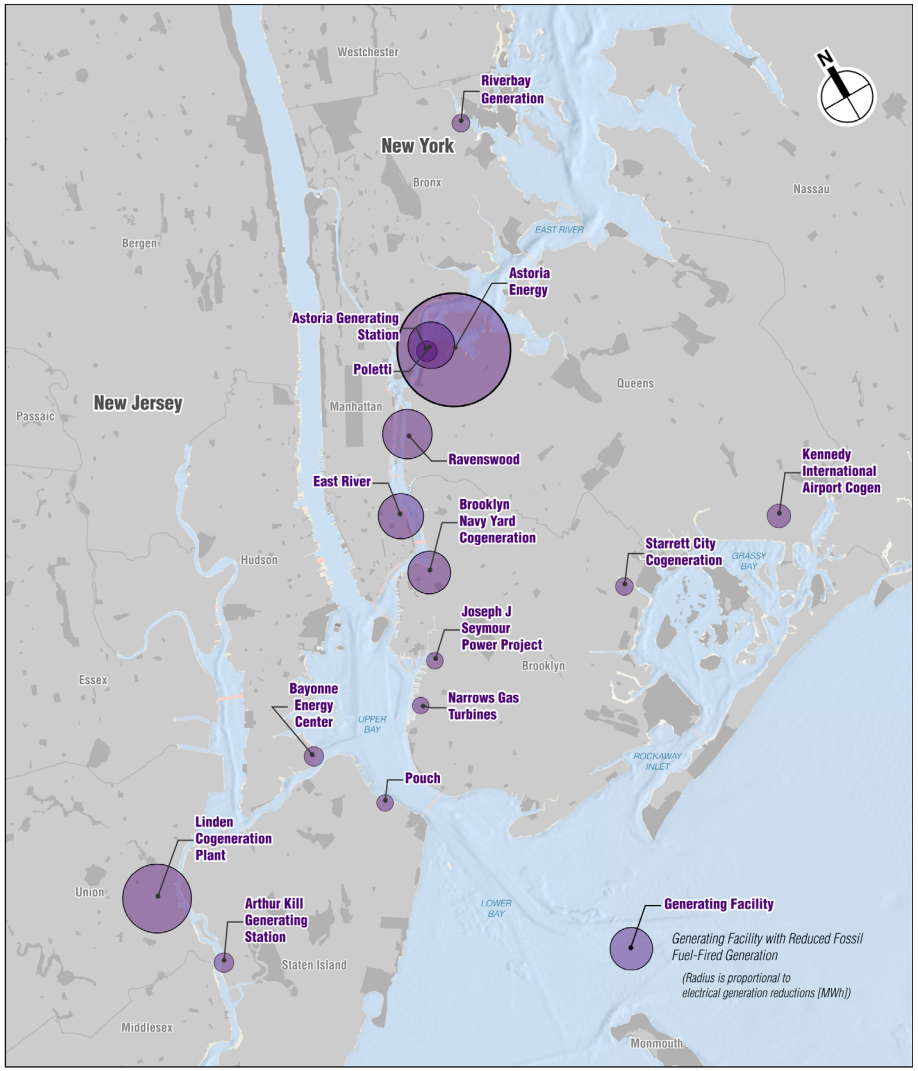
Delivering benefits to disadvantaged communities

Approximately 57% of the emissions reduction would occur within New York City (Zone J), with an additional 15% within Long Island (Zone K), 10% within the Hudson Valley (Zone G), and 10% within the Capital District (Zone F).

Therefore, most of the benefits from reduced emissions of NO_x, SO_2, and PM would directly impact communities in these areas within the vicinity of the impacted electricity generating facilities, see Figure 12-4 for an illustration of such an impact. Figures 12-5 to 12-9 provide more granuality of such impact for the positively affected areas. To assess the estimated benefits that would directly impact disadvantaged communities, a refined air quality dispersion modeling analysis was performed; refer to AKRF report in Appendix 16 for more details.

57%
of the emissions reduction would occur in New York City

40%
of emissions reductions occur in disadvantaged communities



Facility	MWh
Arthur Kill Generating Station	-26369.794667
Astoria Energy	-815860.664733
Astoria Generating Station	-35465.853533
Bayonne Energy Center	-23959.300167
Brooklyn Navy Yard Cogeneration	-220090.819433
East River	-241795.599267
Joseph J Seymour Power Project	74.550133
Kennedy International Airport Cogen	-58826.5043

Facility	MWh
Linden Cogeneration Plant	-440195.877367
Narrows Gas Turbines	45.5389
Poletti	-253233.200033
Pouch	-578.8318
Ravenswood	-277458.338333
Riverbay Generation	-10805.263267
Starrett City Cogeneration	-8461.363233

Figure 12-4. Reduced emissions impact on communities.

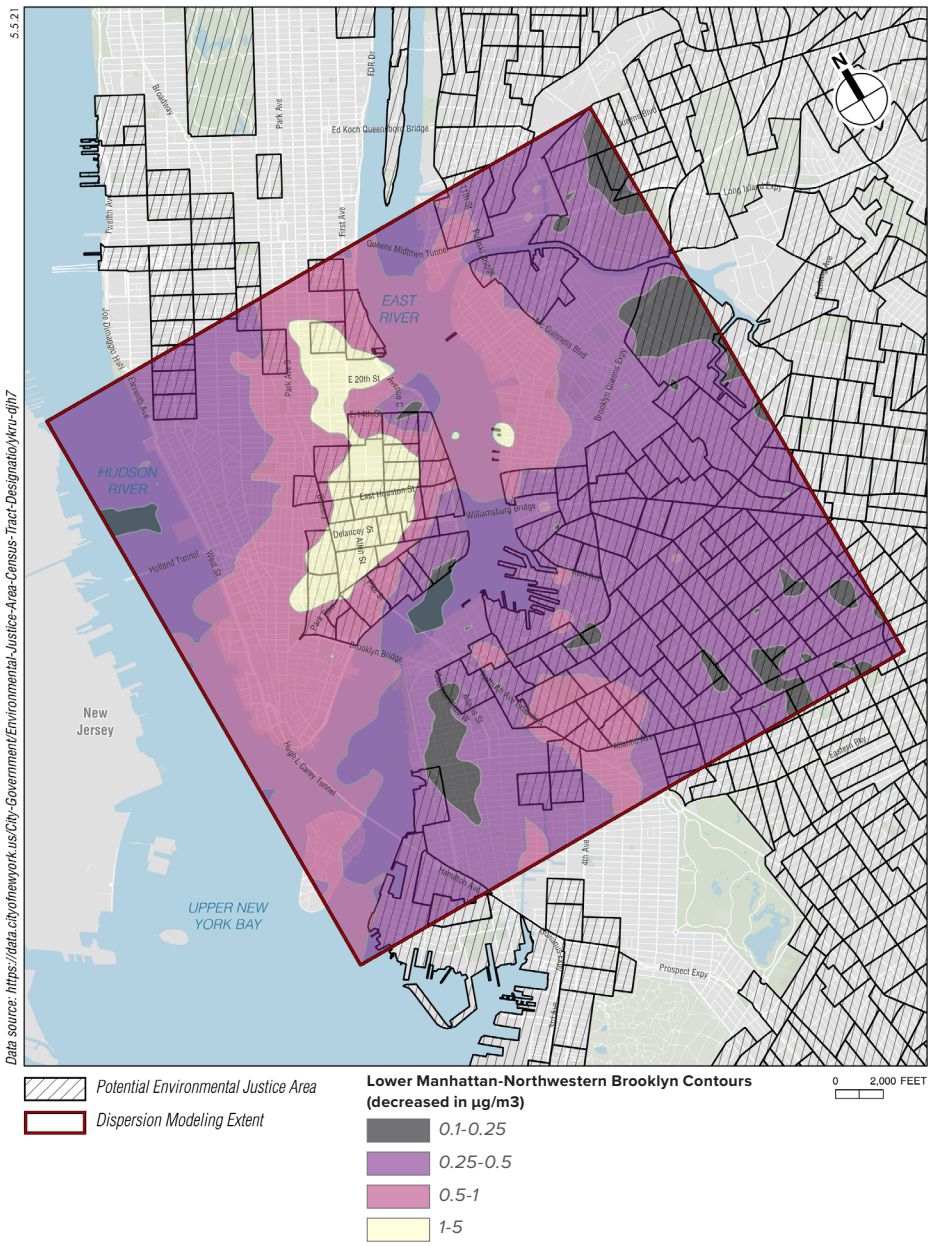


Figure 12-5. Reduced emissions in Lower Manhattan-Northwestern Brooklyn .

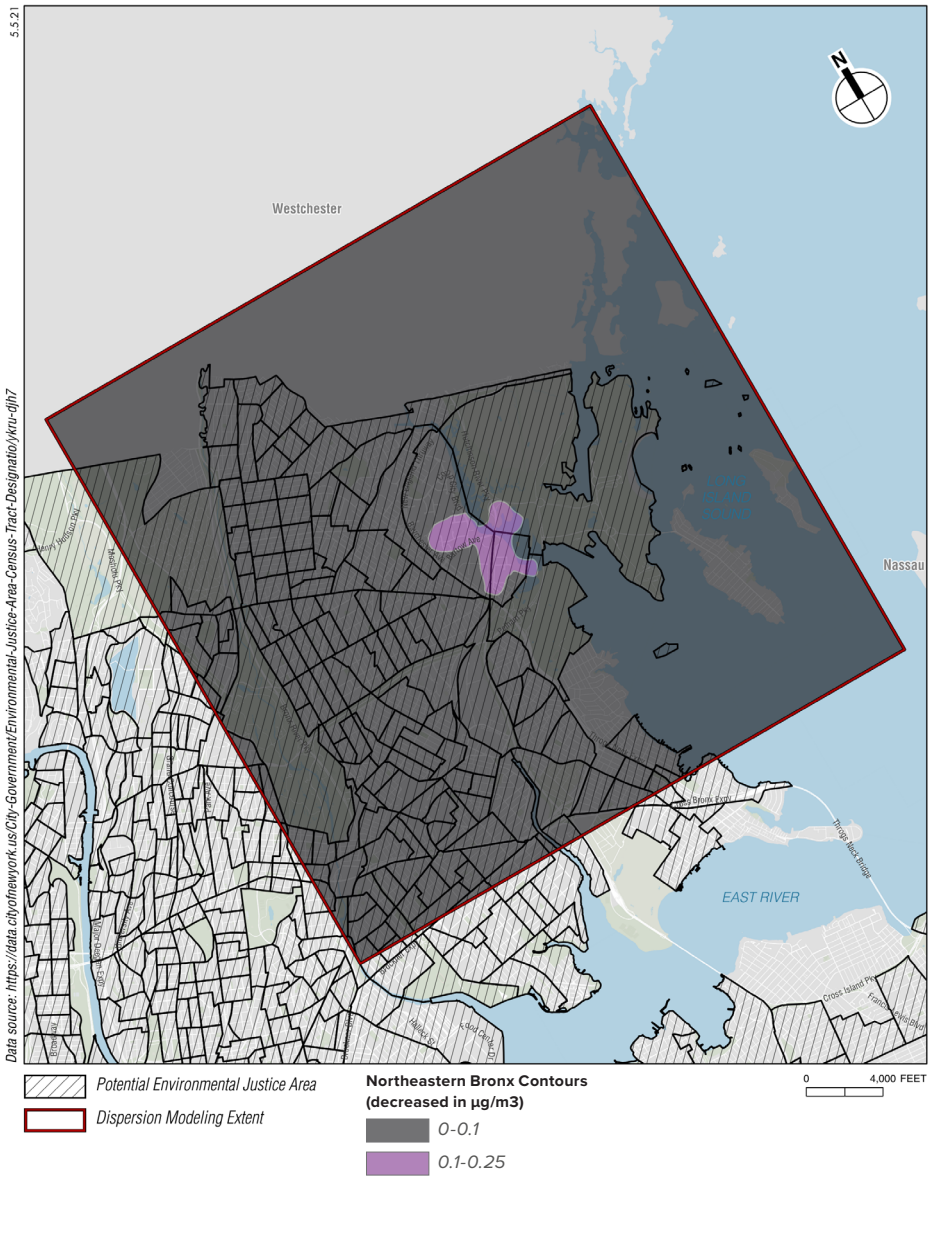


Figure 12-6. Reduced emissions impact on communities.

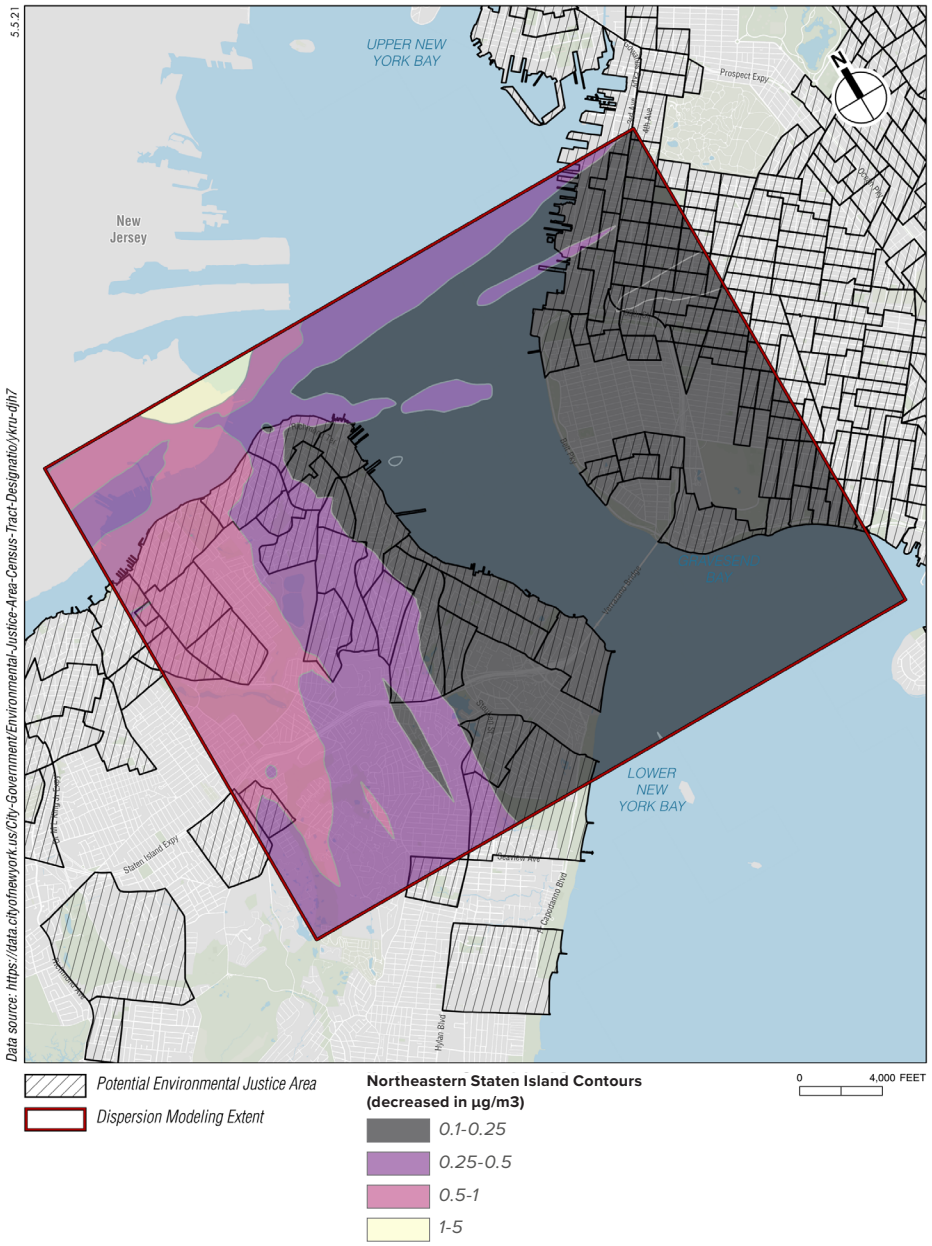


Figure 12-7. Reduced emissions in Northeastern Staten Island.

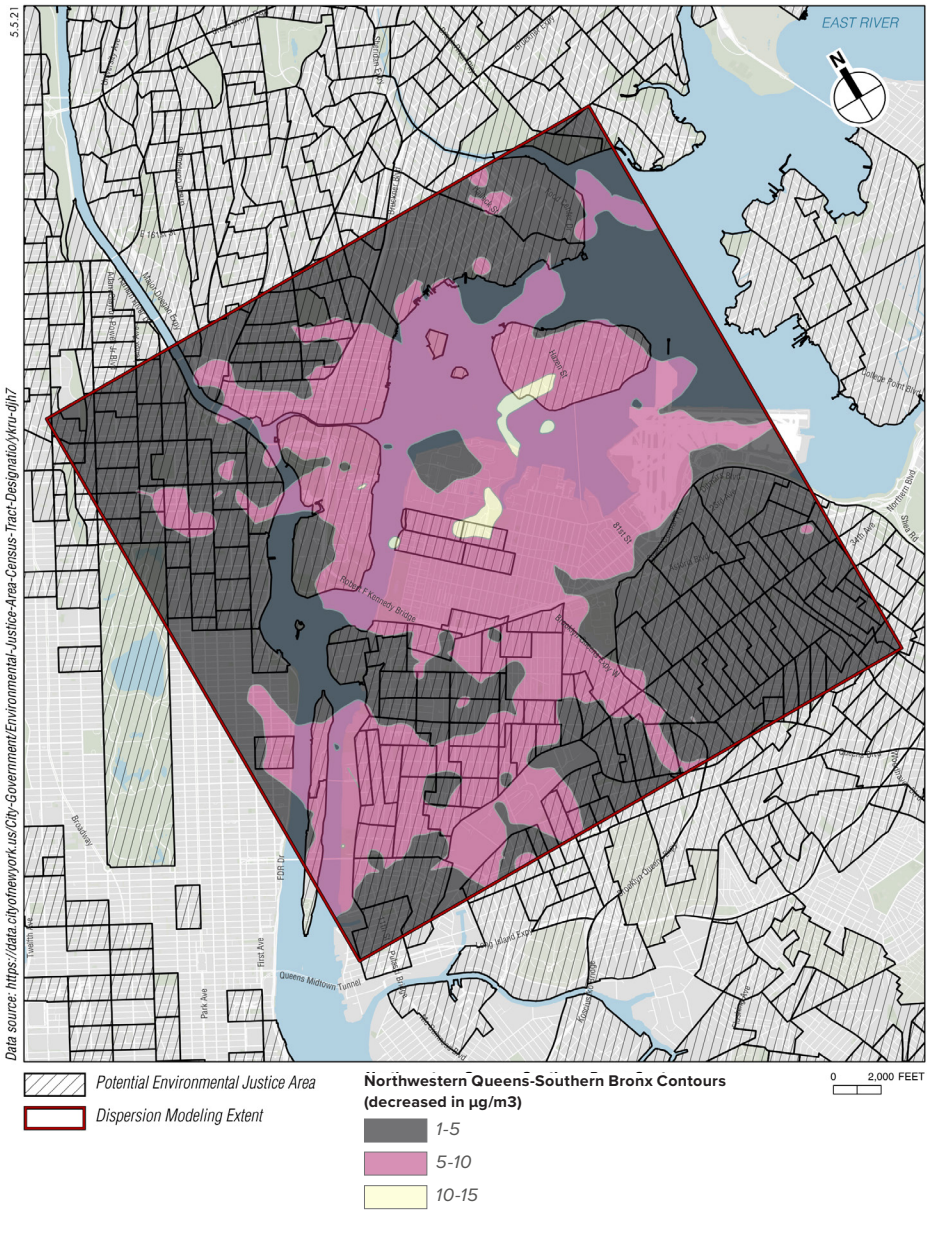


Figure 12-8. Reduced emissions impact in Northwestern Queens-Southern Bronx.

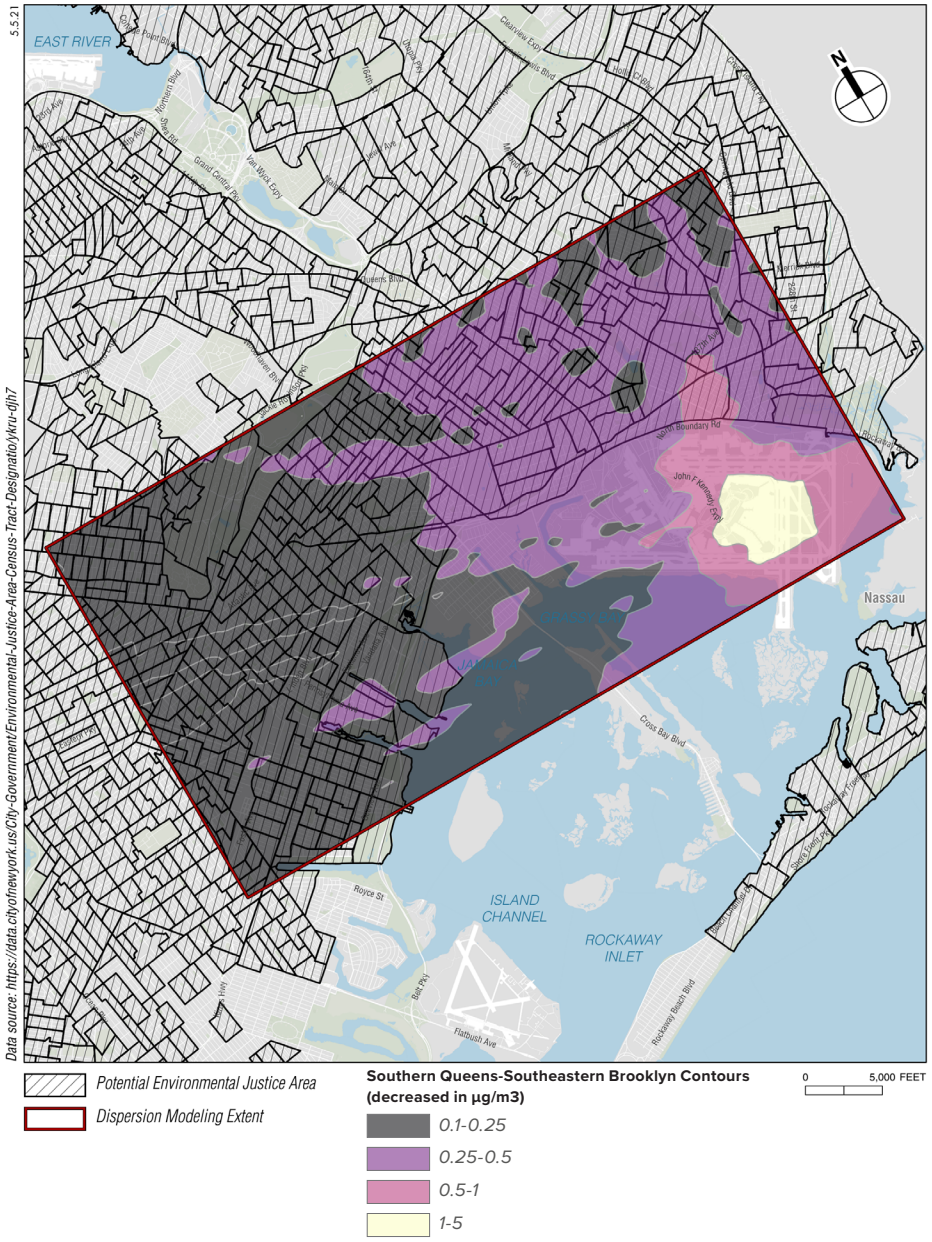


Figure 12-9. Reduced emissions impact in Southern Queens-Southeastern Brooklyn.

Concentrations were predicted at locations across New York City. Our analysis found that approximately 53% of short-term reduction would occur within disadvantaged communities. The most significant reductions would occur within Northwest Queens, Southwest Bronx, and West Central Queens. Approximately 30% of total air quality benefits are anticipated to directly impact disadvantaged communities within New York City.

Concentration decreases would extend up to four miles from facilities, with the most significant reduction occurring within two miles. Disadvantaged communities adjacent to electricity-generating facilities in Long Island and the Hudson Valley would also be directly impacted. Subsequently, additional air quality benefits that directly impact disadvantaged communities are calculated to be 6% in Long Island, 6% in the Hudson Valley, and 5% in the Capital area. Therefore, the project is anticipated to achieve New York State's goal of disadvantaged communities receiving 40% of the benefits associated with the reduced emissions of NO_x, SO_2, and PM.

Impact on climate change

As part of the CLCPA, New York State has called for stringent limits on the statewide emission of GHGs, requiring that those emissions on a statewide basis be reduced by 40% by 2030 and 85% by 2050, compared with statewide 1990 levels. New York State estimates that statewide GHG emissions in 1990 were 409.78 million metric tons of CO_2 equivalent. Statewide GHG emissions accounted for approximately 205.61 million metric tons in 2016 (50% of 1990 levels). Clean Path New York would result in a reduction of approximately 2.6 million metric each year and will further the state's emissions reduction goals for 2030 and beyond.

Increased GHG emissions are projected to have wide-ranging effects on the environment, including rising sea levels, increases in temperature, and changes in precipitation levels. Although this is occurring on a global scale, the environmental effects of climate change are also likely to be experienced at the local level within coastal areas of New York State — primarily within New York City and Long Island.

Climate change projections from the New York City Panel on Climate Change (NPCC) include a summary of baseline and projected climate conditions throughout the 21st century, including heat waves and cold events, intense precipitation and droughts, sea-level rise, and coastal storm levels and frequency.

NPCC projected that sea levels are likely to increase by up to 30 inches by the 2050s and up to 75 inches by the end of the century. In general, the probability of increased sea levels is characterized as "extremely likely," but there is uncertainty regarding the probability the various levels projected and timescale. Intense hurricanes are characterized as "more likely than not" to increase in intensity and/or frequency.

Many disadvantaged communities in New York City are located within a coastal floodplain, including the coastal communities of the Bronx, portions of Northwest Queens, Northwest Brooklyn, South Brooklyn, and North Staten Island. Therefore, a significant portion of the benefits associated with reduced GHG emissions would result in indirect benefits to these communities and would continue to further New York State's goal of directing a significant portion of the anticipated benefits towards disadvantaged communities.

12.6. Project's carbon intensity in project design, sourcing, construction, operation, and maintenance

Our approach

Reducing costs while lowering carbon is an integral component of our approach and management of the project's design and construction phases. In large and complex infrastructure projects like this one, reducing project costs while reducing the carbon impact is essential not only for project success but to deliver socially responsible, inclusive, and community-focused projects. We aim to support environmental justice, pass on benefits to New York ratepayers, and contribute to the achievement of New York CLCPA targets.

To focus on carbon reduction, the embodied carbon must be effectively measured at this early stage of the project and then at key design, procurement, and construction milestones. By highlighting carbon hotspots early in the design, carbon can be managed and intelligently reduced.

Clean Path New York is determined to implement the best measures and practices to influence the reduction of carbon:

- ✓ Optimizing the route
- ✓ Procuring the material from local sources to the extent possible, thereby minimizing the carbon associated with material transport
- ✓ Bundling deliveries to the job site to minimize trips
- ✓ Proposing an optimized construction contracting strategy that will improve production and minimize material and equipment needs

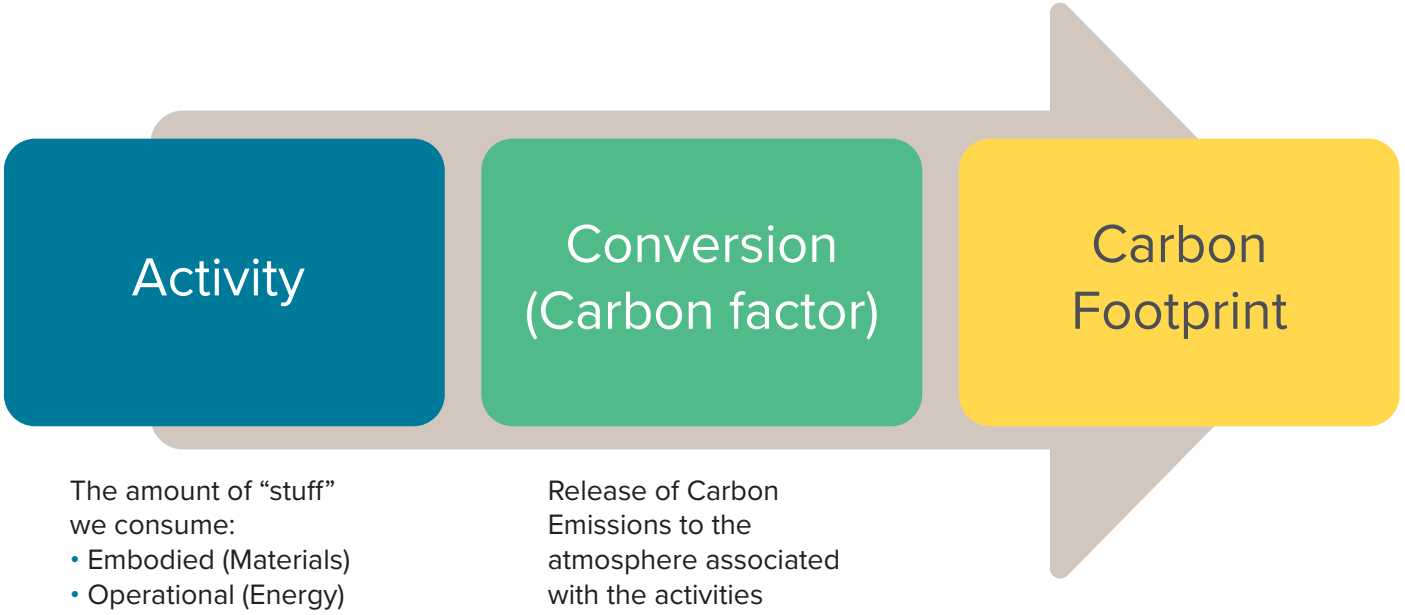


Figure 12-10. How carbon footprint is calculated.

At each phase of the project, we will use the **Moata Carbon Portal** to calculate the embodied carbon emissions released, including material fabrication, material transport, labor, and equipment emissions during construction, and to identify where savings can be made at the various stages.

The Carbon Portal is a proprietary tool developed by Mott MacDonald, our technical advisors on this project. It is a solution for modeling the capital and operational carbon of new assets. It will enable us to quickly identify carbon hot spots in the project, facilitating low-carbon design. The Carbon Portal is built on the infrastructure industry's most comprehensive carbon database and is integrated with Building Information Management, enabling the carbon impacts of design changes to be visualized as they are made. The Carbon Portal is globally compliant with PAS2080 certification — the world's first carbon management standard for infrastructure.

By assessing the carbon impact at each phase of the design process, we believe that embodied carbon can be reduced between 50% and 80% as we illustrate in Figure 12-11 below. We know that new complex infrastructure must be designed, procured, and built to respond to the decarbonization needs in New York State. We have consistently optimized our design so that we only build what is required and we can use the existing infrastructure to the maximum extent possible.

We know that the greatest opportunity to reduce carbon impact lies within these early design stages. That is why we are focused on the win-win opportunities to reduce carbon impacts, reduce new infrastructure construction, and reduce overall project costs.

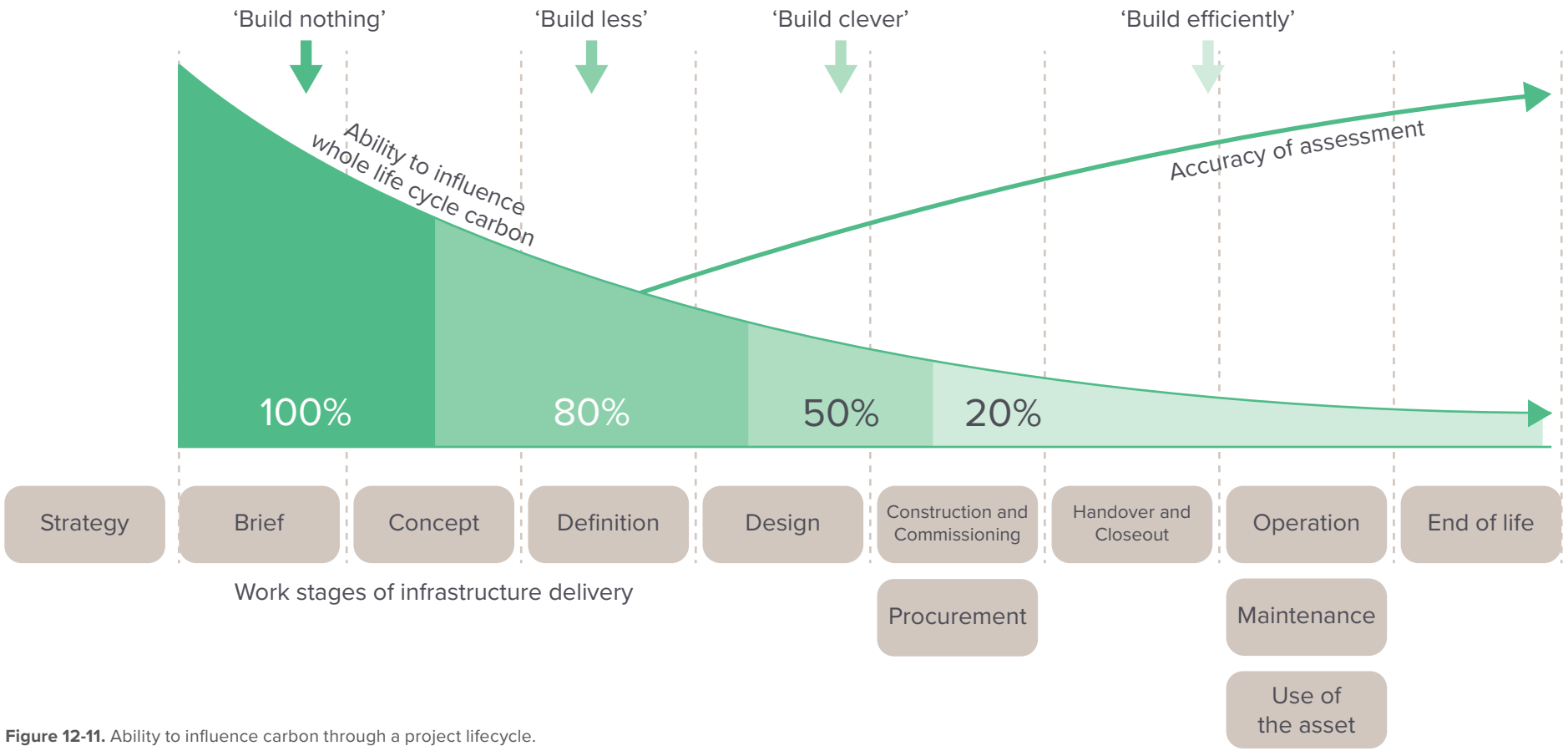


Figure 12-11. Ability to influence carbon through a project lifecycle.

The opportunity

Clean Path New York will deliver Tier 4 eligible renewable energy power to the New York City electrical grid via a new HVDC transmission link. Our team proposes to deliver 1,300 MW through an underwater/underground HVDC electric transmission system extending at least 174 miles from the withdrawal point of Fraser Substation in Delaware County, New York to the primary point of interconnection at the Rainey Substation in Queens, New York, the delivery point. We have performed carbon intensity modeling in the early design and conceptual phase to determine ways to achieve these goals:

- ✓ Prepare a design that optimized existing infrastructure in upstate New York
- ✓ Develop a procurement strategy to maximize locally sourced materials like vaults, concrete, sand/gravel, pavement, wood, and other construction materials
- ✓ Develop a contracting strategy that increases construction efficiency
- ✓ Route the conduit along previously disturbed areas to minimize greenfield disturbance
- ✓ Optimize converter station efficiency
- ✓ Optimize cable pulling and duct bank installation methods
- ✓ Identify and evaluate innovative materials (e.g., fiberglass vaults versus traditional concrete vaults) to increase construction efficiency

We spent the majority of the past eight months performing site reviews, facilitating route review and converter station siting workshops, performing risk assessments, and preparing CAPEX studies, with the ultimate goal of optimizing the underground/underwater duct bank route, reducing capital costs, and reducing carbon footprint.

We have performed evaluations for converter station siting to find the best and most reasonable locations for the stations and are negotiating lease options with landowners. We have determined the most constructable in-water cable route in the Hudson, Harlem, and East Rivers to minimize congested inner-city street ROW work, reduce the amount of utility relocation, increase overall construction productivity, and minimize traffic impacts.

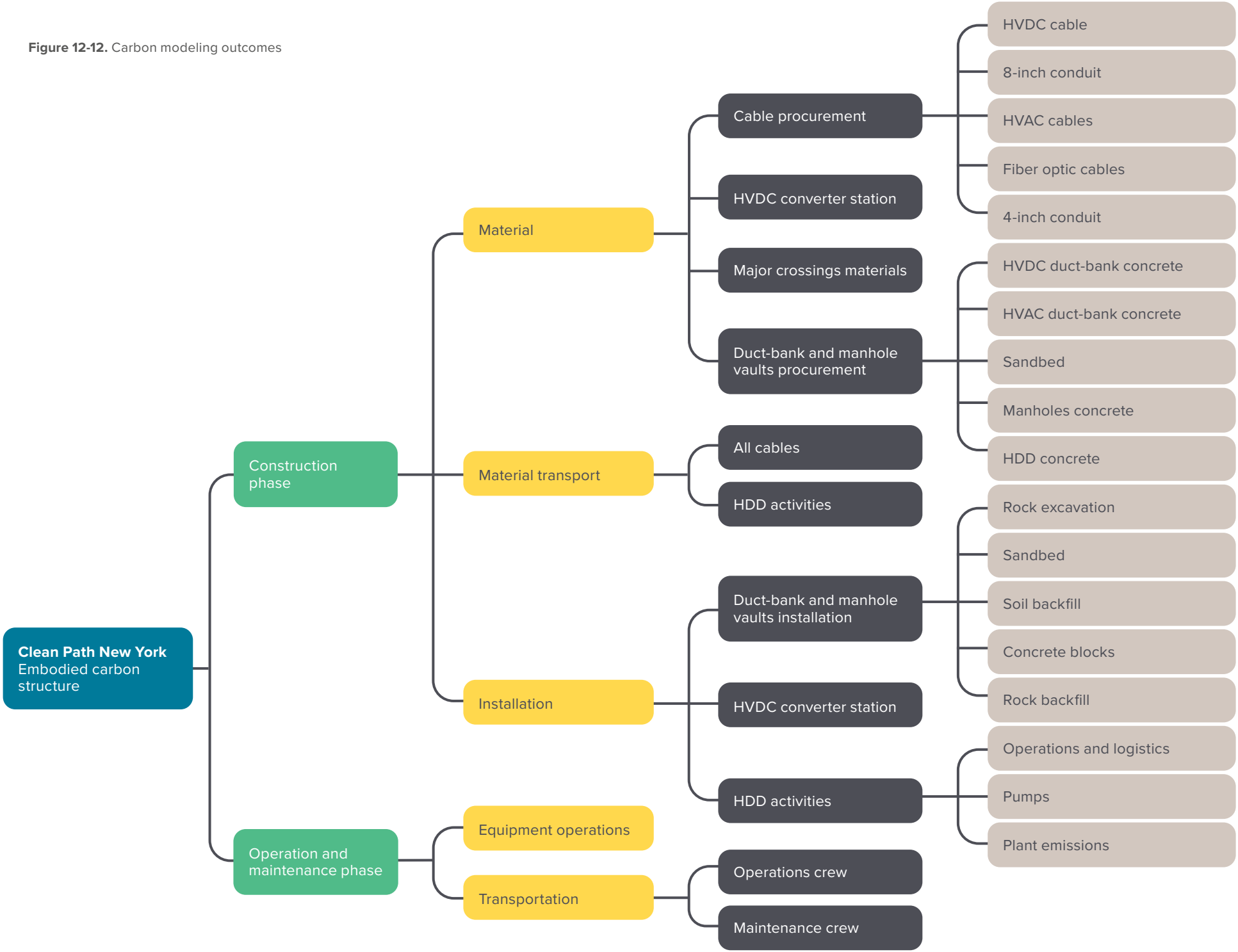
Finally, we prepared a contracting strategy that defines the methods to maximize construction efficiency by contracting with contractors with expertise in each aspect of construction.

Based on the above, we have conducted carbon assessment and simulated the embodied carbon emissions associated with the procurement, logistics, and construction activities. The outcome results are carbon intensity breakdowns by construction scope, operations, and maintenance activity, and a commentary with regards to the decommissioning. Those are detailed below.

Carbon modeling outcomes

The breakdown structure of the embodied carbon calculation is presented in the diagram on the next page, Figure 12-12. The below sections report the carbon portal simulation results for each component within the structure.

Figure 12-12. Carbon modeling outcomes



12.7. Construction phase

Overview

Figure 12-13 below provides the carbon modeling outcomes broken down by scope during construction phase. Of the total carbon emissions, 91% results from the procurement stage and is attributable to the material fabrication and procurement. This is largely due to the significant cable and vault procurement associated with the 174-mile electric transmission project. 7% of the total emissions results from material transportation attributable to transporting cable transportation from Southeast Asia to New York by barge and specialized vessels and then to the job site by truck (assumed 13,000 nautical miles). The remaining carbon emissions are from installation, which is estimated to be as low as 2% of the construction phase. The below subsections provide the breakdown of the subcomponents.

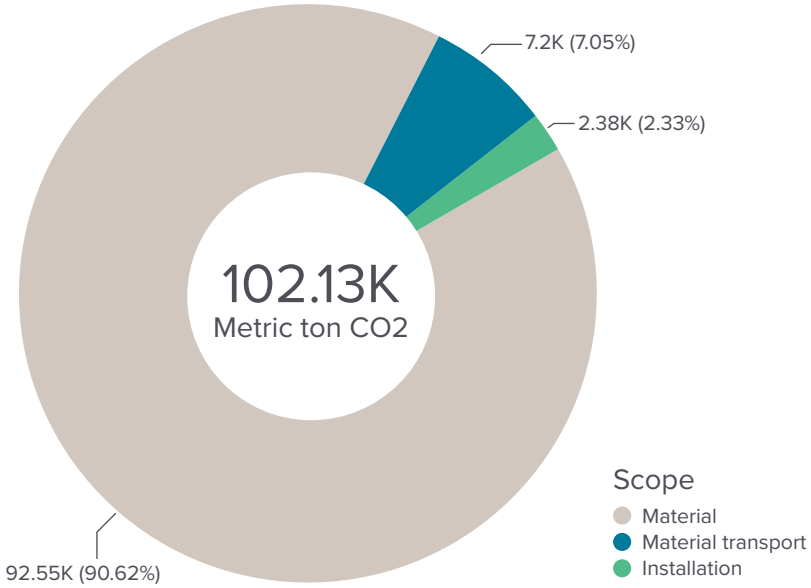


Figure 12-13. Carbon modeling outcomes broken down by scope.

Material

Figure 12-14 below presents the carbon emissions by activity within material scope. As stated previously, the majority of the carbon emissions come from the materials used for the cable along the route (80%). The next largest carbon emission factor is the duct bank and vault procurement and installation (11%). Because there are only two converter substations at intervals along the route, the procurement and installation of the station materials was the third carbon emissions component (9%). Materials used in major railroad, road, and wetland/waterbody crossings resulted in additional carbon emission components of less than 1%.

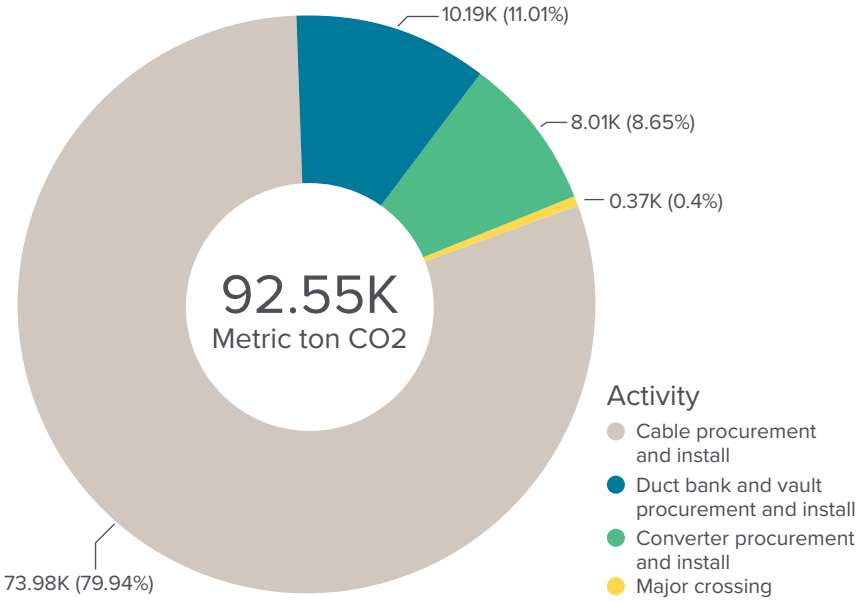


Figure 12-14. Carbon emissions by activity.

Cable procurement

Figure 12-15 below shows material carbon impacts from cables. The major materials that contribute to carbon impacts come from DC cable (70%) and 8-inch conduit (22%). The carbon impacts from AC cable, 4-inch conduit, and fiber optic cable make up the remaining 8%.

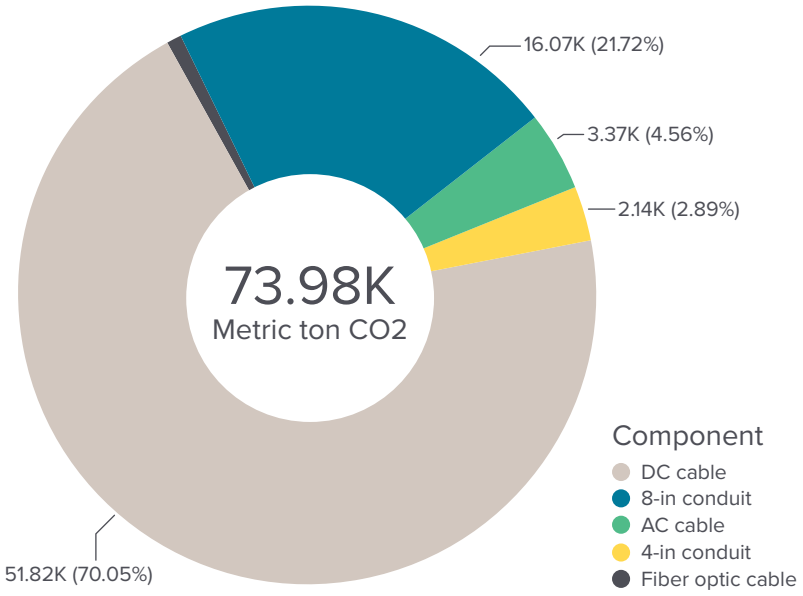


Figure 12-15. Material carbon impacts from cables.

Duct bank and vault procurement

Figure 12-16 below shows material carbon impacts from duct banks and vaults. Concrete blocks for AC duct banks contribute the most (65%) to carbon impact, followed by concrete blocks used for DC duct banks (18%) and sandbed (14%). Concrete used for manholes and the horizontal directional drilling (HDD) duct bank contribute minimally to carbon impacts (less than 3%).

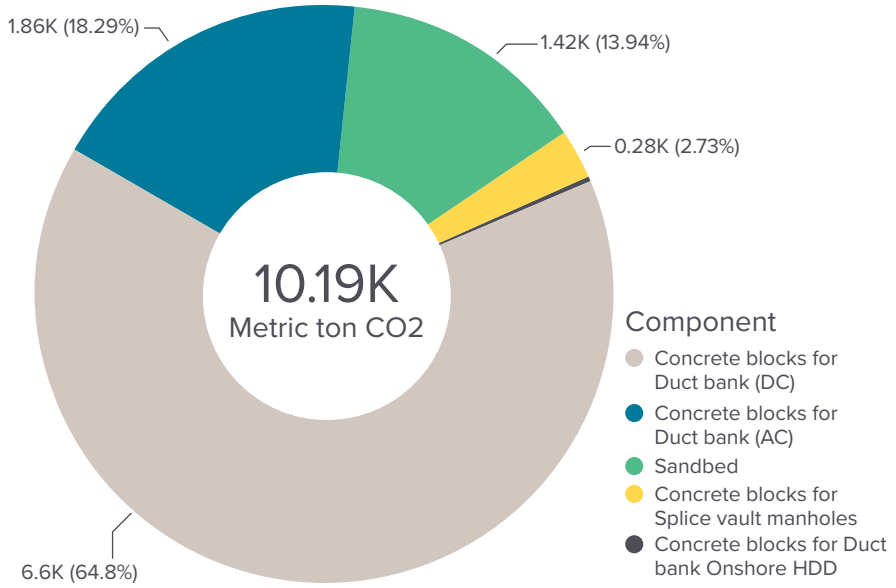


Figure 12-16. Material carbon impacts from duct banks and vaults.

Converter procurement

Figure 12-17 below shows that 8,000 metric tons of CO_2 come from the assumed 3,000 metric tons of steel structures used for two converters (based on a conceptual plot plan). As the project progresses, more information regarding materials used within these two converters can be gathered and utilized to update the carbon model.

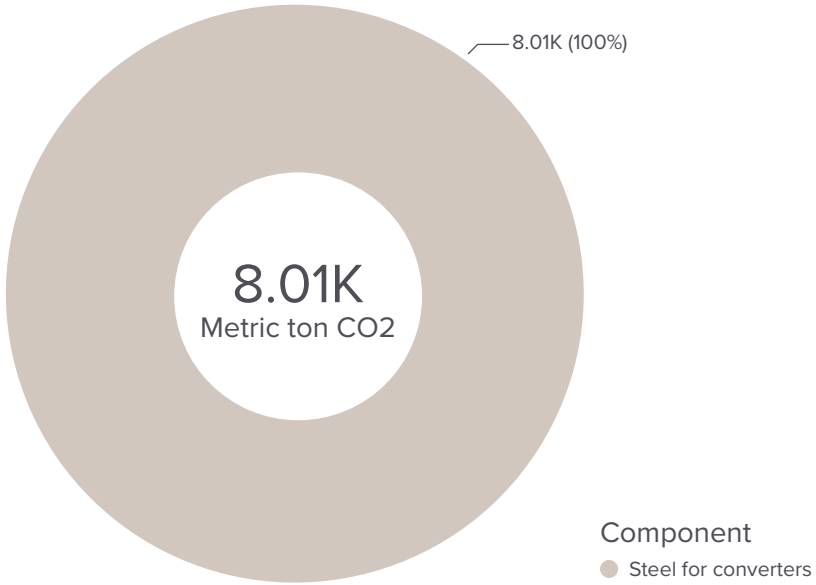


Figure 12-17. Carbon emissions from steel for converters.

Major crossing

Figure 12-18 shows that 373 metric tons of CO_2 come from approximately 43,000 timber mats used at major crossings.

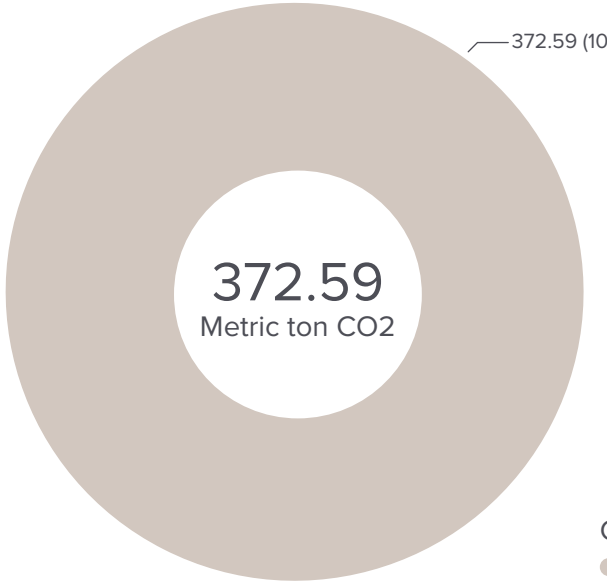


Figure 12-18. Carbon emissions by timber mats at major crossings..

Material transport

Figure 12-19 below represents the carbon emissions by activity within the material transport scope. The majority of the carbon emissions come from transporting cables (95%). The remaining 5% comes from HDD-related material transportation.

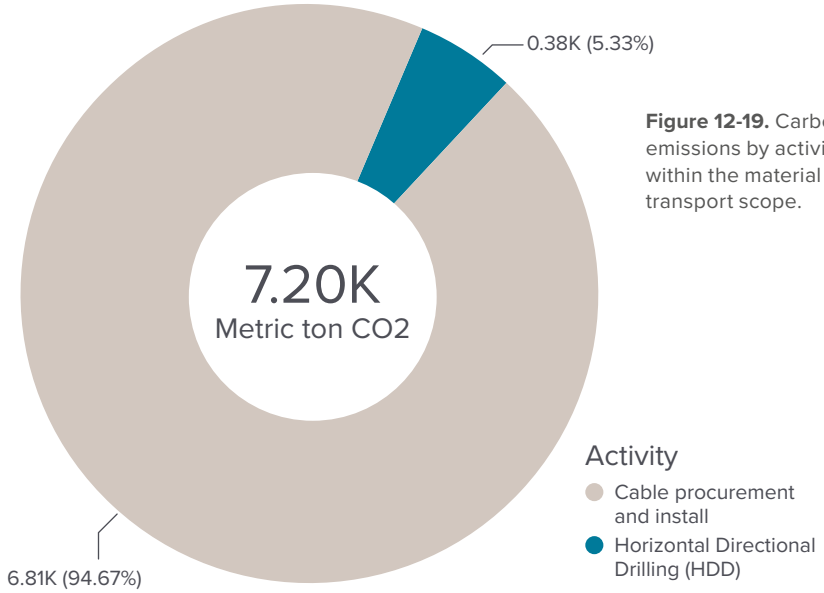


Figure 12-19. Carbon emissions by activity within the material transport scope.

Cable installation

Figure 12-20 below shows that 6,800 metric tons of CO_2 come from transporting cables.

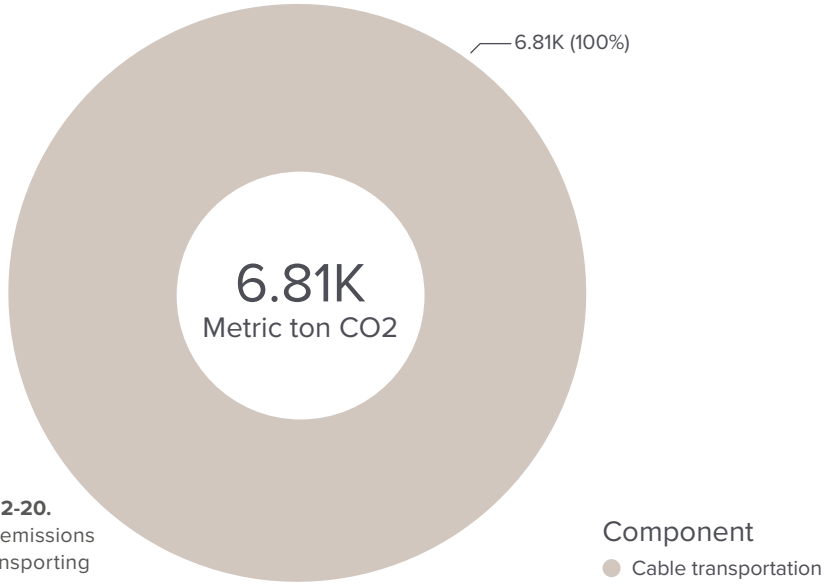


Figure 12-20. Carbon emissions from transporting cables.

HDD tranportation

Figure 12-21 shows the distribution of an estimated 400 metric tons of CO_2 across HDD-related material transportation trucks.

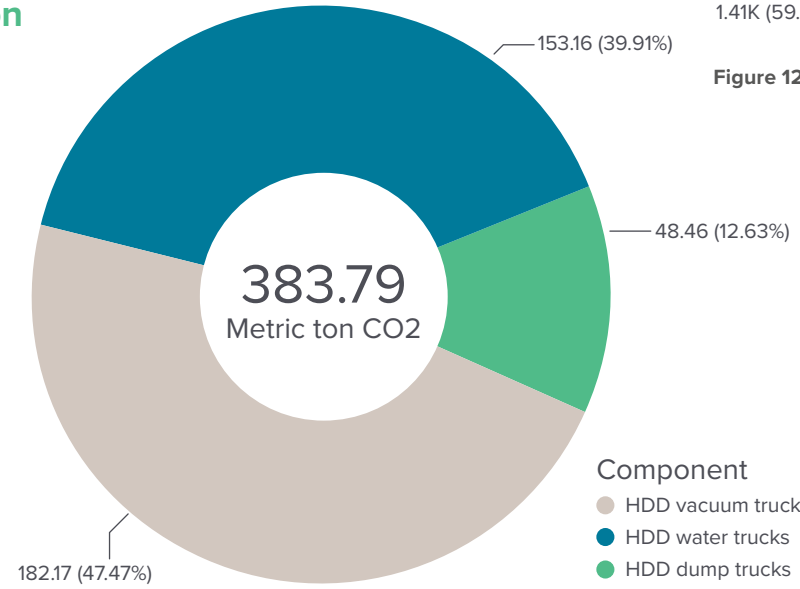


Figure 12-21. Carbon emissions from transporting HDD-related material.

Installation

Figure 12-22 below represents the carbon emissions by activity within the installation scope. Out of an approximate 2,400 metric tons of CO_2, 60% originates from duct banks and vaults work, 22% from converters, and the remaining 19% from HDD.

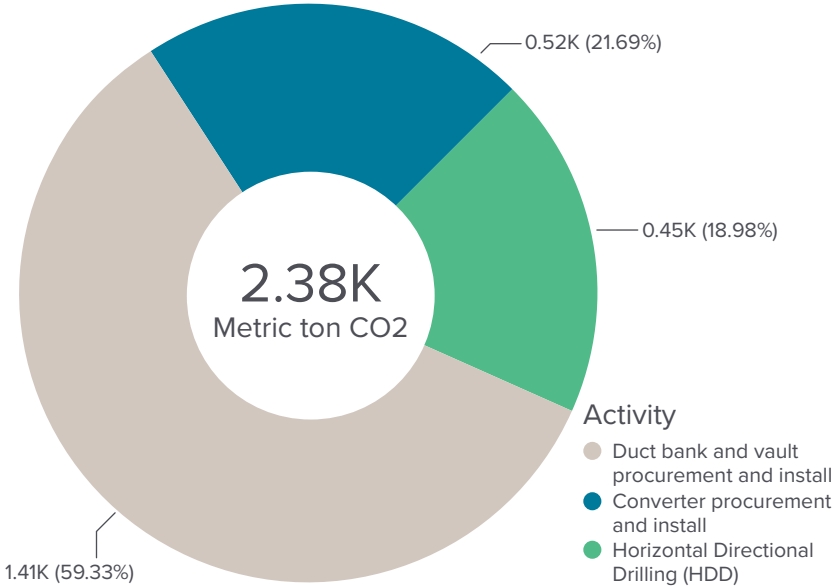


Figure 12-22. Carbon emissions by activity within the installation scope.

Converter installation

Figure 12-23 to the right shows that an estimated 500 metric tons of CO_2 come from constructing the assumed 3,000 metric tons of steel structures used for two converters (based on a conceptual plot plan). As the project progresses, more information regarding materials used within these two converters can be gathered and utilized to update the carbon model.

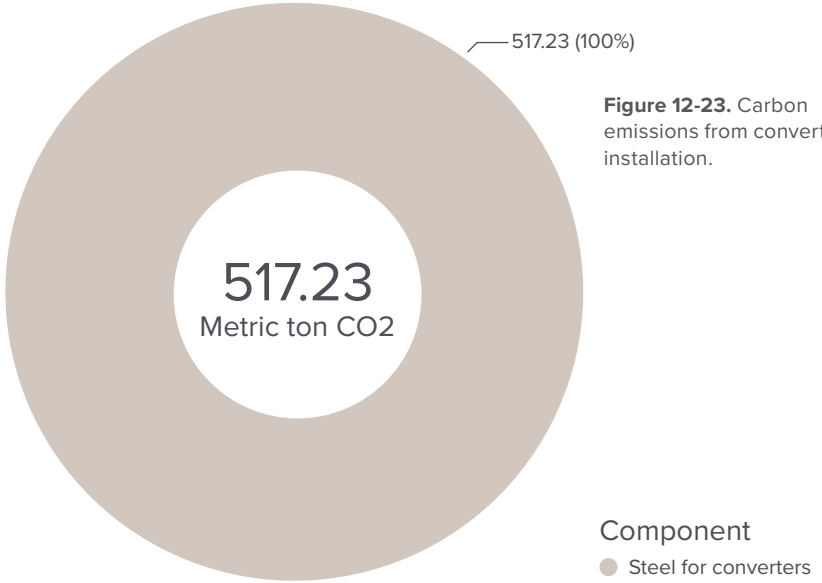


Figure 12-23. Carbon emissions from converter installation.

Duct bank and vault installation

Figure 12-24 below shows the distribution of an estimated 1,400 metric tons of CO_2 from duct bank and vault installation for rock excavation, sandbed, soil/rock backfill, and concrete blocks.

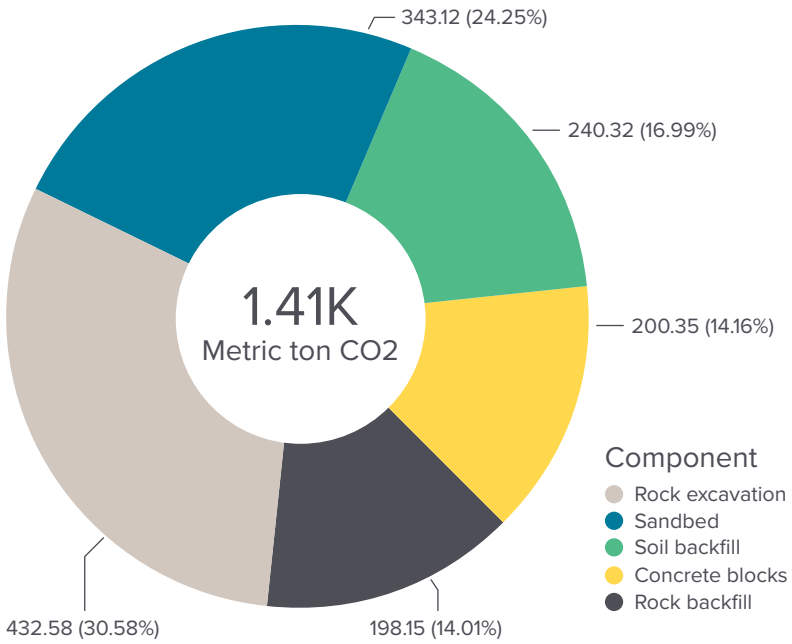


Figure 12-24. Carbon emissions from duct bank and vault installation.

HDD installation

Figure 12-25 below represents the distribution of an estimated 450 metric tons of CO_2 from HDD installation.

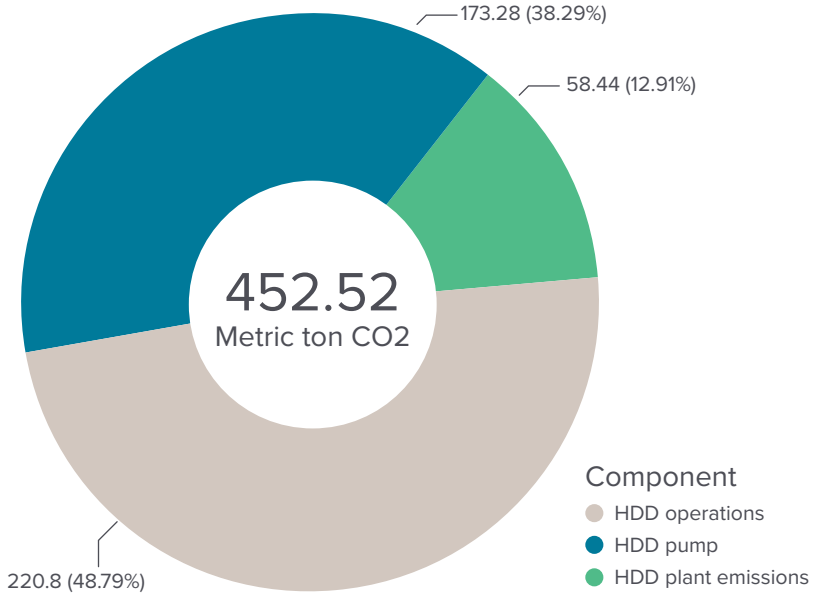


Figure 12-25. Carbon emissions from HDD installation.

12.8. Operations and maintenance

Overview

Figure 12-26 below provides the carbon modeling outcomes broken down by scope during operations and maintenance (O&M). 95% of the total carbon emission is resulting from equipment operation derived from excavator fuel consumption. The remaining 5% carbon emission is from personnel transportation for O&M crews. The below subsections provide the breakdown of the sub-components.

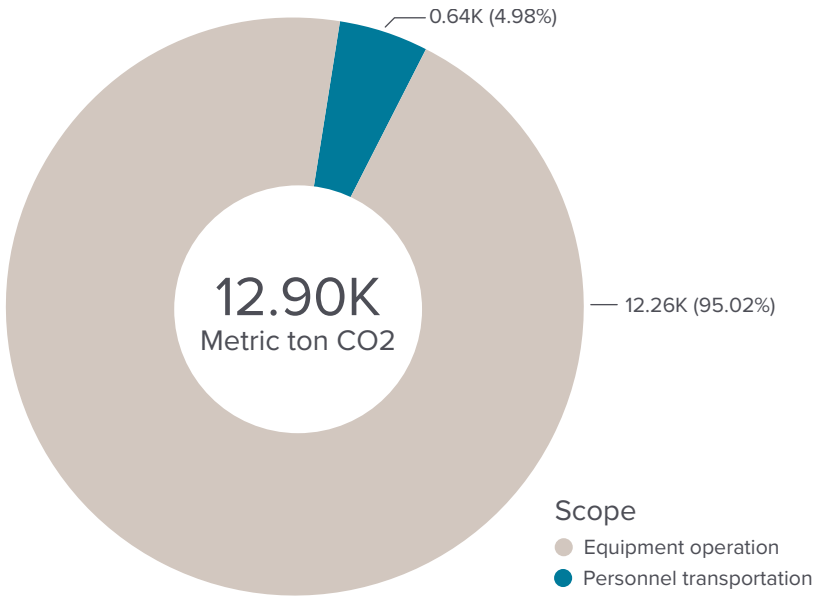


Figure 12-26. Carbon modeling outcomes broken down by scope during O&M.

Personnel transportation

Figure 12-27 to the right shows that an estimated 650 metric tons of CO_2 come from transporting O&M crews, assuming a two-year operating period and a 25-year maintenance period. Transporting operations crews accounts for 75% of carbon emission from personnel transportation, with the remaining 25% accounted for transporting maintenance crews.

Equipment operation

Figure 12-28 below represents an estimated 12,000 metric tons of CO_2 derived from excavators' fuel consumption rate operating for two years.

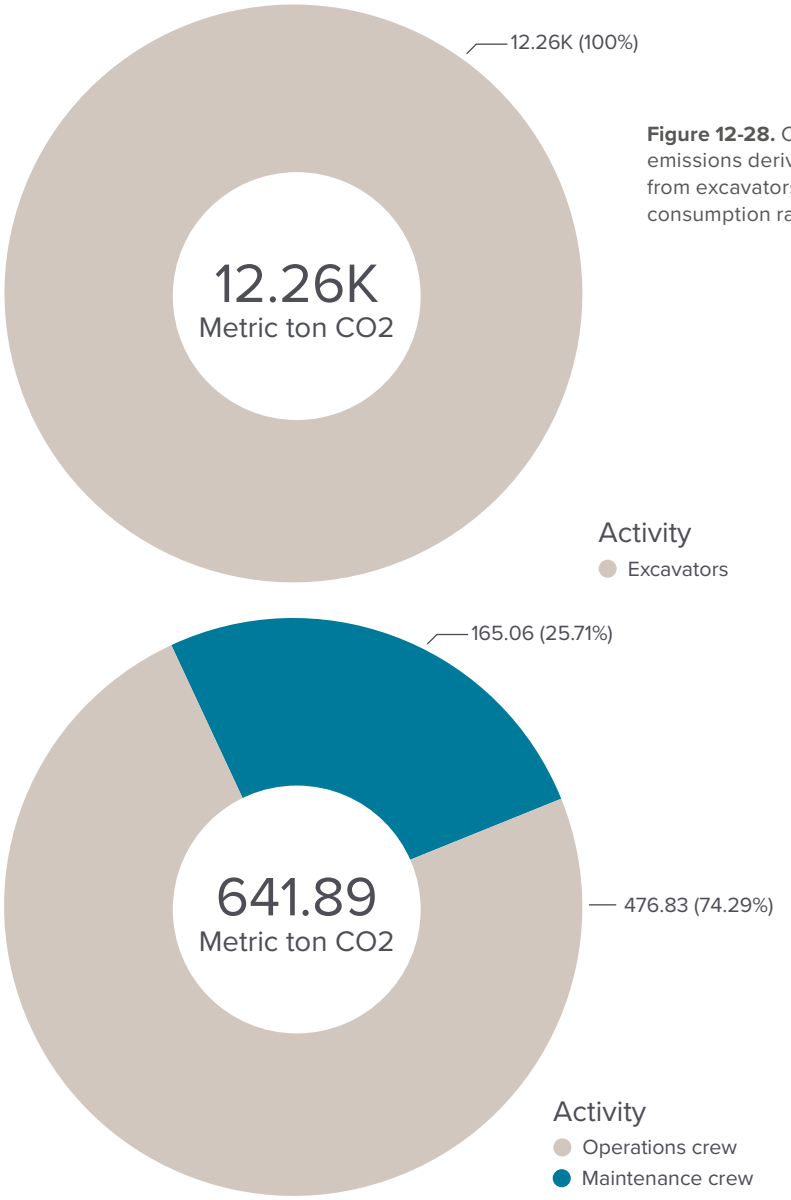


Figure 12-28. Carbon emissions derived from excavators' fuel consumption rate.

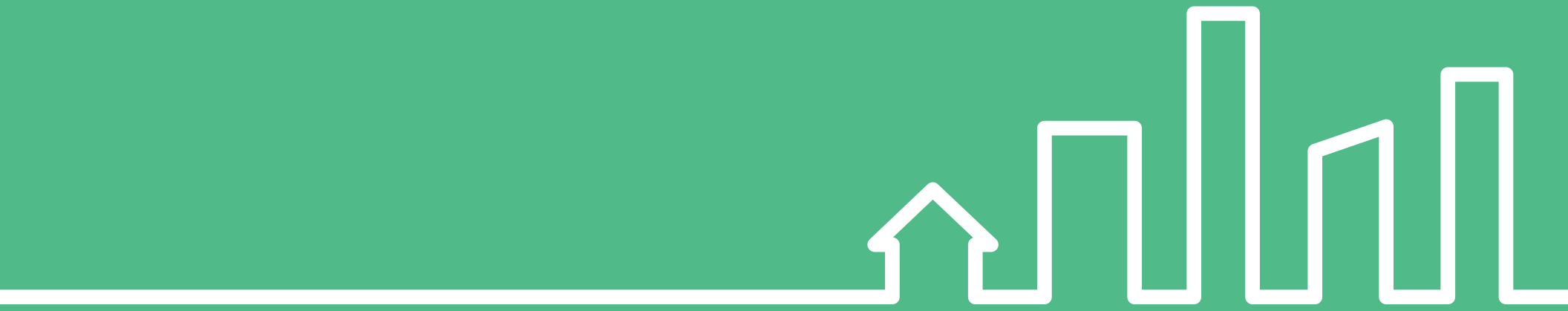
Figure 12-27. Carbon emissions as a result of transporting operations crews.

12.9. Decommissioning

For power projects like Clean Path New York, industry standards estimate that the carbon impact for decommissioning converter stations and duct banks is approximately 35% of the calculated carbon impact for the project. For this project, an estimated carbon impact of 103,000 tons of CO_2 equivalent would result in an additional decommissioning carbon impact of about 36,000 tons of CO_2 equivalent.

Section 13

Project schedule



13 Project schedule

13.1. Demonstrate project can be developed, financed, and constructed within a commercially reasonable timeframe

Clean Path New York has developed a detailed project schedule integrating transmission system requirements, associated development resources, and project execution including the following:

1. An achievable Commercial Operation Date (COD)
2. Utilizing deep understanding of critical activities
3. Strategic planning
4. Effective resource management

Clean Path New York members have the necessary resources and experience to successfully deliver large complex development projects on schedule.

The overall project schedule is developed around various discrete but integrated work packages, incorporating diligently evaluated potential contracting and procurement strategies to maximize productivity and understand what can be concurrently delivered.

Clean Path New York developed realistic work packages, inclusive of associated durations, by gathering inputs from technology providers, manufacturers, contractors, and other members of the supply chain. Early communications with agencies such as NYISO, NYSDOT, NYSDEC, and USFWS was key to understanding schedule drivers and the impact of key permitting requirements in developing a realistic and achievable target COD.

The development, construction, and completion of the HVDC transmission component is the main driver for achieving the targeted COD, and more specifically, the critical path for this component includes the NYSDPS Article VII permitting and construction phase. Given the current progress and the development schedule of the remaining activities, the portfolio of power generation supply resources is expected to achieve COD one to four years before the completion of the new transmission system.

To manage the risk of delay in the resources schedule, such as unforeseen substantial delay that may extend beyond the new transmission COD, Clean Path New York has developed several schedule-driven risk management strategies. These include replacing and/or adding other generation resources to the portfolio as alternatives for projects that are not able to achieve COD in a timely fashion. This is achievable given Clean Path New York LLC's access to a large portfolio of resources. As evidenced by our letters of support from several renewable project developers in addition to support from our partner Invenergy, Clean Path New York already has direct line-of-sight to a significant portfolio of projects that can be brought to bear to the task of supplying the transmission line with renewable energy.

Please refer to Section 4 for details about each resource's expected commercial operation date (COD) and major schedule milestones that precede it, as well as the site control document included as Appendix 3. If any resource experiences a significant delay that causes its projected COD to fall substantially behind that of the new transmission, we would consider replacing it and/or adding another resource to the portfolio to either substitute or otherwise backstop the production of the delayed project. Please refer to Section 2 for the suggested organizational structure and Section 5 for the delivery plan.

06.30.26
Target COD

A detailed project schedule is provided under Appendix 17 of this proposal. The schedule is focused on the development of the new transmission line but also includes COD milestone dates for project resources. Clean Path New York is targeting a commercial operation date within the second quarter of 2026. The specific COD target is June 30, 2026. The restoration activities will continue thereafter and will be finalized by August 14, 2026, which represents final project completion.

These target milestones are based on reviewing the interdependencies and expected durations of the major project drivers, including commercial, development, permitting, and construction activities for the project. Clean Path New York has completed extensive outreach to lenders, environmental and permitting agencies, major material vendors, and construction contractors to further refine the proposed project schedule. Further detail is provided below on the activities performed to date to develop and validate the proposed project schedule.

- Studied and developed power system modeling for interconnection at Fraser and Rainey
- Consulted with NYISO on initial project concepts and revised scope to provide improved reliability
- Consulted and continue to discuss with NYISO regarding open access transmission tariff and the changes needed for the market rules to manage and utilize an intrastate HVDC transmission line
- Performed electrical studies to determine project transmission capability and rating
- Performed engineering feasibility studies to validate proposed project concept and route
- Assessed workspace feasibility of siting underground conduit installation in NYPA ROW
- Reviewed geologic conditions along NYPA ROW to assess rock excavation requirements
- Evaluated terrain along NYPA ROW to understand cable and duct bank installation requirements
- Performed electromagnetic field studies for NYPA ROW to determine siting location within ROW
- Performed field site evaluations to review key routing and siting areas
- Evaluated requirements and feasibility of trenchless crossings for major rivers, conservation areas, and other features
- Performed and continue to perform detailed routing assessments of multiple alternatives
- Reviewed and developed mitigation strategies for Hudson, Harlem, and East River constructability challenges
- Reviewed entry/exit landfalls for access to the rivers to assess construction methods
- Assessed public road ROW siting, including public road ROW widths and existing utility information
- Reviewed environmental impacts of project route utilizing publicly available NWI and NHD datasets
- Assessed community impacts along project route and known community interest drivers
- Performed environmental agency consultation including NYSDEC, USFWS, and others to understand agency project schedule drivers

- Coordinated with multiple public road state agencies, including NYSDOT and New York State Thruway
- Developed a detailed permitting plan including understanding sequencing of activities

Development, permitting, and construction

The schedule illustrates an overall development, permitting, and construction duration of five years, including commissioning and restoration activities. We have rigorously reviewed and prepared this schedule in conjunction with a procurement strategy for major materials required for the project. We have incorporated challenges such as allowable construction windows and the availability of resources for parallel activities while accounting for permitting requirements. The following activities were conducted to validate the targeted COD date:

- Consulted with environmental permit agencies to baseline permit lead times including NYSDPS Article VII and ACOE Section 404/10
- Engaged a legal team to review applicable permit time frames and durations for the "Hearings and Decisions" phase of the NYSDPS Article VII permitting process
- Developed environmental and cultural field survey strategies and reviewed resource requirements and protocols to achieve desired project durations
- Developed a field investigation and execution plan
- Engaged an engineering and civil survey consultant to review durations and requirements for associated activities
- Engaged a land/row consultant to provide applicable activities and associated durations
- Reviewed typical permitting agency lead times including approval of the project environmental management and construction plan
- Reviewed lead times for major material vendors including original equipment manufacturers (OEMs) for the HVDC land and submarine cables and converter stations
- Evaluated logistics for material deliveries and staging for both NYPA ROW and public road ROW
- Evaluated logistics for material deliveries and staging for converter stations and substation work
- Solicited construction execution methodologies from experienced construction contractors
- Reviewed and benchmarked the project schedule against other similar complex infrastructure projects developed by Clean Path New York members
- Reviewed project schedule activities with construction contractors including the following:
  - Mobilization/demobilization
  - Duct bank installation production rates
  - Public road ROW installation production rates
  - Submarine installation production rates
  - Cable pulling, splicing, and terminating
  - Converter station logistics and site erection production rates
  - Restoration rates for various installation types (land and submarine)

13.2. Documentation that resources, process, and schedule are adequate for the acquisition of all rights, permits, and approvals for financing

Clean Path New York's schedule for the development and construction of the new transmission line is commercially achievable. As described in Section 13.1, the Clean Path New York members have established experience with developing and executing large-scale, complex infrastructure projects. The members have an extensive knowledge and understanding of engineering, supply chain bottlenecks, permitting, and regulatory regime. In addition to its members' in-house capabilities, Clean Path New York has retained a reputable engineering firm with the requisite technical expertise to conduct project management, development, planning, design, and constructability reviews. Section 3 of this proposal provides details in regard to Clean Path New York's capabilities and organization structure to deliver the project, as well as experience with similar successfully delivered projects.

The transmission line project is in the early stages of development and as detailed in Section 5, the proposed ROW for the new

transmission requires minimal to no acquisitions. The proposed route will largely utilize NYPA Marcy South transmission ROW between the withdrawal point at Fraser and Rock Tavern. [redacted] Clean Path New York has secured an option agreement for the Fraser converter station location and also has site control for the Zone J converter station. Documentation and agreements to verify site control can be provided to NYSERDA upon request.

As described in Section 4, the generation resources provided in this proposal are being developed and are at varying stages. Most of those resources are also contracted under Tier 1 and those resources submit quarterly progress reports to NYSERDA. Those reports provide details on the development progress, including financing, permits, and acquisition of rights. Refer to Appendix 3 which provides details of the site control status for each Resource.

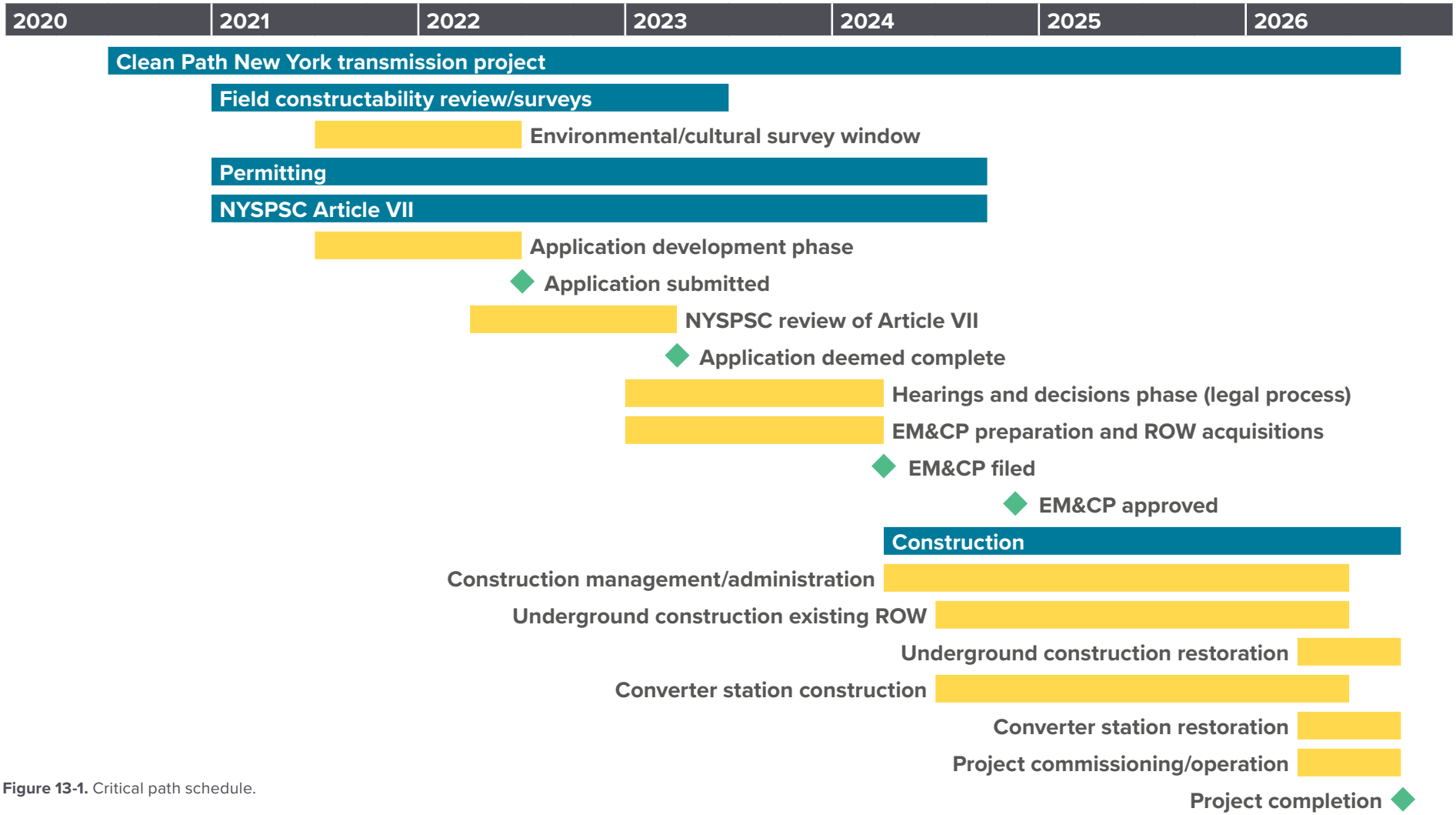


Figure 13-1. Critical path schedule.

13.3. Critical path schedule

The critical path schedule is illustrated in Figure 13-1 below.

The key schedule drivers for Clean Path New York are the NYSPSC Article VII process, and the construction/commissioning phase of the project. Procurement has the longest duration, but this was managed and relatively de-risked in the schedule and was disintegrated from the critical path by creating floats around key interface activities. Additional detail for each of these items is provided below:

NYSPSC Article VII process

Clean Path New York has started initial consultation with the NYSDPS and other environmental permitting agencies to commence the Article VII process. This reflects an Article VII permit issue date of January 31, 2024 along with an Environmental Management and Construction Plan approval date of July 30, 2024. These approvals are the key drivers to allow for field construction to begin on this project. Below are additional details related to more specific tasks for achieving these milestone dates**:**

- **Environmental/cultural surveys.** Clean Path New York has consulted with NYSDEC, USFWS, and other permitting agencies to establish protocols for completing the environmental and cultural surveys for the project. These protocols are anticipated to be in place by July 2021 to allow for these surveys to begin on July 21, 2021. The surveys are expected to start before the NYSERDA award date of Q3 2021. However, Clean Path New York is willing to progress these activities in advance to achieve the overall COD date indicated above. The environmental/cultural surveys will be largely complete in Q3 2021 and may continue into Q1 2022. Further detail regarding these surveys can be found in the Field Investigation Plan developed for Clean Path New York, which is provided in Appendix 18.
- **Article VII Application submittal and review.** Clean Path New York will develop the Article VII application in parallel to the environmental and cultural surveys in anticipation of submitting an application to the NYSDPS in June 2022. Clean Path New York will process, review, and develop the application material on a real-time basis as the environmental/cultural survey work is completed. The schedule allows for an 8-month review period for the NYSPSC to assess and deem the Article VII application complete by January 29, 2023.
- **Hearings and decisions phase.** Following the submittal and review by the NYSPSC of the Article VII application, a legal process will commence once the agency deems the application complete. Clean Path New York has allowed for a one-year duration for the hearing and decisions phase of the Article VII process. We understand that this phase will include a pre-hearing conference, public statement hearings, and other evidentiary hearings toward the issuance of an Article VII permit. Clean Path New York is targeting Article VII permit issuance on January 31, 2024.
- **Environmental Management and Construction Plan.** Following the issuance of the Article VII permit, Clean Path New York will immediately file the Environmental Management and Construction Plan. Clean Path New York will be proactively compiling comments as received during project Hearings and Decisions Phase to accelerate approval of the plan. The project schedule anticipates that this phase will be completed and approved by July 30, 2024.

Major material procurement

During the Article VII process, Clean Path New York will procure the major materials for the project. Based on initial discussions with the material suppliers, lead times are expected to be two years from contract execution to initial receipt of materials on-site. Procurement is expected to have the largest duration in the project schedule. These lead times are for the HVDC land and submarine cables and the two converter stations. Purchasing these major materials in the early stages of the project will help de-risk the procurement and create a float of approximately four months. This float period removes the

procurement from the critical path and allows the project adequate time to respond with mitigation measures in the unlikely event of major delays.

Construction

Following receipt of approval of the Environmental Management and Construction Plan from the NYSDPS, Clean Path New York expects to immediately start construction with a start date of July 31, 2024. The overall construction duration is expected to be 25 months with a COD date of June 2026 where additional restorations will continue thereafter. Below are additional details related to the construction activities included in this critical path task:

- **Mobilization.** The project anticipates mobilizing to the site several months in advance of approval of the Environmental Management and Construction Plan to the extend permissible. This early mobilization will allow for construction field offices to be installed, material to be received and unloaded at designated material storage yards, and construction management staff to be prepared for immediate start of construction following approval of the Environmental Management and Construction Plan. We anticipate that construction management and administrative personnel will mobilize to the project site in April 2024.
- **NYPA ROW direct bury conduit installation.** Construction on the existing NYPA ROW component will proceed immediately following approval of the Environmental Management and Construction Plan. This includes 105 miles within the existing NYPA ROW from the Fraser Substation interconnect to the Rock Tavern Substation and will involve installation of a direct bury conduit system, HVDC cable pulling, splicing, and terminating activities, trenchless installations, and other construction-related activities. It is anticipated that this section will proceed with three to four mainline spreads of construction activity to achieve completion by May 2026.
- **Public Road ROW duct bank installation.** Construction of the public road ROW duct bank installation will start immediately following approval of the Environmental Management and Construction Plan. This component includes approximately 29 miles of duct bank installation in primarily NYSDOT and NYCDOT roads and involves installation of a concrete duct bank/conduit system, HVDC cable pulling, splicing, and terminating activities, trenchless installations, and other construction-related activities. It is anticipated that this section will proceed with three mainline construction spreads for the following areas: Orange County, Westchester County, and New York City streets with a targeted completion date of May 2026.
- **Submarine installation.** Construction of the submarine components of the transmission route will begin immediately following approval of the Environmental Management and Construction Plan and includes 36 miles of submarine installation in the Hudson River (36 miles), Harlem River (5 miles), and the East River (1 mile). It is anticipated that dedicated crews will be engaged for each component previously described, as different installation vessels will be required based on the varying construction parameters required for the various rivers. Further discussion on the construction windows for the submarine installations is provided in Section 13.6.
- **Converter station installation.** In addition to the transmission line components, Clean Path New York anticipates commencing the converter station construction at Fraser and Zone J immediately following receipt of the Environmental Management and Construction Plan. Each converter station location will require a two-phase construction process, the first phase for the site/civil works and the second phase for the erection of the converter station with a target completion date of May 2026 and has been validated with several OEM vendors.
- **Project synchronization.** Following the completion of the construction activities previously described above, the project

schedule allows for a 45-day project synchronization period to commission and test the integrated transmission system components including the converter and substations) leading to energization and a subsequent COD date of June 2026.

13.4. Preliminary engineering, financing, property acquisition, permits, environmental assessments, interconnection studies, and financial close

The proposed schedule provides details with regards to preliminary engineering, financing, property acquisition, permits, environmental assessments, interconnection studies, and financial close. Those are detailed below.

Preliminary engineering. Preliminary engineering for the project commenced in January 2020 and has progressed based on assessments, evaluations, field visits, and engagement of various subject matter experts to develop the project scope described in this proposal submittal. If selected, the engineering activities will continue to advance following submission of this proposal and include a field investigation program to collect data to support further project development and detailed design. The Field Investigation Plan is attached as Appendix 18 to this proposal and includes the following activities:

- Land-based preliminary civil survey
- Water-based geophysical surveys
- Field route reconnaissance and constructability reviews
- Geotechnical investigation and soil boring program
- Thermal resistivity/conductivity
- Environmental/cultural surveys
- Right-of-way support for field investigation program

Financing. Financing activities are included in the project schedule as milestones and include activities, durations, and completion dates for the following:

- Final Investment Decision: targeted for January 2023, mainly tied to the receipt of the Article VII permit.
- Construction debit financing due diligence period: one-year duration following Final Investment Decision with a targeted completion date of January 2024
- Construction debit financing financial close: targeted for February 2024

Acquisition of real property rights. The proposed project maximizes the use of existing transmission and publicly available project corridors. This includes the use of the existing NYPA ROW and public NYSDOT and NYCDOT road corridors. Based on this approach, the acquisition of real property rights is limited and is focused on securing assets for the converter station sites. Preliminary site locations have been identified, and Clean Path New York is currently in final negotiations with the landowners to secure the property locations for the Fraser converter station and the Zone J converter station.

Federal, state and/or local permits, licenses, environmental assessments and/or environmental impact statements (including anticipated permit submittal and approval dates). Clean Path New York has commenced consultation with federal, state, and local permit agencies. We have depicted the processes, durations, and anticipated target dates for receipt of the major project permits in the provided project schedule. Additional information regarding the permitting approach is provided in Section 11 of this proposal.

Completion of interconnection studies and approvals culminating in the execution of the Interconnection Service Agreement. Clean Path New York has submitted an interconnection request to the NYISO and is expecting a scoping meeting will be held in the near future. It is anticipated that the system impact study phase of the NYISO process will commence in the Summer of 2021. Our team is progressing toward an interconnection service agreement with NYISO by 2022.

Engineer/procure/construct contracts. Our proposed EPC contracting strategy is further defined in Section 13.5 of this document. This section details the program management approach and contract work packages that we anticipate using for the project. The anticipated contracts for these services will be initiated at various stages of the project, as required to support the project COD.

Construction and construction duration. Clean Path New York is proposing to commence construction immediately following receipt and approval of the NYSDPS Article VII Environmental Management and Construction Plan on July 31, 2024. Construction for the project is anticipated to achieve a COD date of June 2026, with final restoration activities completed by Q3 2026.

13.5. EPC contract activities

Clean Path New York is proposing to engage a program manager to execute the project and manage interfaces across various work packages. The strategy for engaging an EPC or construction contractor varies based on the work packages. These in turn are

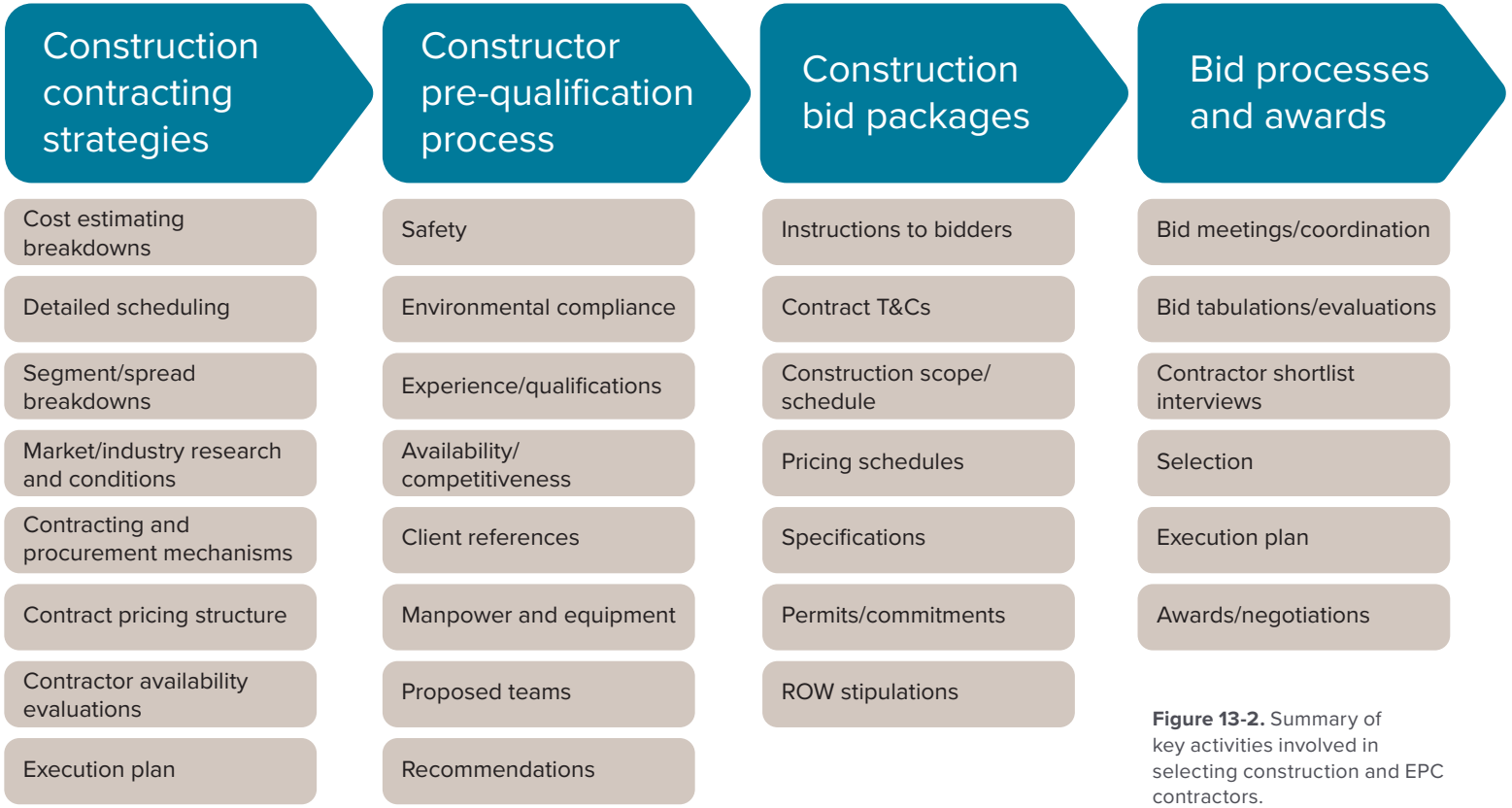


Figure 13-2. Summary of key activities involved in selecting construction and EPC contractors.

developed on the basis of geographic locations, type of installation/ methodology, proposed construction activities, preferred risk mitigation strategy, and other project contracting considerations. Clean Path New York has developed a comprehensive Preliminary Contracting Strategies and Execution Overview Plan. This plan is provided in Appendix 19.

The program manager will coordinate early contractor involvement in the pre-construction design/planning phase on behalf of Clean Path New York. The construction contractors involved in this phase will contract directly with Clean Path New York. The program manager will perform pre-qualification, scoping and bidding, and contract conformance of the construction contractors on behalf of Clean Path New York. The construction contractors will typically support the following activities during the early contractor involvement phase:

- Constructability and construction methodology
- Construction workspace, access, and work area selection
- Construction cost estimating
- Construction schedule development
- Construction risk management/mitigation
- Early construction planning
- Construction scope of work development
- Logistics and planning
- Environmental permit application review and input
- Construction execution plan development
- Execution plan
- Cost
- Schedule
- Organization and staffing
- Construction contractor selection

Summary of the work packages

Six construction work packages have been identified and those are summarized as follows:

- **Work package 1:** AC and submarine cable installation (+/- 400 kV DC and 345kV AC) in the Hudson, Harlem, and East rivers from Fraser Substation (north end of project) to Rainey Substation (south end of project)
- **Work package 2:** Underground duct bank within existing NYPA ROW in Delaware, Sullivan, and Orange counties
- **Work package 3:** Underground duct bank within existing public road ROW in Orange, Westchester, Bronx, and Queens counties
- **Work Package 4:** Converter Station #1 adjacent to the NYSEG Fraser substation in Delaware County and Converter Station #2 in Zone J
- **Work Package 5:** Substation interconnect modifications at NYSEG Fraser Substation
- **Work Package 6:** Substation interconnect modifications at CECONY Rainey Substation

13.6. Construction windows for aquatic sites

Clean Path New York has an understanding of the allowed construction windows for the proposed in-river submarine installation components of the project, including the Hudson River, Harlem River, and East River. Based on a preliminary review of previous Army Corps of Engineer permits for similarly scoped projects and conditions, the following are the anticipated submarine construction windows:

- Hudson River: July 1 to January 14
- Harlem River and East River: June 1 to January 14

Clean Path New York has incorporated these windows into the overall project schedule, and these are key drivers to achieving the targeted COD date. Based on a construction start date of July 31, 2024, Clean Path New York's schedule utilizes and leverages the allowable windows to the maximum extent practical. In the event of a schedule delay due to unforeseen conditions, Clean Path New York has investigated several preliminary land alternatives to mitigate the risk

to the project and will continue to develop these further during future project development activities.

Based on Clean Path New York's current schedule, the project takes advantage of the allowed windows and incorporates the following two construction seasons into the project schedule for the Hudson River installation. Note that the project currently proposes to install approximately 36 miles of submarine cable within the Hudson River from New Windsor to Buchanan, NY and from Ossining, NY to the Harlem River junction.

- July 31, 2024 through January 14, 2025
- July 1, 2025 through January 14, 2026

For the Harlem River and East River, it is anticipated that only one construction season will be required for the submarine installation. Note that the Harlem River submarine installation length is approximately 5 miles and the East River submarine installation length is approximately 1 mile. For these two rivers, Clean Path New York proposes to utilize the first available construction window as shown below. This proactive approach leaves the second construction window in 2025 available in the event it is required to complete the installation.

- July 31, 2024 through January 14, 2025

13.7 Siting, environmental, and NYISO approvals

Please refer to Section 13.3 for the critical path siting and environmental approvals which will be required for this project. Additional information on the regulatory and environmental permitting can be found in Section 3: Delivery Plan and Section 11: Permitting Plan.

13.8. Critical milestones

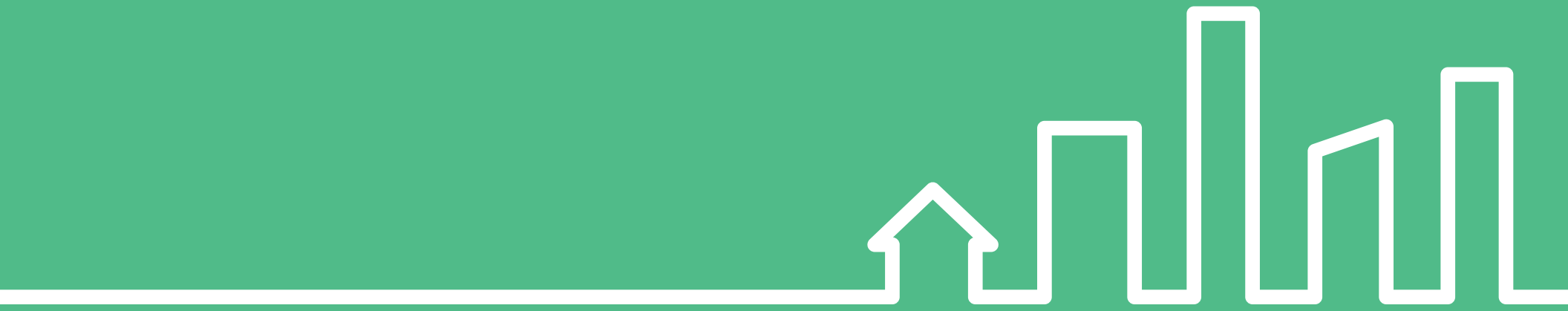
In addition to the critical path milestones listed in Section 13.3 above and other key schedule drivers, the project schedule also includes the milestones in Table 13-1 below, which are critical activities for advancement toward the proposed June 2026 COD date.

Activity	Milestone
NYISO Interconnection Service Agreement	November 25, 2022
PSC financing review and approval	June 1, 2023
Secure community host agreements	January 11, 2026
Environmental/cultural surveys begin	July 5, 2021
Civil surveys begin	October 1, 2021
Right-of-way/land acquisition complete	March 14, 2025
Army Corps of Engineers Section 404/10 approval	February 13, 2024
Detailed engineering complete	March 29, 2024
NYSDPS Article VII Environmental Management and Construction Plan approval	July 30, 2024
End of other agency coordination window	July 29, 2024
Project construction debt financing financial close	March 12, 2024
Cable and converter station procurement begins	March 31, 2022
Major material available	March 20, 2024
Construction begins	July 31, 2024
Submarine installation (Hudson River) season 1 begins	July 31, 2024
Submarine installation (Hudson River) season 1 begins	July 1, 2025
Submarine installation (Harlem River) begins	July 31, 2024
Project commissioning/operations begins	April 29, 2026
Commercial Operation Date	June 30, 2026

Table 13-1. Critical milestones.

Section 14

Operational flexibility and peak coincidence



14 Operational flexibility and peak coincidence

14.1. Contributions of project to operational flexibility and peak coincidence in Zone J

Operational flexibility

Introduction

Clean Path New York has conducted extensive modeling and system analysis and has engaged in an iterative approach to improve the proposed New Transmission. Clean Path New York goal is to reliably export Tier-4 RECs to New York City (Zone J) and to help provide additional system benefits such as operational flexibility, relief of congestion, and reduced curtailment. The below subsections provide additional explanation on such benefits.

Assisted by PowerGEM, Clean Path New York modeled the reliability and wholesale energy market impacts of the Resources portfolio and the New Transmission. The analysis covered the years 2025, 2030, and 2035. Three scenarios were modeled for each year studied; they are summarized below as they will be referred to in the subsequent sections:

1. **A Reference Case:** This case uses a base case without the New Transmission and the proposed portfolio of Resources portfolio.
2. **A Resources Only Case**, which is the Reference Case plus the portfolio of Clean Path New York Resources.
3. **A Resources and New Transmission Case**, which is the Resources Case plus the Clean Path New York New Transmission (a 1,300 MW HVDC interconnect between Fraser substation in Zone E and Rainey substation in Zone J).

More details on the modeling conducted by PowerGEM and the associated assumptions is provided under Appendix 7.

The technology

Clean Path New York proposes to build a New Transmission line that will utilize state-of-the-art high-voltage direct current (HVDC) technology that can deliver a capacity of 1,300 MW. The proposed technology will utilize a voltage source converter (VSC) configured as a symmetrical monopole. A +/- 400 kV operating voltage was selected as the optimal voltage to maximize capacity.

This state-of-the-art configuration recommended by Clean Path New York is a feasible and attractive technology that will provide distinct advantages in controllability and flexibility. The proposed New Transmission is designed to manage challenges mainly arising from

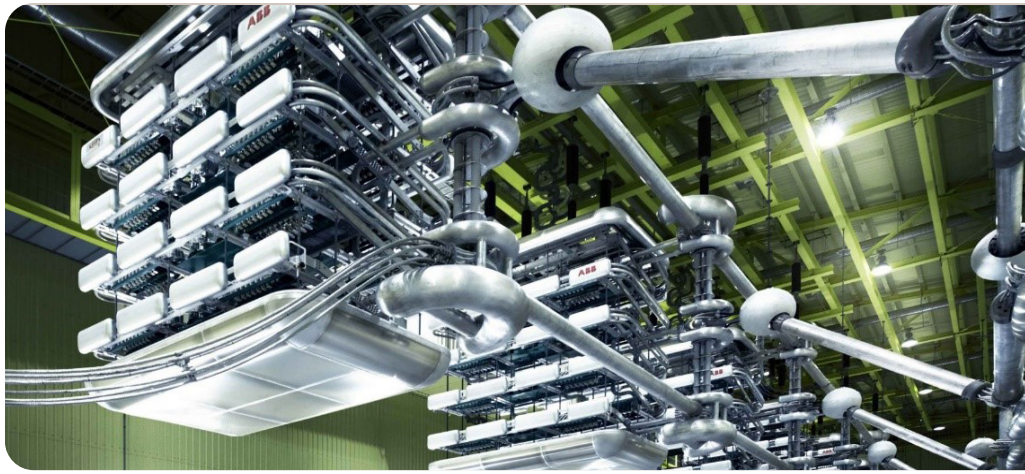


Figure 14-1. Inner view of a VSC-HVDC converter (image courtesy of ABB).

the large renewables Resources portfolio and the associated increase in the level of intermittency and unpredictability of generation connecting in to the NYISO system.

The New Transmission will provide more flexible power flow control to intelligently maximize the utilization of the Resources while relieving transmission bottle necks and managing the difficulties of obtaining new transmission corridors in New York State. Additional benefits to NYISO and the grid include the ability to independently control active and reactive power and to provide very fast control response and black start ability.

The VSC-based converters offer a great amount of flexibility. The converter employs an Insulated Gate Bipolar Transistor to switch the DC voltage. It can be turned on and off many times per cycle and thus is very controllable. This switching commutates the DC voltage to the expected AC voltage of the grid to which it is delivering power. The transistors operate based on information provided by the control systems, increasing the control of real and reactive power with reactive compensation capabilities.

The proposed configuration uses a single transformer secondary that feeds a simple pole. The center of the DC bus of each converter station is grounded, and the converter stations are connected to two transmission links at equal and opposite potentials (the HVDC poles or the cables): the positive pole and the negative pole. A schematic of the New Transmission is shown in Figure 14-2.

The project will include two VSC HVDC converter stations at each end of the transmission link: Fraser in Zone E (withdrawal point) and Astoria in Zone J (delivery point). At the withdrawal point, the northern converter station will connect to the NYSEG Fraser 345kV yard by installing a new breaker in a spare bay position in the existing breaker-and-a-half substation. At the delivery point, we plan to connect the southern converter station to the CECONY 345 kV Rainey Substation by installing two new breakers and expanding the existing ring bus to meet CECONY operations procedures and reliability standards.

The symmetrical monopole link will include a buried section of two 2,500 mm^2 underground cross-linked polyethylene (XLPE) HVDC cables. A fiber optic communication link will connect the two converter stations, with submarine portions of single-core 2500 mm^2 armored copper XLPE cable in the Hudson, Harlem, and East Rivers, to Zone J.

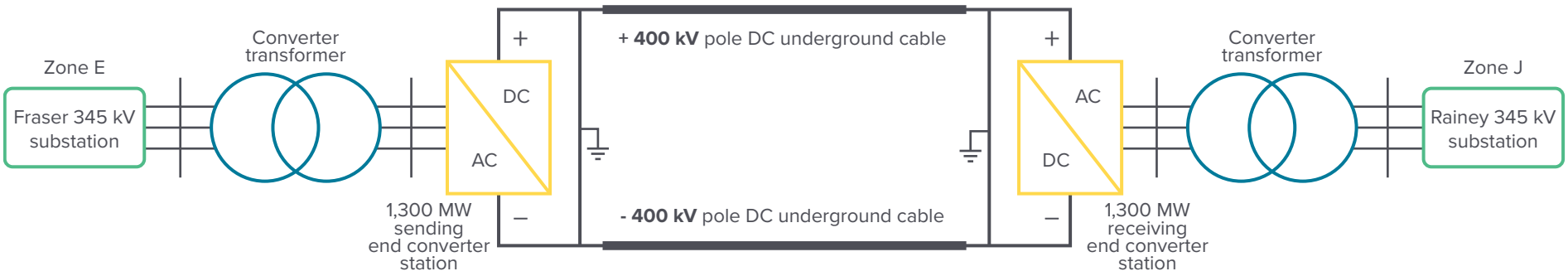


Figure 14-2. New Transmission schematic.

Enhanced system reliability

Clean Path New York New Transmission technology enhances the system reliability to include capabilities to respond and mitigate certain contingency events on the system. The VSC HVDC link controls can be configured, and the link can be scheduled to NYISO's requirements to respond to specific contingency events.

Clean Path New York reliability attributes can be summarized as follows:

- The New Transmission VSC HVDC terminals and their inherent performance characteristics can maintain and potentially increase significantly the transmission transfer capability (TTC) if considered as an integral part of TTC. Under contingency events, the VSC HVDC link controls can be configured, and the link can be scheduled to NYISO's requirements to respond to specific contingency events. This is not novel or unique: At multiple global and local projects, HVDC is an integral part of the existing internal control area interface and is managed by the relevant independent system operator. The Mackinac project in Michigan is an excellent example.[1] This can be done by measuring voltages and currents locally at the HVDC terminals and having the HVDC controls respond to changes in such data to meet NYISO TTC requirements and remain compliant with NERC requirements.
- The New Transmission VSC HVDC can emulate an AC line in terms of responding to a contingency. This can be done by automatically changing the power flow on the line based on sudden changes to the voltage phase angle at the terminals. This requires only locally measured signals at both ends, without the need for a wider communication protocol. In summary, the VSC is capable of automatic power changes (e.g., as part of an AC line emulation functionality) in the event of major disturbances that give a large change in the AC network impedance. This reduces the stresses on remaining AC transmission lines after a certain relevant contingency. Additionally, a VSC HVDC system design has an embedded fast reactive power control. The converter station at each end can independently act as a STATCOM device, offering reactive power support even when one terminal is out of operation. VSC stations have no minimum short circuit capacity requirement and can thus be used to black start one terminal from the other and quickly energize a blacked-out AC network.

Load savings

As New York progresses towards its CLCPA targets, the percentage of renewable generation on the system is expected to significantly increase. With this increase, congestion and curtailment must be addressed to ensure that benefits of these renewables are adequately captured. Clean Path New York will play a pivotal role in reducing congestion, reducing curtailment, and decreasing total load costs to customers and ratepayers as more and more of New York State's energy is generated from renewable sources.

Figure 14-3. Clean Path New York will play a pivotal role in increasing renewable generation.

[1] https://www.atc-projects.com/projects/mackinac-hvdc-flow-control-project/

Conducted modeling shows that in 2025 the Resources and New Transmission Case, will provide New York State with total load payment savings of $242 million, or 5%. About $96 million of these savings will be in Zone J. In 2030, as more renewables are added to the system to meet the State's 70% renewables by 2030 goal, the Resources and New Transmission Case reduces the statewide load payments even further, by $438 million. This is an 11% reduction in the amount New York State ratepayers pay for their electricity. A little less than half of these savings will be in Zone J, where load payments will decline $204 million. For the same Resources and New Transmission Case, these savings are projected to be even higher in 2035, with statewide load payments reduced by $528 million or 13%, and Zone J load payments by $247 million or 16%.

Clean Path New York estimates that the total load payment savings will amount to $12 billion over the 25 years NYSERDA contract period. This was calculated using the load payments savings from the three years modeled by PowerGEM to interpolate the total load payment savings over the 25-year NYSERDA contract period. This was done by using a weighted average of the 2025 and 2030 results for the next four full years of operation. Similarly for the period 2030 to 2035, PowerGEM's 2030 results were used for the fifth year of operation and a weighted average of the 2030 and 2035 results for years six through nine. As for the 16 years after 2035, PowerGEM 2035 results were used uniformly throughout. Those savings are in today's nominal dollars, with no escalation factor applied.

$12 billion

total load payment savings over 25-year NYSERDA contract period

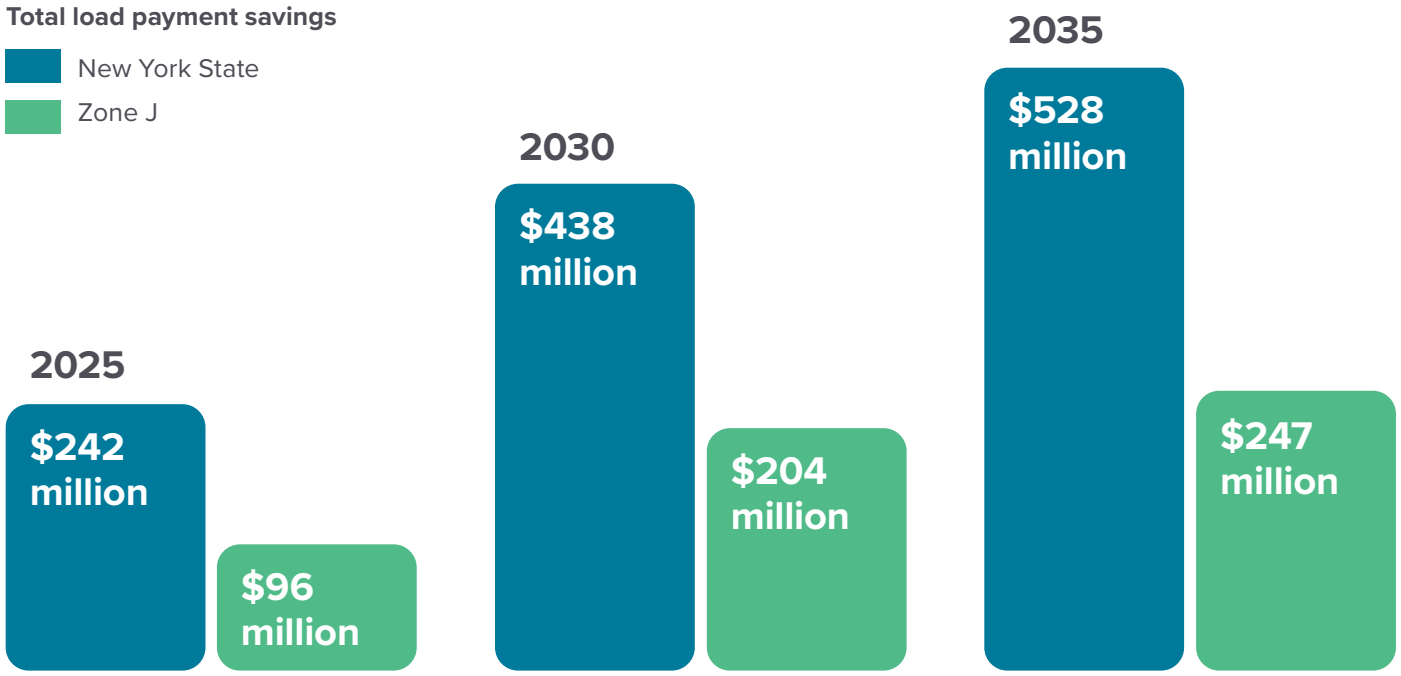


Figure 14-4. Total load payment savings will continue to increase in New York State and subsequently in Zone J.

Congestion

Much of the load savings discussed above comes in the form of reduced congestion over the Total East interface, a critical internal transmission constraint in the New York Control Area. Congestion over Total East keeps renewable generation in upstate and western New York from reaching customer demand in southeastern New York. As renewables are developed in upstate and western New York, congestion over this interface will continue to increase.

Generally speaking, adding generation without improving the transmission system increases congestion. For the Resources Only Case in 2025, modeling shows that congestion more than doubles over the Total East interface, increasing congestion costs up to $123 million. However, the Resources and New Transmission Case for the same year shows a reduction in net congestion by $145 million relative to the Resources Only Case.

$145M

savings in congestion relative to the Reference Case

$5.6B

total load payment savings over 25-year NYSERDA contract period

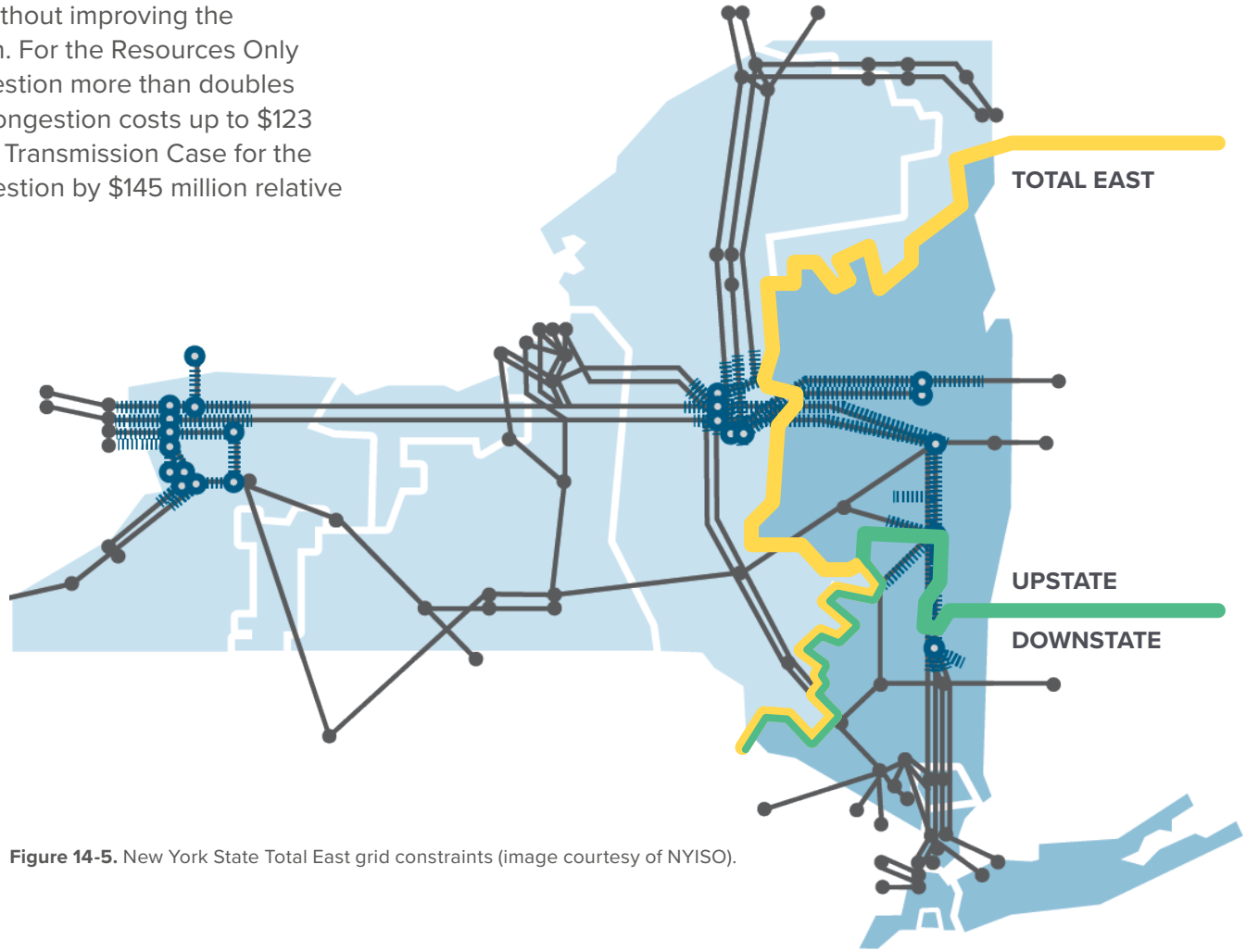


Figure 14-5. New York State Total East grid constraints (image courtesy of NYISO).

This pattern holds true for 2030. Using the Resources Only Case and meeting the state 70% renewables by 2030 goal, increases congestion costs over the Total East interface by $103 million, or 31%. This case is a good representation of what congestion in the state will look like without the Clean Path New York New Transmission. Modeling the Resources and New Transmission Case reduces congestion costs over Total East by $250 million, making the net impact of Clean Path New York in 2030 to be $146 million or a 44% reduction of congestion costs over Total East.

In 2035, the net impact is even greater, Resources and New Transmission Case reduce Total East congestion costs by $154 million or 55%.

The Upstate New York–Southeast New York interface (UPNY-SENY) is not a binding constraint in the modeled 2025 Reference Case. However, as renewables penetration increases across the state, it too becomes more congested. In 2030, Resources and New Transmission Case relieves 21% of the congestion over the UPNY-SENY interface, and in 2035 it relieves 59%.

Clean Path New York estimates that the total savings in congestion costs over Total East will amount to $5.6 billion over the 25 years NYSERDA contract period. This was calculated using the Total East congestion savings from the three years modeled by PowerGEM to interpolate the total load payment savings over the 25-year NYSERDA contract period. This was done by using a weighted average of the 2025 and 2030 results for the next four full years of operation. Similarly for the period 2030 to 2035, PowerGEM's 2030 results were used for the fifth year of operation and a weighted average of the 2030 and 2035 results for years six through nine of operation. As for the 16 years after 2035, PowerGEM 2035 results were used uniformly throughout. Those savings are in today's nominal dollars, with no escalation factor applied.

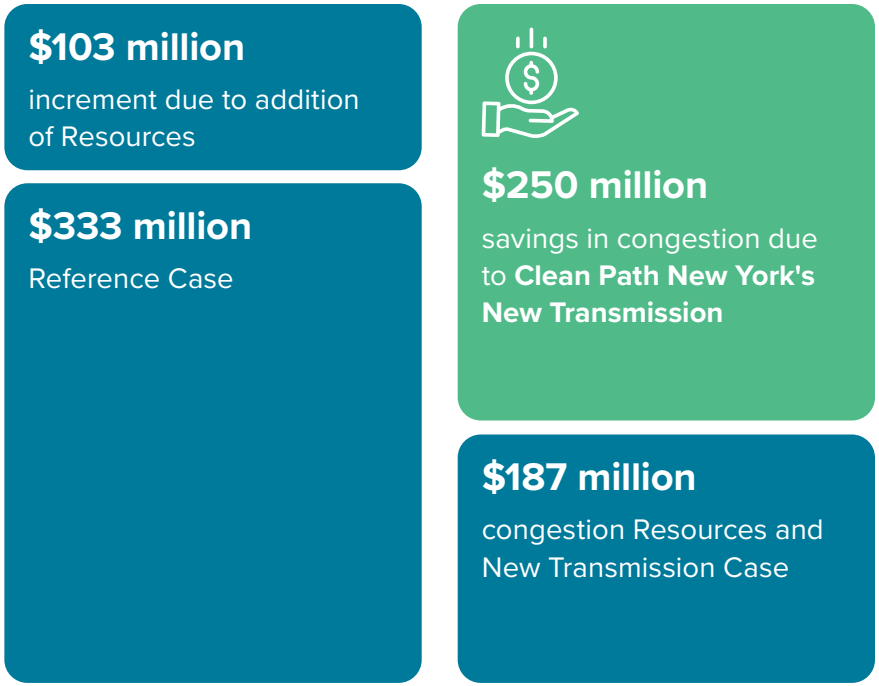


Figure 14-6. Clean Path New York 2030 congestion impact over Total East interface.

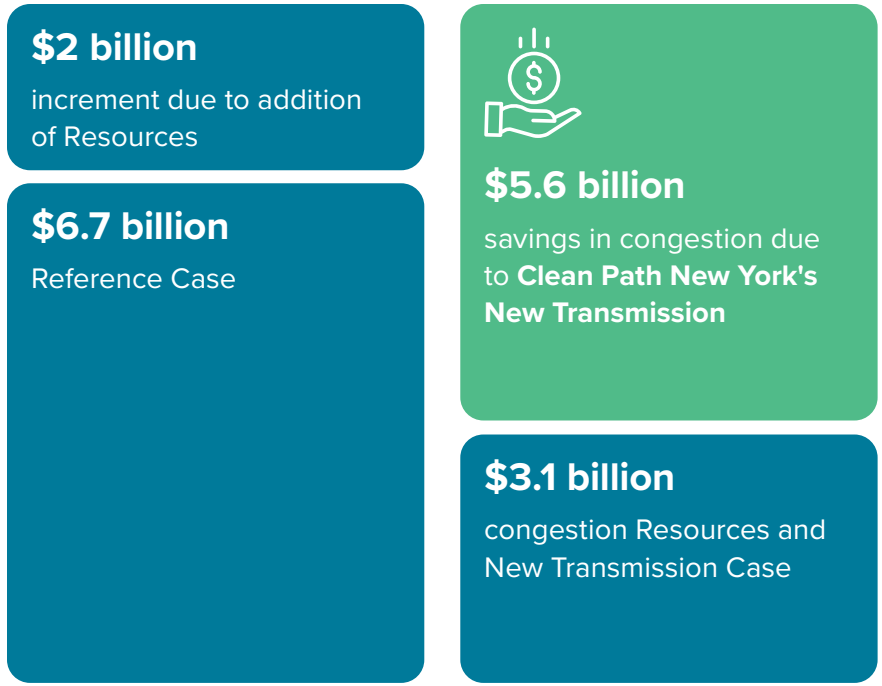


Figure 14-7. Clean Path New York 25-year congestion impact over Total East interface.

Renewables curtailment

As with congestion, curtailment of renewable generation increases over time, as a greater proportion of the state's generation comes from renewable resources. In the 2025 Reference Case, renewables are curtailed around 0.1% of the time. In the 2025 Reference Case, curtailment increases a hundredfold, to 10%. When renewables are curtailed, they cannot be delivered to customers. Additional energy must be generated to serve those customers, often from less efficient generating sources.

In 2030 the Resources Only Case increases renewables curtailment by 3.6 TWh, bringing renewable curtailment in the state to 7.7%. Again, this 2030 Resources Only Case with no incremental transmission to bring the power downstate represents the level of curtailment the state should expect to see if the 70% renewable by 2030 goal is met and no additional transmission is added to the system. Adding the New Transmission to this case (Resources and New Transmission Case) reduces the state's renewable curtailment by 25%, from 7.7% to 5.8%, and allows for an additional 2.9 TWh of renewable generation to be dispatched.

In 2035, when the state is seeing a full 10% of its renewable generation curtailed in the Resources Only Case, the Resources and New Transmission Case reduces curtailments to 8.6% and allows an additional 2.05 TWh of renewables to be dispatched onto the system.

Adding the Clean Path New York portfolio of Resources and New Transmission to the reference case reduces renewable curtailment allowing additional generation to be dispatched.

↑ 2.9 TWh
Increases renewables flow by 25% by 2030

↑ 2.05 TWh
Increases renewables flow by 8.6% by 2035

Capacity market benefits

At present, as discussed in more details under Section 5, the NYISO does not have rules to allow Clean Path New York New Transmission and other intrastate HVDC transmission projects to secure capacity rights. However, Clean Path New York can still provide significant capacity benefits to customers in Zone J. As the percentage of New York State's energy from renewables increases, the installed capacity required to meet the state's resource adequacy criterion will increase as well. Clean Path New York is expected to have a significant positive impact on the Zone J Locational Minimum Installed Capacity Requirement (LCR).

In 2020, the New York State Reliability Council looked at the impacts of large volumes of intermittent renewables on the state's reliability criteria.[2] The Council modeled a hypothetical scenario with 12,000 MW of renewable generation, almost 4,500 MW located in New York City and Long Island. Under such a scenario, the state's Installed Reserve Margin increased to 142.9% from a baseline of 118.6%. The impact on the LCRs in downstate New York was also significant. New York City's LCR increased to 97.9% from a baseline of 83.9%.

These increases in LCR have a direct impact on customers, who will have to purchase additional capacity due to higher LCRs. It is also important to note that, while 12,000 MW is a significant amount of generation, New York will have to install about twice as many renewables to achieve its goal of meeting 70% of its energy needs from renewables by 2030.

[2] https://nysrc.org/PDF/MeetingMaterial/ECMeetingMaterial/EC%20Agenda%20252/4.2a%20HR%20White%20Paper%20-%20Clean%20Final%20Draft-Attachment%204.2a.pdf

Figure 14-8. Ravenswood Generating Station in Queens.

We can confidently claim that Clean Path New York New Transmission connecting Zone J and upstate New York can help mitigate this increase. When the New Transmission goes into service, the incremental transmission capability will measurably lower the Zone J LCR. This benefits the state directly, by reducing overall capacity costs to Zone J ratepayers, and indirectly, by decreasing the volume of in-city generation that must remain in service to meet the LCR.

Post Tier-4 contract benefits

As time passes, the system benefits of Clean Path New York will allow for change in the overall electric system. Lower LCRs will allow for the retirement of in-city fossil fuel generation, and reduced congestion and renewable curtailment throughout the state will allow for the cost-effective development of additional in-state renewables. The state's electrical grid will evolve to incorporate and rely on the transmission capability provided by Clean Path New York.

As a project fully integrated with the New York Control Area, Clean Plath New York will continue to be a transmission resource for the state even after any Tier 4 REC contract with NYSERDA has ended. Practically, the owners of any transmission projects connected into Zone J from outside the New York Control Area could elect to stop sending power into Zone J following the conclusion of a Tier 4 contract. Clean Path New York, however, will continue to be a transmission asset controlled by the NYISO to allow for efficient and reliable dispatch of the New York state electric grid.

While a revenue mechanism to ensure high-quality operation and maintenance of the transmission would need to be determined, the project would be largely depreciated, meaning that New York State ratepayers could benefit from its continued operation for much less money than it would cost to build additional transmission.

Peak coincidence

As an internal controllable HVDC line operated by the NYISO, Clean Path New York will provide the New York system operator with significant operational flexibility. Clean Path New York will be dispatched by NYISO, which can use the line to respond to contingencies and other system emergencies. Dispatch by the NYISO will also ensure that the operation of Clean Path New York complements peak coincidence and other market conditions in Zone J.

The generation resources will facilitate the NYISO's dispatch efforts by balancing flows across capability periods. Of the 7,496,113 MWh delivered by Clean Path New York, 3,732,462 MWh (49.8%) will be delivered in the summer capability period and 3,763,650 MWh (50.2%) will be delivered in the winter capability period.

Clean Path New York will have the ability to flow from south to north if NYISO dispatch and market conditions were to dictate this dispatch. Such conditions might include full-capacity generation of 9 GW of offshore wind during a period of low load in Zones J and K. If the line were to flow south, it would allow for this offshore wind energy to be delivered to upstate New York customers, rather than being curtailed or exported to out-of-state markets.

The proposed New Transmission technology is capable of automatic power changes in the event of major disturbances that give a large change in the AC network impedance. This reduces stresses of remaining AC transmission lines in certain contingency conditions.

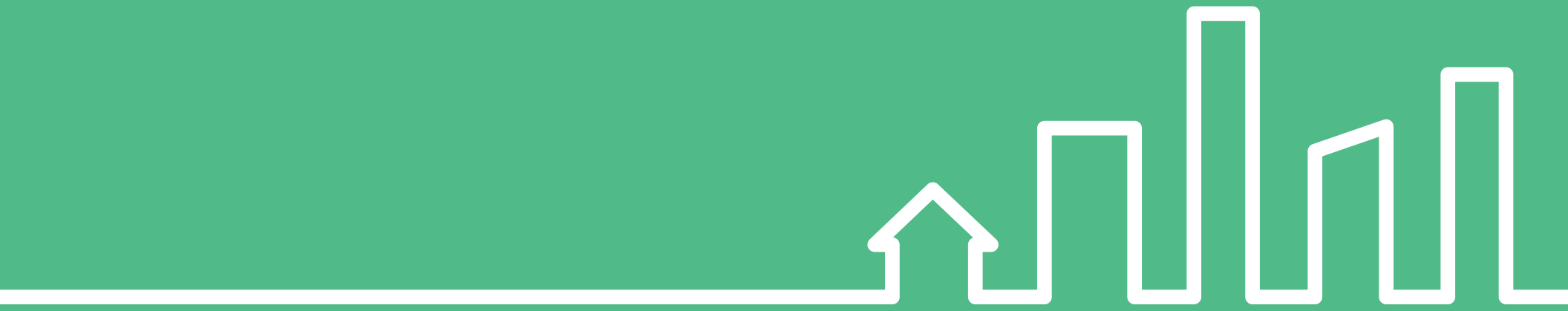
14.2. P(50) delivery schedule of aggregate Zone J energy deliveries

Clean Path New York offered portfolio of Resources and New Transmission will meet both the summer and winter minimum deliverability requirement as defined in the RFP.

We are submitting under Appendix 21, and also uploading as an Excel workbook, the P(50) 8760 schedule of aggregate Zone J energy deliveries to supplement the 12 x 24 delivery schedule provided in the Offer Data Form, Delivery Profile worksheet. The 8760 delivery schedule represents the aggregate of all proposed Resources into the Zone J Delivery Point with and without Blenheim-Gilboa storage.

Section 15

Communities engagement plan



15 Communities engagement plan

15.1. Introduction

Clean Path New York proposes this Communities Engagement Plan (CEP) as a companion to Section 16, Incremental Economic Benefits Plan, and as a starting point for consultation and collaboration with NYSERDA on developing and implementing an inclusive and equitable plan that achieves the outcomes envisioned by the Climate Leadership and Community Protection Act (CLCPA).

Robust community engagement is vital to any successful project. Clean Path New York will develop a comprehensive CEP that will provide key stakeholders, interested parties, and the public at large with project information throughout development, permitting, construction, and operation. Project representatives will proceed with proactive outreach to public and private community stakeholders. Clean Path New York encourages public input as a way to share information, develop necessary relationships to ensure appropriate project implementation and improve upon existing ideas about how to incorporate communities into the new green economy.

Clean Path New York is proposing to construct approximately 2,000 MW of new solar generation throughout upstate and western New York; approximately 1,800 MW of new wind generation, also in upstate and western New York, and a new 1,300 MW underground and underwater HVDC transmission line beginning in Delhi, NY and terminating in Queens, NY.

Communities surrounding the generation projects and along the proposed transmission line will have the opportunity to have their voices heard and to be partners along the way. Clean Path New York will emphasize engagement with Disadvantaged Communities and at-risk populations to ensure that they can equally benefit from opportunities the project will provide.

The goals of this CEP are as follows:

1. Inform and educate stakeholders about the project
2. Advise stakeholders and the public on how to contact Clean Path New York with questions regarding the project
3. Provide transparency between stakeholders and Clean Path New York throughout the Article VII, Article 10, and Office of Renewable Energy Siting (ORES) processes
4. Solicit and consider stakeholder and public input to minimize impacts
5. Demonstrate a commitment to the community outreach process
6. Execute all identified mandatory outreach under the Article VII, Article 10, and ORES processes

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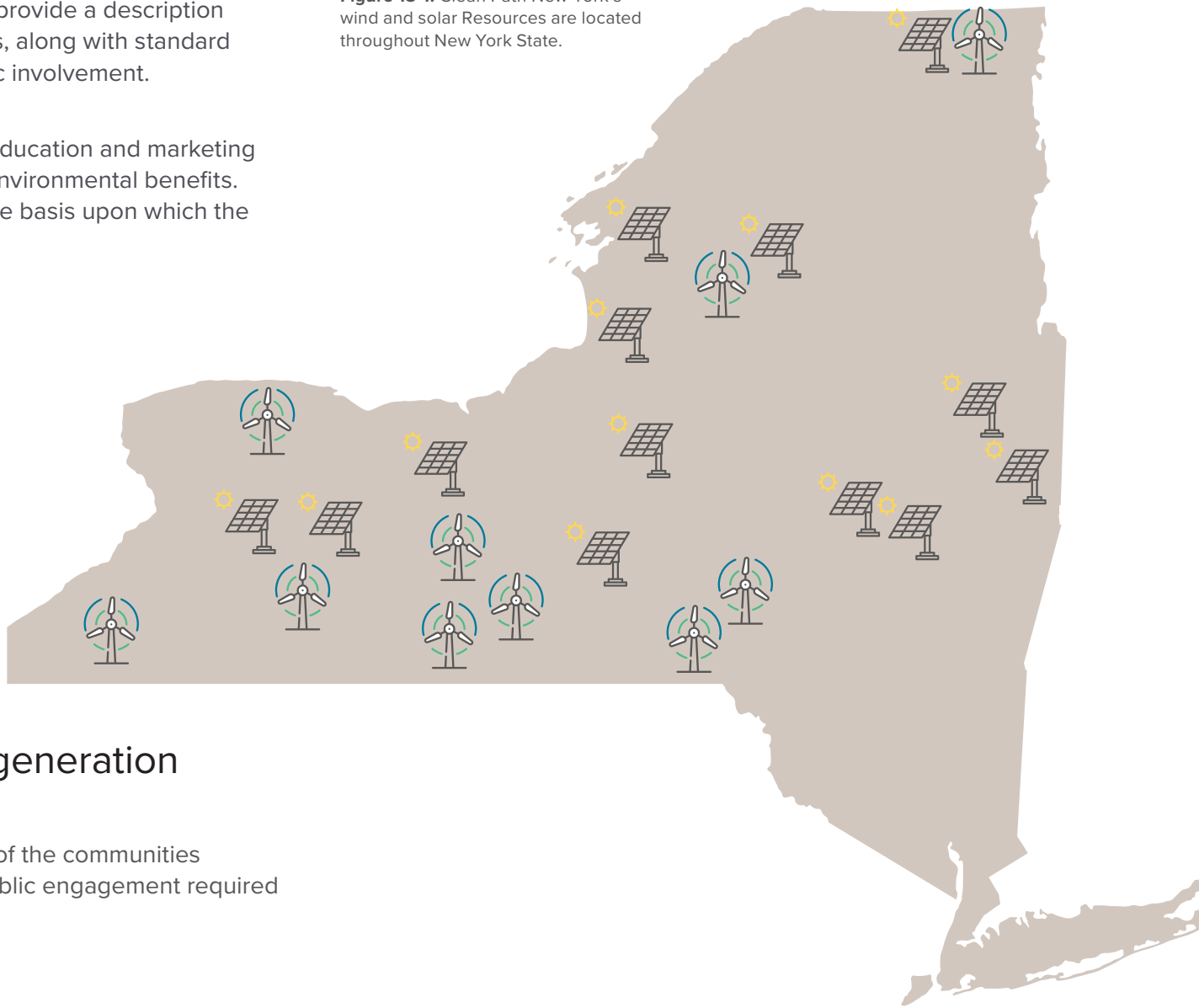
To aid the NYSERDA review team with their evaluation of this CEP, Clean Path New York has developed the following structure:

- Part 15.2. Communities hosting the generation Resources.
- Part 15.3. Communities hosting the New Transmission infrastructure.
  - In both cases, Clean Path New York will provide a description and analysis of the affected communities, along with standard permitting requirements related to public involvement.
- Part 15.4. Engagement strategy
  - In this CEP we will summarize targeted education and marketing strategies, and *inherent* economic and environmental benefits. These *inherent* economic benefits are the basis upon which the *incremental* economic benefits are founded and presented in Section 16.
  - As Category 3 Benefits, these initiatives are quantified and described in further detail in the Section 16 Incremental Economic Benefits Plan.
- Part 15.5. Alignment with the CLCPA.
- Part 15.6. Proposed Progress Reports to NYSERDA.

Description and analysis of communities hosting generation Resources

Figure 15-1 below depicts the location of the various solar and wind Resources throughout the state.

Figure 15-1. Clean Path New York's wind and solar Resources are located throughout New York State.



15.2. Communities hosting generation resources

This section provides a detailed description of the communities hosting the generation resources and the public engagement required in the permitting process.

The population of each county and town that hosts a Resource facility is detailed in Table 15-1 below. The population data was derived from the 2010 US Census. More recent data sources were used where available.

Developer	Project name	Capacity (MW-AC)	Technology	County	County population	Town	Town population
Invenergy	Alle-Catt	142	Wind	Allegany	48,946	Centerville	822
				Allegany	—	Rushford	1,111
		157	Wind	Cattaraugus	80,317	Freedom	2,299
				Cattaraugus	—	Farmersville	1,053
		40	Wind	Wyoming	42,155	Arcade	4,118
Invenergy	Bull Run Wind	449	Wind	Clinton	82,128	Altona	2,900
				Clinton	—	Ellenburg	1,827
				Clinton	—	Clinton	1,830
				Clinton	—	Mooers	12,958
Invenergy	Canisteo	290	Wind	Steuben	98,990	Cameron	926
				Steuben	—	Canisteo	2,341
				Steuben	—	Jasper	1,424
				Steuben	—	Greenwood	801
				Steuben	—	Troupsburg	1,267
				Steuben	—	West Union	300
				Steuben	—	Hornellsville	3,991
Invenergy	Horseshoe	15	Solar	Monroe	741,770	Rush	3,478
		165	Solar	Livingston	62,914	Caledonia	2,078
Invenergy	Number Three	105	Wind	Lewis	26,572	Harrisburg	428
				Lewis	—	Lowville	3,233
Invenergy	Verona 1	200	Solar	Oneida	228,671	Verona	1,024
Invenergy	Verona 2	150	Solar	Oneida	—	Verona	—
Invenergy	Bull Run Solar	170	Solar	Clinton	82,128	Clinton	1,830
				Clinton	—	Ellenburg	1,827
				Clinton	—	Mooers	3,589

Table 15-1. The population of each town and county where a Resource is located.

Developer	Project name	Capacity (MW-AC)	Technology	County	County population	Town	Town population
Invenergy	Wintergreen	75	Solar	Montgomery	49,221	Canajoharie	1,905
				Montgomery	—	Root	1,677
Invenergy	Taproot	205	Solar	Montgomery	—	Charleston	1,373
				Montgomery	—	Glen	2,507
Invenergy	Seventy-Seven (Sheldon)	100	Solar	Wyoming	42,155	Sheldon	2,409
Invenergy	Orangeville	75	Solar	Wyoming	42,155	Orangeville	1,308
Invenergy	Twinleaf	75	Solar	Lewis	26,572	Croghan	3,033
Northland	Bluestone	124	Wind	Broome	190,488	Windsor	999
				Broome	—	Sanford	2,305
Northland	High Bridge	100	Wind	Chenango	47,909	Guilford	2,922
RWE	Baron Winds	238	Wind	Steuben	98,990	Cohocton	2,500
				Steuben	—	Dansville	1,800
				Steuben	—	Fremont	1,000
				Steuben	—	Wayland	4,000
Northland	Ball Hill	100	Wind	Chautauqua	134,905	Villenova	1,100
Apex	Heritage	147	Wind	Orleans	42,883	Barre	2,000
Terra-Gen	Prattsburgh Wind Farm	145	Wind	Steuben	98,990	Prattsburgh	2,000
				Steuben	—	Wheeler	1,200
				Steuben	—	Avoca	2,100
				Steuben	—	Howard	1,400
				Steuben	—	Troupsburg	2,500
Boralex	Greens Corners (NY38)	120	Solar	Jefferson	116,229	Watertown	27,000
				Jefferson	—	Hounsfield	3,500

Table 15-1 (continued). The population of each town and county where a Resource is located.

Table 15-2 below provides a list of the affected school districts.

Generation school districts	
Alle-Catt	Cuba Rushford Central School District
	Yorkshire- Pioneer Central Schools
	Franklinville Central School District
	Fillmore Central School
Bull Run Wind	Northern Adirondack Central School District
	Northeastern Clinton School District
Canisteo	Addison Central School District
	Canisteo-Greenwood Central School District
	Hornell City School District
	Jasper-Troupsburg Central School District
Horseshoe	Avon Central School Dsitrict
	Caledonia-Mumford Central School District
Number Three	Lowville Academy and Central School
	Copenhagen Central School District
Verona 1	Vernon-Verona-Sherrill Central Schools
	Oneida City School District
Verona 2	Vernon-Verona-Sherrill Central Schools
Bull Run Solar	Northern Adirondack Central School District
	Northeastern Clinton School District
Wintergreen	Canajoharie Central School District
Taproot	Canajoharie Central School District
	Fonda-Fultonville Central School Dsitrict
Seventy-Seven	Yorkshire-Pioneer Central School District
	Attica Central School District
Orangeville	Warsaw Central School District
Twinleaf	Beaver River Central School District
Bluestone	Deposit Central School District
	Windsor Central School District
High Bridge	Bainbridge-Guildford Central Schools
	Norwich Central Schools
	Gilbertsville-Mt Upton Central School District
Baron	Wayland-Cohocton Central Schools
	Alfred-Almond Central Schools
	Arkport Central Schools
	Canisteo-Greenwood Central Schools
	Avoca Central Schools
	Hornell City School District
Heritage	Albion Central School District
Ball Hill Wind	Forestville Central School District
	Pine Valley Central Junior/Senior High School
Prattsburgh Wind	Prattsburgh Central School district
	Onondaga Central School District
	Avoca Central Schools
Greens Corners	Watertown City School District
	South Jefferson Central Schools
	Sackets Harbor Central Schools

Table 15-2. A list of school districts affected by a nearby Resource.

Potential Environmental Justice Areas (PEJA) in proximity to the generation Resources are depicted in Figure 15-2 below. The PEJAs indicated are based on data provided by the New York State Department of Environmental Conservation Office of Environmental Justice.[1]

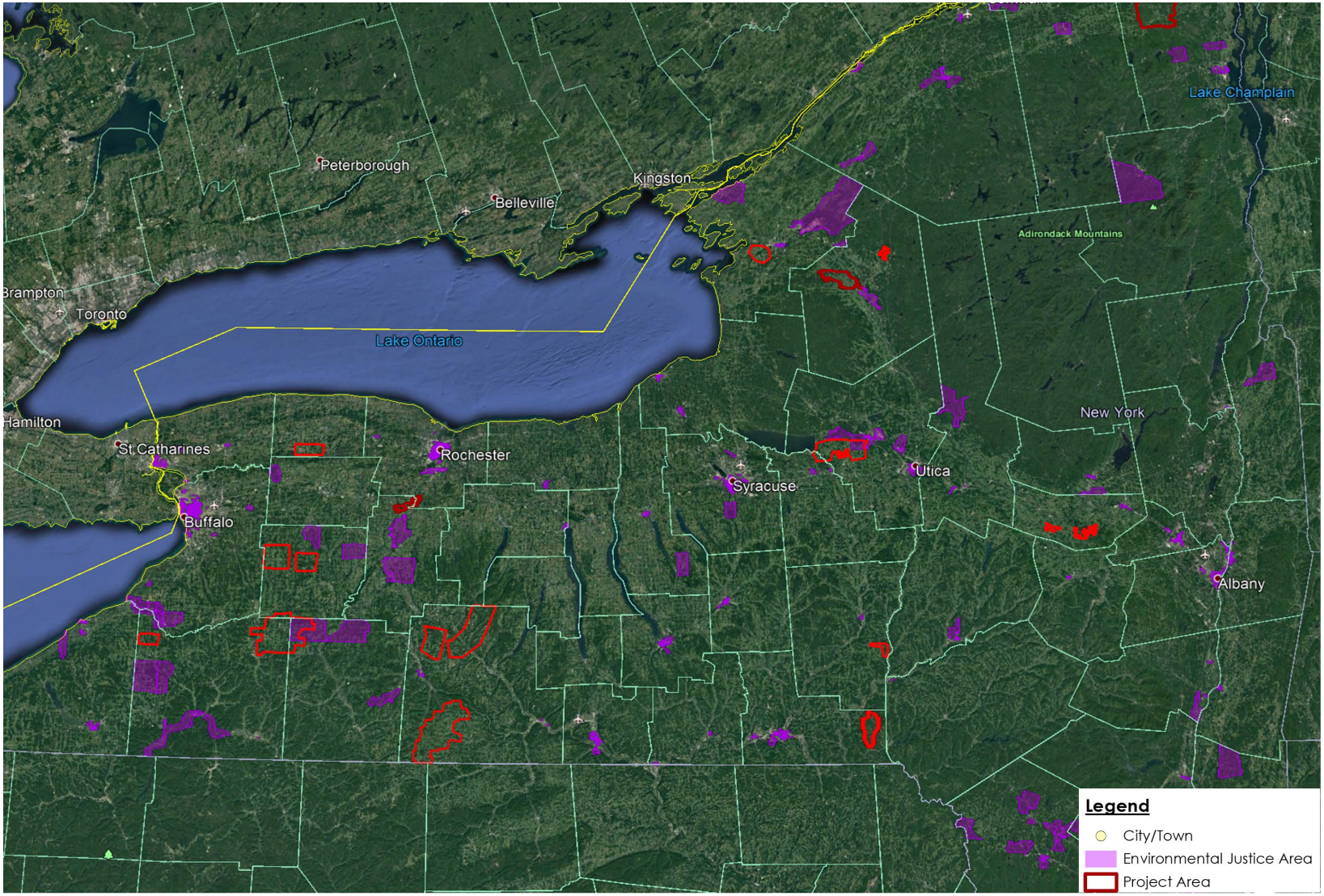


Figure 15-2. PJEA areas in New York State.

[1] PJEA source: https://www.dec.ny.gov/pubs/103459.html

A map of New York State Opportunity Zones is provided in Figure 15-3 below.

Additional demographic data of each community hosting the generation Resources is provided in Appendix 23.

As the definition of disadvantaged communities comes into focus, the Clean Path New York team will work with NYSERDA to ensure that the most recent low-income census tracks, potential Environmental Justice Areas, and New York Opportunity Zones hosting or in proximity to the project are given priority regarding the Incremental Economic Benefits Plan of the project, in line with the objectives of the CLCPA..

Article 10 and ORES process

As detailed in Section 11, Permitting Plan, many of these generation resources are in the late stages of development and were previously subject to New York State's Article 10 Law administered by the New York State Public Service Commission. The balance of the resources will participate in the new process established by the Accelerated Renewable Energy Growth and Community Benefit Act. The process is administered through the new Office of Renewable Energy Siting (ORES), which is housed within the New York State Department of State. Both permitting processes allow for public involvement, and Clean Path New York is committed to working with the affected communities to minimize impact throughout the duration of the project.

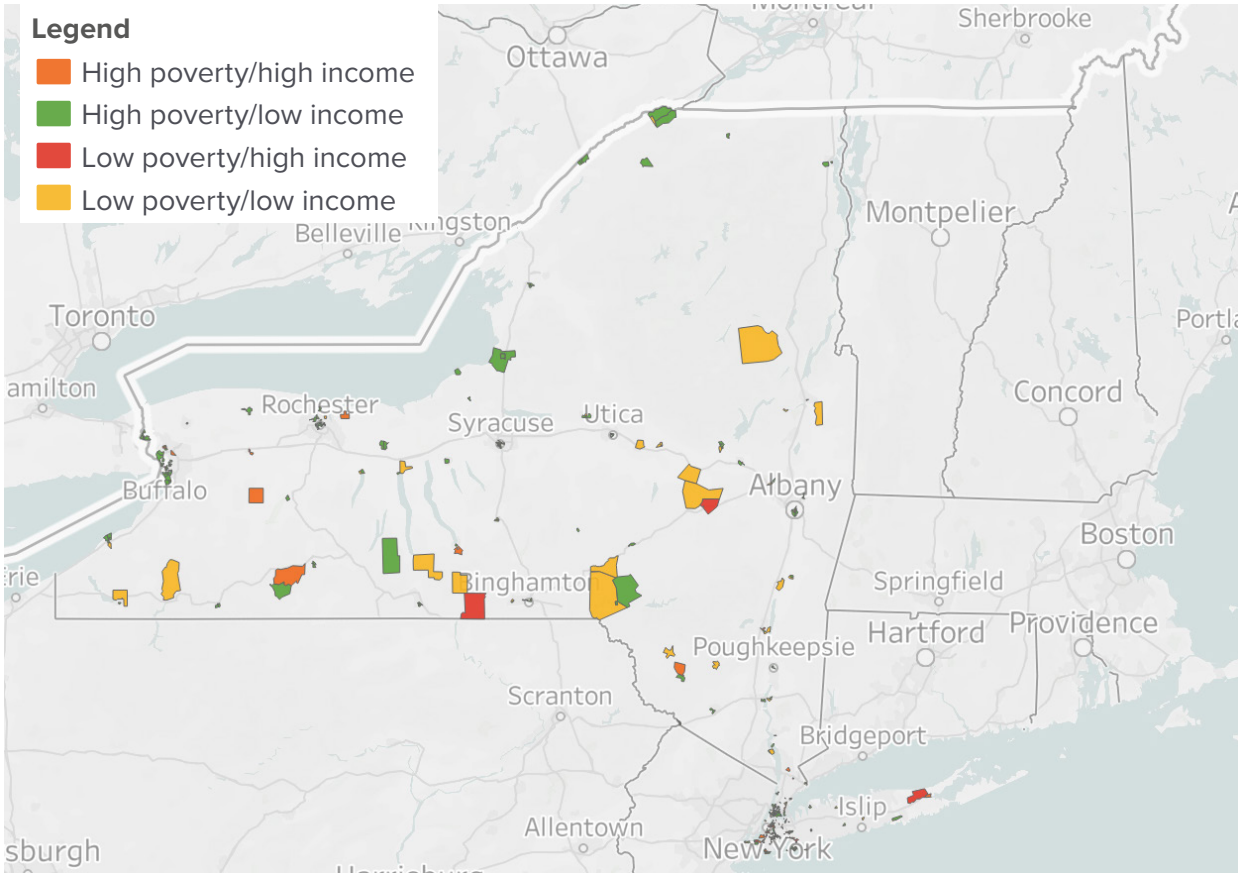


Figure 15-3. Map of New York State opportunity zones by criteria.

The Department of Public Service (DPS) provides guidance on preparing a Public Involvement Plan for all Article 10 applicants. An excerpt is provided below:

> Article 10 of the Public Service Law empowers the State of New York Board on Electric Generation Siting and the Environment (Siting Board) to issue Certificates of Environmental Compatibility and Public Need (Certificate) authorizing the construction of major electric generating facilities. On July 17, 2012, the Siting Board adopted regulations to implement Article 10. The regulations include requirements that are intended to "ensure that the Board is aware of the concerns of stakeholders" and to encourage stakeholder participation throughout the certification process.
>
> One of the key element [sic] of the regulations is the requirement that applicants develop and implement a Public Involvement Program (PIP). Section 1000.4 of the regulations specifies that the program must include:
>
> 1. consultation with the affected agencies and other stakeholders;
> 2. pre-application activities to encourage stakeholders to participate at the earliest opportunity;
> 3. activities designed to educate the public as to the specific proposal and the Article 10 review process, including the availability of funding for municipal and local parties;
> 4. the establishment of a website to disseminate information to the public;
> 5. notifications; and
> 6. activities designed to encourage participation by stakeholders in the certification and compliance process.
>
> Potential applicants should note that a PIP should be designed to facilitate public participation at all phases of the Article 10 process, from pre-application through certification and compliance.
>
> The regulations require an applicant to submit a written plan describing its proposed program to DPS for review at least 150 days prior to submission of a preliminary scoping statement. DPS Staff will provide specific comments to the applicant if it finds the proposed plan is inadequate. This guidance memorandum offers suggestions that potential applicants should consider in developing PIP plans. Every project and every community will have its own characteristics and public information needs, and DPS encourages potential applicants to tailor their proposals accordingly.[2]

The Accelerated Renewable Energy Growth and Community Benefit Act requires ORES to promulgate regulations within one year of its effective date, which was March 3, 2021. These new regulations include specific requirements regarding community engagement:

> **§900-1.3 Pre-application procedures**
>
> *(b)Meeting with community members.* No less than sixty (60) days before the date on which an applicant files an application, and following the meeting(s) held pursuant to subdivision (a) of this section, the applicant shall conduct at least one meeting for community members who may be adversely impacted by the siting of the facility. The purpose of the meeting is to educate the public about the proposed project, including the anticipated application date and information regarding the future availability of local agency account funds, citing to the requirements set forth in Subpart 900-5 of this Part, including, but not limited to, the requirement that any local agency or potential community intervenor shall submit a request for initial funding within thirty (30) days of the date of application filing and that such request be made to the Office of Renewable Energy Siting, at the Albany, New York office, Attention: Request for Local Agency Account Funding. The applicant shall provide notice of the meeting no sooner than thirty (30) days and no later than fourteen (14) days prior to the meeting in accordance with the publication requirements of section 900-1.6(c) of this Part.

[2] https://www3.dps.ny.gov/W/PSCWeb.nsf/96f0fec0b45a3c6485257688006a701a/6fd11ce8db088a2785257e200054a99b/$FILE/PIP%20Guidance%20Document%202.8.13.pdf

(c) The applicant shall provide as part of the application copies of transcripts (if any), presentation materials, and a summary of questions raised and responses provided during the pre-application meeting(s). In the event the applicant is unable to secure a meeting with a municipality, the application shall contain a detailed explanation of all of applicant's best efforts and reasonable attempts to secure such meeting, including, but not limited to, all written communications between the applicant and the municipality.

(d) At least sixty (60) days before the date an applicant files an application, the applicant shall publish a notice of intent to file an application in accordance with the publication requirements of section 900-1.6(c) of this Part and provide a copy thereof to the Office, and to all local agencies in attendance at the pre-application meeting. The notice of intent to file an application may be included as part of the notice requirement of subdivision (b) of this section. The notice shall contain, at a minimum, the following:

(1) A brief summary of the proposed facility and location;

(2) A designated contact person, with telephone number, email address and mailing address, from whom information will be available on a going-forward basis, as well as a proposed project website to disseminate information to the public; and

(3) A statement of future availability of local agency account funds, citing to the requirements set forth in Subpart 900-5 of this Part, including, but not limited to, the requirement that any local agency or potential community intervenor shall submit a request for initial funding within thirty (30) days of the date of application filing and that such request be made to the Office of Renewable Energy Siting, at the Albany, New York office, Attention: Request for Local Agency Account Funding.[3]

Clean Path New York has developed this CEP with these Article 10 and ORES public involvement guidelines and requirements in mind.

15.3. Communities hosting New Transmission resources

This section provides a detailed description of the communities hosting the New Transmission facility of Clean Path New York and the public engagement required in the permitting process.

Description and analysis of communities hosting New Transmission infrastructure

Figure 15-4 below depicts the location of the new HVDC transmission line and facilities:

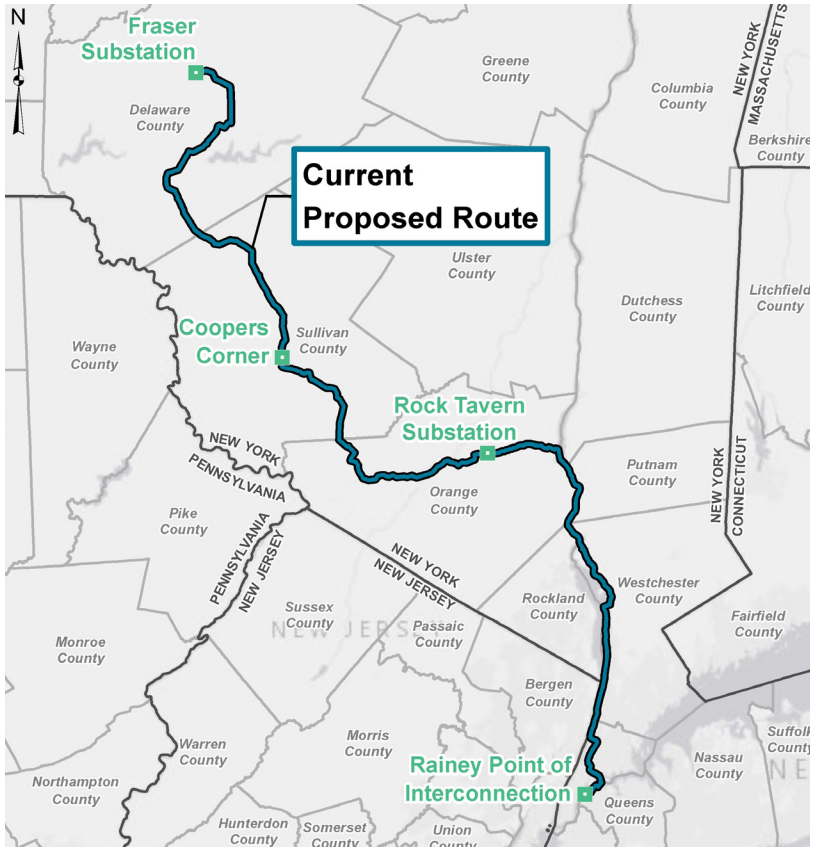


Figure 15-4. Proposed New Transmission route overview map.

[3] https://ores.ny.gov/system/files/documents/2021/03/chapter-xviii-title-19-of-nycrr-part-900-subparts-900-1-through-900-15.pdf

The 10 counties and 54 municipalities that host the New Transmission facility are detailed in Table 15-3 below. The population data was derived from the 2010 US Census. More recent data sources were used where available.

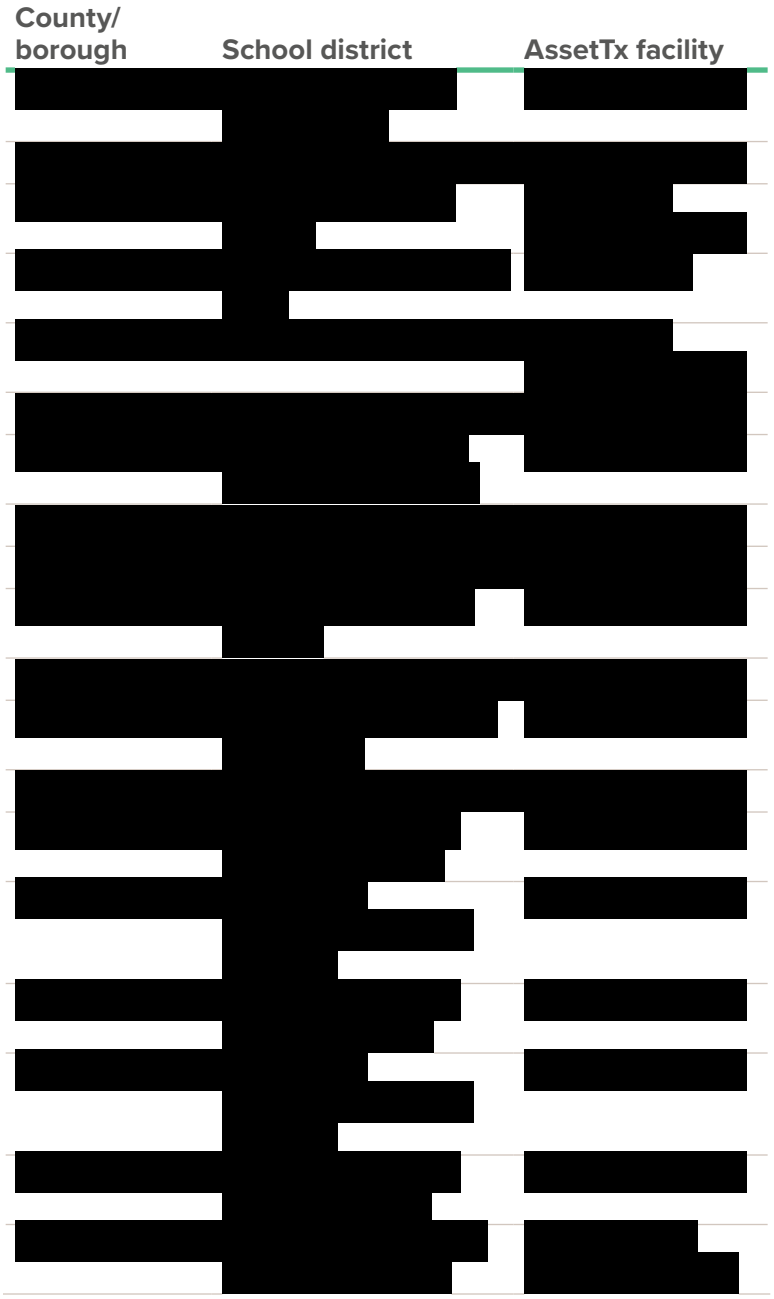
County	County pop.	Municipality	Town pop.	EJ community within town?
[redacted]				

Table 15-3. A list of towns and counties that host the New Transmission.

Table 15-4 below, based on public data, provides a list of the 38 school districts in areas hosting the New Transmission resource. This list is preliminary and subject to any changes to the proposed route.

County/ borough	School district	AssetTx facility

Table 15-4. A list of school districts near the New Transmission line.



Potential Environmental Justice Areas (PEJA) hosting and in proximity to the New Transmission facility resources are depicted in Figures 15-5 through 15-10 below. The PEJAs indicated are based on data provided by the New York State Department of Environmental Conservation Office of Environmental Justice.[4]

Figure 15-5. Potential EJ area map #1.

Figure 15-6. Potential EJ area map #2.

Figure 15-7. Potential EJ area map #3.

[4] PJEA source: https://www.dec.ny.gov/pubs/103459.html

Figure 15-8. Potential EJ area map #4.

Figure 15-9. Potential EJ area map #5.

Figure 15-10. Potential EJ area map #6.

Maps of New York State and New York City Opportunity Zones are provided below in Figures 15-11 and 15-12 below.

Additional demographic data on each community hosting the New Transmission resource is provided in Appendix 24.

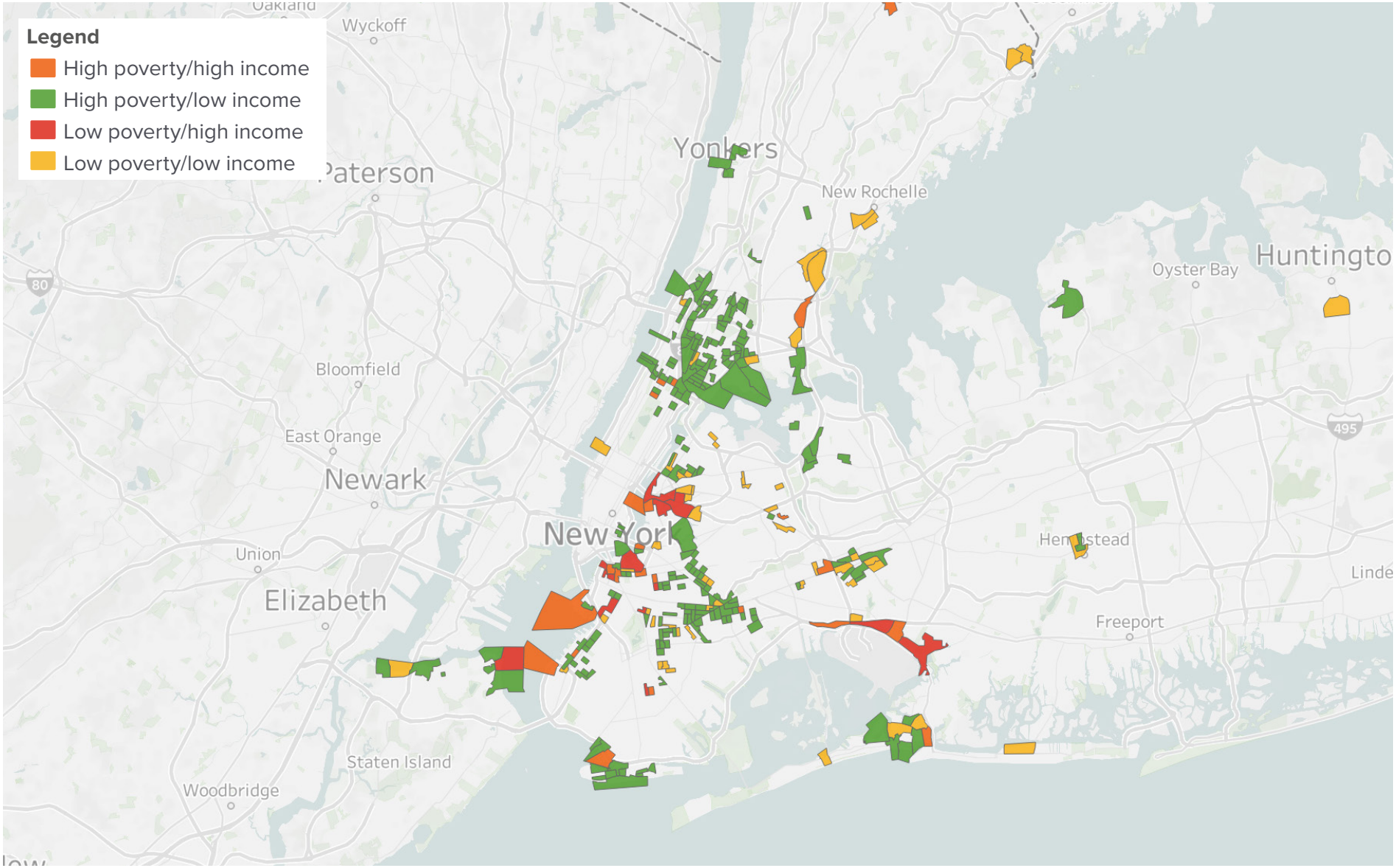


Figure 15-11. New York State Opportunity Zones.

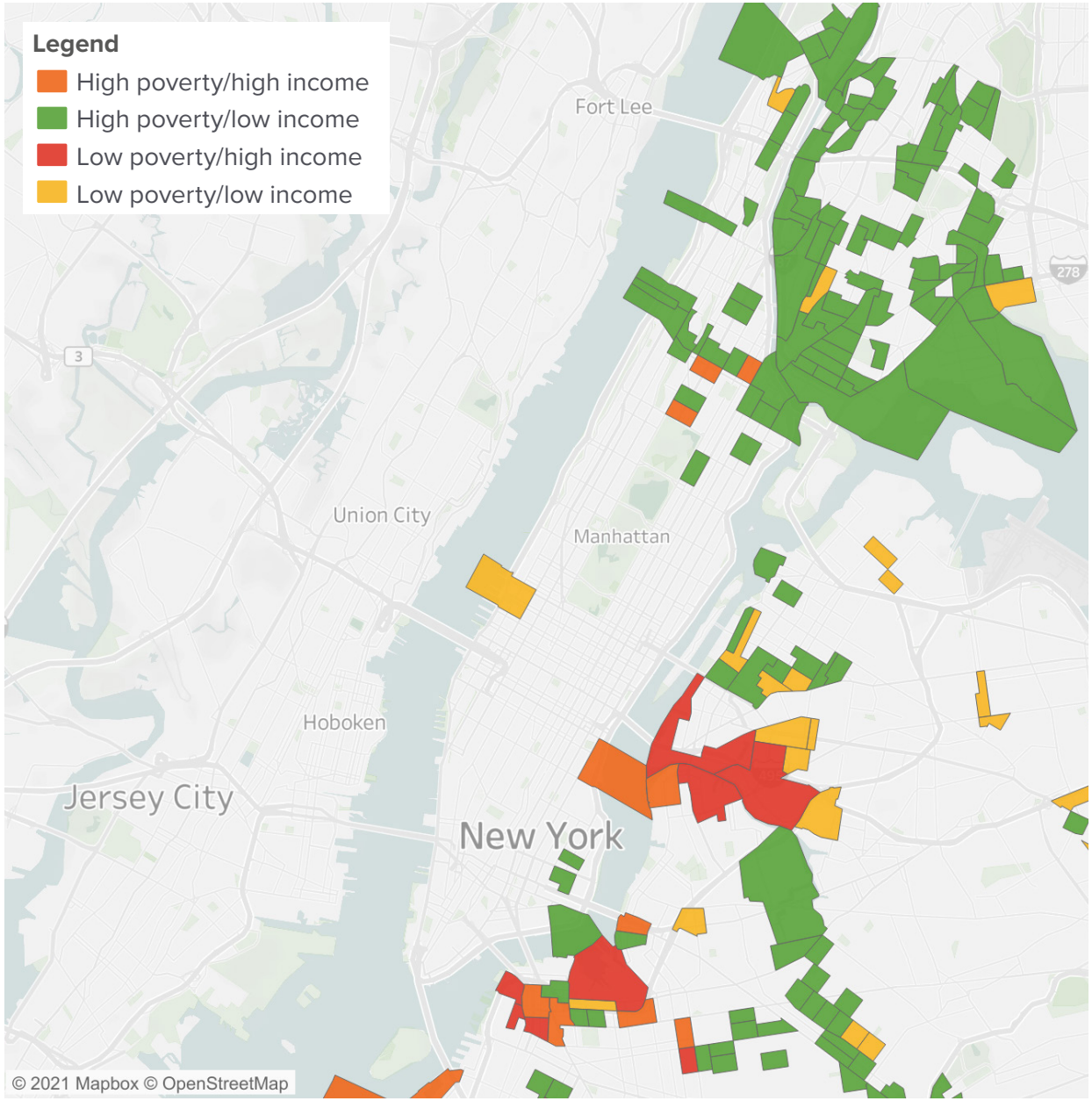


Figure 15-12. New York City Opportunity Zones.

As the definition of disadvantaged communities comes into focus, the Clean Path New York team will work with NYSERDA to ensure that the most recent low-income census tracks, potential Environmental Justice Areas, and New York Opportunity Zones hosting or in proximity to the project are given priority regarding the Incremental Economic Benefits Plan of the project, in line with the objectives of the CLCPA.

Article VII process

As detailed in Section 11, Permitting Plan, the transmission infrastructure of the project is subject to the permitting requirements of Article VII of the New York State Public Service Law and must receive a Certificate of Environmental Compatibility and Public Need from the New York State Public Service Commission (PSC) prior to construction commencement. The Article VII process allows for public involvement, and Clean Path New York is committed to working with the affected communities to minimize impact throughout the duration of the project.

Guidelines provided by the PSC regarding public involvement:

> The Commission strongly encourages applicants to voluntarily communicate with the public early in the project's planning phase, as well as during all subsequent phases of the Article VII process. A public involvement program is made up of a variety of public activities to achieve different objectives during the course of the Article VII process.
>
> - To first alert the public to its proposal, an applicant may choose to conduct an awareness campaign using fliers, print and broadcast media, information kiosks, bill stuffers, brochures, videos or displays.
> - To explain its proposal to the public, an applicant may choose to hold open public forums, tours, or one-on-one discussions or to offer speakers to established groups that meet regularly.
> - To collect input and provide feedback, an applicant may choose to hold focus groups or public meetings, or use surveys, questionnaires, public comment cards, direct mailings or an Internet Website.
> - To establish a presence in the community, an applicant may choose to open a field office, establish a toll-free telephone line or a community advisory group.
> - To keep the public informed and provide information and updates, an applicant may choose to use a pre-recorded telephone line, a newsletter, or local radio or public access television, or to hold briefings or issue technical reports or fact sheets.
>
> Regardless of which tools are used, an applicant should identify its stakeholders and develop a public involvement plan with techniques and tools to communicate with the community.[5]

Clean Path New York has developed this CEP with the Article VII, Article 10, and ORES public involvement processes in mind. Clean Path New York intends to go above and beyond the recommendations to ensure an equitable outcome for all New York stakeholders.

15.4. Engagement strategy

Clean Path New York's goal is to build support, respond to questions or concerns, and provide opportunities to build community equity in the project. This section presents Clean Path New York's overall engagement strategy and the community benefits common to both the generation and transmission aspects of the project. A summary of these benefits is provided in this CEP , while detailed descriptions and quantification of the eligible Category 1-3 benefits and programs are provided in Section 16, Incremental Benefits Plan.

The Clean Path New York team comprises both public and private entities that have excellent existing relationships throughout New York, and along the proposed transmission route and at the respective generation sites. Utilizing the existing reputations and relationships of NYPA and Invenergy, and expanding their reach, the team will coordinate several methods of outreach.

NYPA and the Forward Power team are deeply experienced with direct outreach to residents and other stakeholders in the context of new transmission development. For its generation projects, Invenergy uses a range of tools from direct mailings to open houses and virtual events. These outreach campaigns can last years and cover all phases of project implementation and operation.

[5] https://www3.dps.ny.gov/W/PSCWeb.nsf/96f0fec0b45a3c6485257688006a701a/a021e67e05b99ead85257687006f393b/$FILE/19336071.pdf/Article%20VII%20Guide%20Web%2011-17%20Final.pdf - Page 6.

Outreach to Environmental Justice (EJ) communities will be prioritized. The Clean Path New York project will seek to fund and replicate key aspects of NYPA's dedicated EJ program, which has been in existence since 2001.

In 2016, NYPA's EJ team embarked on a listening tour that included extensive conversations with community-based organizations, EJ advocates, local schools and elected representatives. These engagements culminated in a revamped EJ program for the benefit of and informed by the underserved communities. A cornerstone of the program is a fully integrated, enterprise-wide plan that aligns with NYPA's strategic initiatives, State energy policy, and the environmental concerns of communities. NYPA's EJ staff works side by side with neighbors at community fairs, neighborhood beautification projects, and back to school events across the state.

These opportunities help Clean Path New York develop a deeper, one-on-one understanding of the concerns and challenges of those who live in EJ communities. The NYPA EJ team is committed to developing and maintaining relationships with Clean Path New York's statewide stakeholders. NYPA's EJ programs are designed to meet the specific challenges of local communities and often include workshops and engagements on weekends, evenings, and public holidays to best accommodate community members. Transportation can be a barrier to participation, so the EJ team often travels to deliver workshops and programing at local schools or community centers. NYPA's EJ outreach program and methods will serve as a model to be utilized by Clean Path New York throughout the project's footprint.

Making a meaningful impact in this space means working at the grassroots level and building relationships with the communities Clean Path New York both impacts and serves. Clean Path New York will utilize an investment model that leverages the experience and relationships of its partnership's regional offices to listen to those communities, understand the issues they are facing, and make informed decisions. As fixtures in the communities they serve, the project's regional offices will identify and respond to local needs by interacting with community boards, political leaders, and strategic partners. All these stakeholders will play an essential role in the success of Clean Path New York and proposed community outreach programs.

Clean Path New York is accustomed to executing a long-running series of different outreach efforts associated with a single project over its lifecycle. Clean Path New York intends to go above and beyond the minimum requirements outlined by Article VII, Article 10, and the ORES permitting processes. Local outreach and relationship building is integral to Clean Path New York's development approach and project success. A range of tools may be used depending on the need. A notification of a particular permit filing may require a postcard, and an introductory which notice may be also coupled with events such as a series of open houses, online events, etc.

Tailoring outreach strategies is important to reaching the largest and most diverse audience. The team will use a combination of methods in different areas and different communities.

Typical outreach activities to build public acceptance for projects will include:

- Open houses and events (in person and/or virtual)
- One-on-one meetings with stakeholders
- In-person presentations at town and county meetings
- Direct mail to residents of specified target areas, with mailing lists developed by internal team using public datasets
- Collateral materials including project fact sheets, FAQs, myths/facts documents, posters, maps, and presentations
- Print, radio, and online ads through local news outlets
- Earned media with local news outlets
- Flyers posted at community venues such as post offices, libraries, town halls, etc.

- Project websites, project social media communities, and/or notices posted to the Clean Path New York website and social media channels
- Goodwill activities including charitable giving to community causes
- Documentation and affidavits of all of the above to satisfy any proof requirements of DPS

At every step of the way, the public will be informed of the various aspects of the projects — from the potential environmental impacts, to process and participation, to economics and opportunities for employment and small business engagement through the supply chain. Clean Path New York understands the impact that COVID-19 has had on many of our communities of color, and special emphasis will be placed on MWBEs and employment outreach in these areas.

Targeted education and marketing

Clean Path New York's stakeholder relations team will focus its education and communications efforts on engaging with the following key stakeholders:

- Landowners abutting the proposed generation and transmission projects
- Impacted communities
- Elected officials and agency regulators at the state, county, and town levels representing most or all of the counties and towns serving as host communities to the generation Resources and New Transmission line
- Local emergency service personnel
- Local transportation authorities
- Environmental organizations and special interest groups
- Civic and business groups
- Sporting clubs
- Native American tribes
- Local media

The Clean Path New York stakeholder list will be continuously updated to reflect changes and additional stakeholders as the project progresses.

Project hotline

A telephone hotline will allow interested stakeholders to reach the project team to get their questions answered and provide feedback. Clean Path New York will publicize the hotline on project collateral, the project website, and direct mail pieces. The local hotline number and message system will operate 24 hours a day. The message system will be checked every business day by the stakeholder relations team, who will respond to inquiries within 24 hours or the next business day.

Stakeholder meetings

Face-to-face meetings are critical to the success of Clean Path New York, and our team will conduct proactive outreach and respond to any requests for meetings. Interested stakeholders will be able to request a meeting in a variety of ways: website, hotline, or email. Clean Path New York's accessibility is important to a strong outreach program.

Clean Path New York will also host public information meetings throughout the duration of the project. These meetings will be scheduled after the applications for either Article VII, Article 10, or the new ORES siting process have been submitted, and will be in a public setting such as a library or community center. The meetings will be scheduled for various times during the day to accommodate differing schedules. Information regarding the time and location of the meetings will be provided via direct mail to the stakeholder list and landowner list. The information will also be posted to the project website and communicated to local media outlets.

Public information meetings are particularly educational and informative as the entire project team is on site to answer stakeholders' questions, solicit input, and listen to concerns. During these open house events, stakeholders and the public will have the opportunity to discuss the project with professionals in renewable

generation and transmission line engineering, construction, and environmental science, and other subject matter experts working on the project.

For open house events, NYPA and Forward Power will manage all notices/invitations, develop all public-facing material and take-aways for visitors, and manage the event agenda/moderation/presentation. The three main subject areas to be covered at such events are:

- Environmental topics such as visual impacts, wildlife, traffic, etc.
- Economic topics such as jobs, tax revenues, host agreements (as applicable)
- Process and participation topics (regulatory steps, ways to be a stakeholder and provide public comment, etc.)

After each meeting, the stakeholder relations team will document all communications, capture action items, and follow up with stakeholders as needed. All meeting materials will be available on the project website or mailed to stakeholders upon request.

Project website

Clean Path New York has developed an educational website for the project (www.cleanpathny.com). Stakeholders will have the opportunity to view project maps and FAQs and to learn about the project route and the Article VII, Article 10 and ORES processes. The website will also feature collateral pieces for the project, including fact sheets, safety information, project applications, and other key documents. The website will be updated on a regular basis to provide new information and construction milestones.

Project email

Throughout the project, the stakeholder relations team will maintain a special project email address (info@cleanpathny.com) and will document all communication and corresponding resolutions. The stakeholder relations team will respond to email communications in a timely manner. All correspondence will be entered into a communications log for future reference.

Document repositories

While the project's Article VII, Article 10, and ORES applications and related documents will be made available for public view on the project website, it will be necessary to provide hard copies for viewing. Clean Path New York will deliver the Article VII, Article 10, and ORES applications and all supporting documents to local libraries and town halls for public viewing. Upon selection and through consultation with NYSERDA and the various permitting agencies, the optimal document repositories will be identified.

Mailings

Pre-construction mailings. Mailings will be an important part of the outreach program, as they provide an opportunity to share project information with a large audience in a consistent manner and meet regulatory notification requirements pursuant to Article VII, 10 and ORES processes. The pre-construction mailings will include:

- Letter to specific landowners asking permission to survey and test
- Article VII, Article 10 and ORES intent to file letter sent to impacted landowners and municipalities, including a project fact sheet, milestones, and information on the Article VII, Article 10 and ORES processes, and how to be added to the stakeholder list
- Newspaper advertisements announcing the intent to file Article VII, Article 10 or ORES
- Public statement hearing invitation letter to be sent to impacted landowners and municipalities
- Newspaper advertisements regarding the public statement hearing

Construction mailings. Mailings during construction will notify stakeholders of construction commencement, milestones, and safety information, and provide updates as needed. Construction mailings will include the following:

- Construction commencement notice letter sent to impacted landowners and municipalities, local media, and other key stakeholders, and placed on community public information boards around the region

- Notification to local emergency response agencies (police, fire departments, and EMS) of on-site hazardous materials, along with construction commencement and updates to the hazardous materials list and milestone updates as needed
- Notification to local traffic departments regarding the traffic management plan for the project
- Email notifications and phone calls to municipalities for after-hours and Sunday/holiday work

Post-construction mailings. The stakeholder relations team may mail post-construction letters to impacted landowners, municipalities, and key stakeholders when construction is complete, outlining steps moving forward and safety messages. Such mailings may include:

- Restoration notices if restoration will occur at a significantly later date due to inclement weather
- Rights-of-way trespass letters and newspaper publications, if required by the PSC or ORES
- "Thank you" notes to landowners, residents, municipalities, and emergency response agencies, and other key stakeholders, alerting them of construction completion

Additional mailings. The stakeholder relations team may elect to send the following additional mailings to municipal officials, landowners, and other key stakeholders to ensure engagement with, and understanding of, the project:

- Invitations to public information meetings/open house events
- Construction schedule update notices
- Restoration notices for specific areas of disturbed land
- Time-sensitive safety messages (e.g., hunting season)
- Project status updates
- Major scope of work changes

Emails

In addition to letters sent via the US Postal Service, stakeholders will have the opportunity to receive information from the project team via email. All interested parties will be able to sign up for email updates on the project website, at public information meetings, during door-to-door outreach efforts, or by phoning the hotline. Project emails will be sent in conjunction with direct mailings to the stakeholder email list.

Open house and public statements

Clean Path New York will conduct open house events as part of the project application process . The events will be held in the affected community or communities, likely at a community hall or library. The events will be college-fair style, bringing in project subject matter experts to answer questions and concerns from the public and stakeholders.

The open houses will be held in multiple locations at multiple times to accommodate a variety of schedules. Stakeholders, including landowners, residents, and the public, will be invited at least two weeks prior via direct mail and email, and the events will be advertised via newspaper ads and on the project website. Materials for the open houses will include fact sheets, field cards, project maps, safety messages, etc. Clean Path New York will work with the Department of Public Service and/or ORES in planning for and advertising any public statement hearing.

Door-to-door outreach

Clean Path New York's stakeholder relations team will conduct door-to-door outreach in counties and towns adjacent to the generation projects and New Transmission route to hand out pertinent information and be a visible and engaged presence in the community. It is critical to foster relationships with municipal officials, landowners, business owners, and other key stakeholders who are affected by the project. If a landowner or resident is not home or does not answer the door during outreach, a special notice will be left on the

doorknob, giving the resident the information needed to contact the project team. These efforts will be conducted prior to construction commencement. These door-knocking efforts will be conducted prior to construction commencement.

Construction signage

Clean Path New York will erect signage in key locations along any impacted rights-of-way to direct the public to avoid trespassing and be aware of construction crews in the area. The signs will display the project hotline number and website address.

Crew pads

The stakeholder relations team will provide special project crew pads to field employees and contractors working in the project area. These small tear-off pads will contain general information about the project, including the website address and hotline number. The goal is to help the field workers answer questions while in the field, and to provide contact information to the stakeholders. The stakeholder relations team will brief the workers on the proper protocol while handling customer inquiries.

Media briefings

The Clean Path New York media relations team will update local media personnel on the status of the project. Throughout the duration of the project, the team will disseminate project information via press releases or advertisements to ensure public awareness.

Public inquiry process

The public will be able to reach the project team with any questions or comments via the local hotline or project email. Open house meetings will also provide the public the opportunity to obtain information and ask questions of the project team.

Inquiries from the public after the open house meetings will continue to be facilitated through the project hotline and email. Any inquiries received through the telephone hotline, emails, and in-person meetings will be logged into the stakeholder database with the date, time, subject discussed, names of parties, and the ultimate resolution. Upon receipt of an inquiry, each will be disseminated to the appropriate subject matter expert to be resolved.

Community engagement will be a priority throughout the various stages and duration of the project. Clean Path New York has proactively begun reaching out to potential stakeholders.

Stakeholder outreach timeline

Community engagement will be a priority throughout the various stages and duration of the project. Clean Path New York has proactively begun reaching out to potential stakeholders.

Stakeholder outreach is one of the very first development tasks in the arc of developing any generation or transmission project. Early outreach typically consists of mailings to an area several miles' radius around a given generation project site, or along the transmission line route, followed by open house events and public hearings.

There are typically several cycles of mailings, open houses, and hearings as the design and permitting progress. One-on-one meetings are held with local officials and interested stakeholder groups, and any interested people who request more information. Presentations are regularly made at town board meetings of the host municipalities. Throughout the outreach process, contact information is provided. Paper copies of the project documents can be found at local document repositories.

Many of the generation resources that form a part of this project have been in development since 2015 or earlier, with public outreach as outlined above being a regular component of their development. One to two community-wide mailings and open houses every year throughout development is typical for a single generation project. Most or all of the outreach techniques outlined above have been completed.

For earlier-stage projects, the first year of development is the most intense period of public outreach, to ensure that all parties who are interested in learning more, or in participating in the various avenues for public input, have been notified and are engaged in the process. Once the permitting process is underway, general public mailings, meetings, and open houses continue, but outreach is typically more focused on the parties most engaged in the process.

Later in the development cycle, typically as a project gets closer to construction, there is a renewed level of intensity of public outreach efforts to ensure everyone in proximity knows the timeline to construction, and the contact information for the community liaison for questions or concerns on any field activities.

Lastly, there is always a point of contact for the community for an operating project, to ensure that there is a clear channel for communication of questions or concerns, as well as a clear complaint handling procedure and emergency response plan that have been developed in consultation with emergency responders in the project area.

Community benefits

Section 7.6.15 of the RFP asks proposers to describe how the project offers benefits related to economic development, the creation of local jobs, and the environment, among others. Section 7.6.16 asks for detailed descriptions and specific data associated with such benefits. A summary of these benefits is provided in this CEP, and the detailed descriptions and estimated economic figures are provided in the Incremental Economic Benefits Plan in Section 16 of this proposal.

Clean Path New York's diverse portfolio of generation resources offers benefits throughout New York State, as opposed to projects from a single generation resource. This provides an opportunity to make a greater impact and reach more Disadvantaged Communities than would otherwise be the case.

Economic development and local jobs (Category 1 and 2)

The project will provide these benefits through several channels, including:

- Direct in-state expenditures on goods and services
- Development, construction, and operating jobs
- Payment-in-lieu-of-taxes (PILOT) programs with several Industrial Development Authorities
- Host community payments
- Real property taxes
- New York Independent System Operator interconnection fees
- Financing fees paid to New York State banks and other providers of financial services
- Lease payments to owners of land on which the proposed generation and transmission facilities are located
- Revocable consent fees to be paid to the City of New York for work in city streets

These Category 1 and 2 benefits are described in more detail and quantified in Section 16, Incremental Economics Benefits Plan.

Reduced energy burden

- The project will save New York State ratepayers $12 billion in energy costs over its 25-year term.
- To determine the project's impact on ratepayers across the state, PowerGEM modeled the project as a 1,300 MW HVDC transmission line interconnecting at the Fraser Substation in the north and the Rainey Substation in the south, and ran several modeling sensitivities examining the behavior of the state's electric system with and without the project.
- A more detailed description of the modeling methodology and assumptions can be found in the PowerGEM report under Appendix 7. In this section Clean Path New York summarizes the impact of the project on ratepayer burden and the drivers of the energy cost savings.

- As New York progresses towards its aggressive renewable energy goals, the percentage of generation coming from renewables increases. With this increase in renewable generation comes increased congestion and renewables curtailment. Clean Path New York will play a pivotal role in reducing congestion, reducing renewables curtailment, and decreasing total load costs to customers as more and more of New York State's energy is generated from renewable sources.

As shown below in Figure 3, based on the cases described above, statewide load payment savings (ratepayer energy cost savings, relative to what they would be paying without Clean Path New York) are expected to be approximately:

- $242 million in 2025 (a saving of 5%)
- $438 million in 2030 (a saving of 11%)
- $528 million in 2035 (a saving of 13%)

In Zone J, the combination of 3,800 MW of new wind and solar generating capacity and a new transmission line connecting upstate New York to New York City would yield savings to ratepayers in the five boroughs of approximately:

- $96 million in 2025 (a saving of 6%)
- $204 million in 2030 (a saving of 13%)
- $247 million in 2035 (a saving of 16%)

Over 25 years, statewide ratepayer savings would total $12 billion – a reduction of approximately 11.7% relative to what ratepayers would be paying in the absence of Clean Path New York's investments in generation and transmission. In Zone J, ratepayer savings would total $5.5 billion over 25 years (about 46% of total statewide savings), a reduction of approximately 14.5% relative to what customers in Zone J would be paying without Clean Path New York.

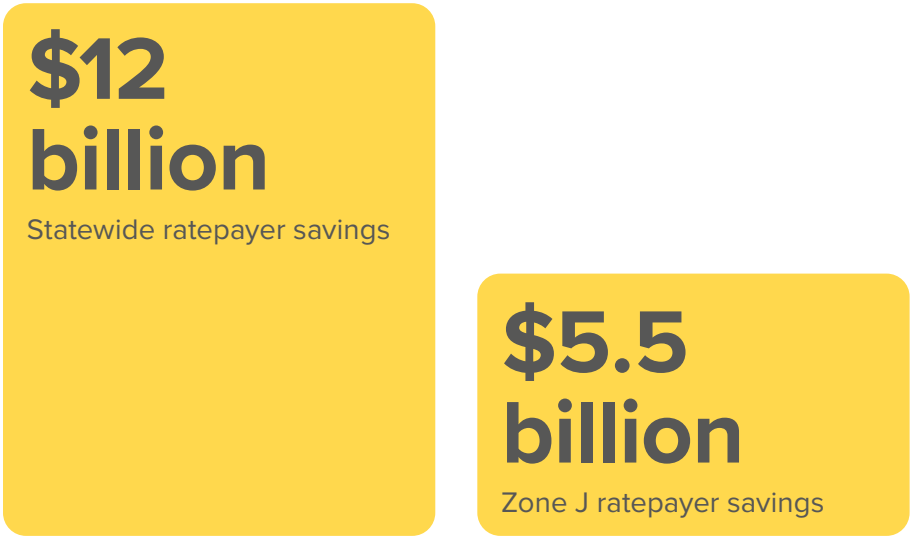


Figure 15-12. Ratepayer savings produced by Clean Path New York, 2025 – 2050.

Avoided health and social costs[6]

In addition to the impact of its investments in the development, construction, and operations of renewable energy generating and transmission facilities, and the more targeted impacts of its proposed community investment fund, Clean Path New York will contribute to the economic, social, and physical health of New York State by reducing emissions of carbon dioxide and other pollutants.

Increased availability of clean, carbon-free power will allow New York – especially New York City – to reduce its reliance on some of the State's oldest and dirtiest fossil-fuel fired generating plants, many of which are located in disadvantaged communities.

Extensive research over the last several decades has documented the social costs that are associated with emissions of carbon dioxide, as well as other pollutants such as SO_2, NO_x and particulate matter. The social costs as defined by the federal Environmental Protection Agency and Department of Transportation can include such effects

[6] The PowerGEM cases underlying the [AKRF/Appleseed] analysis have Blenheim-Gliboa modeled differently than those used in the rest of the Step Two Proposal. This more conservative modeling of Blenheim-Gliboa slightly understates the emissions reductions of the Clean Path New York project.

as property damage and disruption of economic activity caused by extreme weather events, increased health care costs, increases in children's absence from school, and lost productivity associated with pollution-related diseases such as asthma, chronic obstructive pulmonary disease (COPD) and other respiratory ailments.

For several reasons, these costs can increase over time – for example:

- The adverse effects of greenhouse gas emissions can increase over time as these gases accumulate in the atmosphere.
- Economic losses associated with any given level of emissions may increase as the overall value of economic activity increases. The losses associated with one worker being absent for one day, for example, will increase as GDP per worker increases.
- The aggregate health care costs that pollution imposes on a community can increase as its population increases. Such costs can also increase as the composition of the local population changes; an aging population, for example, may be more vulnerable to several types of pollution-related diseases.

In February 2021, the U.S. Environmental Protection Agency, Department of Transportation and Office of Management and Budget released new estimates of the social cost of CO_2, NO_x, SO_2 and particulate emissions, for use by federal agencies in evaluating the costs and benefits of actions aimed at reducing such emissions. The agencies estimated the current social cost per metric ton of these pollutants; and projected how these costs were likely to increase through 2050. The EPA/OMB estimates for the cost of CO_2 and NO_x are shown below in Table 4.[7]

An analysis conducted by PowerGem and AKRF estimates that implementation of Clean Path New York will reduce emissions in New York State in 2030 by:

Year	CO_2	NO_x	SO_2	PM
2020	$51	$15,700	$40,400	
2025	$56	$16,800	$45,500	$807,500
2030	$62	$18,000	$48,200	$852,700
2035	$67	$18,000	$48,200	$852,700
2040	$73	$18,000	$48,200	$852,700
2045	$79	$18,000	$48,200	$852,700
2050	$85	$18,000	$48,200	

Table 15-5. Social cost of CO_2 and NO_x emissions per metric ton through 2050 (in 2007 dollars, assuming a 3% discount rate).

- 2.3 million tons of CO_2
- 1,602 tons of NO_x
- 13.2 tons of SO_2
- 147 tons of PM2.5

After converting the above estimates to metric tons[8], applying the cost-per-metric ton estimates for 2030 cited above in Table 4, Clean Path New York estimates that in 2030, Clean Path New York it will have reduced the social cost of emissions in New York State by $272 million, including:

- $132 million for CO_2
- $26 million for NO_x
- $0.58 million for SO_2
- $114 million for PM2.5

Using PowerGem and AKRF's analysis of impact reductions within Zone J (New York City), Clean Path New York estimates that reductions in emissions of these four pollutants resulting from

[7] Interagency Working Group on Social Cost of Greenhouse Gases, "Technical Support Document: Social Cost of Carbon, Methane and Nitrous Oxide, Interim Estimates Under Executive Order 13,990 Technical Update of the Social Cost of Carbon for Regulatory Impact Analyses under EO12866," February 2021, appendix; U.S. Department of Transportation, Benefit-Cost Analysis Guidance for discretionary Grant Programs, February 2021, p. 34.

[8] One American (or "short") ton equals 2,000 pounds; 1 metric ton equals 2,204 pounds.

Clean Path New York project operations would reduce the social cost of emissions in the five boroughs by $173 million (more than 63.4% of the statewide total), including:

- $84 million for CO_2
- $17 million for NO_x
- $0.40 million for SO_2
- $72 million for PM2.5

Moreover, the value of the projected reduction in emissions should not be viewed solely in terms of its impact in a single year. The social benefits of reduced emissions – such as fewer episodes of illness, fewer days of school or work missed, less disruption of business, lower health care costs and fewer premature deaths can also be counted cumulatively.

Based on PowerGem and AKRF's estimates of reductions in CO_2, NO_x, SO_2 and particulate emissions in Zone J that the project would achieve through 2035 and beyond, and using EPA's and DOT's estimates of the social costs of CO_2, NO_x, SO_2 and PM2.5 per metric ton ($71, $18,000, $48,200, and $852,700 respectively) in 2038 (the midpoint of the proposed contract), Appleseed estimates that over the life of the contract, Clean Path New York will have cumulatively reduced the social cost of these emissions

- $4.2 billion for CO_2
- $720 million for NO_x
- $8.7 million for SO_2
- $3.1 billion for PM2.5

Over the 25-year life of the proposed contract, reductions in emissions resulting from the operation of Clean Path New York would cumulatively reduce the social cost of these emissions in New York State between 2025 and 2050 by approximately $6.25 billion

In Zone J, reductions in emissions of these four pollutants resulting from the operations of Clean Path New York would cumulatively reduce the social cost of these emissions between 2025 and 2050 by approximately $3.76 billion – 57% of the long-term value of social cost savings throughout the State. Three other zones – Long Island (Zone K) at 15%, the Hudson Valley (Zone G) at 10 percent, and the Capital Region (Zone F) at 10% – account for another 35%.

$6.25 billion

Statewide social cost reductions

$3.76 billion

Zone J social cost reductions

Figure 15-13. Reductions of health, social, and environmental costs produced by Clean Path New York, 2025 – 2050.

The benefits of reduced emissions from power plants are not, however, distributed evenly. AKRF's modeling of how emissions from power plants in New York City disperse geographically indicates that:

- 37% of the reduction would occur within one mile from the source;
- 74% would occur within two miles from the source; and
- 99% within four miles from the source.

A two-mile radius from major generating plants in New York City encompasses many disadvantaged communities, such as Mott Haven in the South Bronx and Manhattan's Lower East Side; and large New York City Housing Authority (NYCHA) housing projects in Astoria and Long Island City (Astoria Houses and Queensbridge Houses) and near the Brooklyn Navy Yard (Farragut Houses).

Overall, AKRF estimates that disadvantaged communities in the four Zones cited above (F, G, J and K) account for at least 40% of the statewide reductions in power plant emissions expected to result from the development of Clean Path New York.

Added climate resilience

The project enhances the resilience of the New York State electric system by providing a 1,300 MW HVDC link from Fraser to New York City, all of which is located underground or underwater. Underground infrastructure is more resilient against extreme weather events and is generally subject to fewer faults, delivering more robust system uptime than overhead transmission lines. The link into Zone J itself provides a pathway for a more diverse resource mix to be delivered into that Zone, which also bolsters the overall resilience of the system.

Avoided environmental costs

In addition to its goal of 70% renewable energy by 2030, New York State has a goal of reducing carbon emissions to at least 85% below 1990 levels by 2050. According to the New York State Department of Environmental Conservation, the State emitted 410 million metric tons of CO_2 equivalent in 1990. This implies that the State must reduce its CO_2 emissions by 349 million metric tons – to 61 million metric tons – by 2050.[8] Based on PowerGEM's modeling, which assumes the state will meet its 70% renewable energy by 2030 goal, Clean Path New York in that year will reduce New York State's annual CO_2 emissions by 2.5 million tons. This represents an overall 22% reduction in statewide CO_2 emissions from electric generation. Clean Path New York provides similar incremental CO_2 reductions even when modeled in conjunction with a similarly sized HVDC line interconnecting into Zone J from Canada.

Clean Path New York provides the targeted CO_2 emissions reductions that are the driving force behind the Tier 4 program. Over 60% of these reductions, or 1.56 million tons, are in New York City, and 85% of them – 2.13 million tons – are located in the constrained downstate New York State capacity zones (G-K). In the 2035 case, with 9 GW of offshore wind interconnecting in Zones J and K, Clean Path New York reduces statewide carbon emissions 22% versus the base case, for a total of 1.74 million tons.

Clean Path New York achieves these impressive reductions by adding significant in-state renewable generation and providing the critical transmission infrastructure needed to reduce congestion between upstate and downstate New York. The transmission allows both existing generation and incremental project generation to be dispatched more efficiently – reducing curtailment of renewables upstate, bringing clean power into Zone J, and thereby reducing the output of downstate's less-efficient fossil fuel generation.

A project injecting renewable power directly into Zone J from outside of New York State may provide similar emissions reductions but would do so by bringing out-of-state renewables into the state, not by improving the intrastate transmission system to dispatch New York's own renewables more efficiently. Based on Clean Path New York's modeling, a fully utilized 1,200 MW transmission line from Canada into Zone J would increase New York's net electricity imports by 52% in 2030 and 57% in 2035. While such a project would reduce emissions in Zone J, from a system perspective it would do so by injecting foreign renewables into the state, rather than allowing New York State to better utilize in-state renewables.

The concomitant emissions reductions of NO_x and SO_x will have a positive outcome not only on public health, but with respect to acid rain and other environmental problems associated with acidification and ozone formation.

NO_x is of principal concern because of its role, together with volatile organic compounds (VOC), as a precursor in the formation of ozone. Ozone is formed through a series of chemical reactions that take place in the atmosphere in the presence of sunlight. Because the reactions are slow, and occur as the pollutants are advected downwind, elevated ozone levels are often found many miles from sources of the precursor pollutants. The effects of NO_x and VOC emissions from all sources are therefore generally examined on a regional basis.

In addition to being a precursor to the formation of ozone, one component of NO_x, nitrogen dioxide (NO_2), has been identified as a significant danger to public health. According to the EPA, current scientific evidence links short-term NO_2 exposures (ranging from 30 minutes to 24 hours) with adverse respiratory effects, which is of particular concern for "susceptible individuals," including people with asthma, children, and the elderly.

SO_2 emissions are primarily associated with the combustion of sulfur-containing fuels (oil and coal). SO_2 is also of concern as a precursor in the formation of particulate matter (PM) pollution. Like As with NO_2, EPA has found current scientific evidence that links short-term SO_2 exposures with adverse respiratory effects, which is of particular concern for "susceptible individuals," including people with asthma, children, and the elderly. In addition to SO_2's impacts on human health, EPA has found that at high concentrations, this pollutant may result in damage and decreased growth in trees and plants.

Added environmental benefits

One element of the Clean Path New York project that has not been quantified, but that provides a meaningful environmental benefit, is the repurposing of the site in Queens that hosts the withdrawal point converter station in Zone J. The site is an eight-acre industrial parcel on which. 6 fuel oil tanks are currently located. As part of the project, Clean Path New York will remediate the environmental contamination created by previous operations on the site. This will benefit the surrounding communities, which are disadvantaged and overly burdened from an environmental justice perspective.

Opportunities to build community equity

The next generation will face challenges when it comes to the impacts of climate change on the environment, economy, and society. These challenges will be exacerbated by the issues we face today: a widening wealth gap, racial disparity, a mid-level skills gap, and a health system recovering from a global pandemic. Rightfully, there is hope on the horizon with a clean and just energy transition, bringing innovation and jobs to the economy while increasing energy efficiency, reducing pollution, and reducing the negative climate impacts future generations face. As these developments unfold, Clean Path New York has an obligation to engage thoughtfully in the green economy, interceding in areas where transition threatens to deepen existing inequalities in our society.

A green economy that leaves historically disadvantaged populations behind will not be a sustainable economy.

Equitable opportunity is extremely important to the project. The Clean Path New York development team will take considerable time and effort to ensure that outreach, access, and opportunities are made available to environmental justice communities, communities of color, and economically depressed and at-risk populations. The new green economy should benefit all of New York's residents.

Category 3 incremental economic benefits may include workforce development activities, actions aimed at increasing the likelihood that New York residents will find work on the project, and other actions that provide assistance to disadvantaged communities.

The COVID-19 pandemic laid bare the deleterious impact of long-standing systemic health and social inequities in New York State's economy. According to the Centers for Disease Control and Prevention, these social determinants of health put many people from racial and ethnic minority groups at increased risk of dying from COVID-19.[9] One study by Lauren Holmes Jr. et al. stated,

"The COVID-19 mortality [cumulative incidence] indicated Blacks/AA [experienced] 34% of the total mortality in the United States, albeit their 13% population size."[10]

[9] https://www.cdc.gov/coronavirus/2019-ncov/community/health-equity/racial-ethnic-disparities/disparities-deaths.html

[10] Holmes Jr., Lauren, et al. "Black–White Risk Differentials in COVID-19 (SARS-COV2) Transmission, Mortality and Case Fatality in the United States: Translational Epidemiologic Perspective and Challenges," *Int. J. Environ. Res. Public Health* 2020, 17(12), 4322.

A growing body of literature correlates environmental justice burdens with negative health impacts in minority communities. The New York Times Magazine asserts that not only are "African Americans 75% more likely than others to live near facilities that produce hazardous waste" but that "[B]lack Americans are exposed to 1.5 times as much of the sooty pollution that comes from burning fossil fuels than the population at large." The article goes on to explain:"[a] study of more than 3,000 U.S Counties released in April [conducted by Harvard University researchers] shows a statistical connection between death rates from COVID-19 and long-term exposure to air pollution. Each increased microgram of [particulate matter pollution] per cubic meter of air is associated with an 8 percent increase in death from COVID-19."[11]

Couple these disturbing findings with other recent studies, one quantifying higher-than-appreciated global mortality (1 in 5 early deaths globally) from outdoor fine particle pollution generated by fossil fuel combustion[13] and another showing increased prevalence of street-level particulate matter pollution in New York City in excess of 20 times what it was previously thought to be, and the importance of projects like ours is brought into stark relief.

Reducing air pollution, hardening infrastructure, and creating a greener, cleaner New York are significant benefits to New Yorkers. However, Clean Path New York believes that community benefits need to be taken a step further to support the new green economy that the state envisions.

To that end, Clean Path New York will constitute a community investment fund of at least $270 million over 25 years prioritizing the following areas:

- Workforce development and Job Creation
- Economic Development
- Enhancements to Public Health
- Environmental Justice

An overarching goal of each of these priorities is to focus opportunities in disadvantaged populations and environmental justice communities. Through community engagement and outreach, Clean Path New York will develop a community investment fund that is in line with specific community needs. By funding programs with these priorities in mind, Clean Path New York will be able to nurture meaningful socio-economic growth in some of the most depressed communities in the state, while ensuring that each and every New Yorker is given the opportunity to be part of the next phase of energy infrastructure.

The fund will be managed by a board of directors to be named after the project secures a funding award from NYSERDA. The full scope of economic benefits to be provided under Category 3 will only be determined through consultation with NYSERDA and engagement with the affected host communities.

A preliminary array of programs and investments is provided in the Table below. The full scope of economic benefits to be provided under Category 3 will only be determined through consultation with NYSERDA and engagement with the affected host communities.

Detailed descriptions of these programs and estimated economic benefit figures are provided in the Incremental Economic Benefits Plan in Section 16 of this proposal.

The Clean Path New York community investment fund will be a collaborative program, informed by meaningful stakeholder outreach and community priorities. With special focus on disadvantaged populations and environmental justice communities, Clean Path New York looks forward to providing opportunities for all to thrive in the new green economy.

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[11] Villarosa, Linda "Pollution is Killing Black Americans. This Community Fought Back." New York Times Magazine, July 28, 2020. Found at: https://www.nytimes.com/2020/07/28/magazine/pollution-philadelphia-black-americans.html.

[13] Vohra, Karn et al. "Global mortality from outdoor fine particle pollution generated by fossil fuel combustion: Results from GEOS-Chem." *Environmental Research*. Vol. 195. April 2021.

Category 3

Initiative	Workforce/jobs	Economic development	Public health	Env. Justice	Total
Thru 3rd year of CDT	$20,000,000	$10,000,000	$10,000,000	$10,000,000	$50,000,000
Remainder of CDT	$80,000,000	$40,000,000	$40,000,000	$60,000,000	$220,000,000
Total	**$100,000,000**	**$50,000,000**	**$50,000,000**	**$70,000,000**	**$270,000,000**

Table 15-6. Economic benefits under Category 3.

Detailed descriptions and estimated economic figures are provided in the Incremental Economic Benefits Plan in Section 16 of this proposal.

15.5. Alignment with the CLCPA

Clean path New York contributes in every aspect to the Climate Act and specifically to the goal of transforming the way we generate and transmit electricity, reduce carbon emissions, empowering disadvantaged communities, enhancing New York State economy through increased jobs and specifically improving health and quality of life for New York families and communities.

Table 15-7 on the next page summarizes Clean Path New York outcomes and how it contributes to meeting the Climate Act targets.

15.6. Progress reporting

Clean Path New York will work with NYSERDA to develop an effective reporting process and format before and during all community engagement activities in concert with the Economic Benefits Verification Plan discussed in Section 16.

Climate Act targets and Clean Path New York outcomes

CLCPA target	Clean Path New York outcome	How outcome is met
Clean electric grid of tomorrow	3000+ MW of new onshore wind and Solar with 10+ TWh of clean energy generation capability and at least 7+ TWh of the energy delivered into New York City. A green state-of-the-art flexible HVDC transmission capable of transferring 1,300 MW from upstate to downstate New York.	Clean Path New York boasts a portfolio of 3000+ MW of new onshore wind and solar resources zonally diversified and all exclusively New York Renewable Generation. The advantages of this large portfolio are further amplified by leveraging the state's largest storage resource, Blenheim-Gilboa to maximize the utilization of those resources. Clean Path New York suggested New Transmission is feasible, constructable, permittable and have a minimum impact on communities. The line will provide ultimate flexibility to meet New York City green energy requirements while at the same time enhancing the grid reliability. Refer to Sections 4, 5 and 9 of this proposal for more details on how Clean Path New York accelerates the achievement of a green electric grid.
A clean energy economy for everyone	Clean Path New York aims to providing communities and businesses in New York City access to clean energy as well as the resulting economic opportunities that arise with the development of such project.	Clean Path New York have created a reliable path to transmit 7+ TWh of clean energy directly in to New York City. The portfolio of Resources is assembled along with Blenheim Gilboa in an intelligent fashion to maximize renewable energy flows over the New Transmission and alleviate the bottleneck preventing upstate-generated clean energy from reaching New York City. Clean Path New York will help the State achieve the CLCPA goals while delivering huge economic, social and health benefits to disadvantaged communities. Refer to Sections 4, 5 and 14 of this proposal for more details on how Clean Path New York helps in creating a clean energy economy for New Yorkers.
Jobs	Clean Path New York will create over 10,500 person years of in-state jobs over the first three years of the contract delivery term – all paying prevailing wage.	Clean Path New York construction and operations requirements for its Resources and the Transmission line is extensive and is expected to generate jobs mostly within the construction phase of the project. Refer to Sections 15 and 16 of this proposal for more details on how Clean Path New York creates jobs focusing opportunities in disadvantaged populations and environmental justice communities

Table 15-7. Clean Path New York's alignment with Climate Act targets.

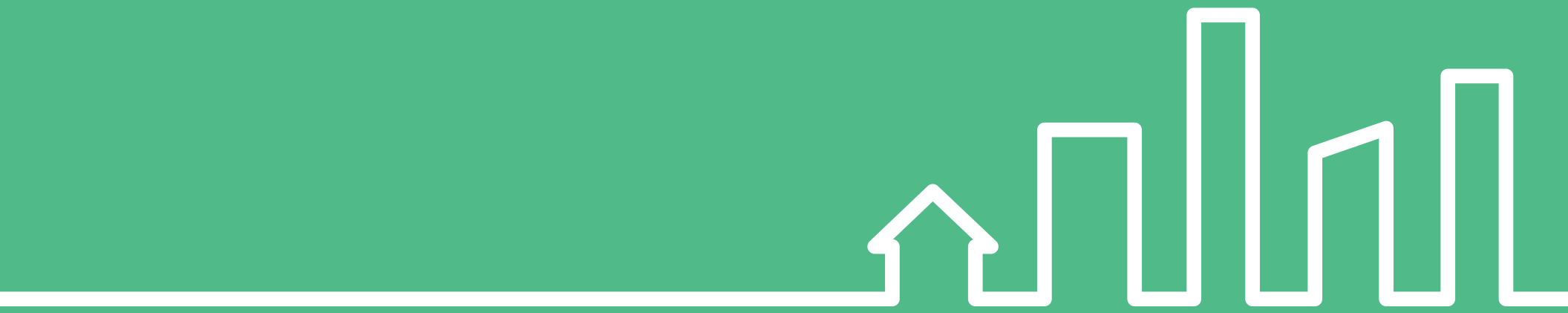
Climate Act targets and Clean Path New York outcomes

CLCPA target	Clean Path New York outcome	How outcome is met
A healthier New York	Largely contribute to reducing greenhouse gases and local pollution to keep our communities healthier.	Clean Path New York will reduce the output of oil- and gas-fuelled generation sources by an average of 4.6 TWh per year state-wide and 2.56 TWh per year in New York City, reductions of 8% and 16%, respectively. Clean Path New York will reduce carbon emissions by 39 million tons in its first 25 years and will further the state's emissions reduction goals for 2030 and beyond. Refer to Sections 12 and 15 of this proposal for more details on how Clean Path New York helps in creating healthier New York.
Affordable energy	Clean Path New York will deliver $12 billion of cost savings to ratepayers across the State in its first 25-years of operation. Such savings are expected to outweigh the total REC cost over 12 years by two folds.	Over 25 years, Clean Path New York Resources and specifically the New Transmission largely contributes to the resolution of the "Tale of Two Grids". Thanks to the flexibility and enhanced transfer capability of the New Transmission, Clean path New York expects to alleviate renewables curtailment and reduce overall congestion. The savings from such benefits are estimated to be $5.6 billion over 25 years. The remaining benefits are driven by the avoided social and public health costs due to emissions reductions across the state. Thanks to the enhanced portfolio of Resources and the planned delivery into New York City. Refer to Sections 14 of this proposal for more details on how Clean Path New York helps in creating an affordable energy.
Empowerment	Create the following: • Workforce development and job creation • Economic development • Public health • Environmental justice An overarching goal of Clean Path New York is to focus those opportunities in disadvantaged populations and environmental justice communities By funding programs with these priorities in mind, Clean Path New York will be able to nurture meaningful socio-economic growth in some of the most depressed communities in the state, while ensuring that each and every New Yorker is given the opportunity to be part of the next chapter in energy.	Clean Path New York generates over $4.3 billion Category 1 and 2 incremental economic benefits, 36.3% of which flow to disadvantaged communities. Through community engagement and outreach, Clean Path New York will develop a community investment fund of US$ 270 million that is in line with specific community needs. The fund will focus on Category 3 workforce development, public health, and community programs to provide a pathway for members of our most vulnerable populations to emerge as a vibrant new green workforce that will continue to build New York's future while also enhancing the overall quality of life in these communities. Refer to Sections 15 of this proposal for more details on how Clean Path New York helps in empowering disadvantage communities.

Table 15-7 (continued). Clean Path New York's alignment with Climate Act targets.

Section 16

Incremental economic benefits plan



16 Incremental economic benefits plan

16.1. Introduction

The Clean Path New York Team has developed this Incremental Economic Benefits Plan ("IEBP") in lockstep with the Communities Engagement Plan ("CEP"), informed by expert consultants, and aimed at fulfilling the targeted outcomes of the CLCPA.

It is very important to note the use of the term "Incremental" in the title and intent of this IEBP. Before Clean Path New York discusses these *incremental* benefits, it is also essential to make clear the Clean Path New York Project's *inherent* economic and environmental benefits to New York State ratepayers, residents and Disadvantaged Communities. These *inherent* benefits are described in detail and quantified in the CEP, but significant enough to restate here as they form the basis of the *incremental* economic benefits of the Clean Path New York project.

$12 billion
saved for New York ratepayers

49%
of projected reductions in emissions in Disadvantaged Communities

39 million
tons in emissions reductions

16.2. Inherent economic and environmental benefits

Reduced energy burden

The Clean Path New York project will save New York State ratepayers over $12 billion in energy costs over its 25-year life reducing congestion and renewable energy resource curtailments and decreasing total load costs.

Avoided health and social costs

Over the 25-year life of the proposed contract – from 2025 to 2050 – reductions in CO_2, NO_x, SO_2, and particulate emissions resulting from the operations of the project would cumulatively reduce the social cost of these emissions in Zone J between 2025 and 2050 by approximately $6.25 billion. 49% of the projected reductions in the social costs of these emissions would occur in Disadvantaged Communities in Zones J, K, and G (Downstate).

Added climate resiliency

A technologically and geographically diverse mix of generation resources linked to transmission infrastructure that is buried underground or underwater provides resiliency against extreme weather events and is subject to fewer faults.

Avoided environmental costs

The dramatic emissions reductions discussed above include an overall reduction in carbon emissions of 39 million tons over the 25-year life of the project.

Altogether, these *inherent* economic and environmental benefits form the launching pad from which the incremental economic benefits take off for the ratepayers, residents and Disadvantaged Communities in New York. Clean Path New York benefits all New Yorkers and more than pays for itself in the process. The net present value (NPV) of NYSERDA's portion of the Tier 4 REC payments is $6.2 billion over 25 years while the NPV of direct cost savings to ratepayers resulting from the project over the same 25-year term is $7.02 billion – $828 million more than the value of the REC payments.

There is therefore...

zero net expense to ratepayers

i.e., the residents of New York who will ultimately fund all energy projects

When the value of $6.25 billion in avoided social and public health costs due to emissions reductions across the state and the billions of dollars invested in economic development, job creation, and tax and PILOT revenues demonstrated in this IEBP are combined, the NPV of the project benefits outweigh the expense by a margin of 2:1.

Incremental economic benefits summary

A summary of the *Incremental* Economic Benefits of Clean Path New York is provided in Table 16-1 below.

Investment in New York State and Disadvantaged Communities ($000)		NYS	DACs	% to DACs
Generation and Transmission	Through 3rd year of Contract	$2,060,650	$453,634	22.0%
	Remainder of Contract	$2,314,549	$1,132,933	48.9%
	Full term	**$4,375,200**	**$1,586,566**	**36.3%**
Community and Workforce	Through 3rd year of Contract	$50,000	$50,000	100.0%
	Remainder of Contract	$220,000	$220,000	100.0%
	Full term	**$270,000**	**$270,000**	**100.0%**
Combined	Through 3rd year of Contract	$2,110,650	$503,634	23.9%
	Remainder of Contract	$2,534,549	$1,352,933	53.4%
	Full term	**$4,645,200**	**$1,856,566**	**40.0%**

Table 16-1. Incremental economic benefits.

To be very clear... that's...

$4.4 billion in economic benefits to New York State including $1.8 billion to Disadvantaged Communities (40%)

These expenditures result in a significant amount of full-time equivalent (FTE) job creation in New York State and to the Disadvantaged Communities hosting the Generation and New Transmission resources.

	NYS	DACs	% in DACs
Thru 3rd year of CDT	10,618	2,016	19.0%
Remainder of CDT	210	26	12.3%
Total 25-yr term	10,827	2,042	18.9%

Table 16-2. Job creation in New York State.

Each incremental benefit is described in detail in this IEBP.

IEBP Approach

To aid NYSERDA with its evaluation, Clean Path New York provides the following points of clarification about the assumptions, interpretations and formatting choices used to develop this IEBP.

Key Assumptions:

Clean Path New York has developed this IEBP based on the guidelines provided in the following RFP sections:

- 3.3 Incremental Economic Benefits to New York State Including Disadvantaged Communities
- 7.5.5 Part V - Incremental Economic Benefits Worksheets
- 7.6.15 Communities Engagement Plan
- 7.6.16 Incremental Economic Benefits Plan
- Appendix E – Standard Form PSA (namely Exhibit F)
- Appendix G – Economic Benefits Claims and Verification

This IEBP Narrative, developed in concert with the CEP, and informed by the studies conducted by Appleseed, attached as Appendix 17 serves as an accompaniment to the Offer Data Form ("ODF") to support and provide detailed descriptions of the Incremental Economic Benefits claimed in Parts V-1, V-2 and V-3 of the ODF.

Evaluation Period

In this IEBP and associated ODF, the time period considered to be "through the end of the first three (3) years of the Contract Delivery Term ("CDT")" is based on an interpretation of conflicting definitions between the RFP Definitions and Appendix E Definitions. Namely, the conflict as to whether the period begins either on the Award Notification Date, as defined in the RFP, or on January 1, 2021, as defined in Appendix E. The conflicting definitions are provided below for reference (emphasis added):

Relevant Definitions from RFP:

- "Economic Benefits Report – An independently audited report, documenting the total dollar amount of actual Incremental Economic Benefits accrued to New York and associated activities and commitments undertaken from *the Award Notification Date* through the end of the first three (3) years of the Contract Delivery Term." RFP Page vii
- "Verified Total Dollars – The total dollar amount of Economic Benefits in Categories 1 and 2 as separate sums for all New York State benefits and for benefits in Disadvantaged Communities, verified by NYSERDA to have accrued to New York as a result of the development, construction, modification, interconnection, and operation of the Project *from the Award Notification Date* through the end of the first three (3) Contract Years." RFP Page x

Relevant Definitions from Appendix E:

- "Expected Total Dollars: The total amount, in nominal dollars, of Economic Benefits (as described in Exhibit F) expected to accrue to New York State as a result of the development, construction, modification, interconnection, and operation of the Selected Project *from January 1, 2021* through the end of the first three (3) Contract Years. The amount of Expected Total Dollars under this Agreement is $_____." Appendix E, Page 4.
- "Verified Total Dollars: The total dollar amount of Economic Benefits as calculated pursuant to Exhibit I and verified to have accrued to New York as a result of the development, construction, modification, interconnection, and operation of the Selected Project *from January 1, 2021* through the end of the first three (3) Contract Years." Appendix E, Page 7

Therefore, for the purposes of this IEBP and ODF, Clean Path New York defines the period of time "through the end of the first three (3) years of the Contract Delivery Term," to be from January 1, 2021 through the 3rd Year of the CDT.

Project Phases

The IEBP and ODF do not make a distinction between the Development Phase and Construction Phase within this period, but does indicate where benefits are occurring during the Operations Phase, i.e. from the Commercial Operation Date through the first three (3) Contract Delivery Years. As such, the benefits occurring during either the development or construction phase of the project are all labeled as "Construction" in the "Project Phase" column of the ODF.

All of the benefits claimed during the Construction Phase have a start date of January 1, 2021 and an end date at the COD in order to provide flexibility with the actual delivery of the benefits. Similarly, all of the claimed Operations Phase benefits occurring in the same evaluation period have a start date at COD and an end date at the conclusion of the 3rd year of CDT.

Project-Specific Expenditures

All monetary values are nominal and expressed as ($000), i.e., $2,000 represents $2,000,000. The estimates of employment, earnings and payments for goods and services reflect direct spending and jobs only. They do not include any indirect or induced effects of Clean Path New York's investment in Resources or New Transmission. All figures are bases on the Appleseed report, informed by the Generation and New Transmission development team and consultants.

Unique Jobs

Per the response to Question 24 of NYSERDA's posted response to questions dated 4/30/2021, the two categories of Unique Jobs in Category 1 and 2 are not provided in the ODF but will be discussed in relation to the FTE job claims.

IEBP Format

To aid the NYSERDA review team in its analysis of this proposal, the structure of this IEBP narrative is presented in the format required in Appendix G, Table G.1, wherein the Economic Benefit IDs in the tables below correspond to the EB ID in the Offer Data Form. The tables are partitioned by Category and Evaluation Period. The Project Phase and/or Target Beneficiary, and Term (short or long) is indicated within the description of each benefit.

The order of tables is as follows:

- 16.3 Category 1 Benefits
- 16.3.1 Through 3rd Year of CDT
- 16.3.2 Remainder of CDT
- 16.4 Category 2
- 16.4.1 Through 3rd Year of CDT
- 16.4.2 Remainder of CDT
- 16.5 Category 3

These Incremental Economic Benefits must be quantifiable and verifiable. Therefore, each benefit claimed in the IEBP has been quantified in Sections 16.3 through 16.5 below and will be verifiable based on the proposed Economic Benefits Verification Plan, presented in Section 16.6.

The NYSERDA review team will find that these expenditures and investments are firm and credible, will create persistent and sustainable institutional or worker capabilities in New York State, distribute economic benefits more heavily within Disadvantaged Communities, and are expected to lower the cost of future projects in the State that use similar technologies.

16.3. Category 1 – Project-specific spending and job creation in New York State

Clean Path New York's Category 1 project-specific expenditures will relate to the development, construction and in some cases, initial operation of approximately 3,817 MW of new land-based wind and solar power generating capacity in upstate New York.

Based on detailed data on five of the Generation Resources included in the Clean Path New York portfolio (Number Three Wind, Alle-Catt Wind, Canisteo Wind, Bull Run Wind and Horseshoe Solar) submitted by Invenergy to the Public Service Commission pursuant to Article 10, Appleseed has estimated the economic benefits that would be provided to New York by the development, construction and operation of 3,817 MW of new wind and solar generating capacity.

Appleseed's estimates of direct in-state expenditures for the proposed new renewable generating capacity, and the number of construction and operating jobs associated with each, are shown below in Table 16.3.

Extrapolating from Invenergy's analysis of these five projects, Appleseed then estimated the direct payments and jobs attributable to the development, construction and operation of the additional wind and solar power generating facilities in the Clean Path New York portfolio.

For all Category 1 claimed benefits, Appleseed's estimates of the value of incremental economic benefits accruing to Disadvantaged Communities assume that, in the case of the proposed generation projects, 10 percent of statewide incremental economic benefits will accrue to Disadvantaged Communities, due to the inherent remoteness of wind resources and the current definition and approximate location of DACs, which generally tend to be in more urban areas. When combined with the Category 2 and 3 benefits, the portion of incremental benefits accruing to DACs meets the 40% target of the CLCPA.

EB ID#	Benefit description	($000s) Number Three Wind	Alle Catt Wind	Canisteo Wind	Bull Run Wind	Horseshoe Solar	Other wind	Other solar	Total ($000)	$ to DACs
Construction										10%
N/A	Unique Construction Jobs	330	430	385	520	300	1,133	2,743	5,841	584
EB1-001	Construction person-yrs.	165	175	147	215	261	478	2,388	3,829	383
EB1-002	Construction payroll	$15,000	$24,600	$20,300	$30,100	$28,800	$61,241	$263,360	$443,401	$44,340
EB1-003	Non-payroll construction spending	$8,100	$8,730	$7,010	$21,690	$4,390	$30,981	$40,144	$121,045	$12,105
EB1-004	Non-payroll construction jobs (FTE)	44	93	73	108	10	217	95	642	64
EB1-005	NYISO interconnection fees	$200	$200	$200	$200	$200	$1,200	$2,400	$4,600	$460
Operations: Through 3rd year of CDT										
EB1-006	Operating jobs (FTE)	7	12	11	16	3	31	27	107	11
EB1-007	Operating payroll	$990	$1,605	$1,485	$2,055	$465	$4,175	$4,252	$15,027	$1,503
EB1-008	Local purchasing	$423	$2,344	$2,470	$1,939	$2,050	$4,883	$18,746	$32,855	$3,286
EB1-009	Local purchasing jobs (FTE)	2	5	5	7	8	12	70	107	11
EB1-010	Land lease payments	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
EB1-011	PILOT & HCA payments	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Operations: Remainder of CDT										
EB1-012	Operating jobs (FTE)	7	12	11	16	3	31	27	107	11
EB1-013	Operating payroll	$7,260.0	$11,770.0	$10,890.0	$15,070.0	$3,410.0	$30,613.6	$31,182.6	$110,196	$11,020
EB1-014	Local purchasing	$1,108.0	$2,586.0	$2,706.0	$7,198.0	$9,450.0	$9,252.8	$86,415.0	$118,716	$11,872
EB1-015	Local purchasing jobs (FTE)	1	1	1	2	8	3	69	85	8
EB1-016	Land lease payments	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
EB1-017	PILOT & HCA payments	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Total Expenditures										
	Thru 3rd Year of CDT	$29,367	$52,566	$44,277	$75,688	$41,116	$137,914	$376,554	$757,482	$75,748
	Remainder	$42,497	$124,994	$107,547	$166,761	$51,074	$299,725	$467,043	$1,259,640	$125,964
	Total 25-Term	$71,864	$177,560	$151,824	$242,448	$92,190	$437,639	$843,598	$2,017,122	$201,712
Total Jobs										
	Thru 3rd Year of CDT	218	285	236	346	282	738	2580	4685	468
	Remainder	8	13	12	18	11	34	96	192	19
	Total 25-Term	225	298	248	364	293	772	2676	4876	488

Table 16-3. Generation figures.

16.3.1 Through 3rd Year of CDT

The Category 1 benefits occurring from January 1, 2021 through the 3rd year of the CDT and claimed in the ODF are quantified and described in the following table based on industry standards for development, construction and operations cost estimating methods. The Clean Path New York team is comprised of well-established generation and transmission developers and is advised by expert consultants experienced with projects of this size and scope. The claimed benefits are therefore credible, reliable and verifiable to ensure these benefits are realized by New York rate payers and Disadvantaged Communities associated with the project.

For additional details on how these benefits accrue to DACs, refer to the Section 15, Communities Engagement Plan. Details regarding the estimation methods used to determine the project-specific expenditures and job creation benefits are provided in the Appleseed reports in Appendix 17 and additional details can be provided upon request of the NYSERDA review team.

EB1 ID	Detailed description		
EB1-001	**Generation - Construction Person Years - Construction Phase**	In NYS	In DACs
	Short-term Direct Job Creation (FTE-Years)	3,829	383
	Unique Jobs	5,841	584
	For purposes of this RFP response, we have defined “unique” construction jobs as, in effect, unique hires. The relationship of unique jobs to total payroll or person-years of employment can vary considerably from project to project. Estimates of unique jobs are based upon Unique Job estimates reported by Invenergy for several upstate wind and solar development projects under New York’s Article 10 process and extrapolated to the complete CPNY portfolio. A “person-year” is a measure of employment that generally represents the equivalent of one employee working full-time for a year. It could for example consist of two workers, each employed full-time for six months; or two workers employed half-time for a year.		
	For additional details on how these benefits accrue to DACs, refer to the Section 15 - Communities Engagement Plan.		
EB1-002	Generation - Construction Payroll	In NYS	In DACs
	Net Expenditures ($000)	$443,401	$44,340
	These benefits are based on estimated payments for labor-related expenditures for work that is performed in New York State. Examples include gross wages (including employer side payroll tax payments), and benefit costs incurred in association with the employment of construction, rail and port workers, contractors and laborers, operations and maintenance personnel, engineering or environmental service providers, consultants, other employees and financial and legal service providers associated with the Project.		
EB1-003	Generation - Non-Payroll Construction Spending	In NYS	In DACs
	Net Expenditures ($000)	$121,045	$12,105
	These benefits are based on estimated payments for in-State purchases of goods and services. Including expenditures resulting from the purchase and consumption of local goods and services (including sales tax), such as, but not limited to, food, lodging, vehicles, equipment; and the purchase of materials sourced from within New York State such as, but not limited to, gravel, steel, concrete and similar materials and/or the purchase and use of equipment and products manufactured or assembled within New York State and/or the use of rental equipment or similar supplies sourced within New York State.		
EB1-004	Generation - Non-Payroll Construction Jobs	In NYS	In DACs
	Short-term Direct Job Creation (FTE-Years)	642	64
	Estimates of jobs supported through in-state purchases of construction-related goods and services were derived from Invenergy’s Article 10 reports, as further described in the Appleseed report. These jobs include an establishment of a project office in New York State, pre-development activities, leases/purchases, and other related non-payroll employment.		
EB1-005	Generation - NYISO Interconnection Fees	In NYS	In DACs
	Net Expenditures ($000)	$4,600	$460
	NYISO Interconnection fees help to fund NYISO operations and those employees and third-party consultants called upon during the system impact study process. The vast portfolio of CPNY Generation projects provides significant funding for these operations and activities. Futher details regarding the benefits of NYISO Interconection Fees can be provided upon request.		

Table 16-4. Through 3rd year of CDT.

Each claimed incremental economic benefit in the following tables detail the corresponding EB ID# in the ODF, the Project Phase, the Evaluation Period, the value of the benefit to NYS, portion accruing to DACs, and a reference to its alignment with the benefit eligibility criteria stated in the RFP.

EB1 ID	Detailed description		
EB1-006	Generation - Operating Jobs (FTE)	In NYS	In DACs
	Long-term Direct Job Creation (FTE-Years)	107	11
	These benefits include, but are not limited to, jobs associated with operations and maintenance, plant management, and long-term project development.		
EB1-007	Generation - Operating Payroll	In NYS	In DACs
	Net Expenditures ($000)	$15,027	$1,503
	These benefits include, but are not limited to, jobs associated with operations and maintenance, plant management, and long-term project development.		
EB1-008	Generation - Local Purchasing	In NYS	In DACs
	Net Expenditures ($000)	$32,855	$3,286
	These benefits are based on estimated payments for in-State purchases of goods and services. Including expenditures resulting from the purchase and consumption of local goods and services (including sales tax), such as, but not limited to, food, lodging, vehicles, and equipment		
EB1-009	Generation - Local Purchasing Jobs (FTE)	In NYS	In DACs
	Short-term Direct Job Creation (FTE-Years)	107	11
	Estimates of jobs supported through in-state purchases of local goods and services were derived from Invenergy's Article 10 reports, as further described in the Appleseed report.		
EB1-010	Generation - Land Lease Payments	In NYS	In DACs
	Net Expenditures ($000)	[redacted]	[redacted]
	NYSERDA's Tier 4 RFP specifies that land lease payments may be counted as eligible economic benefits only to the extent that they exceed the fair market value of the leased property. In most cases, however, the only alternative use of land leased for wind and solar facilities in upstate areas would be agricultural. The price of land leased for agricultural purposes is typically much lower on a per-acre basis than the rents paid by developers of renewable power. The [redacted] cited here represents only the amount by which lease payments exceed the estimated agricultural value of the leased land, assumed here to be approximately [redacted] per acre.		
EB1-011	Generation - PILOT and HCA Payments	In NYS	In DACs
	Net Expenditures ($000)	[redacted]	[redacted]
	Estimates of Payment-In-Lieu of Taxes (PILOT) and Host Community Agreement (HCA) payments assume that these payments will start as of the Commercial Operation Date; and will initially total [redacted] (The relevant local governments will determine how these payments will be allocated among PILOT, HCA and other local taxes.)		

Table 16-4 (continued). Through 3rd year of CDT.

16.3.2 Remainder of CDT

The benefits being delivered to the State of New York and the host Disadvantaged Communities for the remainder of the CDT are an extension of the estimates of the Operating Payroll, Local Purchasing, Land Lease Payments, Taxes, PILOTs and Host Community Agreements established between January 1, 2021 and the COD.

16.4. Category 2 – Transmission and other infrastructure, supply chain, and community economic development in New York State

Clean Path New York's Category 2 incremental economic benefits associated with Project-related transmission and infrastructure are derived primarily from Clean Path New York's investment in the development and operation of a new, 1.2 GW, 174-mile transmission line that will extend from Fraser in Delaware County to Rock Tavern in Orange County, and then down the Hudson River to Con Edison's Rainey substation, in Queens.

The Project-related transmission and infrastructure expenditures on the development and construction of the New Transmission delivering to Zone J are herein claimed as Eligible Economic Benefits. All

EB1 ID	Detailed description		
EB1-012	**Generation - Operating Jobs (FTE)**	In NYS	In DACs
	Long-term Direct Job Creation (FTE-Years)	107	11
	These benefits include, but are not limited to, jobs associated with operations and maintenance, plant management, and long-term project development.		
EB1-013	Generation - Operating Payroll	In NYS	In DACs
	Net Expenditures ($000)	$110,196	$11,020
	These benefits include, but are not limited to, jobs associated with operations and maintenance, plant management, and long-term project development.		
EB1-014	Generation - Local Purchasing	In NYS	In DACs
	Net Expenditures ($000)	$118,715	$11,872
	These benefits are based on estimated payments for in-State purchases of goods and services. Including expenditures resulting from the purchase and consumption of local goods and services (including sales tax), such as, but not limited to, food, lodging, vehicles, and equipment.		
EB1-015	Generation - Local Purchasing Jobs (FTE)	In NYS	In DACs
	Long-term Direct Job Creation (FTE-Years)	85	8
	Estimates of jobs supported through in-state purchases of local goods and services were derived from Invenergy's Article 10 reports, as further described in the Appleseed report.		
EB1-016	Generation - Land Lease Payments	In NYS	In DACs
	Net Expenditures ($000)	[redacted]	[redacted]
	NYSERDA's Tier 4 RFP specifies that land lease payments may be counted as eligible economic benefits only to the extent that they exceed the fair market value of the leased property. In most cases, however, the only alternative use of land leased for wind and solar facilities in upstate areas would be agricultural. The price of land leased for agricultural purposes is typically much lower on a per-acre basis than the rents paid by developers of renewable power. The amount cited here represents only the amount by which lease payments exceed the estimated agricultural value of the leased land (assumed in this analysis to be [redacted] per acre).		
EB1-017	Generation - PILOT and HCA Payments	In NYS	In DACs
	Net Expenditures ($000)	[redacted]	[redacted]
	Estimates of Payment-In-Lieu of Taxes (PILOT) and Host Community Agreement (HCA) payments assume that these payments will start as of the Commercial Operation Date; and will initially total [redacted] (The relevant local governments will determine how these payments will be allocated among PILOT, HCA and other local taxes.)		

Table 16-5. Remainder of CDT.

expenditures and job creation claims for construction labor on the Associated New Transmission Facility intends to adhere to Sections 18.10 and 18.11 of the Agreement as though it were the Seller under the Agreement.

EB ID#	Benefit description	Fraser to Rock Tavern	Rock Tavern to Yonkers	New York City	Total	To DACs Fraser-Yonkers	To DACs NYC	Total to DACs	% To DACs
Construction									
N/A	Unique Construction Jobs	1,280	464	586	2,330	262	469	730	31.3%
EB2-001	Construction person-yrs.	2,561	929	1,172	4,662	524	938	1461	31.3%
EB2-002	Construction payroll	$405,900	$256,300	$180,000	$842,200	$99,330	$144,000	$243,330	28.9%
EB2-003	Non-payroll construction spending	$58,332	$28,308	$17,660	$104,300	$12,996	$14,128	$27,124	26.0%
EB2-004	Non-payroll construction person-yrs.	201	105	43	349	46	34	80	23.0%
EB2-005	NYS-based professional services spending	N/A	N/A	N/A	$242,700				
EB2-006	NYS-based professional services person-yrs.	N/A	N/A	N/A	904				
EB2-007	ROW usage fee paid by CPNY to NYPA	N/A	N/A	N/A	$63,000				
Operations: Through 3rd year of CDT									
EB2-008	Operating jobs (FTE)	4	2	2	8	1	2	3	31.3%
EB2-009	Operating payroll	$1,758	$814	$702	$3,274	$386	$562	$947	28.9%
EB2-010	In-state purchasing	$1,956	$730	$2,396	$5,082	$403	$1,917	$2,320	45.6%
EB2-011	Local purchasing jobs (FTE)	4	2	4	10	1	3	4	41.0%
EB2-012	PILOT payments (100% to DACs)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	100.0%
EB2-013	NYC revocable consent fee	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	80.0%
EB2-014	Easement fees paid to NYS agencies	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	27.1%
Operations: Remainder of CDT									
EB2-015	Operating jobs (FTE)	4	2	2	8	1	2	3	31.3%
EB2-016	Operating payroll	$12,890	$5,972	$5,148	$24,010	$2,829	$4,118	$6,948	28.9%
EB2-017	In-state purchasing	$14,345	$5,354	$17,570	$37,269	$2,955	$14,056	$17,011	45.6%
EB2-018	Local purchasing jobs (FTE)	4	2	4	10	1	3	4	41.0%
EB2-019	PILOT payments (100% to DACs)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	100.0%
EB2-020	NYC revocable consent fee	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	80.0%
EB2-021	Easement fees paid to NYS agencies	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	27.1%
Total Expenditures									
	Thru 3rd Year of CDT	$467,946	$314,057	$278,465	$1,303,169	$139,876	$238,010	$377,885	29.0%
	Remainder	$27,235	$272,608	$755,066	$1,054,909	$258,678	$748,291	$1,006,969	95.5%
	Total 25-Term	$495,182	$586,666	$1,033,531	$2,358,078	$398,553	$986,301	$1,384,854	58.7%
Total Jobs									
	Thru 3rd Year of CDT	2,770	1,038	1,221	5,933	571	977	1,548	26.1%
	Remainder	8	4	6	18	2	5	7	36.7%
	Total 25-Term	2778	1042	1227	5951	573	982	1555	26.1%

Table 16-6. Transmission figures.

For all Category 2 claimed benefits, Appleseed's estimates of the value of incremental economic benefits accruing to Disadvantaged Communities assume that, for the proposed transmission line, 15% of eligible spending on construction between Fraser and Yonkers will accrue to Disadvantaged Communities; and in New York City, 80% of direct benefits of construction spending within the City (excluding purchases of professional services) will accrue to Disadvantaged Communities. When combined with the Category 1 and 3 benefits, the portion of incremental benefits accruing to DACs exceeds the 40% target of the CLCPA.

16.4.1 Through 3rd Year of CDT

The Category 2 benefits associated with Project-related transmission and infrastructure occurring from January 1, 2021 through the 3rd year of the CDT and claimed in the ODF are quantified and described in the following table based on industry standards for development, construction and operations cost estimating

EB2 ID	Detailed description		
EB2-001	**New Transmission - Construction person-yrs**	In NYS	In DACs
	Short-term Direct Job Creation (FTE-Years)	4,662	1,461
	Unique Jobs	12,331	730
	For purposes of this RFP response, we have defined "unique" construction jobs as, in effect, unique hires. The relationship of unique jobs to total payroll or person-years of employment can vary considerably from project to project. Estimates of unique jobs are based upon Unique Job estimates reported by Mott MacDonald for the proposed New Transmission facility. A "person-year" is a measure of employment that generally represents the equivalent of one employee working full-time for a year. It could for example consist of two workers, each employed full-time for six months; or two workers employed half-time for a year. For additional details on how these benefits accrue to DACs, refer to the Section 15 - Communities Engagement Plan.		
EB2-002	New Transmission - Construction Payroll	In NYS	In DACs
	Net Expenditures ($000)	$842,200	$243,330
	Mott MacDonald's estimates of the transmission construction payroll assume that construction workers are employed an average of 60 hours per week during the two-year construction period. These benefits are based on estimated payments for labor-related expenditures for work that is performed in New York State. Examples include gross wages (including employer side payroll tax payments), and benefit costs incurred in association with the employment of construction, rail and port workers, contractors and laborers, operations and maintenance personnel, engineering or environmental service providers, consultants, other employees and financial and legal service providers associated with the Project.		
EB2-003	New Transmission - Non-Payroll Construction Spending	In NYS	In DACs
	Net Expenditures ($000)	$104,300	$27,124
	Payments for in-State purchases of goods and services. Includes expenditures as a result of the purchase and consumption of local goods and services (including sales tax), such as, but not limited to, food, lodging, vehicles, equipment and the purchase of materials sourced from within New York State such as, but not limited to, gravel, steel, concrete and similar materials and/or the purchase and use of equipment and products manufactured or assembled within New York State and/or the use of rental equipment or similar supplies sourced within New York State.		
EB2-004	New Transmission - Non-Payroll Construction Person-yrs	In NYS	In DACs
	Short-term Direct Job Creation (FTE-Years)	349	80
	Estimates of jobs supported through in-state purchases of construction-related goods and services, as further described in the Appleseed report. These jobs include an establishment of a project office in New York State, pre-development activities, leases/purchases, and other related non-payroll employment.		
EB2-005	New Transmission - NYS-Based Professional Services Spending	In NYS	In DACs
	Net Expenditures ($000)	$242,700	N/A
EB2-006	New Transmission - NYS-Based Professional Services Person-yrs	In NYS	In DACs
	Short-term Direct Job Creation (FTE-Years)	904	N/A

Table 16-7. Through 3rd year of CDT.

methods. The Clean Path New York team is comprised of well-established generation and transmission developers and is advised by expert consultants experienced with projects of this size and scope. The claimed benefits are therefore credible, reliable and verifiable to ensure these benefits are realized by New York rate payers and Disadvantaged Communities associated with the project.

For additional details on how these benefits accrue to DACs, refer to the Section 15, Communities Engagement Plan. Details regarding the estimation methods used to determine the project-specific expenditures and job creation benefits are provided in the Appleseed reports in Appendix 17 and additional details can be provided upon request of the NYSERDA review team.

Each claimed incremental economic benefit in the following tables detail the corresponding EB ID# in the ODF, the Project Phase, the Evaluation Period, the value of the benefit to NYS, portion accruing to DACs, and a reference to its alignment with the benefit eligibility criteria stated in the RFP.

EB2 ID	Detailed description		
EB2-007	New Transmission - ROW Usage Fee Paid by CPNY to NYPA	In NYS	In DACs
	Net Expenditures ($000)	$6,300	N/A
	NYSERDA's Tier 4 RFP specifies that land lease payments may be counted as eligible economic benefits only to the extent that they exceed the fair market value of the leased property. In most cases, however, the only alternative use of land leased for wind and solar facilities in upstate areas would be agricultural. The price of land leased for agricultural purposes is typically much lower on a per-acre basis than the rents paid by developers of renewable power. The amount cited here represents only the amount by which lease payments exceed the estimated agricultural value of the leased land (assumed in this analysis to be $100 per acre).		
EB2-008	New Transmission - Operating Jobs (FTE)	In NYS	In DACs
	Long-term Direct Job Creation (FTE-Years)	8	3
	These benefits include, but are not limited to, jobs associated with operations and maintenance, plant management, and long-term project development.		
EB2-009	New Transmission - Operating Payroll	In NYS	In DACs
	Net Expenditures ($000)	$3,274	$947
	These benefits include, but are not limited to, jobs associated with operations and maintenance, plant management, and long-term project development.		
EB2-010	New Transmission - In-State Purchasing	In NYS	In DACs
	Net Expenditures ($000)	$5,082	$2,320
	These benefits are based on estimated payments for in-State purchases of goods and services. Including expenditures resulting from the purchase and consumption of local goods and services (including sales tax), such as, but not limited to, food, lodging, vehicles, and equipment.		
EB2-011	New Transmission - Local Purchasing Jobs (FTE)	In NYS	In DACs
	Short-term Direct Job Creation (FTE-Years)	10	4
	These benefits are based on estimated payments for in-State purchases of goods and services. Including expenditures resulting from the purchase and consumption of local goods and services (including sales tax), such as, but not limited to, food, lodging, vehicles, and equipment.		
EB2-012	New Transmission - PILOT Payments	In NYS	In DACs
	Net Expenditures ($000)	[redacted]	[redacted]
	Payments in-lieu-of taxes to school districts, cities, towns, and other taxing jurisdictions.		
EB2-013	New Transmission - NYC Revocable Consent Fee	In NYS	In DACs
	Net Expenditures ($000)	[redacted]	[redacted]
	Underground conduit installation fee paid to New York City Department of Transportation		
EB2-014	New Transmission - Easement Fees Paid to NYS Agencies	In NYS	In DACs
	Net Expenditures ($000)	[redacted]	[redacted]

Table 16-7 (continued). Through 3rd year of CDT.

EB2 ID	Detailed description		
EB2-015	**New Transmission - Operating Jobs (FTE)**	In NYS	In DACs
	Long-term Direct Job Creation (FTE-Years)	8	3
	These benefits include, but are not limited to, jobs associated with operations and maintenance, plant management, and long-term project development.		
EB2-016	New Transmission - Operating Payroll	In NYS	In DACs
	Net Expenditures ($000)	$24,010	$6,948
	These benefits include, but are not limited to, jobs associated with operations and maintenance, plant management, and long-term project development.		
EB2-017	New Transmission - In-State Purchasing	In NYS	In DACs
	Net Expenditures ($000)	$37,269	$17,011
	These benefits are based on estimated payments for in-State purchases of goods and services. Including expenditures resulting from the purchase and consumption of local goods and services (including sales tax), such as, but not limited to, food, lodging, vehicles, and equipment.		
EB2-018	New Transmission - Local Purchasing Jobs (FTE)	In NYS	In DACs
	Short-term Direct Job Creation (FTE-Years)	10	4
	These benefits are based on estimated payments for in-State purchases of goods and services. Including expenditures resulting from the purchase and consumption of local goods and services (including sales tax), such as, but not limited to, food, lodging, vehicles, and equipment.		
EB2-019	New Transmission - PILOT Payments	In NYS	In DACs
	Net Expenditures ($000)	[redacted]	[redacted]
	Payments in-lieu-of taxes to school districts, cities, towns, and other taxing jurisdictions.		
EB2-020	New Transmission - NYC Revocable Consent Fee	In NYS	In DACs
	Underground conduit installation fee paid to New York City Department of Transportation		
EB2-021	New Transmission - Easement Fees Paid to NYS Agencies	In NYS	In DACs
	Net Expenditures ($000)	[redacted]	[redacted]

Table 16-8. Remainder of CDT.

16.4.2 Remainder of CDT

The benefits being delivered to the State of New York and the host Disadvantaged Communities for the remainder of the CDT are an extension of the estimates of the Operating Payroll, Local Purchasing, Land Lease Payments, Taxes, PILOTs and Host Community Agreements established between January 1, 2021 and the COD.

16.5. Category 3 - Other activities that provide opportunities for the New York workforce and communities

The impacts of climate change on the environment, economy and society are becoming ever more apparent and will be still greater in the future. The challenges will be exacerbated by the issues we face today: a widening wealth gap, racial inequities, a mid-level skills gap, and a health system recovering from a global pandemic. However, there is hope that a clean and just energy transition can bring innovation and jobs to the economy while increasing energy efficiency, reducing pollution, and combating the threat of climate change. Clean Path New York therefore has an obligation to engage thoughtfully in the green economy, interceding in areas where transition threatens to deepen existing inequalities in our society.

A green economy that leaves historically disadvantaged populations behind will not be a sustainable economy.

Equitable opportunity is extremely important to the Clean Path New York project. Clean Path New York will devote considerable time and effort to ensuring that outreach, access, and opportunities are made available to environmental justice communities, communities of color, and economically depressed and at-risk populations. The new green economy should benefit all of New York's residents.

As discussed in the CEP , and further defined and quantified in this IEBP, Category 3 incremental economic benefits may include workforce development activities, actions aimed at increasing the likelihood that New York residents will find work on the project, and other actions that provide assistance to Disadvantaged Communities.

The COVID-19 pandemic laid bare the deleterious impact of long-standing systemic health and social inequities in New York State's economy. According to the Centers for Disease Control and Prevention, these social determinants of health put many people from racial and ethnic minority groups at increased risk of dying from COVID-19.[2] One study by Lauren Holmes Jr. et al. stated, "The COVID-19 mortality [cumulative incidence] indicated Blacks/AA [experienced] 34% of the total mortality in the United States, albeit their 13% population size."[3]

A growing body of literature clearly documents the painful reality of environmental justice burdens and their correlation with negative health impacts in minority communities. The *New York Times Magazine* asserts that "[B]lack Americans are exposed to 1.5 times as much of the sooty pollution [particulate matter] that comes from burning fossil fuels than the population at large."[4]

The article goes on to explain that, "[a] study of more than 3,000 US Counties released in April [conducted by Harvard University researchers] shows a statistical connection between death rates from COVID-19 and long-term exposure to air pollution. Each increased microgram of [particulate matter pollution] per cubic meter of air is associated with an 8 percent increase in death from COVID-19."

Couple these disturbing findings with other recent studies, one quantifying higher-than-appreciated global mortality (1 in 5 early deaths globally) from outdoor fine particle pollution generated by fossil fuel combustion[5] and another showing increased prevalence of street-level particulate matter pollution in New York City in excess of 20 times what it was previously thought to be, and the importance of projects like Clean Path New York is brought into stark relief.

In addition to directly reducing criteria pollutants NO_x, SO_x, and Particulate Matter from electric generation by 40% in Disadvantaged Communities through the delivery of clean energy and the concomitant displacement of fossil fuel-fired generation sources, Clean Path New York will drive significant direct environmental justice benefits to Disadvantaged Communities. Clean Path New York believes that even this substantial impact is by itself insufficient, and that Clean Path New York must be leveraged to the greatest extent possible as a remedy to the structural inequities described above.

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[2] https://www.cdc.gov/coronavirus/2019-ncov/community/health-equity/racial-ethnic-disparities/disparities-deaths.html

[3] Holmes Jr., Lauren, et al. "Black–White Risk Differentials in COVID-19 (SARS-COV2) Transmission, Mortality and Case Fatality in the United States: Translational Epidemiologic Perspective and Challenges," *Int. J. Environ. Res. Public Health* 2020, 17(12), 4322.

[4] Villarosa, Linda "Pollution is Killing Black Americans. This Community Fought Back." *New York Times Magazine*, July 28, 2020. Found at https://www.nytimes.com/2020/07/28/magazine/pollution-philadelphia-black-americans.html.

[5] Vohra, Karn et al. "Global mortality from outdoor fine particle pollution generated by fossil fuel combustion: Results from GEOS-Chem." *Environmental Research*. Vol. 195. April 2021.

Category 3

Initiative	Workforce/jobs	Economic development	Public health	Env. Justice	Total
Thru 3rd year of CDT	$20,000,000	$10,000,000	$10,000,000	$10,000,000	$50,000,000
Remainder of CDT	$80,000,000	$40,000,000	$40,000,000	$60,000,000	$220,000,000
Total	**$100,000,000**	**$50,000,000**	**$50,000,000**	**$70,000,000**	**$270,000,000**

Table 16-9. Economic benefits under Category 3.

To that end, Clean Path New York will constitute a Community Investment Fund of at least $270 million over 25 years prioritizing the following areas:

- Workforce development and job creation
- Economic development
- Enhancements in public health
- Environmental justice

An overarching goal of each of these priorities is to focus opportunities in disadvantaged populations and environmental justice communities. Through community engagement and outreach, Clean Path New York will ensure that our Community Investment Fund is in line with specific community needs. The fund will be managed by a board of directors to be named after the project secures a funding award from NYSERDA.

A preliminary array of programs and investments is provided in Table 16.10 below. The full scope of economic benefits to be provided under Category 3 will only be determined through consultation with NYSERDA and engagement with the affected host communities.

The Clean Path New York Community Investment Fund will explore partnering and funding with various institutions and programs that are in line with the priorities outlined below, with reference to the Category 3 claimed benefit in the ODF:

16.5.1 Workforce development and job creation

EB3 ID	Detailed description
EB3-001	Workforce Development plus Job Creation - Through 3rd Year of CDT Investment: $15,000,000
EB3-002	Workforce Development plus Job Creation - Remainder of CDT Investment: $85,000,000 Clean Path New York will help make New York a leader in the new green economy by creating the infrastructure that will support a diverse new green workforce. Our current workforce must transition along with our energy system and support programs if that goal is to be achieved. The transition to a cleaner, decarbonized economy will create millions of green jobs across the state. Such jobs will decrease inefficient consumption of energy or raw materials, limit greenhouse gases, minimize waste and contamination, and protect or restore ecosystems. To support the green workforce, Clean Path New York will sponsor programs that provide **job training**, promote **career awareness**, and strengthen the **workforce pipeline through education**. A special emphasis will be placed on programs that address disadvantaged populations and environmental justice communities. Over the next 25 years, the Clean Path fund will invest $100 million in the development of a workforce by promoting access to STEM, green, tech and other essential jobs for members of historically Disadvantaged Communities, including those who have encountered barriers to entry due to their race, economic status, former incarceration, gender, or ability. Critical to success is the coordination of education, workforce development, and economic development, with a strengthened role for community-based service providers — including community colleges, universities, vocational training programs, and local workforce nonprofits — to match employers' needs to training and education. **Workforce Pipeline and Career Awareness:** When Governor Andrew M. Cuomo announced New York's bold commitment to become the nation's leading green energy economy in his State of the State message earlier this year, he rightly focused our attention on the importance of education in creating the new workforce that will drive New York's success. The State University of New York, as the nation's largest comprehensive system of higher education, with 95% of all New Yorkers living within thirty miles of at least one of its campuses, is charged with expanding and developing its commitment to studies aimed at making its graduates the best prepared when it comes to taking up the thousands of jobs that will be created by Clean Path and by a myriad of other green energy projects in New York and elsewhere. Clean Path New York will support the state's efforts and, in fact, we have already briefed SUNY about its potential interest in helping the state to further its commitment to New Yorkers who wish to enter the field of green energy and sustainability. The fund will commit significant funding to the SUNY system for the following purposes: • developing its green energy curriculum • creating scholarships and financial aid programs for students who wish to pursue careers related to green energy and sustainability • providing paid internships throughout the project and across the industry for enrolled students and enabling SUNY to expand programming for workforce preparedness in green industries throughout the system's 30 community colleges. The 2012 report by the 21st Century Commission on the Future of Community Colleges underscored the essential role community colleges play in opening up opportunities to all Americans, especially those who are new immigrants or come from Disadvantaged Communities. Clean Path New York also intends to provide funds for: • Experiential learning opportunities through job shadow, paid internships, mentorships, and apprenticeships. • Creating and expanding STEM programs for the K-12 students who will become tomorrow's innovators. • Career and Technical High Schools – Investing in CTE high schools focused on preparing students for careers in energy and other technical fields is critical to developing a green workforce. These programs allow students to pursue a targeted education that meets the needs of the workforce without spending additional time and money at a four-year college. To make these programs work, however, public-private partnerships are essential. In addition to Department of Education investment, industry expertise is vital to shaping the curriculum, offering mentorship, preparing students to enter the workforce, and being engaged in recruitment when it comes time to pick up where the degree programs leave off. **(cont.)**

Table 16-10. Category 3 workforce development and job creation.

EB3 ID	Detailed description

- College and University Scholarships —To offer underserved communities access to education, Clean Path New York pledges to fund endowed scholarships in STEM disciplines at private and public higher education institutions across Clean Path New York's service territory. In this way, Clean Path New York plans to play a key role in educating future generations in STEM fields which offer strong job opportunities in diverse settings.
- STEM Curriculum and Educator Training Programs – A plethora of local organizations have worked for years to bring specialized educational opportunities into the classroom by designing and sharing STEM curricula and training teachers to deepen students' education in these subjects. By leveraging their expertise, Clean Path New York proposes to expand the availability of such programs for local teachers in the Clean Path New York area who wish to expose their students to diverse subjects that will better prepare them for careers in these specialties. Through these programs, Clean Path New York may distribute educational materials such as textbooks or workbooks or may provide specialized kits for performing experiments. Training teachers to administer such curricula gives them transferable skills and the tools needed to continue to reimagine the way they teach.
- After school programs
- Career fairs and career days

Job Training

For the unemployed and underemployed, job training will be key to providing meaningful career opportunities in the field of energy. Clean Path New York will work with local job training programs to develop or expand programing to ensure that communities have access to these opportunities.

Some of the programs that will be considered include:

- Grassroots programs that provide job training and skills development while dismantling barriers to entry faced by marginalized populations such as the formerly incarcerated, immigrants, and at-risk youth.
- Efforts to focus job recruitment on targeted distressed and environmental justice communities.
- Next Century Job Corps Training Facility – As technology continues to develop at a rapid pace, private companies will invest in facilities to train their existing workforce on how to safely implement and use new systems. While these facilities will be primarily leveraged for internal training, Clean Path New York proposes expanding the internal infrastructure to develop accessible training sites and programs for those interested. By making this training curriculum available and affordable, Clean Path New York will give community workforce development candidates the opportunity to complete the training required to enter the company at the entry-level union role. Nonprofit partners will also have the opportunity to utilize certain facilities to carry out licensing and certification for those facing barriers to entry.

Even with significant investments to provide people with the skills necessary to obtain jobs in the green economy or technical sector, marginalized populations can continue to face challenges when they enter the workforce. Difficulties with dependent care, transportation, and inflexible work arrangements can challenge the retention of qualified employees from marginalized communities.

Working with NYS Pathways Program Employers is an opportunity for Clean Path New York to learn about best practices for making careers available to all communities. Leveraging our own experiences, Clean Path New York will determine best practices for providing benefits, creating flexible work arrangements when possible, and recruiting and retaining underserved populations..

Table 16-10 (continued). Category 3 workforce development and job creation.

16.5.2 Economic development

EB3 ID	Detailed description
EB3-003	Economic Development - Through 3rd Year of CDT Investment: $10,000,000
EB3-004	Economic Development - Remainder of CDT Investment: $40,000,000 The new green economy is positioned to breathe new life into New York coming out of the pandemic. Recovery has already begun, and Clean Path New York will prioritize community funds where the needs are greatest. Through its outreach, the team will engage with local Chambers of Commerce, small businesses and non-profits to best position funds to support economic development in areas touched by transmission and generation projects. In addition, the support of MWBE, VOSB and SDVOSBs will be an important priority. Collectively, Clean Path New York partners have created a significant number of jobs with their green energy programs and administered high value programing across the state. Some of the actions that will be considered include: • Supporting programs with similar goals, such as NYPA's ReCharge NY and Municipal and Rural Electric Cooperative IEDP Programs. These programs have helped to create and preserve about 170,000 jobs across the state. • Supporting other related initiatives, such as the Smart Cities Program, which provides financial, logistical, technical, and informational support for cities that want to make energy upgrades, and coordinate technology, such as: – Connectivity (Public WiFi, Digital Kiosks, Smart Phone Applications) – Environmental (Air Quality Sensor, Ice/Snow Detection, Sewer/Storm Water Monitoring) – Transportation (Traffic Optimization, Traffic Monitoring, Parking Management) – Public Safety (Video Analytics, Noise/Motion Detection, Gunshot Detection) – Providing assistance for new and emerging businesses in the green energy sector, with a special emphasis on new MWBE, VOSB and SDVOSBs. • Bridging the digital divide - The digital divide will become a primary driver of socioeconomic outcomes in the 21st century. As labor productivity becomes increasingly reliant on information technology, inequality of economic outcomes will be more tightly correlated with access to the next generation of telecommunications networks. These networks, whether wireline or wireless, are dependent on the fiber optic backbone necessary to satisfy the incessant demand for bandwidth. Clean Path New York is uniquely positioned to help bridge this divide by leveraging its investment in infrastructure to extend the telecommunications network to underserved communities. If selected for this award, Clean Path New York would commit to help bridge the digital divide in New York State. Clean Path New York would start by characterizing the communities of need that fall along the transmission line route. Specific targets would include educational centers and industry partners.

Table 16-11. Category 3 economic development.

16.5.3 Enhancing public health

EB3 ID	Detailed description
EB3-005	Enhancing Public Health - Through 3rd Year of CDT Investment: $10,000,000
EB3-006	Enhancing Public Health - Remainder of CDT Investment: $40,000,000 Cleaner energy means healthier communities and that's why Clean Path New York will embrace additional opportunities to help communities become healthier and stronger. Existing health disparities became more obvious during the pandemic and communities in more polluted areas were affected at a much higher rate. Clean Path New York will focus some of its funds toward those communities that are behind the curve and need additional resources. Potential concepts that will be explored: • Mount Sinai Public Health Partnership - Clean Path New York is focused on improving health outcomes in environmental justice communities that have historically been underserved. In partnership with Mount Sinai, Clean Path New York will focus specifically on the South Bronx (Mott Haven and Hunts Point in particular) and Astoria to create "Virtual First Community Care Access Hubs." This ongoing commitment and program would specifically target children, families, and pregnant women of color who face economic and access barriers to care. The goal of Clean Path New York's yearly investment in these communities would be to increase access to physical, behavioral, and social care, ultimately improving clinical outcomes and reducing the disparities in services these communities have historically faced. Based on a model already successfully established at the Dream Charter School in East Harlem, a Community Health Worker (CHW) positioned at public, neighborhood schools provide facilitation for telehealth access. The facilitation includes providing education regarding the technology, helping students and families navigate telehealth platforms, and connecting them directly for behavioral and physical health. Mount Sinai would partner with us to provide the behavioral health access and the local Federally Qualified Health Centers would provide most of the physical care including prenatal care. Remote monitoring for pregnant women with comorbid conditions is also available. Critically, social care (food, transportation, benefits, etc.) is coordinated by the community health worker. By bringing care to the community in an efficient manner, these hubs are easy to scale and provide new access points for those at highest need. The hubs target high risk, vulnerable communities that often struggle with accessing telehealth due to mistrust, lack of awareness and education, or lack of broadband and WIFI infrastructure. • The Clean Path New York team will seek to take these successful public health programs and expand them throughout the generation and transmission footprint of the project. The lack of affordable and accessible primary care options for communities along the project footprint will be a primary focus of the Clean Path New York Community Investment Fund. • Access to open community space, bike paths and supporting beautification efforts. These all contribute to healthier ways of living and will be considered where project opportunities present themselves.

Table 16-12. Category 3 public health.

16.5.4 Environmental justice

EB3 ID	Detailed description
EB3-007	Environmental Justice - Through 3rd Year of CDT Investment: $10,000,000
EB3-008	Environmental Justice - Remainder of CDT Investment: $40,000,000 The new green economy must be an economy with opportunities for all - from the construction site to the living room. Equal protection from environmental hazard and equal opportunities for creating cleaner, greener homes are among the main objectives of Clean Path New York. Project partners have successfully implemented clean energy and market accelerating investments across the Capital, Mid-Hudson and Southeast NY Regions. These efforts encompass Energy Efficiency, Clean Energy Advisory Services (Solar and Storage Projects) and advancing the decarbonization of the transportation sector. NYPA also continues to enhance its communication to its public customers, including municipal and governmental entities, on how to take control of their energy use, providing insights and resources to achieve GHG and energy reductions. These priorities and communication processes will continue and be enhanced to meet the needs of Clean Path New York. Improving energy efficiency also has an economic impact. Through its continuously evolving partnership with the private sector, NYPA has made investments of over $1.2 billion, creating over 22,000 jobs and avoiding emission of close to 9,000 metric tons of GHG CO_{2e}. Clean Path New York will consider ways to bolster these programs to complement its transmission and generation projects. Further, housing is an area that cannot be ignored when it comes to environmental justice – both the outside and inside environments contribute to a community's overall health and wellness. One of the areas Clean Path New York will look at, based on experience at NYPA, is public housing. While environmental justice communities will be benefit from all of the priorities outlined above, additional measures can be taken to help these communities. Some of the programs that will be considered include: • Improving affordable housing and reducing emissions in Disadvantaged Communities through electrification retrofits to spur local investment, create good jobs, and reduce the environmental burden existing buildings place on local communities • Working with public housing entities throughout the state to upgrade facilities with energy efficient products and technologies, such as: – Energy Star refrigerator updates – HVAC/boiler replacement – Steam – Hot water systems – Heating systems – LED lighting upgrades – Building Envelope-external weatherization • eMobility – transportation and congestion can be a contributing factor to pollution in environmental justice communities. The team will review programs that focus on the following transportation solutions: – Supporting programs like EVolve NY, which provides Level 2 and DC fast charging stations for electric vehicles – Electrification of transit fleets • Alternative methods of transportation such as bike shares and bike paths, where communities desire more connectivity. • Supporting the environment – Clean Path New York will support environmental causes and priorities throughout the transmission and generation footprints – from clean water and clean air to habitat protection and conservation..

Table 16-13. Category 3 environmental justice.

The Clean Path New York Community Investment Fund will be a collaborative program, informed by meaningful stakeholder outreach and community priorities. With special focus on disadvantaged populations and environmental justice communities, Clean Path New York looks forward to providing opportunities for all to thrive in the new green economy.

16.6. Economic benefits verification plan

Clean Path New York will consult with NYSERDA on developing an effective Economic Benefits Report and Verification Plan to ensure claimed benefits are realized. As stated in Appendix G of the RFP,

> "Proposers must provide an Economic Benefits Verification Plan specifying how the claimed Incremental Economic Benefits will be documented for contract compliance. Specifically, Proposers should include a description or list of the documents, reports, contracts, invoices, or other information that they anticipate submitting to allow NYSERDA to verify the actual economic benefits that accrue to New York State. Such description or list need not be exhaustive and may be amended and refined at the election of the Proposer at any time prior to submission of the Economic Benefits Report. A section of the Economic Benefits Report shall state the final description and/or list of documentation used for measurement and verification of the economic benefits claimed."

The guidelines and requirements regarding the Economic Benefits Claims and Verification in Exhibit F of the PSA provide a detailed and thorough outline for such a Plan and Clean Path New York proposes to work within that framework when selected by NYSERDA to enter PSA negotiations.

A preliminary list and description of anticipated documentation is provided below.

List of Anticipated Documentation

- Labor-related expenses:
  - W-2s, 1099s or other tax documents
  - Copies of subcontracts
  - Project Labor Agreements
- Local Goods and Services:
  - Receipts
  - Check registers
  - Invoices with proof of payment
  - Bank statements
- Operations and Maintenance:
  - Receipts
  - Check register
  - Invoices with proof of payment
  - Bank statements
- Other evidence or documentation, subject to NYSERDA's approval

Clean Path New York looks forward to delivering both the *inherent* and *incremental* Economic Benefits we've presented in the CEP and IEBP to New York State.

Clean Path NY

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