



Renewable Energy Siting in New York State

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Abbreviations

1. ALJ - Administrative Law Judge
2. BESS - Battery Energy Storage System
3. BMS - Battery Management System
4. CIA - Cumulative Impact Analysis
5. CLCPA - Climate Leadership and Community Protection Act
6. DC - Direct Current
7. DAC - disadvantaged communities
8. DCFC - Direct Current Fast Charger
9. DEC - Department of Environmental Conservation
10. EJ - Environmental Justice
11. EPA - Environmental Protection Agency
12. EV - Electric Vehicle
13. FMEA - Failure Modes and Effects Analysis
14. GHGs - Greenhouse Gasses
15. GW - Gigawatts
16. KW - Kilowatt
17. kWh - Kilowatt hour
18. MWH - Megawatt hour
19. MW - Megawatts
20. NY- New York
21. NYISO - New York Independent System Operator
22. NYSDPS - New York State Department of Public Service
23. NYSERDA - New York State Energy Research and Development Authority
24. ORES - Office of Renewable Energy Siting
25. PSC - Public Service Commission
26. SEC - Securities and Exchange Commission
27. SEQR - State Environmental Quality Review
28. TWh - Terawatt-hours
29. VAC - Volt Alternating Current

Executive Summary

This report on Renewable Energy Siting in New York State offers HDR a detailed overview of the regulatory procedures related to renewable energy siting in New York State (NYS). The report was developed by graduate students as part of the Environmental Health Sciences Capstone program at the Columbia Mailman School of Public Health in Spring 2024. By analyzing relevant legislation and policies, the report aims to equip HDR with the knowledge necessary to advise clients effectively on permit requirements and implications, particularly concerning Disadvantaged Communities (DACs). The information gathered will enable HDR to offer informed guidance to potential clients regarding renewable energy project siting, ensuring compliance with legal and environmental standards while considering the socio-economic and environmental justice context of proposed locations. This project leveraged a narrative review, qualitative interviews, and a case study to gather insights into renewable energy siting practices and relevant New York State (NYS) legislation. The narrative review followed a systematic snowball search approach to identify relevant sources, while qualitative interviews with two key stakeholders provided supplemental data. A case study example was also examined to illustrate considerations for environmental justice in Battery Energy Storage System (BESS) siting. The comprehensive final report identifies trends and gaps and provides key recommendations for developers to navigate the regulatory landscape governing renewable energy siting in NYS.

Background

Introduction

HDR specializes in engineering, architecture, environmental, and construction services. Leveraging multidisciplinary teams of scientists, economists, builders, analysts, and artists working across 200 locations globally, HDR adds beauty and structure to communities through high-performance buildings and smart infrastructure. This report will introduce HDR and clients to the renewable energy climate of New York State to understand current and proposed environmental justice legislation, policies, and guidance that relate to assessing public health on clean energy projects. The report outlines the identification and mapping of disadvantaged communities (DAC) in New York State (NYS) to integrate into a Cumulative Impact Analysis (CIA) for projects involving Solar, Battery Energy Storage (BESS), on-shore wind, and Brownfields redevelopment.

Historical Context of Renewable Energy in New York State

According to the World Health Organization, climate change affects the social and environmental determinants of health, including clean air, safe drinking water, sufficient food, and secure shelter. Between 2030 and 2050, climate change is expected to cause approximately 250,000 additional deaths per year ([WHO 2023](#)). Human activities have played a large role in rising global temperatures that contribute to climate change. The burning of fossil fuels such as coal, oil, and natural gas has increased the atmospheric levels of carbon dioxide, methane nitrous oxide, chlorofluorocarbons, and other gasses that insulate Earth's atmosphere, causing global temperatures to slowly rise ([Wuebbles & Jain, 2001](#)). Transforming the grid from nonrenewables to clean energy sources, such as wind and solar, is critical to mitigate climate change while addressing air pollution and health equity.

NYS is a leader in energy development and renewable energy implementations. Governor Pataki proposed the first renewable energy plan in NYS. The plan was adopted in 2004 and aimed for 25 percent of NYS's electricity to come from renewable sources by 2013 ([Alin et al., 2020](#)). The plan is known as the renewable portfolio standard, defines renewable energy as wind, fuel, cell, solar, biomass, landfill gas, and tidal power ([NRDC, 2004](#)). By 2011, when Governor Cuomo entered office, only 19 percent of the state's power was generated from renewable energy sources ([Alin et al., 2020](#)). Governor Cuomo created the 2015 New York State Energy Plan to continue progress toward having NY rely on renewable energy. This plan was a roadmap to how NY would build a "clean, resilient, and affordable energy system for all New Yorkers" ([New York State Energy Planning Board, 2015](#)). The standard mandated that renewable energy sources provide 50% of the state's energy needs by 2030. The plan was built to support Governor Cuomo's other initiative, Reforming Energy Vision, which aimed to overhaul New York's energy system to make it more sustainable and affordable for all parties ([New York State Energy Planning Board, 2014](#)). Governor Cuomo's framework focused on three main activities to help New York achieve these ambitious goals. First, regulatory reform would change the state's electric and utility company business practices to create new roles and business models in electric utilities. Second, market activation would allow the private sector to be involved in innovation. Finally, NY aimed to lead by example by mobilizing the state's public energy assets to pilot new technologies, demonstrating to businesses and consumers the efficiency and accessibility of new renewable energy technology ([New York State Energy Planning Board, 2015](#)). These policies then led to the creation of the most recent objective regarding where to site these new renewable energy sources to allow for the entirety of NY to reap the benefits.

In 2019, Governor Andrew Cuomo signed Senate Bill S6599, enacting the Climate Leadership and Community Protection Act (CLCPA) to set the agenda for NYS climate leadership and community protection. This legislation set the ambitious climate goals of achieving 70 percent of electricity from renewable sources by 2030 and zero-emission electricity by 2040 ([Metzger, 2019](#)). Under the CLCPA, NYS has installed large-scale solar panels, onshore wind farms, and battery storage facilities across the state to meet its clean energy targets.

Contemporary Renewables Landscape and Social Outcomes

Environmental justice is a social movement and a theoretical lens to promote fairness in distributing environmental benefits and burdens and the processes determining those distributions ([Scott 2014](#)). Across NY, the clean energy transition must take place from an equity lens that addresses the distribution of environmental benefits and the prevention and reduction of environmental burdens for all communities. Critically, historically marginalized and underrepresented groups deserve procedural justice and a place at the table for communities most impacted to lead change-making. Environmental justice (EJ) communities can be composed of marginalized racial/ethnic, low-income/poor, rural, immigrant/refugee, and indigenous populations that live in areas disproportionately burdened by environmental hazards, unhealthy land uses, psychosocial stressors, and historical traumas, all of which drive environmental health disparities ([American Public Health Association, 2020](#)).

In addition to the emission reduction and increased renewable energy sources, the CLCPA established environmental justice goals requiring that communities disproportionately affected by climate change and associated health outcomes receive 40 percent of the benefits from clean energy programs ([Halliday et al., 2022](#)). To aid in the determination of what communities are disproportionately affected, the Climate Justice Working Group coined the term disadvantaged

communities (DACs), which represent 35 percent of census blocks across NYS that have been the most underserved, unrepresented, and who have the most vulnerable populations ([New York State Climate Action Council, 2024](#)). The CLCPA also created the Climate Action Council and Climate Justice Working Group to develop a scoping plan to achieve the state's greenhouse emission reduction goals and ensure all communities benefit equally from the transition to clean energy ([Aidun et al., 2021](#)). The Scoping Plan, released in 2022, outlines recommendations to meet the Climate Act's goals, placing NY at the forefront of achieving carbon neutrality through an equitable and just transition away from non-renewables.

Brownfield Redevelopment Implications on Renewables

Brownfields are underutilized or unused lands by pollutants and hazardous substances ([De Sousa & Ghoshal, 2012](#)). Most brownfield sites were formed during the deindustrialization of major cities following the decline of manufacturing industries since World War II ([De Sousa & Ghoshal, 2012](#)). In NYS, underutilized environmental sites are estimated to be over 5,000, and many heavily contaminated sites are concentrated in NYC and Long Island areas ([Spielberg, 2022](#)). There are over 3,000 underutilized commercial properties in NYC, a significant portion of which could be identified as brownfields ([NYC, 2024](#)). The presence of post-industrial brownfields has negatively affected the socio-economic environment of the surrounding communities ([Greenberg & Lewis, 2000](#)). Many of these contaminated sites are disproportionately located in low-income communities, highlighting current and potential environmental injustice issues ([Mitchell et al., 2023](#)).

Due to the potential adverse health risks and hazards posed by such contaminated sites on the proximal communities ([Maantay & Maroko, 2018](#)), brownfield redevelopment is critical in addressing the disproportionate climate burdens and achieving environmental justice goals. The city and state governments have initiated several cleanup projects, including the NYS Superfund Program or Brownfield Cleanup Program, which manages approximately 17% of abandoned or underused commercial properties across the state ([Spielberg, 2022](#)). Installing large-scale solar panels or wind farms in the redeveloped brownfields can efficiently utilize the land while redirecting benefits toward low-income and disadvantaged communities, addressing environmental justice issues, and advancing the transition to clean energy goals. To revitalize abandoned lands, many initiative programs have been introduced to encourage the development of Brownfields for renewable energy generators, including the large solar installations in a former iron ore mine in the Adirondacks ([NYSERDA, 2024a](#)). The Benson Mines project will support 50 to 75 construction jobs and five permanent positions while also helping to provide a significant proportion of the estimated 223-312 MW needed to provide electricity to homes in Adirondack Park ([NYSERDA, 2021a](#)). Additionally, the State has announced the plan to build a large-scale solar energy facility in the former Caswell Road landfill in Tompkins County ([Crandall, 2023](#)). Repurposing these formerly contaminated sites for renewable energy development presents an opportunity for communities that have experienced a disproportionate burden of climate change to receive the benefits of the transition to clean energy in the form of job opportunities and access to affordable clean energy.

Energy Consumption State of Affairs

NYS and NYC collectively stand as pivotal players in the nation's energy landscape, with a combined population of 19.65 million and 8.13 million housing units ([US DOE, 2016](#)).

Their 0.53 million business establishments underscore their economic significance. Regarding energy consumption, NYS consumes 143.2 terawatt-hours (TWh) of electric power. At the same time, NYC's peak demand, reaching 10,000 megawatts during summer months, plays a critical role in driving electricity consumption ([NYC Mayor's Office of Climate and Environmental Justice, 2022](#)). An estimated 20 gigawatts (GW) of new renewable generation is required to achieve the 70% renewable goal by 2030, representing a monumental undertaking within the next six years. This target dwarfs previous development efforts, with only 12.9 GW of new generation developed since the inception of wholesale electricity markets over 20 years ago ([New York ISO, 2021](#)).

The upstate energy grid boasts 91% of the renewable electricity supply ([NYC Mayor's Office of Climate and Environmental Justice, 2022](#)). Comparatively, New York City generates a quarter of GHGs through burning fossil fuels for energy alone. NYC is committed to purchasing 100% clean and renewable electricity for City operations by 2025. A vital issue is insufficient transmission lines to bring upstate clean power to NYC. Through part of the Climate Mobilization Act, infrastructure projects with wind, solar, hydropower, and improved transmission networks from upstate New York and Canada will reduce the city's reliance on fossil fuels, create approximately 10,000 family-sustaining jobs statewide, and bring \$8.2 billion in economic development investments ([NYC Mayor's Office of Climate and Environmental Justice, 2022](#)).

Significance

With the increasing interest and investment in renewable energy in New York State, it is critical to closely examine current policies and regulations governing the siting of renewable energy generators and redevelopment of Brownfield sites. The changing policy landscape has spurred new procedures for renewable energy siting, driving the need for critical analysis and synthesis of relevant processes. However, there are potential differences and disparities between state and city-level clean energy policies, particularly regarding environmental justice issues. Therefore, a comprehensive review of current and future policies is required to bridge existing gaps and inform potential developers and policymakers. Moreover, a thorough assessment of the state's definition and criteria for DACs under the CLCPA is crucial for developing inclusive and impactful plans that align with New York State's commitment to sustainable clean energy targets for the benefit of all communities.

Report Objectives

1. Evaluate and synthesize the impact of NY state-specific policies on renewable energy across different regions.

This report evaluates and synthesizes the impact, effect, and nuances of renewable energy policies across different regions of NY in light of recent policy changes. Understanding how state-specific policies and agencies influence the adoption and utilization of renewable energy resources is imperative for meeting the CLCPA agenda of achieving 70 percent of electricity from renewable sources by 2030. By examining regional variations, we aim to discern patterns and disparities to inform and support environmental justice strategies in renewable energy deployment, from renewable siting to storage and transmission.

2. Examine the collective implications of renewable energy deployment, emphasizing regional variations, for future HDR projects.

HDR clients benefit from insights into the values, interests, and collective implications of renewable energy deployment affecting diverse stakeholders across the state. This report provides valuable insights for optimizing client alignment to legal requirements to consider host community benefits from renewable energy projects and geographic, economic, and partisan community divisions affecting renewable siting.

3. Analyze the distinct roles of solar and wind energy and batteries as storage components within the state's energy landscape.

Solar and wind energy, alongside energy storage solutions, constitute pivotal components of New York's energy transition strategy. We aim to elucidate challenges and opportunities by scrutinizing agency roles within the state's energy landscape. This analysis will facilitate informed decision-making regarding integrating and optimizing renewable energy technologies and achieving attractive financial returns for developers.

4. Provide an example client case tailored for projects in DACs, synthesizing legal definitions and policies related to DACs for future clients to consider

An example client case tailored for projects in DACs contextualizes the legal definitions and policies pertinent to such initiatives for clients navigating the regulatory landscape to foster equitable renewable energy projects.

Methods

Overview

This report was developed through a narrative literature and policy review to outline and provide recommendations regarding renewable energy siting in New York State and New York City (Figure 1.). As a capstone project, a team of Columbia University Master of Public Health Candidates completed this deliverable on behalf of HDR.

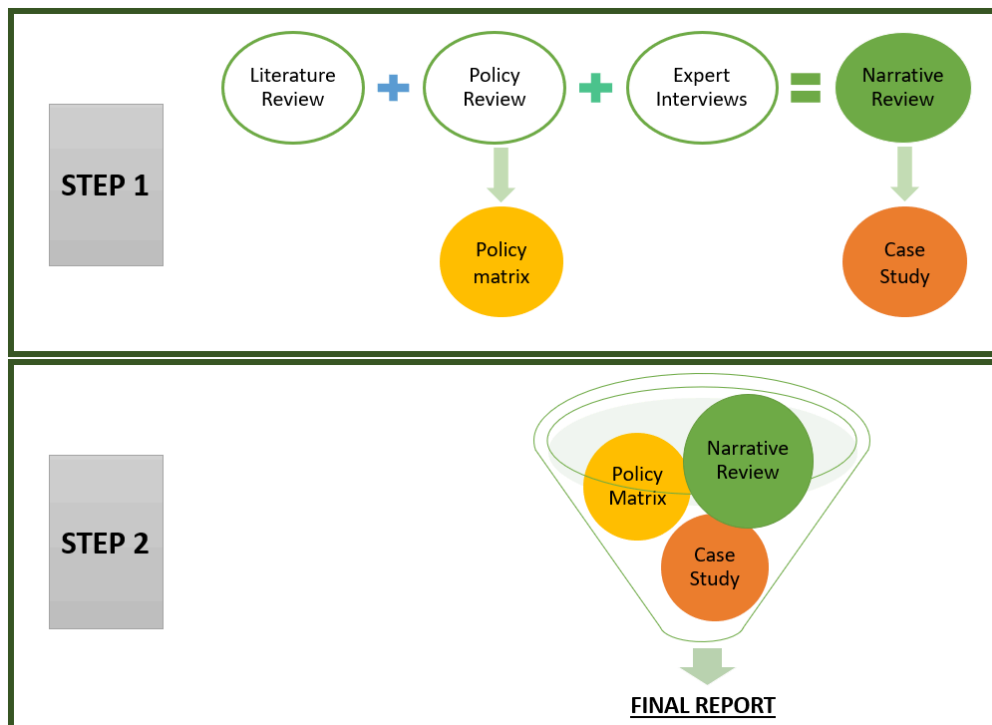


Figure 1. Methodology Schematic.

Policy Landscaping Methodology

The team researched and reviewed laws and offices regarding renewable siting in New York. Data was obtained using the Google search engine, employing search terms like “renewable energy siting New York,” “renewable energy landscape,” and “regulations on renewable energy.” To determine issues in renewable siting processes in New York, the team used the Google Scholar search engine to search phrases including “opposition,” “barriers,” and “controversy” in renewable energy siting in New York. Articles regarding renewable energy siting in New York were accepted if they were produced by reputable sources, like government agencies, professional organizations, consulting firms, or academic research institutions.

Analysis of State Policies, Siting Regulations, and Grants

After initial research identified the New York Climate Leadership & Community Protection Act (CLCPA), the team referenced materials the law created or cited. A snowball sampling method was used to identify relevant literature, policy, and city/state government offices, agencies, and working groups from the CLCPA. The team analyzed the policies and regulations and specific executive orders relevant to the renewable energy siting in the state. Legal databases such as Columbia University's New York State Climate Law Tracker and New York City Climate Law Tracker were employed to identify specific policy implications ([New York State Climate Law Tracker](#), 2024) & ([New York City Climate Law Tracker](#), 2024). Additionally, the Climate Change and Environmental Law Guide: NY State Climate Initiatives database was analyzed to identify the aggregation of state-wide climate initiatives ([Brooklyn Law School](#), 2024). NYSERDA's database containing information on ongoing grants and funding opportunities was also assessed for relevant information for developers interested in participating in state-sponsored clean energy initiatives and programs. The team also assessed the manuals of NYSERDA-supported programs to identify specific eligibility criteria, siting requirements, and publicly available permitting documents. Additionally, the permit application processes and relevant documents, including several notices of denials, were closely analyzed. For the project, NYSERDA's interactive map of DACs was also utilized to identify the locations and geographical distribution of these communities within NYS.

Qualitative Interviews

The team contacted leaders in the renewable energy siting field, including individuals from the NYSERDA and Sabin Center for Climate Change Law at Columbia University Law School, to discuss their experience with renewable energy siting in New York State. The individuals were found via searches on the relevant office's websites and contacted via email. All interviewees were asked about their experience with renewable energy siting in New York. After answering this initial question, interviewees were asked follow-up questions pertaining to their expertise.

Narrative Review for Policy Translation

This report comprehensively examines collective implications focusing on regional and state policy variations for renewable energy siting. Additionally, the report aims to consolidate findings from the narrative review, policy landscaping, and synthesis stages, including an in-depth

analysis of current policies. The comprehensive nature of this report was built upon a thorough examination of current and future policies to bridge existing gaps and inform potential developers and policymakers. As previously discussed, the initial policy landscaping was completed through a detailed policy and a literature spreadsheet matrix to be referenced by HDR and clients for specific policy information. A Snowball search of New York State and City policy, legislation, academic literature, grey literature, and grants was conducted using specific search terms such as "renewable energy siting New York," "renewable energy landscape," and "regulation on renewable energy." The policy matrix informed the narrative review as the foundational element of this report, synthesizing the spreadsheet information into a narrative review. This search yielded sources for the policy matrix for crafting the narrative review. The narrative review thoroughly examines current and future renewable energy siting policies, integrating qualitative insights from expert interviews. The report synthesizes findings and takeaways from the narrative review, provides a comprehensive and narrative understanding of the current landscape, identifies critical issues, and evaluates the effectiveness of existing policies for renewable energy siting that are relevant to HDR and clients.

Uncertainties Section

This section will prepare HDR and clients to identify and manage uncertainties effectively. The uncertainties were identified during the spreadsheet and literature review development to clearly outline potential gaps and policy changes to consider emerging challenges proactively. This section outlines the basis for the risk assessment to provide a big picture of sources, transport, and exposure pathways and receptors/resources regarding renewable energy siting in New York State/City environmental justice communities. The team then addressed solutions and recommendations to these gaps based on information gathered from information interviews. Emphasis was given to analyzing emerging challenges and proactively considering policy gaps and changes.

Analysis of Case Study

A fictional case study outlined by HDR project managers was developed to provide future clients with a real-world scenario. Publicly available siting applications, community comments, and required documentation from various state agencies informed the case study scenario development. The case study followed the steps provided by NYSERDA regarding how developers should develop a plan for BESS facilities in New York. The model permitting information provided by NYSERDA was used to provide developers of potential BESS facilities with the governmental requirements to pursue renewable energy projects. The example client case study was tailored for projects in DAC, synthesizing legal definitions and policies related to DACs to be considered by future clients. The team created potential solutions and resources to address these issues based on previous public comments and complaints, focusing specifically on concerns regarding fire safety at BESS facilities. Since the fictional case is located at a coal power generating plant, funding opportunities for Brownfield redevelopment were outlined. The team synthesized policy applications of DACs and steps required for renewable energy siting to showcase how the recommendations provided in the report can be practically applied. In summary, the case applies legal definitions and policies to guide future renewables projects in DAC communities.

Results

Grants, DACs, and Community Values in Renewable Energy Development

Grants and Incentives

State agencies, including NYSERDA have several grant and funding opportunities to incentivize renewable energy development initiatives across the state. Notably, the NY-Sun Program under NYSERDA is an umbrella program that provides multiple funding and incentive mechanisms to support developers installing residential and non-residential solar panels ([NYSERDA](#), 2024b). Funding opportunities under the NY-Sun Program are divided into several different regions, including Upstate New York, Long Island, and Con Edison region ([NYSERDA](#), 2024b). Additionally, NYSERDA provides an alternative grant funding opportunity for solar projects that serve low-income communities and DACs, through the Inclusive Community Solar Adder ([NYSERDA](#), 2024c). This strategic focus on inclusion ensures equitable access to clean energy resources and fulfills the CLCPA requirements to direct significant benefits from clean energy transition to DACs. Finally, NY Green Bank, a state-sponsored investment bank affiliated with NYSERDA, has several grant and funding schemes to financially support renewable energy programs, including the “Community Decarbonization Fund” to provide capital to eligible projects benefiting DACs ([NY Green Bank](#), 2024).

Considering the importance of DACs in the context of state-funded renewable energy initiatives and funding opportunities, developers seeking state funding must prioritize equity in their proposals. In addition to initial funding for building facilities, NYSERDA also promotes developers to benefit DACs by incentivizing them to hire and train workers from surrounding DACs ([NYSERDA](#), 2023c). By incorporating strategies to benefit DACs and aligning their proposals with the CLCPA objectives, developers can enhance their eligibility for various state funding and grant opportunities.

NYSERDA has also introduced a comprehensive scheme to incentivize the development of battery energy storage systems (BESS) across the state. NYSERDA proposed Roadmap 2.0 in December 2022, to address challenges with the previous roadmap and enhance the safety, efficacy, and affordability of energy storage initiatives and incentive programs (NYSDPS, 2024). According to an interview with a key decision-maker from NYSERDA, his new roadmap incentivizes BESS developers and projects to contribute to grid reliability and efficiency (Colthorpe, [2023](#)).

Under the Bulk Energy Storage Incentive Program (program manual, [NYSERDA](#), 2021b) and the Retail Energy Storage Incentive Program (program manual, [NYSERDA](#), 2021c), NYSERDA has proposed several specific funding opportunities for both retail and bulk energy storage systems, tailoring incentives based on capacity and region. Retail energy storage systems below 5 MW capacity follow the MWh block approach with incentives per block until fully subscribed (NYSERDA, 2024d). NYSERDA offers incentives based on a fixed amount per usable kWh of installed energy storage capacity of either chemical, thermal, or mechanical storage systems. Out of the \$161 million initially allocated, \$16.4 million is still available for residential or commercial projects in Long Island and Con Edison regions (NYSERDA, 2024e). Bulk energy storage systems over 5 MW capacity are incentivized based on the scale of projects and interconnection year. Upon contract execution, such projects must achieve commercial operation within 18 months (NYSERDA, [2021](#)-1). Storage Roadmap 2.0 proposes installing bulk programs in New York City and Long Island regions to increase grid and DAC benefits (NYSERDA, [2023a](#)).

DACs in the Permitting Process

DAC considerations are keystone to navigating New York State's renewable energy permitting process, reflecting a commitment to achieving a more equitable and just transition to clean energy under the CLCPA. The CLCPA requirements determine each proposed project's suitability and compatibility with the statewide clean energy and environmental justice objectives. The relevant state agencies, such as NYS Department of Environmental Conservation (DEC), frequently use Section 7(2) and Section 7(3) of the CLCPA to review proposals and make decisions. Section 7(2) of the CLCPA outlines NYS's goal of reducing greenhouse gas emissions and its dependency on carbon fuels while increasing the renewable energy infrastructure and capacity. The DEC often refers to Section 7(2) of the CLCPA to reject several proposals and renewal applications for traditional energy generators. In 2021, the DEC denied the Clean Air Act Title V Air Permit application from Astoria Gas Turbine Power, LLC, as the agency found the project incompatible with the state greenhouse gas emission goals (NYSDEC, [2021](#)). Additionally, the DEC denied the Title V permit renewal for the Dresden, NY, facilities run by Greenidge Generation, LLC, based on Section 7(2) of the CLCPA (NYSDEC, [2022](#)). While Section 7(2) may not be a big challenge for most renewable energy development projects, Section 7(3) concerning the potential disproportionate impacts on DACs can pose a substantial legislative consideration for renewable energy developers. According to Section 7(3) of the CLCPA, all the relevant state agencies and authorities should not disproportionately burden the DACs when issuing permits and approvals ([NYSDEC, 2024a](#)).

Community Values

The Solar, Wind, and BESS siting processes encompass multiple considerations for the developer. Interests and values shape debates invoked by key political, economic, social/moral, and environmental actors ([Saunders, 2021](#)). For developers, it is important to consider stakeholder values, which often include concerns about environmental protection, the aesthetics and scenery of their community, prosperity and economic opportunity (creating/protecting jobs), and partisan government politics. For instance, economic interests can have positive impacts, such as generating tax revenues for local governments, and negative consequences, such as the potential decrease in nearby property values due to renewable siting projects. Challenges in transitioning to renewables include increasing resistance to projects as stakeholders may not perceive the benefits of projects due to transitions away from traditional non-renewable energy production industry employment. Siting decisions are a matter of environmental justice, and the immediate community may bear a disproportionate burden of the obstructed lines of sight, noise, environmental externalities, traffic, or economic damages. Ensuring communities reap the benefits of renewable energy projects is immensely important for developers ([Saunders, 2021](#)).

Solar and Onshore Wind Siting

The Accelerated Renewable Energy Growth and Community Protection Act, enacted in 2020, streamlines large renewable energy projects' siting and construction processes while ensuring environmental responsibility and cost-effectiveness ([NYSERDA, 2020a](#)). A major initiative within this act was the creation of the Office of Renewable Energy Siting (ORES), creating a central agency for all large-scale energy projects to guarantee predictable, timely, and responsible siting decisions ([NYSERDA, 2020a](#)). With the creation of ORES, the prior Article 10 permitting process is no longer used. Instead, all renewable energy projects larger than 25 Megawatts (MW) were required to receive permission from ORES prior to the construction or expansion of the site ([ORES, 2024a](#)). Renewable energy projects between 20-25 MW could opt

into the ORES permitting process. Projects smaller than 20 MW do not go through the ORES approval process; instead, they must work with local municipalities to ensure they meet regulatory requirements. ORES has helped to significantly reduce the timeline for renewable energy projects. Explicit timelines have been created for the length of time the agency can take to consider the permit application. If ORES does not meet the timeline, the permit is considered approved (NYSERDA, 2020a).

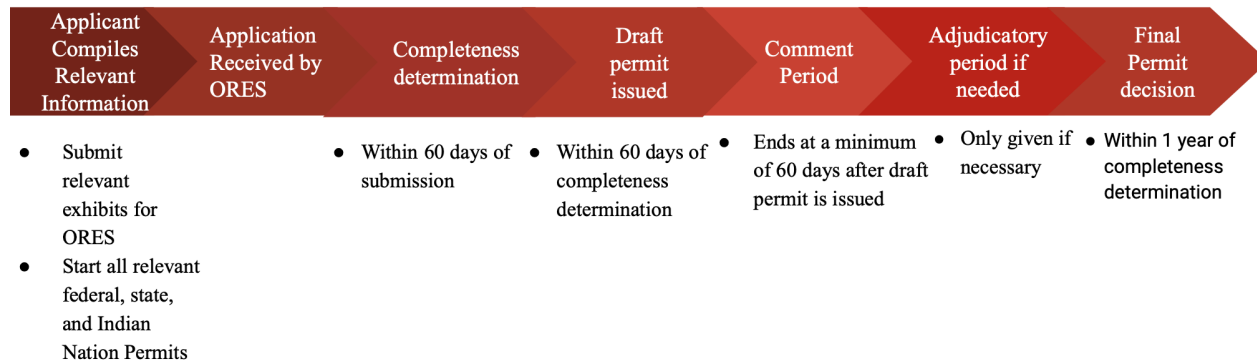


Figure 2. Timeline and important features required for the ORES renewable energy siting process.

Pre-Application

Developers are required to provide detailed information regarding their permit proposal during the first step of ORES' application process. Figure 3 visually interprets the information required for applications under Title 19 Department of State Chapter XVIII Part 900-2 ([Office of Renewable Energy Siting, 2021b](#)). A summary of the exhibits can be found in Appendix A. Exhibit 25 requires that applicants provide certification that they have applied for all other relevant federal, state, and Indian Nation licenses and permits. These permits are approved through separate applications at agencies and offices outside ORES.

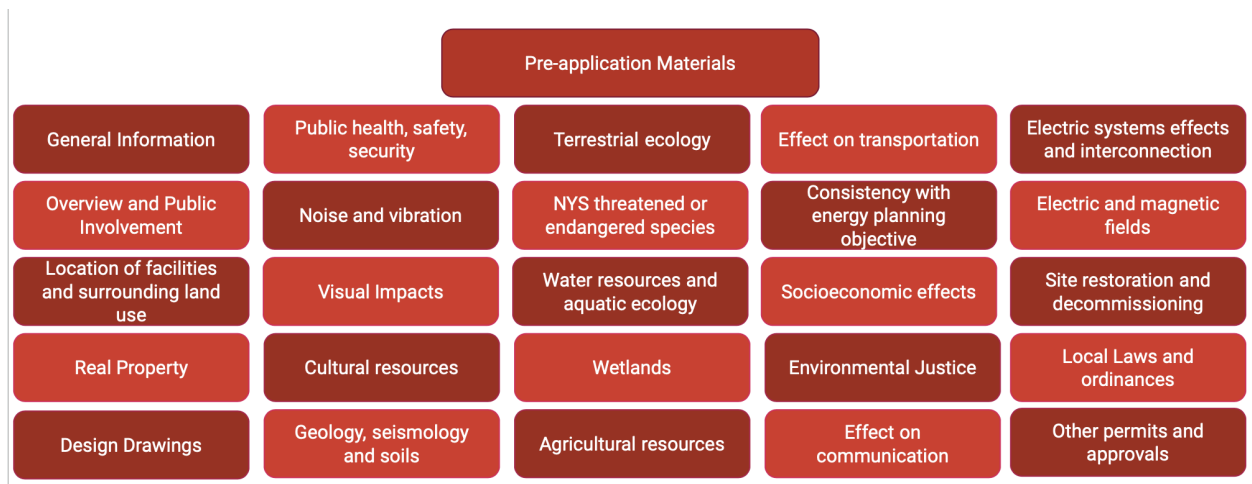


Figure 3. Visualization of 25 exhibits ORES requires applicants to submit for a permit review.

In 2022, New York State passed New York’s Cumulative Impacts Bill (Senate Bill S8830), requiring cumulative impacts assessment by developers before an environmental permit is approved ([Showalter and Rochlen., 2023](#)). The EPA defines cumulative impacts as the accumulative effects of chemical and non-chemical stressors from various sources on individuals or communities over time ([EPA, 2024](#)). The bill amended the State Environmental Quality Review Act (SEQR), requiring the CIA of a project on disadvantaged communities before permit approval, and prohibits the approval or renewal of a project that could cause or contribute to a disproportionate and unequal burden on disadvantaged communities ([Zapata, 2022](#)). The bill requires the DEC to prepare an “existing burden report” containing potential exposures, health outcomes, and traffic and noise pollution for projects that could cause disproportionate impacts on DAC communities (S8830, [2021](#)). According to the bill, a permit must be reviewed based on whether the proposed project would further exacerbate or contribute to such existing burdens and impacts on the communities, strengthening SEQR ([Zapata, 2022](#)).

Another legal component of the pre-application process includes The DEC Commissioner Policy 29, which outlines how the DEC should incorporate environmental justice considerations into the DEC’s environmental permit review process and application of SEQR (DEC, 2024). Many renewable energy projects require SEQR approval due to the size and environmental effects of these projects. Once the DEC receives a permit from an applicant, they will commence a preliminary screening to determine if the site is in or near a potential environmental justice area and if the proposed environmental impacts of the proposal will impact the area. If the DEC determines that an environmental justice community is at risk, it will provide the applicant with information regarding environmental justice. Commissioner Policy 29 requires a public participation plan that allows citizens to engage in the permit review process ([DEC, 2024b](#)). To assess the potential environmental impacts of the proposed development plans, developers must conduct a comprehensive analysis to ensure that the projects meet the social and environmental standards. The assessment must address the proposed project’s potential impacts on DACs and local communities, per the DEC Commissioner Policy 29 and Section 7(3) of the CLCPA. Such environmental impact assessments may include the assessment of land use compatibility, transportation mobility, and other sources of pollution ([DEC, 2024b](#)). The assessment of land use

should particularly focus on how the proposed renewable energy facility would interfere with prior land use, such as in residences or schools. Moreover, analyzing the proposed project's potential disruption in roads and public transportation is critical to comprehensively assessing the impacts on the surrounding DACs.

Application Submission and Review

After the applicant has submitted all the relevant information to ORES, the office will review all the relevant information to provide a completeness determination within 60 days of the initial submission. Applicants can approve an extension of the 60 days if they deem fit ([ORES, 2021a](#)). Outside of the relevant documents submitted to conform to 19 NYCRR Part 900-2 and Executive Law 94-c the applicant must provide proof of consultation with the municipal government. The community engagement requirement states that at least 60 days before filing the permit application the applicant must host at least one meeting with community members who might be adversely impacted by the construction and operation of the facility ([ORES, 2021a](#)). This meeting(s) aims to educate the community members about the proposed project, relevant timelines, and information regarding potential funds to participate in the permitting process. After all the relevant information is provided, ORES will provide a completeness determination to determine if all necessary information has been provided. If ORES determines that the applicant has not completed all required studies and documents, they must provide a rationale explaining what else is necessary.

Draft Permit and Public Comment

Once ORES determines that an application is complete, a notice is published to the ORES website and sent to the applicant, local agencies, and any person who has expressed interest. Following the completeness determination, ORES Permitting Staff begin the development of either a Draft Permit or Statement of Intent to Deny, with publication of the Office's determination required within 60 days of the date an application is deemed complete ([ORES, 2021a](#)).

Upon the publication of the Draft Permit or Statement of Intent to Deny, an Administrative Law Judge (as defined in Box 1.) will publish a combined notice including the dates for the public comment period and hearing, the commencement of the issues determination, instructions for filing a petition for party status, and the deadline for municipalities to submit a statement of compliance with local laws and regulations.

No less than 60 days after the issuance of the notice the public comment will be held. During the public comment hearing parties and non-parties will have the opportunity to express their thoughts on the Draft Permit. Comments expressed during the hearing are not considered evidence. Comments help the ALJ decide if further inquiry is needed during the issue determination stage.

During the 'Issues determination stage', parties (local authorities, agencies, or other entities) can provide written comments concerning potential substantive and significant issues and file for party status ([ORES, 2021b](#)). Substantive issues exist where there is doubt regarding the applicant's ability to meet the required regulatory criteria for their project. Significant issues are those that could result in the denial of a permit, major changes to the project, or the addition of more permit requirements outside the conditions in the draft permit or those in the Uniform Code.

Administrative law judge (ALJ) means the designated representative authorized by the Executive Director of ORES to conduct hearings pursuant to Chapter XVIII, Title 19 of NYCRR Part 900.

Box 1.

During the issue determination process, the ALJ listens to arguments regarding party status, resolves issues of fact, and determines if unresolved issues require adjudicatory hearings ([ORES, 2021b](#)). Party status is automatically given to the developer, a representative of ORES, and any local or state agency consulted during the pre-application process. Other individuals who wish to gain party status must submit a written petition to the ALJ. The ALJ will determine if party status is granted by reviewing the petitioner's application and determining if it is complete, if they raised a substantive or significant issue, and have demonstrated an interest in the standards and conditions implemented by ORES in relation to the siting, operation, or construction of the proposed project ([ORES, 2021b](#)).

Adjudicatory hearings are required if there is a substantive or significant issue between ORES staff and applicant over a term or condition of their permit, public comments raise a substantive or significant issue, if ORES determines a reason to deny a permit that the applicant contests, and if a potential party raises a substantive and significant issue ([ORES, 2021b](#)). During the adjudicatory hearing, the applicant will present their case. Following the case presentation, other parties will have the opportunity to cross-examine the applicant. Following the hearing, the ALJ will send its decision recommendation to the Executive Director within 45 days. The applicant and ORES have 14 days to file any additional comments to the Executive Director ([ORES, 2021b](#)). Thirty days after reviewing all the submissions, the Executive Director will provide their final ruling.

Finally, If the ALJ determines that there are no adjudicable issues, an adjudicatory hearing will not be held. For cases where a hearing is held, the ALJ must issue a decision and report within forty-five days of the close of the record ([ORES, 2021b](#)). After the parties receive the report and recommendation, they will have fourteen days to file their comments. In addition, the ORES staff will have fourteen days to submit a written summary and assessment of the public comments received during the public comment period ([ORES, 2021b](#)).

Final Permit Decision

If the project is located on a repurposed site (refer box 2.) then within six months of deeming an application complete and issuing a draft permit, ORES must inform the applicant of its decision, including all applicable standards and conditions or a statement that the permit applied has been denied with an explanation for the denial ([Office of Renewable Energy Siting, 2021b](#)).

For all other major renewable energy applications not on a repurposed site, the decision must be announced within one year of deeming an application complete and issuing a draft permit. If ORES does not make a determination within the required timeframe of six months or one year based on the site's location, the draft permit will be deemed approved and granted ([ORES, 2021b](#)).

Repurposed site is an existing or abandoned commercial or industrial use property, including brownfields, landfills, dormant electric generating or other previously disturbed location which, has been remediated to permit the siting of a major renewable energy facility.

Box 2.

BESS Siting: State and Local Level Considerations

High-level differences of BESS siting

The CLCPA aims to develop 1,500 MW of energy storage capacity by 2025 and 3,000 MW by 2030, emphasizing the need for significant scale-up of BESS siting throughout New York

State ([NYSERDA, 2024e](#)). Due to the intermittent nature of renewable energy generation, storage facilities are essential to ensuring that NYS can achieve its energy needs and allow for the scaling down of peak generating plants ([NYSERDA, 2024e](#)). BESS can defer costly upgrades to transmission and distribution infrastructure, support the integration of renewable energy generators, including solar and wind, alleviate grid congestion (reducing brownouts and blackouts), and more.

Unlike other types of renewable energy projects in NYS, BESS facilities do not have formal state-level permitting requirements and are approved by local governments ([NYSERDA, 2024e](#)). BESS projects paired (or “co-located”) with large-scale renewable generators are permitted at the state level. However, projects not paired with large-scale generators are permitted at local levels. Although there is no formal state-mandated process for reviewing BESS facility permits, NYSERDA has created guidance and model documents to help inform municipalities of relevant information and suggestions for BESS permitting, siting, and oversight ([NYSERDA, 2021b](#)).

State-Level Best Practice Guides

All resources NYSERDA provides to promote local-level BESS best practices are laid out in the New York State Battery Energy Storage System Guidebook ([NYS BESS Guidebook, NYSERDA, 2024f](#)). The 2020 New York State Uniform Fire Prevention and Building Code ([Uniform Code, NYSERDA, 2020b](#)) provides information regarding the necessary details, processes, and requirements for an energy storage system to receive approval from a fire code official. Uniform Code 11 (page 39 of the Uniform Code), specifically provides construction information required within a permit application. Finally, the Uniform Code sets expectations regarding the failure modes and effects analysis (FMEA). An FMEA is a way to assess the problems or failures of a BESS and their potential effects on the system before an adverse event occurs ([API, 2024](#)). Additionally, NYSERDA created a model law to reflect local priorities and concerns. The flexible document encourages alignment with local, county, regional, and state goals. The BESS Model Law is a comprehensive, customizable template law that establishes procedural and substantive requirements for BESS and addresses systems of all sizes and uses (residential, commercial, and utility-scale installations). The Model Law also reflects the process for developer compliance with SEQR ([NYSERDA, 2024g](#)).

Another document relevant to developers is NYSERDA’s BESS Model Permit. The Model Permit aids local government officials in establishing the minimum submittal requirements for electrical and structural plan review for permitting residential and small commercial BESS. BESS must comply with all applicable provisions of the codes, regulations, and industry standards as referenced in the Model Permit. Finally, the BESS Electrical Checklist promotes and guides field inspections of residential and small commercial BESS ([NYSERDA, 2024h](#); [NYSERDA, 2024i](#)).

As per the New York State Battery Energy Storage System Guidebook, an inspection must be conducted before final approval for the BESS. Once the installation permits are issued and the system is installed, the applicant must contact the local jurisdiction for a final inspection. During this inspection, the inspector will carefully review the complete installation to ensure it complies with all the required codes and standards. The inspector will also confirm that the installation matches the records submitted with the permit application ([NYSERDA, 2024f](#)).

Local Level Nuances

Given the decentralized control over land use across New York State, navigating the landscape of local zoning laws and regulations is crucial for BESS development. With approximately 1,600 jurisdictions having total authority over zoning and land use policies (Office of the State Comptroller, 2024), determining local requirements can be complex. According to insights from the interview with the NYSEDA personnel, one of the most significant challenges in BESS development is the presence of moratoriums on BESS deployment in many towns, such as Suffolk County, which temporarily halts the siting of new BESS projects (County of Suffolk, 2024). These moratoriums on the local levels reflect concerns within communities regarding potential health risks and impacts as well as contaminants associated with BESS installations, which are more complex and directly related to health and safety compared to opposition to solar panel installations primarily based on their aesthetic aspects. Public comments show that safety concerns regarding fire risks largely drive negative public opinions on BESS facilities (NYSEDA, 2024). Potential developers must, therefore, counter misinformation about fire safety of BESS through thorough risk assessment and transparent communication with local stakeholders.

Case Study

Summary of case

A developer wants to site a 50 MW/200 MWH BESS facility on a 75-acre waterfront property on the Hudson River. The site was previously used as an industrial site, with part of the potential location including a 60 MW coal power generating plant expected to be retired in the next couple of years. The site is a DAC-designated area. In the areas surrounding the potential BESS facility site there is a 100 ft x 600 ft warehouse, three two-story buildings with parking areas, and a 6 MW solar generation is being developed in an adjacent town. The developer hopes to use the location to house the BESS facility and a bank of 100 EV Charging stations to power State-owned and operated vehicles.

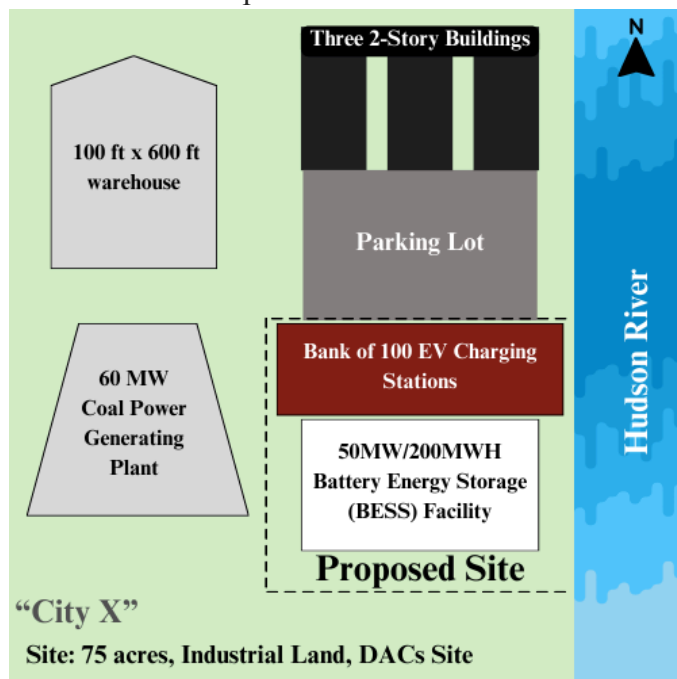


Figure 4: Aerial perspective of the case study site.

Permitting Process

Prior to the construction of the BESS facility, the developer must obtain approval from the town. Assuming that these towns are both following NYSERDA's Battery Energy Storage Model Law, the following steps will be followed. The planned facility is a Tier 2 BESS defined as systems that “have an aggregate energy capacity greater than 600 kWh or are composed of more than one storage battery technology in a room or enclosed area” ([NYSERDA, 2024f](#)). The developer must receive building and electrical permits, comply with SEQRA ECL Article 8 and implementing regulations at 6 NYCRR Part 617, and ensure that all buildings and structures associated with the BESS comply with the uniform code. The Tier 2 facility will be reviewed by the Code Enforcement Officer or Reviewing Board of the towns to determine the completeness of compliance with the Uniform Code and Energy Code ([NYSERDA, 2024f](#)).

NYSERDA Battery Energy Storage System Model Permit: Applications to this Case Study

This document outlines “[the minimum submittal requirements for electrical and structural plan review that are necessary when permitting residential and small commercial battery energy storage systems](#).”

Snapshot of information required by the model permit:

EXISTING USE	
☐ Residential	☒ Commercial
PROVIDE THE TOTAL SYSTEM CAPACITY RATING	
Total System Capacity Rating: <u>205,000</u> kWh	Power Rating: <u>5000</u> kW (Select One) ☒ AC or ☐ DC
SELECT SYSTEM CONFIGURATION	
☐ AC Coupled	☐ DC Coupled ☒ Standalone
SELECT BATTERY TYPE	
☒ Lithium-ion, all types ☐ Lead-acid, all types ☐ Nickel-cadmium (Ni-Cd) ☐ Flow batteries ☐ Other: _____	
SELECT INSTALLATION TYPE	
☐ Indoor ☒ Outdoor ☐ Attached/Detached/Open Garage ☐ Rooftop ☐ Dedicated Use Building	
BATTERY ENERGY STORAGE SYSTEM INSTALLATION CONTRACTOR	
<u>ABC Renewable Energy Contractors</u> Contractor Business Name	

Figure 5. Page 18 Example from “NYSERDA Battery Energy Storage System Model Permit.”

Pre-Permitting Checklist for Developers:

- ☐ Determine local-level permitting requirements.
 - When the local level policy is not robust, BESS siting best practices follow the [New York State Battery Energy Storage System Guidebook](#).

- Review NYSERDA Battery Energy Storage Systems Webinar – [Key Considerations for Local Governments: Permitting and Zoning](#)
- ☐ Ensure alignment with SEQR, NYS Uniform Code, and other applicable codes/standards.
- ☐ Developers can download NYSERDA’s [New York State](#) and [New York City](#) factsheets to learn more about energy storage regulations and safety.
- ☐ For other inquiries, developers should contact cleanenergyhelp@nyserda.ny.gov.

Best practices for engaging with local jurisdictions

In addition to state laws and regulations such as the State Environmental Quality Review (SEQR) and Union Code, the proposed BESS project in City X falls under Tier 2 classification due to its aggregate energy capacity exceeding 600 kWh, requiring a Special Use Permit from City X. As indicated from our interview and previous public comments for similar projects (NYSDPS, 2024), public opposition to the BESS project in City X might stem from concerns about the proximity of BESS facilities to residential and commercial areas such as the warehouse, fire safety, and misconceptions regarding BESS efficiency during cold weather. These factors could lead to community apprehension, especially given past fire incidents associated with BESS and the potentially limited fire response or emergency medical services infrastructure and capacity, as frequently mentioned in public comments for the proposed BESS project in Raquette Lake in Hamilton County, NY (NYSDPS, 2024.; Bennett, 2023).

Developers must carefully evaluate the site selection process for the BESS facility within City X, considering the historical land use and potential environmental impacts. Industrial activities in parts of the project site suggest the need for thorough environmental assessments to address any concerns regarding soil or water contamination. However, developers can position the project as a catalyst for revitalizing neglected areas within City X, leveraging available funding for brownfield redevelopment and repurposing industrial land for clean energy initiatives. Additionally, the proximity of the selected location to a retiring coal power plant presents logistical advantages, such as existing infrastructure, potentially reducing the need for extensive vegetation clearing, which is usually required by the local Special Use Permit regulations for battery storage facilities.

However, transitioning from an existing coal power plant to the proposed BESS facility may face several challenges, particularly regarding opposition from coal plant workers concerned about job security. Moreover, nearby commercial spaces and warehouse space may complicate the project due to local regulations concerning visibility and noise levels. Therefore, community engagement and stakeholder relations should be prioritized throughout the project lifecycle. Developers should engage with local communities, notify adjacent landowners of project plans, and address any concerns or feedback raised during public hearings. Some communities may have safety concerns regarding lithium-ion battery storage (Jones-Gorman, 2023). Although cost-effective and energy-dense, BESS has been known to cause fires, and developers must hold transparent conversations with community members and strictly follow permitting guidelines (Jones-Gorman, 2023). As suggested in our interview with the NYSERDA representative, developers must emphasize BESS safety measures and dispel misinformation about fire risks, highlighting that past incidents were largely contained within the facilities with minimal impact beyond. To address concerns about fire risks, developers can also engage and collaborate with local fire departments to establish emergency response plans specifically tailored to the BESS facilities. Proactive fire response protocols and community engagement are essential to build confidence and address safety apprehensions effectively (Bennett, 2024). Developers may

consider conducting Q&A sessions and offer training workshops to educate the fire department and emergency responders about the BESS's design, capacity, safety features, and emergency protocols ([Lewis, 2024](#)). The developer should provide documentation, technical specifications, and safety compliance specs outlined in the New York State Battery Energy Storage System Guidebook. The collaboration between developers and local fire departments can lead to the development of comprehensive emergency response plans, such as protocols for fire suppression, hazardous materials handling, and evacuation procedures.

Furthermore, developers must align local perspectives from residents and community stakeholders with the statewide clean energy goals driving BESS projects, emphasizing the importance of BESS in achieving renewable energy targets while ensuring local benefits and relevance to City X residents. Developers may leverage NYSERDA contacts and resources to reassure community members with professional peer reviews to ensure the developer's pitch for City X adheres to safe BESS practices.

Considering potential environmental and health impacts, developers need to assess and mitigate risks of waterway contamination near the Hudson Valley, where the project is located. They must also identify common community apprehensions by investigating public comments from other projects sharing similar geographical characteristics, such as the past project near Raquette Lake, NY (NYSDPS, 2024). Collaborative efforts with stakeholders, including city officials and environmental agencies, are crucial to navigating zoning regulations and potential moratoriums and addressing concerns about disproportionate impacts on DACs.

Best practices for BESS

Developers must catalog the potential environmental effects of a new BESS facility by engaging with the local government via a SEQRA review for projects that might impact the environment. SEQRA provides a broad definition of environment that applies to this case because of the potential impact of this facility on plants, wildlife, and water quality. Due to the waterfront location of this proposed facility, developers should consider collecting information regarding current water quality at the site and any possible drinking water locations within one mile of the site. Local municipalities might ask the developer to determine how the facility's construction might impact water, soil, and air quality, especially if any hazardous materials are expected to be used during the construction process. Since many local governments require that trees and vegetation within at least 10 feet of the BESS facility be cut down for fire safety, developers should consider potential wildlife and plant impacts to remove vegetation for the area surrounding the facility ([NYSERDA, 2024f](#))

The project's main benefit, which the developers should highlight to community members and decision-makers, is decommissioning the coal-generating power plant. BESS facilities provide a reliable and flexible way to support the energy grid without relying on fossil fuels. Since the BESS facility will require less land than the current coal power plant, the community will have more spare land for private or public development or conservation efforts ([Pacific Northwest National Laboratory, 2021](#)). Decommissioning the power plant will also reduce greenhouse gas emissions in that area, which can lead to health benefits for these communities ([Pacific Northwest National Laboratory, 2021](#)).

Outside the environmental concerns, developers should also consider the safety of their facilities. Under the Uniform Code, the developers must perform a failure modes and effects analysis (FMEA) to assess the potential problems with the BESS facility before construction. FMEA is typically performed by an experienced third-party. An FMEA at a BESS facility

explicitly evaluates the Battery Management System (BMS) at the facility, which encompasses the safeguards to prevent thermal overload, exposure to hazardous gasses, and voltage surges. An FMEA also assesses the possible scenario of a BMS failing. FMEA is preferred over a standard risk analysis approach because it is designed to identify and develop an in-depth understanding of potential failure modes and their causes and model how these failures could potentially impact the system. Finally, an FMEA allows for developing potential solutions before failures arise.

EV Charging

Proposal

With the increasing popularity and adoption of electric vehicles (EVs) in City X and New York State, the developer plans to install a bank of 100 EV charging stations as part of a proposed renewable energy infrastructure project. The EV charging stations will be near three two-story buildings with parking areas occupied by a non-profit organization and offices and storage spaces for a NYS agency.

Permitting Process

Local governments in New York State oversee permitting for EV charging stations, resulting in various processes based on site jurisdiction ([NYSERDA, 2024j.](#)). To streamline the permit approval process, NYSERDA has developed the [Direct Current Fast Charger \(DCFC\) Streamlined Permitting Guidebook for Local Governments](#). Prior to installing the EV charging stations, the developer must obtain approval from City X.

Pre-Permit Checklist for Developers, assuming City X adopts NYSERDA's DCFC Streamlined Permitting Guidebook:

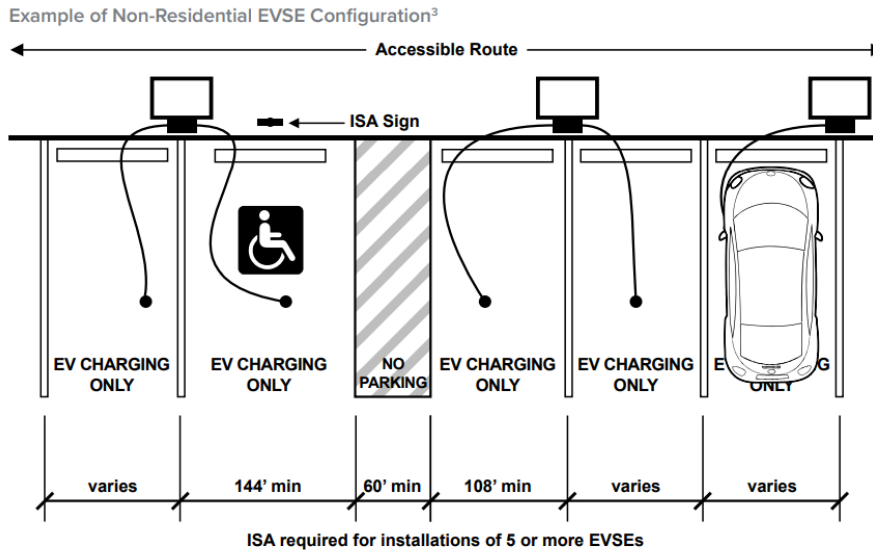
- Determine local-level permitting requirements.
If local policies are not robust, follow NYSERDA's EV Charging Station Guidebook.
- Include accurate and complete plans in the submission.
- Address drainage issues, stormwater control, parking restrictions, traffic and noise issues, and resiliency requirements.
- Consider access for station maintenance and emergency vehicles.
- Engage with local communities and stakeholders to address concerns and gather feedback.
- Ensure the design is aligned with American Disability Act guidelines and applicable codes/standards for appropriate signage and crash protection (bollards).

NYSERDA Tip:

Before submitting the permit application coordinate with the electric utility to finalize arrangements for a 480v service, potentially requiring an upgraded transformer and connections from a distant electrical source.

Box 3.

In the guidebook, NYSERDA illustrates an example of non-residential EVSE configuration, as seen in Figure 7. Since EV charging accessibility codes are loosely defined throughout the state, NYSERDA suggests that developers refer to other U.S. states for guidance. For example, in California, a 76-100 charger facility must have at least 1 Van accessible, 3 standard accessible, and 3 ambulatory accessible chargers ([NYSERDA, 2020c](#)).



³ Based on Checklist for Residential and Nonresidential Permit Application March 30, 2017 by San Joaquin Valley Air Pollution Control District.

Figure 6. NYSERDA Example of Non-residential EVSE configuration.

City X's local government officials or authorities with jurisdiction will review the EV charging station permit application to determine compliance with local and state regulations.

Best Practices for EV Charging Station Installation

NYSERDA has also released a Site Design for Electric Vehicle Charging Stations guide for local governments to share with charging station developers ([NYSERDA, 2012](#)). The guide covers best practices and issues related to the siting and design of public charging stations. Developers may also follow best practices and learn from prior installations documented in case studies around New York State ([NYSERDA, 2024k](#)).

The proposed EV charging station project in City X caters to the growing demand for sustainable transportation options. Given the existing infrastructure at the site, including the three two-story buildings, the developer should prioritize community engagement and stakeholder relations throughout the project lifecycle. This includes engaging with the non-profit organization occupying one of the buildings, as well as the NYS agency planning to use the other two buildings for offices and storage spaces.

Developers should emphasize the benefits of the EV charging stations, such as reducing emissions from State-owned and operated vehicles, and work collaboratively with all parties involved to address any concerns or feedback raised during public hearings. This proactive approach will help build community confidence and ensure the successful implementation of the project.

Stakeholder interaction will help the developer consider the type of charging station based on expected EV use. Most charging station installations today are AC Level 2 stations that use a 240-volt alternating current (VAC) input and output. Level 2 stations are ideal for workplaces or retail parking lots, offering approximately 20 miles of range per hour of charging. Direct current (DC) fast chargers are also available, requiring significantly more hardware and

typically running off 480 VAC. DC Fast Chargers are recommended for locations that cater to longer road trips, delivering more than 100 miles of range in an hour ([NYSERDA,2020c](#)).

Based on the site's intended location near the office buildings and its proximity to City X's recreational facilities, a combination of Level 2 and Level 3 chargers may be decided upon. NYSERDA's sample EV charging application permit allows the developers to select one type of EV charging station per permit.

PERMIT TYPE (select one):	
Level 1 – 120 VAC* NO PERMIT REQUIRED	Residential properties only. Level 1 refers to using a standard house outlet to charge an EV. Homeowner to obtain an Electrical Underwriters Certificate after installation and submit to the Building Division Records Department.
☐ Level 2 – 240 VAC* No. of Stations: _____	This voltage is the type that supports ovens and other large appliances
☐ Level 3 – 480 VAC* No. of Stations: _____	Commercial properties only. Also called DC fast chargers, these chargers use a 480 plug to provide direct current (DC) electricity to the battery.
* Levels of electrical current are called VAC or “Volts Altering Current”.	

Figure 7. Snapshot of NYSERDA's Sample EV Charging Station Permit Application

Future Directions

Uncertainties

NYS geography is less conducive to onshore wind and solar development. [Saunders 2021](#) notes, "Low onshore wind speeds and especially low solar irradiance, relative to many other states, limit the availability of solar and wind energy and necessitate larger land areas for solar panels and wind turbines than might be necessary elsewhere to generate the same amounts of electricity." As a result, the infrastructural requirements and costs are higher, and more solar panels and wind turbines are required to reap the benefits of onshore renewables. Furthermore, onshore solar and wind electricity are expensive in NYS, and the state will likely face increasing grid management costs associated with balancing variable solar and wind energy as the shares of those power supplies grow ([Karlin, 2023](#)). This means initial investments in renewables are expensive, and higher electricity prices are needed to yield financial returns attractive to developers and investors. However, raising electricity prices may adversely affect DAC communities or mean that communities living near renewable energy sites may not receive equitable benefits from clean energy development ([Jenkins et al., 2018](#)).

Upcoming Policy Changes

In October 2023, the New York Public Service Commission (PSC) rejected a private-sector industry inflation adjustment request for 90 planned renewable projects totaling more than 12 GW of capacity ([Disavino & Groom, 2023](#)). In response to industry backlash, Governor Hochul released a 10-Point Action Plan to support NYS clean energy development and engage with industry stakeholders through roundtable discussions, ultimately shaping a clean energy strategy that benefits developers ([NYS Pressroom, 2024](#)). Through this 10-Point Action Plan, NYSERDA will announce a historic suite of awards for renewable energy projects in the near future. NYSERDA will additionally launch an accelerated renewable energy procurement process to simplify bid requirements and collaborate with the industry to coordinate transmission planning initiatives. Also, they will engage with the Federal government to establish a

memorandum of understanding with the U.S. Department of Energy Loan Programs Office to streamline clean energy tax credits and a Federal-State revenue-sharing program. Finally, NYS is deeply committed to fostering public engagement, transparency, and collaboration in its clean energy initiatives, recognizing the importance of involving various stakeholders in decision-making. Throughout 2024, NYS will expand its clean energy workforce, allocating funding to workforce development and training initiatives, focusing on disadvantaged communities, and transitioning fossil fuel workers to the renewables sector ([NYSERDA, 2023b](#)).

In March 2024, the Securities and Exchange Commission (SEC) Final Rule established a climate-related disclosure standard requiring renewable energy developers to inform investors of their emissions and ensure transparency about the financial implications of climate-related risks on business ([U.S. SEC, 2024](#)). Moving forward, developers will need to carefully assess and report their emissions related to installing onshore solar, wind, and battery energy storage systems to meet regulatory requirements. Developers may also have to disclose capitalized costs, expenditures, and losses incurred due to severe weather events. There will be increased scrutiny on emissions reporting, and methods for identifying, assessing, and managing climate-related risks in registration statements and annual reports. The Final Rule will likely face legal challenges from environmental groups and states. In the coming months, the SEC will likely monitor compliance and investigate possible violations. Enforcement may focus on clear violations of the Final Rule and become stricter over time. Anticipated 2024 updates on the status of legal challenges and interpretations of the rule may provide additional clarity for developers ([O'Melveny & Myers LLP, 2024](#)).

Finally, on December 22, 2023, NY State Senator Pete Harckham introduced Senate Bill S7834, as part of the 2023-2024 NYS Legislative Session (S7834, [2023](#)). This proposed bill aims to streamline the siting process for qualified BESS by proposing amendments to Executive Order 94(c) to empower the ORES with the authority to oversee permitting processes for BESS projects with a capacity exceeding 5,000 KW that are not co-located with other major energy generators. If enacted, this bill will establish a centralized formal approval process for siting and permit applications for large-scale BESS facilities, addressing the current challenges stemming from fragmented permitting procedures. This bill may introduce a fee of \$50,000 associated with applying for and obtaining permits; therefore, BESS project developers would need to allocate resources for compliance and regulatory costs. Furthermore, projects reaching a certain size threshold would integrate into the state's bulk electric transmission system, categorizing them as major renewable energy facilities for permitting purposes. While this bill is still undergoing legislative review and has not yet been finalized, its potential enactment could influence BESS projects siting and development, permitting process, and integration into the state's renewable energy transmission infrastructure.

Future DEC Policy

Draft DEC Program Policy released in December 2023 describes what analyses the NYS DEC staff must pursue to meet the requirements stipulated in Section 7(3) and the procedures the DEC must use when reviewing the analyses. Specifically, this bill would impact the permitting process for applications in DACs that result in greenhouse gas or co-pollutant emissions regulated under Article 75 of the Environmental Conservation Law. The draft policy also applies to any permit application for projects “involving the construction of energy production, generation, transmission, or storage facilities” (NYSDEC, [2023](#)). The policy stipulates required documents and analyses for preliminary screening to determine how and if a proposed facility

will impact a DAC area ([DEC, 2023](#)). If the DEC determines that there is no DAC within the affected area, then the permitting process can continue without review from the DEC through this process. If a DAC is identified, then the remainder of the procedures identified in this bill must be incorporated into the review process. A disproportionate burden report must be submitted to the DEC outlining the disproportionate burdens on the DAC and how they will be addressed. During the review process, the DEC can impose conditions on the applicant regarding how disproportionate burdens must be addressed ([DEC, 2023](#)).

The DEC draft policy guidance to permit applicant section provides potential applicants with specific information regarding what material should be submitted to the DEC in the Disproportionate Burden Report ([DEC, 2023](#)). This includes the SEQR determination of significance, identification of greenhouse gas and co-pollutant emissions that would affect DACs, relevant baseline data on existing burdens in the area, identification of environmental and public health stressors, information on the impact of the proposed action on the community, potential benefits of the project, and confirmation of public participation ([DEC, 2023](#)).

Limitations

Although this paper aims to give a thorough overview of current permitting practices for onshore wind, solar, and BESS facilities in New York State, it has some limitations. The authors sought to interview a diverse group of individuals working throughout the renewable energy and DAC space; however, few interviews were conducted due to time constraints of the project and interviewee scheduling difficulty. This limited the report findings due to the lack of supplementary expertise via structured qualitative interviews. Furthermore, renewable energy siting in NY is a developing field. Much is still unknown regarding the impact of certain processes and how future policies might impact the renewable energy siting process. ORES was only created in April 2020; therefore, the process it uses to oversee the permitting process for large renewable energy projects is still relatively new, making it difficult to determine the efficiency of the process. It is yet unclear how ORES will handle an increase in permits as NY attempts to scale up its renewable energy use in accordance with the goals outlined in the CLCPA.

As mentioned in the results section, permitting of BESS facilities is mostly determined at the municipal level. Although NYSEDA provides materials for best practices, some municipalities have distinct policies and regulations regarding BESS siting and permitting. Similarly, most municipalities have a unique process for permitting EV chargers. Due to this project's limited timeframe, the researchers could only review high-level siting recommendations and requirements that apply to most BESS facilities and EV charging stations. Therefore, HDR and developers should ensure they review and discuss the permitting requirements for the municipality with local legislatures prior to the start of a project.

Conclusion

New York State has made significant strides in transitioning to renewable and clean energy sources, especially since the implementation of the CLCPA. The state's current permitting process, overseen by agencies like NYSEDA and DEC and governed by the CLCPA, strongly emphasizes environmental justice considerations. This ensures that renewable energy projects do not disproportionately impact DACs. Developers operating in NYS must comply with existing policies and regulations regarding renewable energy siting and permitting. They also have access

to various grants and incentives provided by agencies, including NYSERDA, which aim to promote environmental justice and equitable access to clean energy resources, especially for DACs.

To effectively navigate the renewable energy landscape in NYS and maximize their chances of securing permits and funding, developers should consider the following strategies:

1. Developers should thoroughly investigate and understand the CLCPA and other pertinent regulations governing renewable energy projects in NYS, including environmental justice considerations and requirements for DACs.
2. Developers should prioritize community engagement with local stakeholders and residents throughout the application process and project lifecycle. This includes holding public meetings and transparently communicating potential concerns raised by residents and stakeholders.
3. Developers should proactively engage with state agencies like NYSERDA, ORES, DEC, and local municipalities to stay updated on available grants, incentives, and regulatory changes.
4. Developers should conduct comprehensive environmental impact assessments to identify and address potential impacts on DACs and local communities by evaluating land use compatibility and other environmental factors.

By adopting these strategies and incorporating them into their siting and application processes, developers can increase the likelihood of their projects' success and contribute to the state's goals of a sustainable and equitable transition to clean energy.

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Appendixes

Appendix A

Exhibit 1: General information	Provide contact information for the applicant, representative of the applicant, and principal officer of the applicant. Brief explanation of the type of business is.
Exhibit 2: Overview and public involvement	Description of major components of the facility. Provide rationale for request. Description of engagement and outreach with locals.
Exhibit 3: Location of facilities and surrounding land use	Spatial maps of proposed site, off-site features, existing land use, municipal and taxing jurisdiction boundaries, and proposed land use in facility area. Qualitative studies of the compatibility of proposed facilities on existing, proposed, and allowed land uses within a one-mile radius of the facility. Qualitative assessments of proposed above-ground and underground transmission lines, etc. on existing, potential, and proposed land uses within 300 feet. Aerial photos of the property. A description of community character in that area of the proposed facility.
Exhibit 4: Real Property	A map of the proposed site property boundaries with tax map sheet, block, and lot numbers. Include owner records of all land and adjacent to the proposed site. Public and private roads on or planned for use on the site. Zoning designations related to the site. Right-of-way map of all proposed transmission lines. Demonstration that applicant has obtained title or leasehold for the facility. A statement that the applicant can obtain need documents for interconnections for the facility site
Exhibit 5: Design Drawings	Maximum height of solar facilities is outlined. Wind and solar must meet setback requirements outlined in this section. Applicants must include information regarding general site plan drawings of all facility components. Requirements differ between solar and wind facilities so applications should check requirements for their facilities here. Applicants must also submit a site suitability report from the manufacturer, a list of engineering codes, standards, guidelines, and practices that applicant has or intends to conform to, and any manufacturer provided information regarding the design, safety, and testing information.

Exhibit 6: Public health, safety and security	A statement and evaluation that identifies and describes all efforts to minimize potential adverse impacts of the construction and operation of the facility on the environment, public health, and safety. A security plan and a safety plan should be created and sent to the New York State Division of Homeland Security and Emergency Services for review.
Exhibit 7: Noise and vibration	A study of noise impacts of the construction and operation of the facility.
Exhibit 8: Visual impacts	A visual impact assessment to determine the extent and assess the effects of the facility on visibility.
Exhibit 9: Cultural resources	Studies of the impacts of construction and operation of the facility on archeological/cultural resources within the area and the impacts on historic resources within the area.
Exhibit 10: Geology, seismology and soils	A study of the geology, seismology, and soils impact of the facility focusing on the identification and mapping of existing conditions and an impact analysis. An evaluation to determine the suitability for building and equipment evaluations.
Exhibit 11: Terrestrial ecology	Identification and description of the types of plants present on the site. An analysis of facility construction and operations effects on these plants and wildlife. Creation of avoidance measures where impacts can be avoided. A list of the species that are likely to travel or live on the proposed site.
Exhibit 12: NYS threatened or endangered species	Wildlife site characterization report, a copy of the office's determination on the report, if endangered or threatened species are identified a avoidance and minimization plan must be created.
Exhibit 13: Water resources and aquatic ecology	The applicant will provide information about the current quality and how the facility might impact groundwater, surface water, stormwater, and aquatic species and invasive species. A description of spill prevention and identification of chemicals and formulas must be provided for chemical and petroleum bulk storage. Finally a water quality certification must be acquired.
Exhibit 14: Wetlands	A map or series of maps showing jurisdictional boundaries of all Federal, State, and locally regulated wetlands and adjacent areas present at the proposed site. A qualitative and descriptive wetland functional assessment. If wetlands and adjacent areas are affected, applicants must provide an explanation of how they will minimize effects.
Exhibit 15: Agricultural resources	An assessment within the area impact on land use and agricultural impacts. Maps of the area focusing on agricultural production, soil mapping, and suspected sub-surface drainage systems. Agricultural plan consistent with the New York State Department of Agriculture and Markets Guidelines. A remediation plan to address inadvertent damages to surface and subsurface drainage.

Exhibit 16: Effect on transportation	A conceptual site plan depicting all facility site driveway and roadway intersections. A description of pre-construction characteristics of public roadways. An estimate of trip generation of the facility during construction. An analysis and evaluation of traffic and transportation impacts of the facility. Analysis and evaluation impacts on airports, airstrips, railroads, buses, and other mass transit systems. If any construction or alteration proposed needs to be submitted to the FAA.
Exhibit 17: Consistency with energy planning objectives	A statement demonstrating the degree of consistency of the construction and operation with New York energy policies. A description of the impact the facility would have on reliability in the State, fuel diversity in the State, regional requirements for capacity, and electric transmission constraints. An analysis of advantages and disadvantages of reasonable and available alternative locations or properties for construction. Statement of the reasons why the facility will promote public health and welfare.
Exhibit 18: Socioeconomic effects	An estimate of the average construction work force for each quarter. An estimate of annual construction payroll for each year of construction. An estimate of the number of jobs and the on-site payroll during a typical operation year. An estimate of incremental school district operating and infrastructure costs during construction and operation. Estimate of incremental municipal, public authority, or utility operating and infrastructure costs that will be incurred for police, fire, emergency, water, sewer, solid waste disposal. An identification of all jurisdictions that levy real property taxes or benefit assessments or user fees upon the site. A description of most community benefits to be provided. A comparison of the fiscal costs to the jurisdiction that are expected to result from construction and operation of the facility. An analysis of contingency plans in the case of fire or hazardous substance incident can be fulfilled by existing local emergency capacity.
Exhibit 19: Environmental Justice	An identification and evaluation of significant and adverse disproportionate environmental impacts of the facility on the environmental justice area. Separately identify the nature and magnitude of all significant and adverse disproportionate environmental impacts of the facility resulting from its construction and operation. A qualitative and quantitative analysis demonstrating the scope of avoidance, mitigation, and offset measures taken to avoid impacts to environmental justice communities. A summary of final EJ analysis.

Exhibit 20: Effect on communications	Description of the proposed telecommunications interconnection. For wind facilities an identification of all existing broadcast communication sources within two-miles. For solar and wind facilities all existing underground cable and fiber optic major transmission telecommunication lines within one-mile. A statement on anticipated effects of the facility and the electric interconnection between the facility and the point of interconnection on communications systems. An analysis demonstrating sufficient capacity to support the requirements for the facility. Evaluation of the design configuration of the facility shown that there are no adverse effects on the communications systems. Description of post-construction activities that will be undertaken to identify and prevent any adverse effects on the communications systems. Description of status of negotiations or a copy of agreements with companies or individuals for providing interconnection including restrictions or conditions of approval.
Exhibit 21: Electric system effects and interconnections	A detailed description of the proposed electric interconnection. A system reliability impact study in accordance with the Federal Energy Regulatory Commission-approved Open Access Transmission Tariff of the New York Independent System Operator. An evaluation of the potential significant impacts of the facility and its interconnection to the transmission system. A discussion of benefits and detriments of the facility on ancillary services and electric transmission systems. An estimate of the increase or decrease in the total transfer capacity. A description of criteria, plans, and protocols for generation and ancillary facilities. If the applicant is planning on sharing above-ground infrastructure with other utilities the criteria and procedures for the proposals.
Exhibit 22: Electric and magnetic fields	Identify every ROW segment for all interconnection lines or any collection line rated over 69 kV. An EMF study with calculation tables and field strength graphs for each identified ROW.
Exhibit 23: Site Restoration and decommissioning	A decommissioning and site restoration plan for if the site is not completed or after the end of life. For facilities located on and the applicant does not own a description of all site restoration, decommissioning, and security agreements between the applicant and landowner. Information regarding salvage value for all elements of the facility.
Exhibit 24: Local laws and ordinances	A list of local ordinances, laws, resolutions, regulations, standards, and other requirements applicable to the construction or operation of the proposed facility. An applicant can choose to not apply in whole or in part any local law or ordinance which would otherwise be applicable if it believes it is unreasonably burdensome.

Exhibit 25: Other permits and approvals	A list of any federal or federally-delegated, or Federal or State recognized Indian Nation, permit, consent, approval or licenses required and date when application was submitted. A statement if the applicant knows of other pending applications or filings or any Federal or federally-delegated, Federal or State recognized Indian Nation, State or local permit that concern the facility.
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