Renewable Energy Transmission Planning and Public Engagement:

Integrated urban energy planning and NYSERDA's Tier 4 awards

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List of Abbreviations

CES	Clean Energy Standard
CHPE	Champlain Hudson Power Express
CLCPA	Climate Leadership and Community Protection Act
CPNY	Clean Path New York
NYPA	The New York Power Authority
NYSERDA	New York State Energy Research and Development Authority
NYISO	New York Independent System Operator

Glossary

General terminology

Distribution	Short-distance movement of lower-voltage electricity on a local scale
Generation	Creation of electrical power from a primary source, e.g. wind power, natural gas.
Grid	Interconnected network of infrastructure for electricity delivery
Transmission	Long-distance movement of high-voltage electricity from a power plant to a sub-station
Utilities	Public utility company that maintain public infrastructure, e.g. transmission lines

Organizations and political mechanisms

Blackstone — Blackstone Group is a New York investment firm and majority owner of CHPE.

Champlain Hudson Power Express (CHPE, or TDI CHPExpress) — A new buried transmission line that will bring Quebec hydropower to New York City. A joint venture between TDI (Blackstone Group) and TransÉnergie (Hydro-Québec).

CLCPA — A 2019 New York State law focused on drastically reducing greenhouse gas emissions

Clean Energy Standard (CES) — NYSERDA's statewide energy goal to achieve 70% renewable energy by 2030, codified by the CLCPA. Works by administering zero-emission generation credits (ZECs) and the Renewable Energy Standard, with one of the primary focuses on large-scale renewable energy generation.

Clean Path NY — An infrastructure project that will bring New York State renewable energy to New York City with a new buried transmission line. A joint venture between NYPA and Forward Power (energyRe, LLC and Invenergy, LLC).

Hydro-Québec — A public utility owned by the Province of Quebec which manages and develops

	electricity generation, transmission, and distribution. One of the world's largest producers of hydropower, it, will generate the electricity and Canadian transmission infrastructure for CHPE with its transmission management division, TransÉnergie.
NYISO	State-owned enterprise that coordinates the state's grid and electricity market.
NYPA	The New York Power Authority (Power Authority of the State of New York) is a public-benefit corporation and utility that generates low-cost power
NYSERDA	Public-benefit corporation that conducts research on energy and energy efficiency, as well as finances initiatives.
Public Service Commission	The State's utility commission that regulates service and rates (pricing).
Renewable Energy Certificate (REC)	Certificates (credits) awarded to electricity-related services for the generation of one MWh of renewable electricity. Can be bought as a market commodity.
Tier 4	One of CES' tiers for large-scale renewable energy generators/developers. Focuses on new renewable electricity-related services which would penetrate the New York City market.

Introduction

In September 2021, two transformative infrastructure projects were announced which promise to bring New York State and City's sustainable future to fruition. This announcement made a limited impact on the general public and was of little note even to environmental and climate groups. This is so often the case for infrastructure development, something so specialized and technical. But this does not lessen its significance nor the need for the public's engagement.

These two sustainability projects are the Champlain Hudson Power Express and Clear Path NY. They are awardees of NYSERDA's new Tier 4 program which is focused on delivering renewable energy to New York City. Tier 4 was developed by the state's energy planners; energy planning is a specific, technical practice in the energy industry that works to forecast and meet the demands of consumers. To better serve the city, energy planning has begun to work in conjunction with urban planning. However, these distinct disciplines have generally worked – and thought – independently from one another. As Tier 4 roles out in early 2022, energy planners could benefit from urban planning thought so to make their infrastructure development a sustainable development practice.

This paper examines the relationship between urban planning and energy planning, particularly with traditional participatory planning approaches. By incorporating each other goals and approaches, these practices might be able to better create a truly sustainable energy future. The first half of this paper approaches the concepts of sustainable development, urban planning, and energy planning in a historical and methodological context, analyzing both where they connect and diverge. The final portion of this report uses New York State and the Tier 4 awardees as a case study for analyzing urban energy projects through this lens.

Background: "the state of the grid"

New York State is powered by hundreds of power plants. These sources of electricity include hydropower and nuclear facilities, offshore wind farms, small solar photovoltaic arrays, and natural gas power plants, among others. About half of the electricity generated in New York is from natural gas, with more than sixty plants in all. This form of electricity, while more sustainable than coal, is a nonrenewable form of energy and generates large quantities of fossil fuel emissions. The other main forms of energy in the state are hydropower and nuclear; these are both considered renewable resources (Rueb, 2017). While both have faced criticism and barriers in further development, they are considered reliable and efficient.

Electricity generation is becoming increasingly diversified and no one form of energy generation defines New York's energy mix; the one generalization that can be made is that a majority of the power is generated in Upstate New York and much is sent down to the greater New York City area through a complicated series of transmission lines, converter stations, and distribution networks. In recent years, the state has rolled out aggressive clean energy goals which require massive investment and innovation in new sources of renewable energy in the next decades. These goals are codified under the Climate Leadership and Community Protection Act (CLCPA) the Clean Energy Standard (CES) and set different timelines and standards for two zones, Upstate and Downstate (NYSERDA, 2021).

Currently, Upstate's energy use is nearly 90% renewables while Downstate's is about 90% nonrenewable energy (NYSERDA, 2020). Most of the current generation in Downstate New York is from natural gas; its main producer of renewable energy, the nuclear power plant at Indian Point, provided one-quarter of Downstate's energy before it was permanently closed in Summer 2021 for operational and political reasons. Under the Clean Energy Standard,

Downstate will achieve 70% renewable energy by 2030, served by a mix of offshore and land-based wind, hydropower, and solar, and 90% renewable by 2040 (NYSERDA, 2020).

Despite these goals, the issue of disparity between Upstate and Downstate remains; Upstate has been enabled to become increasingly clean but Downstate development has been stymied by higher operational costs, less available land, and increasing demand for electricity. While this rural-urban divide between generation and use is common, New York State has come to exemplify just how bottlenecked electricity can become (Rueb, 2017). New York functions as one statewide grid, operated by New York Independent System Operator (NYSIO), a public benefit corporation that also manages New York's role in the Eastern Interconnection, one of North America's main grids which extends from the Rockies into Canada (Rueb, 2017). So, continuing to generate a large portion of clean energy Upstate and sending it down is entirely feasible; the issue is the limited capacity of transmission.

Transmission is the long-distance movement of high-voltage electricity from a power plant to sub-stations. Electricity travels along large cables from power plants across large swaths of the state. New York State has limited transmission capacity to bring renewable energy Downstate and must expand this infrastructure. This is easier said than done. Transmission infrastructure development has high costs and, from a planning perspective, the siting of new transmission cables can be tricky as there is often opposition from local communities as well as local energy generators who fear competition (Park & Andrews, 2017; Rueb, 2017).

In response to these transmissions problems for the Clean Energy Standard, a call for proposals for innovative new projects to service New York City was issued by NYSERDA, New York State's energy research, and financing organization. This program, titled Tier 4 – New York City Renewable Energy, was announced in October 2020 to find and finance innovative solutions

to providing more renewable energy downstate, including new transmission development. Seven bids were received and, in September 2021, Governor Kathy Hochul announced two awardees of Tier 4: the Champlain Hudson Power Express and Clean Path NY. Upon approval by New York's Public Service Commission, these two projects could be serving Downstate by 2025 and 2027, respectively (NYSERDA, n.d.).

These plans have received a mixed response from the informed public and are currently in a key public comment period. While much of the decision-making relies on technical and political considerations, the Public Service Commission has until February 2022 to decide if these projects will well serve the public at large.

The development of urban planning and energy planning

Planning for a sustainable future is a deliberate practice, one that works to integrate the ideals of economic development, equity, and environmental protection. Navigating the tensions between these three priorities is of the utmost concern and has been central to many, but not all, of projects cited as sustainable development (Campbell, 2003). With respect to sustainable urban planning, Scott Campbell argues that these ideals must be satisfied by merging practices like land use and infrastructural improvement with procedures that center conflict mediation and pluralism, among others (Campbell, 2003).

The transition to renewable energy has been at the center of the sustainable development conversation for decades; in addressing climate change, society must prioritize the reduction of fossil fuel processes and the production of greenhouse gases. While the expansion of renewable energy generation is oft considered and analyzed, there is also a more technical conversation going on about other critical infrastructure and their development (Klinenberg, 2016). The relationship between this less prominent infrastructure and sustainable urban planning practice

must be further explored. While there is a long-established study of the relations between urban form, land use, and energy, the scope has generally been limited to understanding how energy use impacts the city or, conversely, the city's role in industrial ecology (Silva et al., 2017; Park & Andrews, 2017; Andrews, 2002).

What is the role of Campbell's understanding of sustainable urban planning and development in the context of the American planning regime and its separate infrastructure development practices? Planning has experienced a transformation since the postwar years. At that time, the agenda focused on rational, scientific planning and was soon replaced by an emphasis on advocacy and equity planning in the 1960s. When the American environmental movement began in the 1970s, environmental planning tenets were formed (Park & Andrews, 2017). The 1980s and 1990s proved instrumental in many of these topics. In urban planning, the movement towards participatory and communicative planning began; this was also the time that sustainable development and Integrated Resource Planning movements began (Healey, 1992; Park & Andrews, 2017; Campbell, 2003). Integrated Resource Planning is a practice in energy planning that came out of the energy crises of the 1970s; this practice requires utilities to consider factors of demand in addition to supply and precipitated the integration of energy-efficiency programs, forms of public participation, and consideration of environmental and social aspects in energy development (Park & Andrews, 2017).

Altogether, community involvement and vision have been incorporated into the decision-making process of urban planning, urban development, and energy planning. It has benefited the policy-making process and helped to manage external conflicts. However, practitioners of urban planning and development have had limited involvement in energy usage, and vice versa (Park & Andrews, 2017; Braun, 2010).

However, Collaço et al. have proposed a new paradigm for the planning of urban energy systems which combines the traditional technical approach to energy planning with the more comprehensive lens of urban planning. They argue that this paradigm, termed Integrated Urban Energy Planning, results in more energy savings and greenhouse gas reduction than either the exclusive use of energy or urban planning strategies, respectively (Collaço et al., 2019). They propose integrating critical urban planning thinking on historical, political, socio-economic, and demographic drivers as well as location and natural environment into traditional energy planning for cities. However, they stop short of proposing the integration of urban planning's critical methodology of stakeholder engagement, likely since it does not lead to direct reductions, their main metric.

Integrating collaborative urban planning approaches into energy planning

A highly technical process, the planning of energy systems and their infrastructure is performed by state utilities and regulators. While stakeholders are involved in the development, what could an Integrated Urban Energy Planning approach learn from the well-developed methodologies of participatory urban planning?

Urban planning emphasizes a pluralistic approach to planning and policymaking; it is understood that when policy choices are representative of many groups, and determined through dialogue and not control, they make for a more comprehensive and accepted plan. By concerning the public with decision-making processes, a greater understanding of the physical, economic, and social are involved (Davidoff, 1965). Pluralistic planning also can mean presenting multiple plans to the public for discussion (Davidoff, 1965). As aforementioned, pluralism led to a communicative paradigm in urban planning. Communicative was also formed as a reaction to the procedural and technical Mannheimian understanding of planning (somewhat reminiscent of

energy planning today). Influenced by Habermas, communicative planning embraced reasoning informed by pluralistic, 'intersubjective communication.' Here, planning becomes a forum for both debate and, subsequently, choice (Healey, 1992). Even as a technical process, urban planning has evolved to become informed by knowledge produced through participatory and democratic processes.

How can this paradigm be better embraced in energy planning and the development of transmission infrastructure? While understudied, it is broadly understood that, in the case of energy, stakeholders have little say; their discussion only extends to a project's direct impact on their lives. As most decisions are top-down and subject to technical and regulatory factors, they have minimal impact on larger decisions or policies in the public and private sectors (Braun, 2010; Haggett, 2009). Additionally, a certain level of individual education is necessary for effective public participation on topics like energy development which limits the perceived significance. In all, stakeholder engagement is viewed as a means to improve communication for decision-makers and avoid conflict. At best, it is an interactive educational forum (Braun, 2010).

In regard to renewable energy, many forms of public participation have developed; in some communities (and countries), involvement is more systematic and involves local groups leading to more active and engaged participation (Braun, 2010). However, despite general support for renewable energy projects, specific initiatives have regularly faced low-public support. While the reasoning against projects differs, many protesters often are motivated by the feeling of powerlessness (Haggett, 2009). Studies call for new approaches to public engagement for renewable energy projects. At its most basic level, public engagement is practiced by decision-makers as information provision, consultation, and/or deliberations (Haggett, 2009). More critically, these decision-makers must recognize the public and their attitudes as a

necessary component to achieving their carbon reduction goals and thus be intimately involved in the production of the social and technical processes of renewable energy development (Walker & Cass, 2007).

This discussion has recently focused specifically on electricity transmission. While the traditional, utilities-led approach to transmission planning has been reactive, new renewable energy goals have required more proactive development strategies (Olsen et al., 2012). In a 2021 national workshop, transmission development practitioners agreed that early and sustained community participation must take place within several technical and regulatory processes. This engagement allows for mutual and meaningful trust and education. Informed by a diverse, pluralistic set of stakeholders, this also creates a structured way for which to resolve conflicts (Reed et al., 2021). This conversation also extended into community benefit sharing. Through engagement, communities can better voice their deserved project benefits (and subsequent project approval) (Reed et al., 2021).

The state of California has become an example of effective collaborative transmission planning. In the late 2000s, when the state laid out a renewable energy portfolio standard, they created a stakeholder-led planning process to identify and evaluate 'renewable energy zones.' From 2007 to 2011, the state was able to acquire insights from different stakeholder groups on the challenges they would face in the siting, permitting, and implementation of transmission infrastructure (Scaccia, 2012; Olsen et al., 2012). Stakeholders not only discussed economic and environmental components but also technicalities like state-wide transmission needs. Stakeholders included representatives from utilities, energy generation companies, regulatory agencies, the military, tribes, community and environmental groups, and any other concerned individuals (Olsen et al., 2012).

Much like many contemporary urban planning projects, California was able to effectively generate development priorities and stakeholder support through a thorough usage of participatory methodologies. While there were some issues between stakeholders, the state was able to create strategies for involvement and transparency for energy planning which has been recommended for use in other projects and jurisdictions (Scaccia, 2012; Olsen et al., 2012).

Energy planning has yet to fully incorporate sustainable development ideals into its development processes at large. While the advent of renewable energy portfolio standards has encouraged greater consideration of environmental concerns, and market forces have championed an economic development approach, energy planning does not robustly consider the final tenant of sustainable development: equity (Campbell, 2003). Shifts in American policymaking approaches have led to the ideation of Integrated Urban Energy Planning which embraces urban planning as a way to better understand the context of the process. An embrace of participatory planning has developed separately from this idea. While understudied, there is an implication that there is a movement towards the combination of collaborative transmission planning and Integrated Urban Energy Planning into a framework for building out the renewable energy future.

Case Study: CES' Tier 4 awards for New York City

Through NYSERDA's Clean Energy Standard program, different market-based initiatives, termed 'tiers,' have targeted distinct forms of energy generation. The most recently created tier, Tier 4, specifically awards funding to privately-developed renewable energy projects for the underserved New York City market. The program was announced in October 2020, opened in January 2021, and winning bids were determined in September 2021. Tier 4 would consider any new local generation and/or larger transmission schemes focused on New York

City. Of eighteen applications, seven formal bids were submitted, and two were selected: the Champlain Hudson Power Express (CHPE) and Clean Path NY (CPNY) (NYSERDA, n.d.).

Both of these proposals are centered on transmission and come from known entities. CHPE has been in the works since 2008 and has already secured permits (Rueb, 2017; NYSERDA, n.d.). It proposes the construction of buried transmission lines from Quebec to Queens, with lines running alongside the Hudson River. The project is co-developed by Transmission Developers Inc. (TDI), a new arm of Blackstone Group, and Hydro-Quebec, a Canadian provincial energy organization. Hydro-Quebec will generate all of the renewable energy with their hydropower facilities. Overall, this project is one of the largest investments in New York State history (Champlain Hudson Power Express, 2021; NYSERDA, n.d.). CPNY is slightly smaller in scale yet proposes delivering 3800 megawatts of solar and wind power generated within Upstate New York (as opposed to the 1250 megawatts from CHPE). The project was developed by the New York Power Authority (NYPA), a public benefit energy producer, with private developer Forward Power. Its new transmission lines will begin in the Catskills and lead to a different substation in Queens (Clean Path NY, 2021; NYSERDA, n.d.).

The projects are distinct from one another as one promises foreign yet dependable energy (hydropower) while the other champions local producers who will provide more intermittent forms of energy (solar and wind power). In some ways, the selection of these two projects can be viewed as political. CHPE has long been in the works but debated for, among other reasons, outsourcing economic opportunities to Canada. It has been championed by state politicians and politically positioned as the de facto awardee to state funding. Thus, its selection, alongside a locally-focused project with state oversight, can be viewed as a compromise between ideals. Technicality is less significant in a selection process with political priorities.

Combined, these projects promise thousands of megawatts of electricity to New York City's doorstep, a serious reduction in fossil fuel emissions, and community benefit sharing. The projects promise the creation of 10,000 long-term jobs through more than $8 billion of economic investment. Additionally, developers promise $460 million in community benefit funds. These funds would provide for the equitable support of green jobs, public health, and environmental conservation (NYYSERDA, n.d.).

Discussion and conclusion

Now, these projects wait for approval by New York's Public Service Commission (PSC). What will this Commission see and hear about these projects and what implications does it have on a more participatory form of Integrated Urban Energy Planning?

Due to the request for proposals process by NYSERDA, the agency allowed private developers to shape plans of their own will. While these organizations may have formed or consulted stakeholder groups, this information is not public. Therefore public participation is limited to the time following the award. As part of the PSC's approval process, a multi-month public comment period is held. Stakeholders can comment in public meetings or through public written commentary. The completely open and public process allows for any concerned individual or organization to comment. However, there is no systematic way to address concerns, and follow-up is not required.

Overall, this is a weak participatory process. The nature of award-based development allows for private developers to shape plans as they see fit. As observed with CHPE and CPNY, community benefits have been well considered; however, the scope and allocation are undefined and the means with which they were determined are not transparent. As is the nature of infrastructure siting, there are many community concerns about these projects, particularly

CHPE. The structure of public commentary does not realize these concerns realistically and disenfranchises the public. While participation is required in this process, it is not collaborative nor particularly communicative; in most cases, public comments do not result in conversation.

In particular, there have been tensions between environmental groups and the state. Per public comments, conservation-focused groups are concerned with the siting of transmission lines along the Hudson River while some climate action advocates believe that capacity should be increased. Other individuals criticize CHPE for the lack of connections to their transmission lines by New York-based electricity generation sources. Most prominently, Canadian First Nation people have shared numerous concerns over the expansion of hydropower on their sacred lands in Quebec for the benefit of New York State.

It is disheartening to see New York State proceed this way when California successfully created a collaborative integrated urban energy planning process more than a decade ago. While it is said that New York looks to California as a pioneer, it does not seem that this methodology is thoroughly integrated into the state's energy planning (Rueb, 2017). Going forward, infrastructure awards like those of NYSERDA's Tier initiatives should better require participatory processes during the shaping of plans. These forums should be public record and require systematic follow-up.

In many ways, cutting-edge energy planning is resistant to embrace the participatory methodologies championed by urban planning and the like. If an Integrated Urban Energy Planning paradigm progresses, it must champion the communicative approach of urban planning. Additionally, this process is intrinsically pluralistic but does resemble similar methodologies in urban planning (Davidoff, 1965). Pluralism here is encouraged by market forces and does not adequately involve a wide variety of stakeholders. By engaging in these planning practices,

energy development will be able to fully take up the tenets of sustainable development – environment, economy, and equity (Campbell, 2003).

As the public comment period for the Tier 4 awardees officially concluded in December, so has the entire formalized stakeholder engagement process. Despite the involved planning process for other large infrastructure projects, these transmission projects (of massive size and sky-high costs) have had limited public participation. Few concerns, if any, have been resolved in these few pasts months, and the public has been almost entirely excluded from this process. Thus, an Integrated Urban Energy Planning practice has yet to develop in New York. Going forward, the state must recognize the benefits of a communicative approach to recognize and reduce public planning concerns in energy development. Thus, to reach the sustainable energy future it so desires, New York must hold its energy projects publicly accountable through a new integrated planning approach.

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