

ENVIRONMENTAL LAW

Expert Analysis

Reducing Legal Hurdles to Combined Heat and Power in New York

Combined heat and power (CHP or cogeneration) is the simultaneous production of electricity and thermal energy from a single fuel source. Most CHP systems in New York City use natural-gas fired turbines or reciprocating engines to generate electricity and then capture heat from the combustion generator's exhaust stream and cooling systems.

CHP has numerous benefits. It is on the order of twice as efficient as conventional fossil fuel power plants, and thus uses much less fuel and generates much less air pollution. It contributes to grid reliability and, by allowing buildings to produce some of their own electricity, it displaces some of the need for costly, polluting power generation during times of peak power use. CHP can also provide electricity and thermal energy to critical infrastructure during disasters.

Recognizing these benefits, in August 2012 President Barack Obama issued Executive Order No. 13,624 establishing a national goal of developing 40 gigawatts of new CHP capacity by 2020. New York City's sustainability plan, PlaNYC, includes a goal of developing 800 megawatts (MW) of clean distributed generation, mostly in the form of CHP, by 2030.

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By
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An interdisciplinary team at Columbia University has been working on methods to advance the use of CHP in New York, with financial support from the Earth Institute's Cross Cutting Initiatives program. A team at the Engineering School led by Professor Vijay Modi and Bianca Howard, a Ph.D. candidate, will be issuing a report about the considerable physical potential to expand CHP use and ways to overcome some of the engineering barriers. This article, based on the work of Alexis Saba, a postdoctoral fellow, and myself, discusses common legal hurdles often encountered in developing CHP projects, and proposes potential solutions.

Standby Tariffs

Buildings using CHP typically remain connected to the grid because CHP systems often do not supply enough power for the building's entire load, and they also sometimes break down or must be shut for maintenance. The electricity supplier—in New York City, chiefly Consolidated Edison (Con Ed)—charges a “standby tariff.” This cost heavily influences the feasibility of a project. The tariff charged is tied to the size of the CHP system.

Some building owners install CHP systems that are smaller than technically optimal in order to fall within a lower rate category. It is important that Con Ed charge a rate for standby service that reflects the actual cost of supplying electricity and steam, even if the service is ultimately not needed. However, many developers claim that the tariff prices are too high. Developers can propose new tariffs by petitioning the New York State Public Service Commission (PSC) for a declaratory ruling, but projects must have the financial ability and the time to pursue this route.

Moreover, there are not sufficient financial mechanisms to enable many property owners and project developers to manage the significant up front costs of a CHP project.

The following recommendations attempt to manage these hurdles and ease the difficulty in financing CHP projects.

- The PSC should create a mechanism on its website through which interested parties can receive alerts about the development and modification of tariffs that impact their projects. Con Ed posts its tariffs and rates online, and the PSC website allows users to search for tariffs; however, given the large number of filings with the PSC, it would be helpful to be able to track applicable tariff filings and modifications more directly.

- The PSC should alter the Con Ed steam tariff to encourage use of Con Ed steam as backup heat for CHP systems installed by current and new steam customers. Con Ed has begun to move in this direction with a small pilot project that allows CHP facilities

to export excess steam back through the Con Ed system.

- At the federal level, Congress should reinstate the grant in lieu of tax credit program so that non-profit entities can be similarly positioned as for-profit entities that can take advantage of a 10 percent investment tax credit, which runs through Jan. 1, 2017. The Energy Improvement and Extension Act of 2008 (EIEA) revised the Internal Revenue Code to allow CHP systems up to 50 MW and with over 60 percent efficiency to qualify for an investment tax credit equal to 10 percent of the costs of the first 15 MW of qualifying CHP equipment, such as equipment needed to generate power and steam.¹

Only entities that pay taxes can take advantage of this tax credit, so the American Recovery and Reinvestment Tax Act of 2009 allows taxpayers ineligible for the EIEA investment tax credit to receive a grant from the U.S. Treasury Department instead of taking the tax credit.² The grant is only available to CHP systems that are placed into service in certain specified years.

- Congress should also create an incentive for non-profit entities that mirrors the five-year depreciation deduction program that for-profit entities can use. The EIEA added CHP to the five-year schedule of the federal Modified Accelerated Cost-Recovery System, which allows businesses to recover investments in certain property through depreciation deductions.³ As with the investment tax credit, the depreciation deduction is only available to entities that pay taxes.

Project Approvals, Permits

In New York City, Con Ed provides all of the steam service, which is limited to Manhattan, and nearly all of the electrical service. The New York Power Authority provides electrical service to government entities including the New York City government and New York City Housing Authority. Con Ed also provides gas service in the Bronx, Manhattan, and Queens, whereas National Grid provides gas service in the rest of Queens, Brooklyn, and Staten Island. A CHP system using natural gas as its fuel must be connected to Con Ed's or National Grid's gas lines. As noted above, most CHP systems also remain connected to the electrical grid. Con Ed has published

a Distributed Generation Guide that enumerates the steps of the gas and electrical interconnection process,⁴ and the New York City Department of Buildings has published information about the requirements for gas and electric connection.⁵

In addition to approvals from utilities, the developer or engineer must also obtain permits and approvals from the New York City Buildings Department, Fire Department (FDNY), and Department of Environmental Protection (DEP) as well as the New York State Department of Environmental Conservation (DEC). The Buildings Department has published information about its own requirements as well as those for FDNY and DEP.⁶

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The Buildings Department must inspect and approve the electric system,⁷ the plumbing system (which includes gas and fire standpipes),⁸ the gas piping for CHP systems using gas over 15 psig,⁹ and a fire protection plan.¹⁰ FDNY must also approve the fire protection plan.¹¹ The gas utility must complete a pressure test of new gas lines.¹² Once both agencies and the gas utility have signed off on the project, Con Ed Electric will perform electrical interconnection testing and must approve the project.¹³

Lack of Clarity in Processes

It can be time-consuming to identify, much less satisfy, all the permitting and approval requirements. State and city agencies often "regulate" through guidance documents and other sources not contained in official statutes and regulations. Lack of clarity about what Con Ed and New York City agencies require for project approval and permitting as well as how long decision-making will take creates uncertainty about the project completion time and cost of compliance. This can discourage financial investment necessary for project development.

The process for obtaining an FDNY high pressure gas permit has been noted as par-

ticularly challenging in this regard. The new appendix in the Fuel Gas Code is expected to lend welcomed clarity. Con Ed and the PSC have established standardized interconnection requirements for systems under 2 MW and over 20 MW, and Con Ed estimates the cost of electrical interconnection through a Coordinated Electric System Interconnection Review.¹⁴ Increased transparency and standardized legal requirements are needed to better plan for a CHP project and design a CHP system.

The following recommendations attempt to manage these hurdles.

- The PSC should create standardized interconnection requirements for CHP systems between 2 MW and 20 MW. The requirements might not be as comprehensive as those for systems outside of that size range due to the variability in design, permitting, interconnection, and construction details; however, engineers and project developers consistently explain that industry and the utilities have enough familiarity with CHP at this level to create some standardized procedure. Con Ed indicates that it is currently drafting standardized interconnection requirements in the 2-20 MW range.

It should be noted that the New York State Energy Research and Development Authority (NYSERDA) has established a CHP Acceleration Program that pre-qualifies CHP "modular kits" 1.3 MW or smaller for \$20 million of NYSERDA incentives available to customers who purchase and install the systems. The approved systems "must be capable of acquiring proper air permits... and capable of interconnecting to New York State electric utilities," meaning that the systems will be proven to already meet some regulatory and utility requirements.¹⁵

- The city should clarify and streamline the permitting processes by creating a single handbook that contains information about the permitting and approval requirements for each New York City agency including the legal source of the requirements, the forms and documentation needed for compliance, timelines for submittal of information, online resources, and contact information.

The NYC Development Hub launched by the city in October 2011 aims to streamline construction projects by allowing permit applicants to submit materials electroni-

cally, in one place, and by virtually bringing together six city agencies (including the Buildings Department, FDNY, and DEP) to review the application materials and discuss project plans.¹⁶ Its purpose is to accelerate the approval process. It could be an even more effective tool when paired with a permitting and approval handbook, such that applicants could enter Development Hub with as much information and preparation as possible.

- The city should also designate a CHP coordinator in a New York City agency or the Mayor's Office to facilitate CHP regulation among the agencies and to coordinate the agencies' and utilities' work. While the DG Ombudsperson position at Con Ed is fairly new, this position serves as a good model for what would be helpful at the city agency level. There are so many agencies involved in regulating CHP that no single entity is a point of contact and ultimately responsible for facilitating CHP development. The CHP coordinator should be given the authority and respect necessary to implement effective changes.

Microgrids

New York City is an optimal environment for CHP microgrids because of the dense and mixed use building stock and neighborhoods. Microgrids are beneficial because they allow multiple buildings with different uses to be served by one CHP system, thereby maximizing use of electric and especially thermal loads. Below are some ways to facilitate the development of CHP microgrids.

- Clarify the definition of "related facilities." Lest they be regulated as utilities, microgrid CHP projects have to be considered "qualifying facilities." The relevant language in the definition of qualifying facilities is: "any facility with an electric generating capacity of up to eighty megawatts...together with any related facilities,"¹⁷ which are "facilities as may be necessary to conduct electricity, gas or useful thermal energy to users located at or near a project site."¹⁸

While the PSC's 2007 *Burrstone* decision¹⁹ provides strong precedent for the proposition that unaffiliated buildings connected across streets constitute related facilities because they are "users located at or near

the project site," the decision may not apply in all circumstances. The risk that a microgrid project will not be approved by the PSC due to unclear language in the agency's decisions can deter investment. A solution is to clarify the definition of related facilities, particularly the language "at or near a project site," by amending the PSL itself or the PSC regulations.

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On Oct. 18, 2012, the PSC approved the "campus offset tariff,"²⁰ which will facilitate CHP microgrid development among buildings under common ownership. The tariff allows low-tension electric customers to connect a CHP facility serving multiple accounts located within a single premises to Con Ed's high-tension electric distribution system, as long as the CHP system is between 2 MW and 20 MW in aggregate.

- Virtual Microgrids. A virtual microgrid "is one that uses the existing utility's distribution wires and aggregates locally sited distributed generation to offset a group of customers' energy needs."²¹ A 2010 study produced by Columbia University and the Pace Energy and Climate Center discusses the potential for virtual microgrids in New York City.²² The study explains that virtual microgrids act like energy service companies (ESCOs), which provide electricity and possibly natural gas or oil through existing utility transmission and distribution facilities²³ and "develop, install, and fund projects designed to improve energy efficiency and reduce operation and maintenance (O&M) costs for their customers' facilities."²⁴ ESCO regulation might provide a model for virtual microgrid regulation.

The Public Service Law could be amended to require utilities to accommodate virtual microgrids. Colorado and Massachusetts have both enacted statutes that could serve as models.

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1. See Energy Improvement and Extension Act of 2008 §103(c). See also U.S. EPA, Federal Incentives for Developing Combined Heat and Power Projects, Tax Provisions, CHP Investment Tax Credit, <http://www.epa.gov/chp/incentives/index.html>.

2. See American Recovery and Reinvestment Tax Act of 2009 §1603. See also U.S. Department of Treasury, 1603 Program: Payments for Specified Energy Property in Lieu of Tax Credits, <http://www.treasury.gov/initiatives/recovery/Pages/1603.aspx>.

3. See Energy Improvement and Extension Act of 2008 §103(c). See also Database of State Incentives for Renewables and Efficiency, Modified Accelerated Cost-Recovery System (MACRS) + Bonus Depreciation (2008-2012), http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=US06F.

4. CONEDISON, DISTRIBUTED GENERATION GUIDE 10 (Vol. 1, Sept. 2011), http://www.coned.com/dg/process_guide/processGuide.asp.

5. NEW YORK CITY DEPARTMENT OF BUILDINGS, INSTALLING NATURAL GAS-FUELED COMBINED HEAT AND POWER (CHP) SYSTEMS 8-11 (Dec. 2010), <http://www.nyc.gov/html/dob/html/sustainability/resources.shtml>.

6. See NYCDOB CHP GUIDE, *supra* note 5, at 8-11.

7. See EC §27-3018. See Department of Buildings, Electrical Applications and Permits, http://www.nyc.gov/html/dob/html/development/electrical_apps_permits.shtml; DOB, Forms, Electrical, http://www.nyc.gov/html/dob/html/development/forms_electrical.shtml.

8. See Department of Buildings, Plumbing Applications and Permits, http://www.nyc.gov/html/dob/html/development/plumbing_apps_permits.shtml; DOB, Forms, Plumbing, http://www.nyc.gov/html/dob/html/development/forms_plumbing.shtml.

9. See RCNY §22-01.

10. See New York City Administrative Code Article 109.

11. See *id.*

12. See NYCDOB CHP GUIDE, *supra* note 5, at 20; CONEDISON DG GUIDE, *supra* note 4, at 7.

13. See NYCDOB CHP GUIDE, *supra* note 5, at 21; CONEDISON DG GUIDE, *supra* note 4, at 7.

14. For more information about CESIR and Con Ed's interconnection process, see CONEDISON, DISTRIBUTED GENERATION GUIDE 10 (Vol. 1, Sept. 2011), http://www.coned.com/dg/process_guide/processGuide.asp.

15. NYSERDA, RFI 2568: CHP Acceleration Program—CHP System Pre-Qualification, <http://www.nyserda.ny.gov/en/Funding-Opportunities/Current-Funding-Opportunities/RFI-2568-CHP-Acceleration-Program-CHP-System-Prequalification.aspx>.

16. See New York City Department of Buildings, About the Hub, http://www.nyc.gov/html/dob/html/development/about_the_hub.shtml.

17. PSL §2(2-a).

18. PSL §2(2-d).

19. Case 07-E-0802, *Burrstone Energy Center LLC*, "Declaratory Ruling on Exemption from Regulation," N.Y. Public Service Commission (Aug. 28, 2007) (cogeneration facilities may distribute energy to multiple end users; facility's distribution lines may cross public streets in order to do so).

20. The campus offset tariff is really a set of amendments to Con Ed's electric tariff schedule, P.S.C. 10—Electricity, that expand the applicability of Service Classification (SC) 14-RA—Standby Service Special Provision E, now referred to as General Rule 20.2.1(B)(7). For all documents filed in the case, see New York State Public Service Commission, Case 11-E-0299—Con Edison Standby Service Rates.

21. MICHAEL A. HYAMS, MICROGRIDS: AN ASSESSMENT OF THE VALUE, OPPORTUNITIES, AND BARRIERS TO DEPLOYMENT IN NEW YORK STATE 54 (prepared for NYSERDA, Sept. 2010).

22. *Id.*

23. See New York State Public Service Commission, Energy Choices—The Facts from the PSC, <http://www.dps.ny.gov/energychoices.htm#Choosing>.

24. U.S. Department of Energy, Federal Energy Management Program: Energy Service Companies, http://www1.eere.energy.gov/femp/financing/espcs_companies.html.