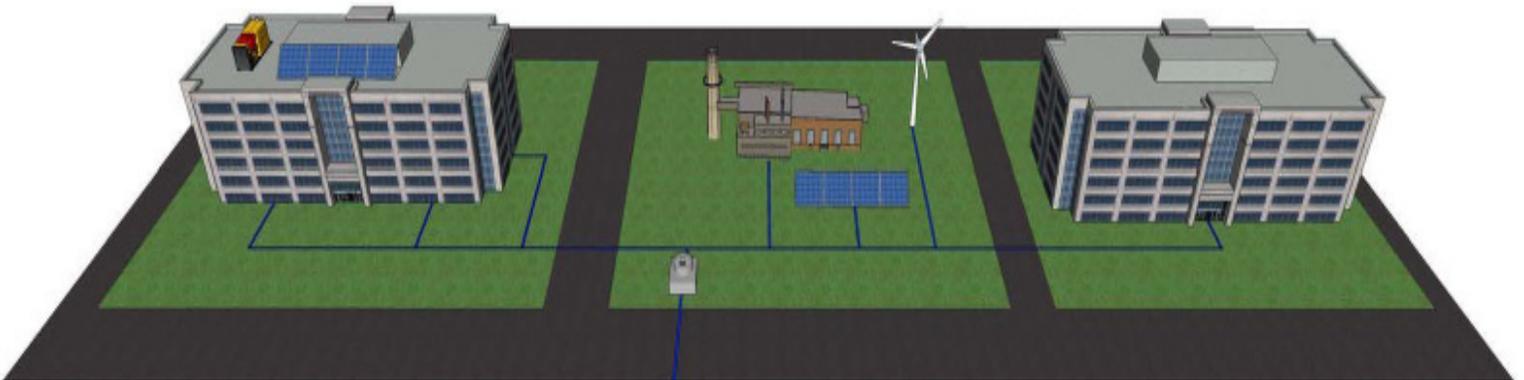


MASSACHUSETTS MICROGRIDS: OVERCOMING LEGAL OBSTACLES



HARVARD LAW SCHOOL
Emmett Environmental
Law & Policy Clinic

SEPTEMBER 2014

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The Emmett Environmental Law and Policy Clinic at Harvard Law School is directed by Wendy B. Jacobs and is dedicated to addressing major environmental issues in the United States and abroad and to providing its students an opportunity to do meaningful, hands-on environmental legal and policy work. Students and clinic staff work on issues such as climate change, pollution reduction, water protection, and smart growth.

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TABLE OF CONTENTS

- I: Introduction and Executive Summary**.....6

- II: Franchise Clause Issues**.....10
 - A. Statutory Language.....10
 - B. Boundary Cases.....11
 - C. Electricity Resale Cases.....15
 - D. Electric Vehicle Charging Case.....17

- III: Application to Microgrids**.....18
 - A. Ownership Models.....19
 - 1. Scenario One: Single Owner/Occupier with On-Site Generation.....19
 - 2. Scenario Two: Single Owner/Occupier with Off-Site Generation.....20
 - 3. Scenario Three: Multi-Tenant with On-Site Generation.....21
 - 4. Scenario Four: Multi-Tenant with Off-Site Generation.....22
 - 5. Scenario Five: Multi-Building, Multi-Tenant with both On-Site and Off-Site Generation.....22

- IV: Other Legal Issues**.....26
 - A. Ownership of Microgrid Generating Facilities.....26
 - B. Retail Choice.....27
 - C. Non-Discrimination.....28
 - D. Limits on a Utility’s Ability to Transfer its Franchise, Lease its Works, or Contract with Someone to Carry on its Works.....28
 - E. Licensing and Supervisory Authority.....30

F. Construction of Electric Lines.....	32
G. Selling Electricity and Ancillary Services to the Macrogrid.....	34
V. Conclusion.....	36

I. INTRODUCTION AND EXECUTIVE SUMMARY

This paper summarizes the conclusions of research conducted by the Emmett Environmental Law and Policy Clinic of Harvard Law School (“the Clinic”) into legal constraints on the ownership structure of microgrids in the Commonwealth of Massachusetts.¹ The Clinic undertook this work at the behest of the City of Boston; the Clinic has previously worked with the City on a variety of other climate change adaptation-related measures, as well as on the regulations to implement the City’s Building Energy Reporting Ordinance.

A microgrid is a spatially defined area in which the electricity, heat, and sometimes cooling distribution systems are coordinated.² A microgrid typically has a natural gas-fired combined heat and power (CHP) unit as its anchor generating facility. It may also contain solar photovoltaic, wind, and electricity storage facilities. By using the waste heat from its CHP unit to provide local heating and cooling in addition to electricity, a microgrid can use fossil fuels much more efficiently than a conventional utility with a central station plant that discharges waste heat into the environment. Further efficiency gains are derived from locating generating facilities close to where the electricity is used because electricity is not lost during long-distance transmission. Therefore, especially when the CHP unit is combined with renewable sources of energy, a microgrid can provide significant efficiency and greenhouse gas emission reduction benefits. It may also function as an adaptation measure due to its ability to function during large-scale utility outages caused by major storm events.

Microgrids connect to the larger electrical grid, or “macrogrid,” at a point of common coupling (PCC). Because a microgrid will typically not contain sufficient generation and storage resources to meet its load at all times, during normal operations, the microgrid will take electricity from the macrogrid. When the macrogrid is down, however, such as might happen after a severe storm, the microgrid has the capability of operating independently, or “islanding,” and thereby continuing to provide electricity and heat for the most critical functions inside the microgrid. As a result, microgrids can increase the resilience of a community to storms and other disruptions that are expected to become more frequent as the climate changes.

Most existing microgrids are in the “MUSH” sectors—municipalities, universities, schools, and hospitals. These types of facilities typically have high energy usage, balanced loads, a single

1 Seth Hoedl, Ph.D. (JD ’15) has taken the lead on the research and analysis for this project and presented preliminary findings at two workshops organized by the Massachusetts Clean Energy Center and the Pace Energy and Climate Center.

2 Genevieve Rose Sherman, *Sharing Local Energy Infrastructure: Organizational Models for Implementing Microgrids and District Energy Systems in Urban Commercial Settings* 11-12 (2012) (unpublished Master in City Planning thesis).

campus or agency owner, and relatively straightforward access to funding. For example, in Boston, there is one multi-user microgrid with wires owned by a non-utility entity: Medical Area Total Energy Plant (“MATEP”), which serves the Longwood Medical area.

MATEP highlights one of the perceived legal barriers to microgrid development. When the Massachusetts legislature restructured the electric industry in 1997, its definition of “distribution company” specifically excluded MATEP. The definition excludes “any entity which owns or operates plant or equipment used to produce electricity, steam and chilled water . . . where the electricity produced by such entity or its affiliate is primarily for the benefit of hospitals and non-profit educational institutions, and where such plant or equipment was in operation before January 1, 1986.”³ MATEP was the only entity that satisfied the conditions of this exclusion. This specific exclusion for MATEP raises the question whether other non-utility-owned microgrids would be subject to regulation as distribution companies and whether they would violate the incumbent utilities’ exclusive franchise to provide distribution service to customers within their exclusive service areas. The primary legal impediment in Massachusetts to the development of non-utility-owned microgrids is M.G.L. c. 164, § 1B(a), which we refer to in this paper as the “franchise clause.” The franchise clause prohibits anyone other than the incumbent distribution utility from providing “distribution service” within that utility’s service territory, except with the written consent of the utility.

The City of Boston wants to enable the creation and use of multi-user microgrids. Microgrids can bring together many improvements promoted by the City of Boston’s energy policy and programs work: whole-building energy efficiency, clean distributed generation, renewable energy, and smart energy management technologies that lower energy costs, boost resilience and reliability, reduce pollution, and attract new investment. The Clinic has therefore undertaken this research to help promote the development of microgrids in the City and elsewhere in the Commonwealth.⁴

Our analysis of the relevant statutory text and the caselaw interpreting the franchise clause (M.G.L. c. 164, § 1B(a)) provides the following synthesis of the key statutory language:

Except with the written consent of the distribution company, no person other than a distribution company shall deliver electricity over lines operating between 110 and 69,000 volts from points on the transmission system or from a generating plant to a customer within the distribution company’s service territory.

3 Mass. Acts 1997, c. 164, § 187, *codified at* M.G.L. c. 164, § 1.

4 Although a microgrid, for both economic and environmental reasons, should involve not only the provision of electricity, but also heating and cooling, our research has focused on the issues raised by the electrical aspects of a microgrid. This focus does not mean that we envision an electricity-only microgrid. Instead, it reflects that the electrical aspects of a microgrid are those most likely to present legal barriers to microgrid development in Massachusetts.

Our analysis is explained in Part II, below, where we also review two “boundary” cases that involve properties either at the border between, or straddling, two utilities’ service areas, *Wellesley Municipal Light Plant (“Olin College”)*,⁵ and *Massachusetts Electric Company (“Stop & Shop”)*.⁶ We conclude that these cases are best understood as prohibiting the transfer of ownership and control of electricity by someone other than the incumbent distribution utility. The analysis in Part II includes a review of cases involving the resale of electricity by landlords to tenants. These cases indicate that the purchase of electricity from the distribution utility and resale of that electricity at a profit is prohibited, while the inclusion of a charge for electricity in a tenant’s rent or charging a tenant a flat rate for a combination of heating, cooling, hot water, chilled water, and/or electricity is permitted. Part II concludes with a brief description of the DPU’s recent order⁷ holding that electric vehicle charging stations neither distribute nor sell electricity.

In Part III, we apply the legal analyses to microgrids. We apply the law to a variety of microgrid scenarios, ranging from the simplest single property, single user to a multi-user microgrid scenario in which the microgrid participants⁸ jointly own the wires and generating assets in a microgrid. Because no transfer of ownership and control of electricity occurs within any of these scenarios, we conclude that, under our interpretation of the boundary cases, such a microgrid would not run afoul of the franchise clause.

In light of DPU 13-182, we also analyze a multi-user microgrid that operated without joint ownership in the form of a service model. The DPU recently held that electric vehicle charging stations do not distribute or sell electricity because they use unique electrical equipment that is very different from traditional overhead electric lines and they provide a “charging service” instead of only providing electricity. A microgrid operated by a non-utility entity as a package of services may resemble a charging station in various respects, thereby complying with the franchise clause and avoiding DPU regulation as an electric company.

Finally, Part IV addresses aspects of utility regulation in Massachusetts other than the franchise clause that are relevant to microgrids. If a distribution utility operated a microgrid, the franchise clause would present no problems. Other aspects of the 1997 Electric Restructuring Act,

5 *Franklin W. Olin College of Engineering v. Department of Telecommunications and Energy*, 439 Mass. 857 (Mass. 2003) [hereinafter “*Olin College*”].

6 *Massachusetts Electric Company*, D.T.E. 98-122, 2002 WL 1162710 (Mass. D.T.E. February 7, 2002) [hereinafter “*Stop & Shop*”].

7 Investigation by the Department of Public Utilities upon its own Motion into Electric Vehicles and Electric Vehicle Charging, D.P.U. 13-182-A, 2014 WL 4052812 (Mass. D.P.U. Aug. 4, 2014) [hereinafter “DPU 13-182”].

8 We use the term “microgrid participant” to mean any entity that uses electricity within the microgrid.

however, may impose limits on the role that a distribution utility can play in a microgrid. These legal constraints include the utility's duty to serve, retail choice, and the prohibition on direct ownership of generating facilities by distribution utilities.

II. FRANCHISE CLAUSE ISSUES

A. Statutory Language

The Electric Restructuring Act of 1997 broke up the vertical monopolies held by the incumbent electric utilities in Massachusetts and introduced competition into wholesale electric markets. While the utilities were forced to divest themselves of their generating assets and were henceforth forbidden from directly owning generating assets (now subject to certain exceptions for solar photovoltaic systems), they maintained a monopoly in the provision of distribution service within their service areas.

In particular, M.G.L. c. 164, § 1B(a) provides that:

[T]he distribution company shall have the exclusive obligation to provide distribution service to all retail customers within its service territory, and no other person shall provide distribution service within such service territory without the written consent of such distribution company which shall be filed with the department []and the clerk of the municipality so affected.

The key terms here are “retail customer,” “service territory,” and “distribution service.” The statute defines “retail customer” as “a customer who purchases electricity for its own consumption.”⁹ “Service territory” is defined as “the geographic area in which a distribution company provided distribution service on July 1, 1997.”¹⁰ The statute also instructs the DPU to “define service territories for each distribution company by March 1, 1998, based on the service territories actually served on July 1, 1997, and following to the extent possible municipal boundaries.”¹¹

“Distribution service” is “the delivery of electricity to the customer by the electric distribution company from points on the transmission system or from a generating plant at distribution voltage.”¹² “Distribution” is defined as “the delivery of electricity over lines which operate at a voltage level

9 M.G.L. c. 164, § 1. DPU regulations define “retail customer or customer” as “a customer located in Massachusetts that purchases electricity for its own consumption and not for resale in whole or in part.” 220 CMR 11.02.

10 M.G.L. c. 164, § 1.

11 M.G.L. c. 164, § 1B(a).

12 M.G.L. c. 164, § 1. DPU regulations define “distribution service” as “the delivery of electricity to the Customer by the Distribution Company over lines that operate at a voltage level typically equal to or greater than 110 volts and less than 69,000 volts.” 220 CMR 11.02. The statute defines “generation facility” as “a plant or equipment used to produce, manufacture or otherwise generate electricity and which is not a transmission facility.” M.G.L. c. 164, § 1.

typically equal to or greater than 110 volts and less than 69,000 volts to an end-use customer within the commonwealth.”¹³ “Transmission,” by contrast, is defined as “the delivery of power over lines that operate at a voltage level typically equal to or greater than 69,000 volts from generating facilities across interconnected high voltage lines to where it enters a distribution system.”¹⁴ Synthesizing these definitions, the statute provides:

Except with the written consent of the distribution company, no person other than a distribution company shall deliver electricity over lines operating between 110 and 69,000 volts from points on the transmission system or from a generating plant to a customer within the distribution company’s service territory.

Significantly, the statute makes no reference to crossing a public right of way in defining a distribution utility’s exclusive franchise. There is a widespread misconception that the utility’s consent is required before one can run an electric line across a public way.¹⁵ Nothing in M.G.L. c. 164, however, requires such consent. Instead, only the consent of the municipality is required.¹⁶

B. Boundary Cases

Since the passage of the Restructuring Act in 1997, there has been very little case law interpreting the franchise clause. The two key cases, *Wellesley Municipal Light Plant* (“*Olin College*”),¹⁷

13 M.G.L. c. 164, § 1.

14 *Id.*

15 The DPU perpetuated the uncertainty about this issue when it declined to rule last year on a petition asking “whether a customer can convert a remote solar photovoltaic generation facility into a ‘behind-the-meter’ facility by having the Company construct a dedicated distribution line from the remote facility across a public way to the customer’s existing meter.” *Petition of Massachusetts Electric Company*, D.P.U. 13-08, 2013 WL 873788 (Mass D.P.U. March 4, 2013). The DPU in particular identified “the issue of utility franchise rights and electric lines crossing public ways” as something that it “prefer[red] to address . . . in the context of a generic or adjudicatory proceeding.” *Id.*

16 See M.G.L. c. 164, § 87 (“In a town where a person is engaged in the manufacture, sale or distribution of electricity, no other person shall lay, erect, maintain or use, over or under the streets, lanes and highways of such town, any wires for the transmission of electricity except wires used by street railway companies for heat or power, without the consent of the aldermen or selectmen granted after notice to all parties interested and a public hearing.”). Although the statute refers only to “towns,” the Supreme Judicial Court has also applied it to cities. See *Boston Edison Company v. Boston Redevelopment Authority*, 374 Mass. 37, 54-55 (1977). See also M.G.L. c. 4, § 7 (defining “town” to include “city”). See generally DNV Kema, *Microgrids—Benefits, Models, Barriers and Suggested Policy Initiatives for the Commonwealth of Massachusetts* 9-6 (2014), available at http://images.masscec.com/uploads/attachments/2014/02/MassCEC%20Microgrid%20Study%20Final%20Report%202-18-14_0.pdf.

17 *Olin College*, 439 Mass. at 857.

and *Massachusetts Electric Company* (“*Stop & Shop*”),¹⁸ both arose out of a singular factual scenario: a customer whose property was at the boundary between the service territories of two different distribution utilities sought service from one of the utilities and the other utility believed this service violated its exclusive franchise. Although these cases do not directly apply the franchise clause to microgrids, the legal analysis of the franchise clause in these cases informs a microgrid franchise clause analysis. Furthermore, these are the only cases that analyze the Massachusetts franchise clause.

Olin College involved the distribution of electricity on several parcels of land that Olin College had purchased from Babson College. Babson College had a campus that straddled the borders of Needham and Wellesley, but was located primarily in Wellesley. NSTAR Electric was the distribution utility in Needham while the Wellesley Municipal Light Plant was the distribution utility in Wellesley. Babson had received most of its electricity from Wellesley Municipal and distributed it throughout its campus (including both the Wellesley and Needham sides) on Babson-owned electrical lines. Some Babson-owned land on the Needham side of the border received electricity from NSTAR.

In 2000, Olin purchased six lots from Babson. All of this land was in Needham. Five of the lots had previously received electricity from NSTAR, while the sixth (called lot 2) had received electricity from Wellesley Municipal via Babson’s lines. Olin filed a petition with the Department of Telecommunications and Energy (DPU’s predecessor), requesting that the Department order Wellesley Electric to provide distribution service for lot 2.

The DPU ruled, and the Supreme Judicial Court affirmed, that Olin was required to purchase distribution service from NSTAR. The Department interpreted the franchise clause to require it “to conform service territories to municipal boundaries wherever possible.”¹⁹ Because lot 2 was no longer owned by a straddling landowner and because the lines connecting lot 2 to lines on the Wellesley side of the border had been removed, there was no reason not to conform to the municipal boundary.

The Supreme Judicial Court deferred to the Department’s interpretation of the statute and affirmed the decision.²⁰ It observed, however, that its decision did “not mean that the Restructuring Act forecloses any deviation from [municipal] boundaries.”²¹ Instead, the statutory proviso that such boundaries should be followed “to the extent possible” demonstrated that sometimes exceptions to such boundaries would be appropriate. In particular, the Court mentioned straddling landowners and an area that was separated from the rest of the municipality by a wetland as examples of the

18 *Stop & Shop*, 2002 WL 1162710.

19 *Olin College*, 439 Mass. at 863.

20 *Id.* at 861.

21 *Id.* at 863.

Department's authority "to recognize individual exceptions to the municipal boundary rule," concluding that:

While we need not define the precise contours of that discretion in this case, the department's conclusion that such discretion does not extend to customers such as Olin, who seek principally to get a better deal on their electric rate from a provider across the border, is a reasonable one.²²

In *Stop & Shop*, the Stop & Shop Company purchased an 11-acre property in 1995 that straddled the border between Salem and Peabody. It subsequently built a supermarket on the property; the supermarket also straddled the municipal boundary. Massachusetts Electric Company (MECo) was the distribution utility in Salem while Peabody Municipal Light Plant was the distribution utility in Peabody. The Department held that Stop & Shop could choose to receive distribution service from either of the utilities serving the municipalities whose borders its property straddled:

Where the customer's premises are an uninterrupted parcel owned in fee or leased by the customer, where those premises straddle a municipal boundary and thus straddle the presumptive line between two electric distribution companies, and, of particular importance, where there is no evidence that the customer engaged in land conveyance or lot merger to get around or defeat the central intent of G.L. c. 164, § 1B(a), we see no reason to deny the customer his choice of provider.²³

Of particular relevance to microgrids, the Department held that the distribution of electricity on a customer's premises does not implicate the franchise law:

Resale of electricity by a customer apart, once electricity is delivered (*i.e.*, been sold) to a customer, it is his lawfully to use as he wishes on his metered premises. Once ownership of delivered electricity passes from PMLP to the intended customer, the Supermarket, it would be the customer's to do with as he wishes. Here, the customer premises (*i.e.*, the Property) would be entered from a point in Peabody; and the electricity metered and sold would then be distributed exclusively by the customer for his own use within the customer's own premises. It really becomes a question of how the customer chooses to use his property, *i.e.*, the electricity purchased, on the Property.²⁴

22 *Id.* at 864.

23 *Stop & Shop*, 2002 WL 1162710 at *4.

24 *Id.* (citation omitted).

In other words, a property owner moving electricity on his/her own property does not engage in the legal (i.e., statutory) concept of “distribution service,” even if the property owner is engaged in “distribution” as an engineering concept. The Department cautioned, however, that

[t]his Order should not be read as an invitation to reconfigure or manipulate lot or parcel boundaries (‘creative conveyancing,’ so to speak) or to engage in other stratagems, in order artificially to defeat the principal purpose of § 1B(a), viz., to conform electric distribution service territory boundaries, as these boundaries existed on July 1, 1997, to municipal boundaries and to do so ‘to the extent possible.’²⁵

This decision is open to at least two different interpretations. First, Stop & Shop did not violate the franchise clause because the electricity remained at all times on Stop & Shop’s property. We refer to this as the “property-focused” interpretation of *Stop & Shop*. Second, Stop & Shop did not violate the franchise because it distributed electricity only to itself, i.e., it exercised continuous ownership and control over its electricity. We refer to this as the “control-focused” interpretation.

Under the property-focused interpretation, the key fact is that the electricity stayed within the customer’s “metered premises.” Under this view of *Stop & Shop*, electricity cannot be moved from one property to another without violating the franchise. The franchise clause, however, makes no reference to property ownership; hence, the identity of the owner(s) of physical parcels over which electricity passes should not matter in a franchise clause analysis.²⁶ Therefore, we conclude that the control-focused interpretation is preferable: the relevant fact was Stop & Shop’s continuous ownership and control of its electricity. Under this interpretation, *Stop & Shop* stands for the proposition that “delivery” of electricity occurs when both ownership and control over that electricity is transferred to another party. Under this interpretation of “delivery,” a customer could engage in “distribution” in the engineering sense and not engage in “distribution” in the statutory sense as long as he/she/it retained continuous control and ownership of the electricity, wherever the electricity travels.

25 *Id.* (footnote omitted).

26 We note that in a subsequent order approving the NSTAR Electric merger, the Department opined in dicta that forbidden “creative conveyancing” included “extinguishment of public easements, so as to give rise to colorable claims of mere internal-distribution of purchased electricity.” *Boston Edison Company*, D.T.E. 06-40, 254 P.U.R. 4th 70, 87 n. 28. (Mass. D.T.E. Nov. 8, 2006). As explained above, however, neither the franchise clause nor the definition of “distribution service” reference public easements; there is no reason to believe that the DPU was expressing a general policy that the transfer of electricity across a public easement would violate the franchise clause. Instead, this case concerned the franchise rights of NSTAR after a merger of its subsidiaries and the DPU may have been concerned about public easements that lie between a property owner’s parcel and a service territory boundary. By extinguishing such an easement, the property owner could claim that he or she was straddling a service territory boundary, and thus, would be free to select a distribution company of his or her choice. Thus, the prohibition of “creative conveyancing” is likely only implicated when a property owner is attempting to switch distribution companies and does not pertain to microgrids.

C. Electricity Resale Cases

Prior to these boundary cases, an older set of decisions dealt with the resale of electricity, usually by landlords to their tenants. The history of this practice can be traced back to the early twentieth century, when Boston Edison's customer base was largely residential and most large commercial buildings in Boston had their own generating plants.²⁷ To get more customers during what were then its off-peak daytime hours, which it could serve without increasing its generating capacity, Edison started offering to sell electricity to these self-generators at wholesale rates.²⁸ Some of these entities then resold the electricity at a profit; for example, some were landlords who resold the electricity to their tenants.

Later, as the pattern of demand for electricity changed, Edison sought to restrict this practice. In 1947, DPU upheld Edison's refusal to sell electricity to a landlord who then resold the electricity to tenants at a profit.²⁹ In 1953, the DPU ordered Edison not to "supply electricity for resale except by way of rent inclusion, a term referring to arrangements whereby the tenant pays for [electrical] current by paying his rent unaffected by extent of use," and certain other limited exceptions.³⁰ The Department reasoned that "the practice of competitive resale is fundamentally unsound and against the public interest, [in] that it results in the utility supplying current to competitors at rates which deprive it of revenue which the utility must obtain by addition to the bills of other customers if it is to receive a just return."³¹ The Massachusetts Supreme Judicial Court ("SJC") affirmed this order.

Importantly, the resale ban is not founded on the franchise law. Instead, the DPU reasoned and the SJC upheld that M.G.L c. 164 § 94, which requires utilities to file "schedules showing all rates, prices and charges with all forms of contracts thereafter to be used in connection therewith," gave DPU the power to set "terms and conditions" in "service contract[s] or . . . filed schedules."³² This power could in turn be used to ban provision of electricity for resale as a matter of public policy. The DPU argued, and the SJC agreed, that resale of wholesale electricity at retail rates was "no longer in the interest of the other customers of Edison," and further that Edison was "threatened with expansion of the practice of resale."³³ In other words, resale was not in the public interest because Edison was

27 *Boston Real Estate Board v. DPU*, 334 Mass. 477, 479-80 (1956).

28 *Id.*

29 *In re A.W. Perry, Inc.*, D.P.U. 7697 (1947).

30 *Id.* at 481.

31 *Boston Real Estate Board*, 334 Mass. at 480.

32 *Id.* at 485.

33 *Id.* at 491-92.

losing money by selling to the landlord at the wholesale rate rather than selling electricity to the tenants at the retail rate. Given the facts of *Boston Real Estate*, the DPU's order could have been limited to a ban on the resale of electricity at a profit, still permitting submetering. However, the DPU did not make that subtle distinction; instead, the DPU banned the sale of electricity to any customer for the use of others if the customer charges a price that is either fixed or that varies with the quantity resold. Thus, submetering of any form is banned by the DPU.

The Department of Public Health enforces the ban on submetering in residential housing via 105 CMR 410.354A. In a recent memo, Assistant Director Paul Halfmann has asserted to local health departments that submetering is illegal by statute.³⁴ The memo erroneously attributed the ban to statute; in fact, the submetering ban does not derive from the Restructuring Act but instead was adopted by DPU as a matter of public policy.

Moreover, the *Boston Edison* case allows the resale of electricity by “rent inclusion.” Twenty years later, in a 1968 decision, the DPU extended the rule by permitting a commercial landlord to sell electricity to its tenants as part of a total energy service. In *Frank Properties*, the DPU held that a landlord that provided heating, cooling, hot water, chilled water, and electricity to its tenants could measure the energy provided during the first two years of a ten-year lease and then set the energy services part of the rent for the remaining eight years based on the energy consumption during the first two years.³⁵ The DPU distinguished this situation from one in which the landlord charged each tenant on the basis of the meter reading; in the latter situation, the landlord would be subject to regulation under M.G.L. c. 164 as a utility because the transaction would constitute a “sale” of gas or electricity.³⁶

In sum, these cases prohibit the purchase of electricity from the distribution utility and resale of that electricity at a profit. By contrast, inclusion of a charge for electricity in a tenant's rent or charging a tenant a flat rate for a combination of heating, cooling, hot water, chilled water, and electricity based on a baseline usage determination is permitted.

34 Memorandum from Paul Halfmann, Assistant Director of the Massachusetts Department of Public Health, to All local Boards of Health and Health Departments (Sept. 5, 2013), available at <http://www.nclc.org/images/pdf/cons-protection/electric-and-gas-submt-prohibition.pdf>.

35 *Frank Properties, Inc.*, DPU 15715, 72 P.U.R. 3d 305 (Mass. DPU January 29, 1968).

36 *Id.*

D. Electric Vehicle Charging Case

In August 2014, the DPU concluded an investigation, undertaken on its own initiative, as to whether electric vehicle charging stations either sell or distribute electricity.³⁷ From an engineering and business perspective, charging stations are engaged in both activities. They transfer, in the engineering sense, electricity from the distribution system to customer's electric vehicles. In addition, in order to use the stations, customers must pay a fee, which in some business models is directly proportional to the amount of electricity that is transferred and which could be described as a sale of electricity.

In rendering its decision, the DPU focused on the physical features of the charging stations and the nature of the service provided by such stations instead of the transfer of ownership of the electricity and held that the stations are not engaged in the distribution or sale of electricity in the statutory sense. The DPU held that charging stations do not distribute electricity because the statutory language "line" has historically been focused on overhead power lines while the cable that connects an electric vehicle to the charging station is a very different connector or cord.³⁸ The DPU also found it "instructive" that the electricity typically flows to the vehicles in the form of direct current, while overhead power lines typically carry alternating current.³⁹

The DPU held that the stations do not sell electricity because the stations offer a complete "charging service" that is distinct from the provision of electricity.⁴⁰ According to the DPU, the service nature of the stations is independent of the exact fee structure used to pay for the service so that even if the cost to the customer is proportional to the electricity consumed, the stations' activities could be characterized as the provision of a service (i.e., charging the EV battery) rather than as the sale of electricity.⁴¹ The DPU highlighted that the stations also provide specialized charging equipment and parking for the vehicle in addition to the electricity.⁴²

37 DPU 13-182, *supra* note 7.

38 *Id.* at 3.

39 *Id.* at 6 n. 8.

40 *Id.* at 4.

41 *Id.*

42 *Id.* at 8 n. 12.

III. APPLICATION TO MICROGRIDS

Applying the legal material discussed above to several potential microgrid ownership structures, we address several questions. First, if a microgrid operator is providing a distribution service in the statutory sense, can the DPU authorize this distribution service within the service territory of an existing distribution company?⁴³ Second, because a microgrid will necessarily involve the distribution of electricity (in the engineering sense), does such distribution necessarily constitute a “distribution service” in the statutory sense?

If we assume that the microgrid operator is providing a distribution service in the statutory sense, then the DPU likely cannot authorize someone other than the incumbent distribution utility to provide such service. Although the exclusive franchise clause grants the DPU limited discretion to set distribution company service territories that deviate from municipal boundaries, the statute does not grant the DPU general authority to waive the franchise clause for non-utilities performing distribution services or to carve out a geographic area from an existing service territory for a microgrid to provide distribution service. The DPU itself has held that it will authorize deviations from municipal boundaries “if facts and fairness so warrant.”⁴⁴ The Massachusetts Supreme Judicial Court (“SJC”), in dicta, suggested that environmental harm or extraordinary expense could be grounds for deviating from municipal boundaries.⁴⁵ At present, it is unclear whether environmental harm or extraordinary expense would justify installing or operating a microgrid.

To answer the second question as to whether entities that either participate or provide services in a microgrid are providing “distribution service” in the statutory sense, we analyzed five different microgrid scenarios in the following section, beginning with a single-owner, single-parcel scenario and concluding with a multi-party microgrid. We find that in all of these scenarios, a microgrid ownership model can be constructed that likely complies with the franchise clause.

43 Ownership of the wires in a microgrid by the local distribution utility is permitted under the franchise clause. The utility will already be providing distribution service from the transmission system or a generating plant to the point of common coupling. Carrying the electricity on utility-owned wires the additional distance from the point of common coupling to each microgrid participant’s building does nothing to change the situation. See Part IV, below, however, for other issues that utilities will face if they choose to own and operate the wires in a microgrid, including the duty to serve and the prohibition on direct ownership of generation facilities.

44 *Stop & Shop*, 2002 WL 1162710 at * 3.

45 *Olin College*, 439 Mass. at 863.

A. Ownership Models

1. Scenario One: Single Owner/Occupier with On-Site Generation.

In this scenario, a single microgrid participant consumes the electricity and owns or leases the building(s) and underlying property that consists of a single undivided parcel. A generating unit is either in the building or on the property. The generating unit is connected to the building “behind the meter” so that the generating equipment and the building are both on the same side of the electric meter that connects the building with the macrogrid.

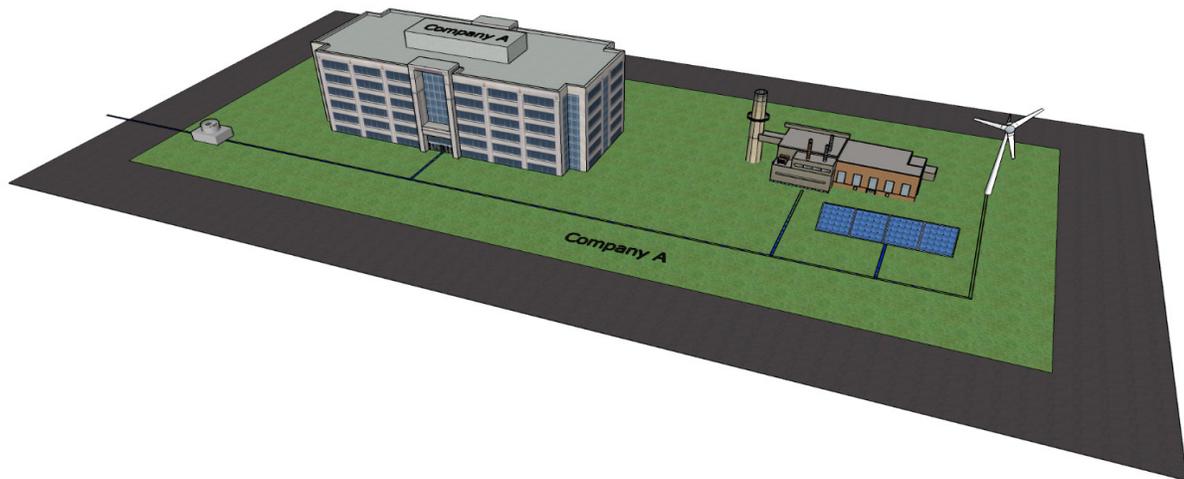


Figure 1. A diagram of scenario 1.

Under either the property-focused or control-focused interpretation of *Stop & Shop*, the lines carrying electricity between the generating and consuming equipment can be controlled and operated by the microgrid participant without violating the franchise clause. The distribution company need only provide the connection to the macrogrid. According to the narrow, property-ownership interpretation of *Stop & Shop*, a property owner is free to move his/her/its own electricity around on his/her/its own property. According to the control-focused reading of *Stop & Shop*, as long as the property owner or lessee owns the electricity at the time it is created in the generator, then the owner or lessee can move the electricity to any part of his/her property without triggering the franchise because the owner/lessee had continuous control and ownership of the electricity from the point of generation to the point of consumption. Thus, under either interpretation, the “distribution” of electricity in the engineering sense from an on-site generator does not implicate the distribution company’s exclusive franchise.

2. Scenario Two: Single Owner/Occupier with Off-Site Generation.

In this scenario, a single microgrid participant consumes the electricity and owns or leases the building and underlying property that consists of a single undivided parcel. However, the generating unit is located on a different parcel that is separated from the building by either a public right-of-way or another property owner and is connected to the building by an electric line, operating between 110 and 69,000 volts. As in scenario 1, the generating equipment is connected to the building “behind-the-meter.”

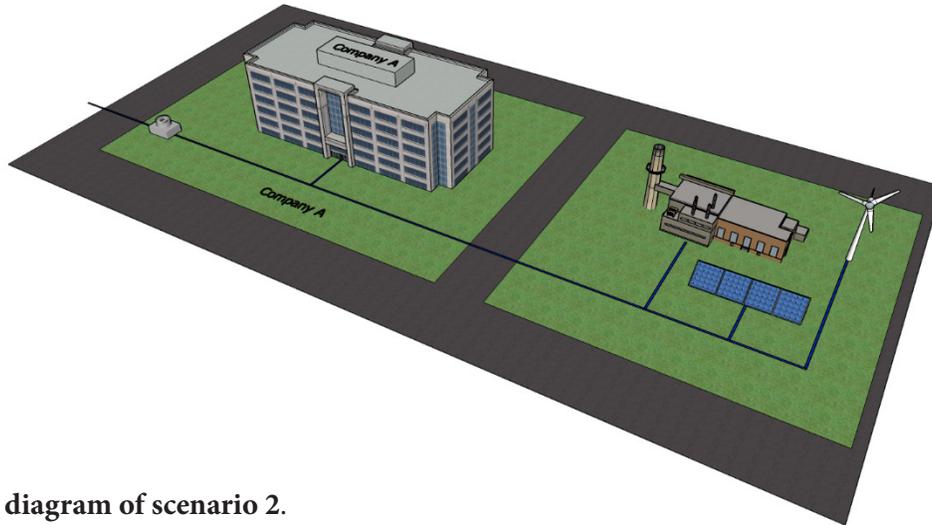


Figure 2. A diagram of scenario 2.

It is a common misconception in the utility and utility customer community that transferring electricity between two parcels by crossing a public right-of-way violates the franchise clause. This misconception may be based on a historic practice before the passage of the Restructuring Act. It might also reflect the fact that some states do define the franchise in such terms: Connecticut, for example, imposes the franchise by giving distribution companies the exclusive right to cross public rights-of-ways.⁴⁶ In Massachusetts, however, the franchise law makes no reference to crossing a public right-of-way. Thus, from a franchise law perspective, this scenario is identical to scenario one.

A strict property-based interpretation of *Stop & Shop*, however, might call this conclusion into question. Because the electricity does not remain on a single property, scenario two is arguably distinguishable from *Stop & Shop*, in which the company owned “an uninterrupted parcel.”⁴⁷ Yet it is common for owners of multiple parcels to transfer electricity from one parcel to another without

⁴⁶ *Texas Ohio Power v. Connecticut Light and Power*, 243 Conn. 635, 651 (1998). Connecticut law defines distribution service in terms of using public rights-of-way. See CONN. GEN. STAT. § 16-1(a)(28) (2014); see also Sara C. Bronin & Paul R. McCary, *Peaceful Coexistence*, FORTNIGHTLY MAGAZINE 38 (Mar. 2013).

⁴⁷ *Stop & Shop*, 2002 WL 1162710 at *4.

implicating the franchise clause. Thus in the *Olin College* case, DPU mentions that Babson College had previously transferred electricity from one parcel to another without indicating that there was anything problematic about that practice, despite the parcels being situated in different towns subject to the franchises of different distribution companies. Likewise, Harvard University operates generation facilities and transfers electricity to different parts of its campus across public rights-of-way in an urban environment.⁴⁸

As explained in Part II, a control-focused interpretation of *Stop & Shop* is more consistent with the franchise clause. Under this interpretation, as long as the company in scenario two has continuous ownership and control of the electricity from the point of generation to the point of consumption, it is not violating the franchise law by moving the electricity around on its property.

3. Scenario Three: Multi-Tenant with On-Site Generation.

In this scenario, a landlord (“Company A” in Figure 3) leases space to two tenants (“Company B” and “C” in Figure 3). The tenants’ electricity is provided by the landlord who may, but does not have to, submeter the electricity. Generation equipment is on-site. There is one point of common coupling to the macrogrid.

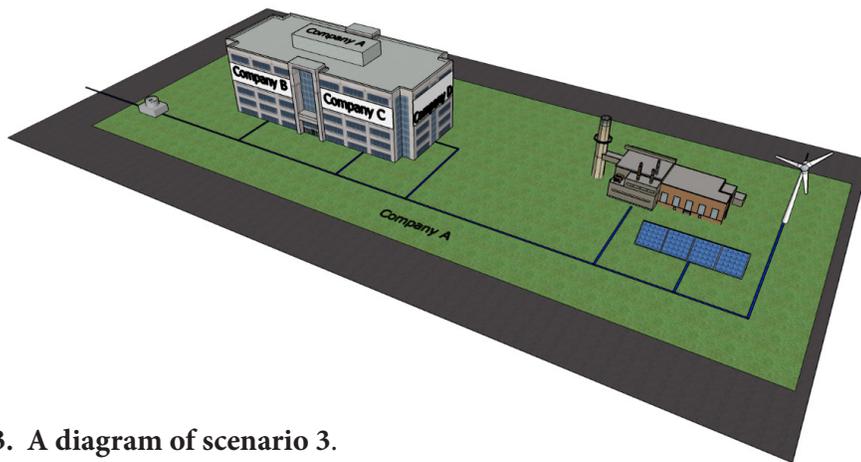


Figure 3. A diagram of scenario 3.

This scenario differs from scenario one in one respect only: the building now has tenants. Although from an engineering perspective the landlord may be distributing electricity to his/her/its tenants, a landlord’s provision of electricity, in either a commercial or residential setting, has never been challenged as a violation of the franchise clause.⁴⁹ As long as a landlord is permitted to provide electricity to his/her tenants, the landlord can be treated as the sole microgrid participant and all the

⁴⁸ See DNV Kema, *supra* note 17, at 9-5.

⁴⁹ Landlord provision of electricity in the context of a complete energy service was challenged as a violation of the submetering prohibition, but was upheld. See *Frank Properties, Inc.*, 72 P.U.R. 3d 305.

considerations of scenario one apply.

4. *Scenario Four: Multi-Tenant with Off-Site Generator.*

This scenario is the same as scenario three except that the generating equipment is located off-site. It is essentially a combination of scenarios two and three, and hence, should be deemed to comply with the franchise clause.

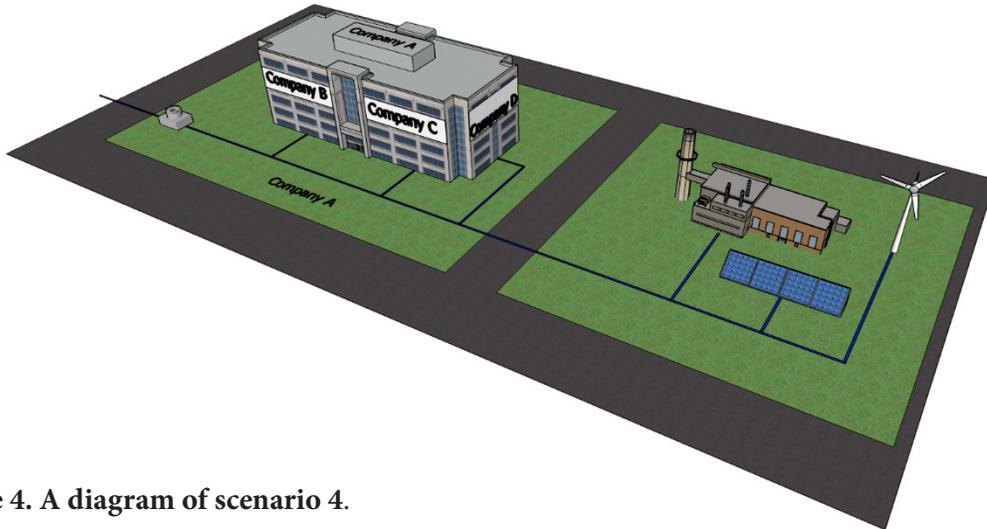


Figure 4. A diagram of scenario 4.

5. *Scenario Five: Multi-Building, Multi-Tenant with both On-Site and Off-Site Generators.*

This scenario models a microgrid with multiple participants, at least one building with a single occupant, one building with multiple tenants, both on-site and off-site generation, and one point of common coupling to the macrogrid.

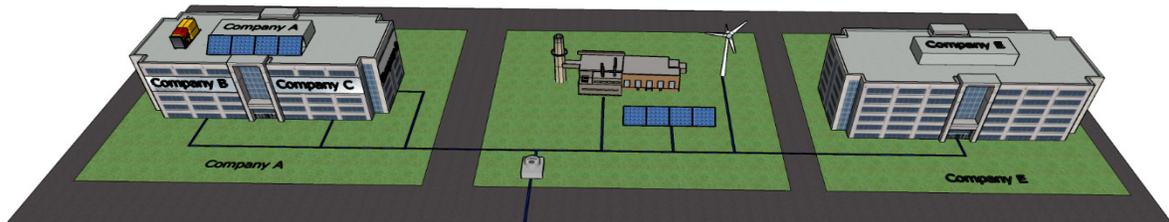


Figure 5. A diagram of scenario 5.

This scenario squarely presents the question whether, under the franchise clause, a multi-user microgrid can be owned and operated by someone other than the incumbent distribution company. That is, if one of the participants, or an unaffiliated third party, owned the electric lines in the microgrid and/or the generating assets, would the microgrid violate the franchise clause because it would involve the transfer of ownership and control of electricity? There may be two structures that avoid a violation of the franchise clause: joint ownership or microgrid service.

a) Joint Ownership

If the microgrid participants jointly owned the microgrid and all of its wires and generating assets, such that no transfer of ownership and control of electricity occurs when it travels over the microgrid's wires, then there is no "distribution" of electricity in the statutory sense and no violation of the franchise clause. In this scenario, all participants in the microgrid would jointly own the electrical wires and generating and/or storage assets of the microgrid. As a result, all participants would have an ownership stake in electricity as soon as it enters the microgrid, either by being generated within the microgrid or by being transferred into the microgrid at the point of common coupling. The permissibility of this approach depends upon the control-focused interpretation of *Stop & Shop* being the correct one. The electricity in this scenario would be transferred over properties owned by different entities and therefore would be inconsistent with the property-focused interpretation.

In such an arrangement, to encourage energy conservation the contract(s) should require the microgrid participants to pay for the microgrid in a way that accounts for their energy usage. However, a payment structure that is based purely upon electricity usage would resemble the sale of electricity so that it may be harder to argue that the microgrid participants had continuous ownership of the electricity. DPU order 13-182-A,⁵⁰ allowing electric vehicle charging stations to charge a fee proportional to energy consumed, may mean that microgrid participant payments can also be proportional to energy consumed because the microgrid offers a service that includes more than just the provision of electricity.

Some may challenge this approach as involving the sort of "creative conveyancing" against which the DPU has warned. However, that DPU statement was made in the context of a boundary dispute, where the policy—and economic—implications are quite different than in the microgrid context. The DPU and SJC have rejected attempts by customers to obtain electricity from the utility across a municipal boundary when the customers were merely attempting to get a better price for their electricity. Allowing that sort of price-shopping risked undermining the franchise completely.

50 DPU 13-182, *supra* note 7.

By contrast, a microgrid does not create the risk that a distribution company's customers will flee to another utility. Instead, it creates a new entity that will continue to purchase distribution service from the utility (because it will not generate sufficient electricity within the microgrid to satisfy all microgrid loads) and which creates system-wide benefits in terms of integrating renewable energy sources and demand response into the grid. Therefore, a joint ownership structure for a microgrid should not be seen as analogous to conveyances that allow customers to circumvent service area boundaries.

b) Service Model

The DPU's recent order⁵¹ that electric vehicle charging stations neither distribute nor sell electricity within the meaning of M.G.L. c. 164 may signal that a microgrid service provider may offer a microgrid service without implicating the franchise clause. In that proceeding, the DPU held that electric vehicle charging stations are not distributing electricity because of the use of specialized equipment between the station and the vehicle and are not selling electricity because they are providing a bundled "charging service."⁵² Likewise, a microgrid is likely to use specialized equipment that is very different from what is found in the distribution system owned by a traditional distribution company. Just as the cable connecting an EV charging station is different than an overhead power line, a microgrid may use specialized electrical cables that are designed specifically for microgrid applications. For example, a microgrid that was powered exclusively with solar photovoltaics could transfer electricity between the PV panels and consuming buildings with direct current power cables. Following the reasoning of DPU 13-182, such a microgrid should not be deemed to violate the franchise clause, even if the cables and PV panels were owned by a non-utility entity that in turn sold electricity to multiple microgrid participants, because the direct current cables are very different from traditional overhead alternating current power lines.

Similar to the charging stations, a microgrid also offers much more than just electricity: microgrids offer a bundled energy service that includes electricity, heating, and cooling and more. Even as to the electrical aspects of the microgrid, this service may include providing a higher quality and/or reliability of electricity than the macrogrid, facilitating the sale of demand-side resources into the New England ISO, and operating in island mode in the event of a macrogrid failure. In this sense, the argument that a microgrid operator is offering a bundled service rather than exclusively selling electricity is even stronger in the microgrid context than in the electric vehicle charging context.⁵³

51 *Id.*

52 *Id.*

53 On the other hand, the electricity being provided in a microgrid is "general use electricity," unlike electricity used only as a transportation fuel. *Cf.* Reply Comments of the Department of Energy Resources and the

Under this service model reasoning, if accepted by the DPU, a non-utility entity would be allowed to own and operate the microgrid; microgrid participants would not need to have an ownership stake in the microgrid wires and generating facilities – they would simply pay the third party a fee, which could be proportional to the energy consumed, for the provision of the microgrid service.

Department of Environmental Protection, DPU 13-182. This point, however, should not be dispositive because the landlord in *Frank Properties* itself was providing general use electricity to its tenants.

IV. OTHER LEGAL ISSUES

In this Part, we discuss several aspects of electric industry regulation in Massachusetts other than the franchise clause that might have an impact on the ability of various entities to operate a microgrid, own microgrid assets, or participate in a microgrid.

A. Ownership of Microgrid Generating Facilities

The franchise clause allows a distribution company to own the wires in a microgrid located within its service territory. One might imagine that ownership and operation of all of a microgrid's assets by a single entity would provide the most reliable and inexpensive service to microgrid participants. A distribution utility, because of its expertise and experience, might be in a particularly good situation to provide such one-stop service.

One limit on the distribution company's ability to provide such service is the Restructuring Act's prohibition of a distribution company "directly owning, operating or controlling . . . generating facilities."⁵⁴ In addition, although the Restructuring Act allows utilities to transfer their generating assets to an affiliate instead of selling them to a third party, generating companies formed through such transfers are not permitted to acquire new generation facilities.⁵⁵ Thus, an existing utility-affiliated generation company could not procure or operate new generating equipment for a microgrid.

The statute (M.G.L. c. 164) is silent on whether a distribution company could start or acquire a new affiliate that owns generating equipment. Thus, from the language of the statute alone, it would likely be legal for a distribution company to start an affiliate that owns or operates generating equipment as part of a microgrid. DPU's regulations, however, require that a distribution company not share employees with a "competitive energy affiliate,"⁵⁶ which is defined as an affiliate "engaged in the sale or marketing of natural gas, electricity, or Energy-related Services on a competitive basis."⁵⁷ It is not clear whether an affiliate that owns a generation facility in a microgrid would be considered to be selling electricity on a competitive basis. In addition, the DPU can grant an exception to the separation requirement if sharing employees or facilities is in the "interests of the rate payers and [has] minimal anticompetitive effect."⁵⁸ In summary, a new distribution company affiliate could likely

54 M.G.L. c. 164, § 1A.

55 M.G.L. c. 164, § 1A(c).

56 220 CMR 12.03(15).

57 220 CMR 12.02.

58 220 CMR 12.03(17).

own generation and the electrical lines and operate the microgrid only if the DPU grants a case-by-case exemption for such affiliate or clarifies that a distribution company affiliate operating in a microgrid is not a “Competitive Energy Affiliate.”

B. Retail Choice

The Restructuring Act requires that distribution companies “accommodate retail access to generation services and choice of suppliers by retail customers.”⁵⁹ In addition, distribution companies must offer “basic” or “default” service and cannot charge a customer a fee for either initiating or terminating this service.⁶⁰

These retail access provisions imply that a distribution company could not prevent a microgrid participant from leaving the microgrid and switching to macrogrid electricity at any time. The distribution company could not charge a fee for switching to basic service or any other competitive supplier accessed through its lines. If the distribution company refused to connect the microgrid participant to the macrogrid, the participant could petition the DPU to order such connection.⁶¹

The freedom for a microgrid participant to switch to macrogrid electricity may present a barrier to microgrid deployment, particularly if the microgrid is owned and operated by a distribution company. For a microgrid to function properly, it must have a predictable mix of loads and generating assets. If microgrid participants are free to leave the microgrid at any time, then the microgrid risks becoming unstable. Moreover, a lack of long-term certainty about the involvement of other participants may dissuade some entities from joining a microgrid in the first place. A multi-user microgrid is therefore most likely to be successful if it has a mechanism for locking-in participants.

One way of dealing with the risk of participant defection is to include penalties associated with terminating microgrid participation in any contracts between the microgrid operator and microgrid participants. A non-utility entity would likely be able to enter into such termination clauses with participants. A termination clause in a contract with a distribution company would require DPU approval.

59 M.G.L. c. 164, § 1A(a).

60 M.G.L. c. 164, § 1B(d); 220 CMR 11.04(9)(c)(1), (9)(d).

61 M.G.L. c. 164, § 92.

C. Non-Discrimination

As another condition of their exclusive franchise, distribution companies may not discriminate between customers: they must offer “all products, services, discounts, rebates, and fee waivers” to “all customers and suppliers simultaneously, to the extent technically possible, on a comparable basis.”⁶² Assuming that participation in a microgrid would qualify as a distinct “product” or “service,” this duty of non-discrimination means that if a utility owned and operated the microgrid, it might have to offer all customers the opportunity to join the microgrid. This result would make it difficult for a utility-owned microgrid to be confined to a distinct geographical area—any customer on the border of such a microgrid could argue that it has the right to join the microgrid.

One potential way around this limitation would be if the DPU interpreted “technically feasible” to allow the distribution company to draw firm boundaries around a microgrid. The operation of a microgrid involves so many interlinking components, and the balancing of load with demand, that “technically” should not be limited simply to the ability to connect an adjacent property to the microgrid. Instead, it should include the suitability of the adjacent properties’ load, the on-site generating capacity of the adjacent property, and the ability of the adjacent property to enter into contracts with the other microgrid components, including the operator and generator.

D. Limits on a Utility’s Ability to Transfer its Franchise, Lease its Works, or Contract with Someone to Carry on its Works.

Another provision that on its face might appear to limit a distribution company’s ability to participate in the ownership or operation of a microgrid is M.G.L. c. 164, § 21, which provides that: “A corporation subject to this chapter shall not, except as otherwise expressly provided, transfer its franchise, lease its works or contract with any person, association or corporation to carry on its works, without the authority of the general court.”⁶³ The concern would be that if a distribution company owned the wires in a microgrid but then contracted with a third party microgrid operator to run the microgrid, it would be in violation of this provision. A number of decisions from the SJC and DPU, however, construe “works” narrowly in this context to mean “franchise duties” or “public duties.” As a result, M.G.L. c. 164, § 21 should not limit a distribution company’s ability to be involved in a microgrid.

⁶² M.G.L. c. 164, § 1C(ii).

⁶³ M.G.L. c. 164, § 21.

A version of this statutory limitation has been part of Massachusetts law for over 120 years. First passed in 1886, it originally applied only to natural gas utilities.⁶⁴ The current language of section 21 was adopted in 1914.⁶⁵ The same 1914 legislation also enacted the language of what is now M.G.L. c. 164, § 96, which specifies that mergers, sales, and acquisitions of either gas or electric companies must be approved by the DPU;⁶⁶ approval is conditioned on a finding that the transaction is “consistent with the public interest.”⁶⁷ The DPU has recently analyzed the legislative history of these provisions and interpreted section 96 as fulfilling the “otherwise expressly provided” condition of section 21, meaning that once the DPU approves distribution company mergers, sales, or acquisitions, i.e., transferring the franchise, further legislative approval is not required.⁶⁸

There is little if any case law interpreting the portion of section 21 that prohibits a distribution company from leasing “its works” or contracting with any person to “carry on its works.” Prior to the Restructuring Act, the DPU evaluated restructuring proposals and interpreted section 21 as prohibiting an electric company from “contracting with any person to perform its *duties under the franchise* without legislative authority.”⁶⁹ In effect, the DPU interpreted “works” as “franchise duties.” Likewise, in a 1908 utilities case, the SJC opined in dicta that a regulated electric company could not “sell its property and franchise to another party, in such a way as to take away its power to perform its *public duties*.”⁷⁰ Here, the SJC in effect interpreted “works” as “public duties.” Because a microgrid is an attempt to isolate electricity consumers from the macrogrid, any involvement of the distribution company in a microgrid likely does not implicate either the franchise duty or a public duty. Thus a distribution company could likely contract out any involvement in microgrid to a third party without violating M.G.L. c. 164, § 21.

64 See Joint Petition of New England Gas Company, Plaza Massachusetts Acquisition, Inc., The Laclede Group, Inc., and Liberty Utilities Co. pursuant to G.L. c. 164, s 96, for Approval of the Sale of the Assets of New England Gas Company, D.P.U. 13-07-B, 2014 WL 1321003, 8 (Mass. D.P.U. Mar. 26, 2014).

65 *Id.* at 10.

66 *Id.* at 10; *see also* M.G.L. c. 164, § 96.

67 M.G.L. c. 164, § 96(b)(ii). There is a lot of case law explaining when a transaction is “consistent with the public interest.” See Joint Petition of New England Gas Company, Plaza Massachusetts Acquisition, Inc., The Laclede Group, Inc., and Liberty Utilities Co. pursuant to G.L. c. 164, s 96, for Approval of the Sale of the Assets of New England Gas Company. D.P.U. 13-07-A, 2013 WL 6729252, 6-7 (Mass. D.P.U. Dec. 13, 2013).

68 Joint Petition of New England Gas Company, *supra* note 71, at 11.

69 *In re Elec. Indus. Restructuring*, D.P.U. 95-30, 163 P.U.R. 4th 96, 1995 WL 542479, at *123 (Aug. 16, 1995) (emphasis added).

70 *Weld v. Gas & Elec. Light Comm'rs*, 197 Mass. 556, 558 (1908) (emphasis added).

E. Licensing and Supervisory Authority

The DPU has licensing and supervisory authority over several categories of entities that participate in electric markets. The DPU has “general” supervisory authority over electric companies so that it can review company rates, charges and contracts.⁷¹ In addition, the Department has the authority to “license to do business . . . all generation companies, aggregators, suppliers, energy marketers, and energy brokers.”⁷² Licensure or supervision by the DPU triggers regulatory obligations that could complicate microgrid business plans. Perhaps of greatest relevance, net metering, in which the distribution company pays full retail rates for any surplus electricity delivered to the macrogrid by renewable generation, is not available to any entity that is considered a(n) electric company, generating company, aggregator, supplier, energy marketer, or energy broker.⁷³ We focus on whether entities involved in a microgrid might be subject to such licensing and supervisory authority.

An “electric company” is defined as “all persons, firms, associations and private corporations which own or operate works or a distributing plant for the manufacture and sale, or distribution and sale . . . of electricity, within the commonwealth.”⁷⁴ Most microgrid entities will not fall under this definition because they will be in compliance with the franchise clause and will not sell or distribute electricity in the statutory sense. However, it is possible for an entity to sell electricity and yet not distribute electricity so that the entity could be an electric company and yet not violate the franchise clause. For example, the DPU has opined in dicta that a landlord who sells electricity to tenants could be regulated as an electric company.⁷⁵ Microgrid entities should be aware of this possibility and structure their operations accordingly to avoid a risk of DPU supervision as electric companies.

Note, however, that the reasoning behind the DPU’s recent order (DPU 13-182-A) regarding electric vehicle charging stations may provide microgrid entities the freedom to charge directly for energy consumption without triggering DPU supervision. In that proceeding, the DPU held that charging a fee for the use of the charging stations does not constitute a sale of electricity within the meaning of M.G.L. c. 164 because the stations offer a charging service and are not simply selling electricity.⁷⁶ Similarly, a microgrid operator may be able to charge microgrid participants a fee proportional to the energy they consume without triggering DPU supervision because the microgrid

71 M.G.L. c. 164, § 76.

72 M.G.L. c. 164, § 1F(1).

73 M.G.L. c. 164, § 139(e); *See also* 220 CMR 18.06(1).

74 M.G.L. c. 164, § 2(i).

75 *Frank Properties, Inc.* 72 P.U.R. 3d 305. *See also* DPU 13-182, *supra* note 7, at *4.

76 DPU 13-182, *supra* note 7, at *4.

provides many services in addition to electricity including, *inter alia*, heating, cooling, islanding potential, and increased reliability.

A “generation company” is “a company engaged in the business of producing, manufacturing or generating electricity or related services or products, including but not limited to, renewable energy generation attributes for retail sale to the public.”⁷⁷ While DPU has authority to license generation companies, it has no published regulations stating the requirements for “generation company” licensure. The entity that owns and operates generation facilities such as the combined heat and power unit in a microgrid might be subject to regulation as a “generation company” in that it would be generating electricity and would be selling that electricity to the microgrid participants. There is also an argument that such an entity is not a “generation company,” however, in that by selling electricity *only* to the microgrid participants, it is not engaged in “retail sale to the public.” It would be helpful if the DPU would clarify whether microgrid generators are subject to regulation as generation companies.

Turning to the other entities over which DPU has licensing authority, an “aggregator” is defined as “an entity which groups together electricity customers for retail sale purposes.”⁷⁸ A “supplier” is defined as “a supplier of generation service to retail customers, including power marketers, brokers and marketing affiliates of distribution companies, except that no electric company shall be considered a supplier.”⁷⁹ “Energy marketer” is not defined in either the statute or regulations. “Energy broker” is also not defined, but an “electricity broker” is “an entity, including but not limited to an Aggregator, that facilitates or otherwise arranges for the purchase and sale of electricity and related services to Retail Customers, but does not sell electricity.”⁸⁰

The application of these definitions to microgrid operators is not clear. On the one hand, a microgrid operator does facilitate the purchase of electricity by the microgrid participants and in effect groups them together for purposes of purchases from the macrogrid. On the other hand, the microgrid operator is not providing any services to the broader retail electricity market, but is only providing services within the microgrid itself. The consumer protection rationale for licensing therefore does not apply to the same extent. Here too, clarification from the DPU would be helpful.

77 M.G.L. c. 164, § 1. DPU’s regulatory definition is “an entity engaging in the business of producing, manufacturing, or generating electricity for sale to Retail Customers.” 220 CMR 11.02.

78 M.G.L. c. 164, § 1.

79 *Id.*

80 220 CMR 11.02.

F. Construction of Electric Lines

A microgrid will require dedicated electric lines, which will often cross public rights-of-way. Massachusetts law imposes no limitations on who can construct such lines. Construction of electric lines is regulated by municipalities and is subject to DPU design standards.

Any corporation, whether subject to DPU regulation or not, may “construct lines for the transmission of electricity.”⁸¹ This provision could be interpreted narrowly to apply only to high voltage lines, or it could be interpreted broadly to apply to lines that carry electricity at any voltage. The Restructuring Act defines “transmission” as “the delivery of power over lines that operate at a voltage level typically equal to or greater than 69,000 volts from generating facilities across interconnected high voltage lines to where it enters a distribution system.”⁸² If this definition were applied to the construction provision, it would mean that lines operating above 69,000 volts could be constructed by entities that are not regulated by the DPU while not saying anything about lines operating below 69,000 volts.

“Transmission” under section 71 could instead be interpreted broadly to mean “the action or process of transmitting”⁸³ electricity so that it refers to the construction of a line that carries electricity at any voltage. The broad interpretation is likely more persuasive; if the legislature had intended a narrow definition conforming to a voltage standard it would have been more likely to use “transmission lines” or “transmission facility”—which would make clear that the lines have a specific function and corresponding voltage—instead of “lines for the transmission of electricity.” This broader interpretation is also supported by an examination of other laws governing electricity regulation. M.G.L. c. 187, § 5, for example, refers to “transmission of electricity” in the context of private property owners building their own lines. These lines almost certainly do not operate at 69,000 volts. Therefore, a microgrid participant or operator is likely free to build and own electric lines under M.G.L. c. 164, § 71.

Other provisions also make explicit that private companies and individuals can construct and operate electric lines on either public or private property. M.G.L. c. 166, § 24 states that a town’s selectmen may “authorize a person to construct *for private use* upon, along and under the public ways of the town . . . for the transmission of electricity for light, heat or power.”⁸⁴ On private rights-of-way,

81 M.G.L. c. 164, § 71.

82 M.G.L. c. 164, § 1.

83 NEW OXFORD AMERICAN DICTIONARY (3d ed. 2010).

84 M.G.L. c. 166, § 24 (emphasis added). The statute calls for the “poles and structures” to become the property of the town and allows either the town or other private parties to attach additional wires to the structures. *Id.*

Massachusetts law gives “owners of real estate abutting on a private way who have by deed existing rights of ingress and egress upon such way” a right to construct electric lines.⁸⁵ Alternatively, the law gives the property owners the right to invite a distribution company to construct the electricity line along the private right-of-way.⁸⁶ In this case, the cost of building the new electricity line cannot be recovered from other utility customers.⁸⁷

Neither Massachusetts statutes nor regulations address whether a distribution company can construct and own electricity lines “behind the meter.” However, the statutory language governing line construction makes no mention of electricity meters, and thus, whether such line construction occurs behind the meter is likely not relevant to its legality.

The construction of electric lines, whether by utilities or private parties, is regulated by individual municipalities and the DPU. A municipality’s selectmen must consent to lines that run along,⁸⁸ under,⁸⁹ or over a public right-of-way⁹⁰ and they can adopt “reasonable regulations for the erection and maintenance of all lines.”⁹¹ Furthermore, municipalities must appoint an “inspector of wires” who supervises “every wire over or under streets or buildings . . . and every wire within or supplied from buildings and structures.”⁹² The DPU has issued design regulations for lines operating above 50,000 volts.⁹³ The DPU also has issued regulations for underground lines operating at 50,000 volts or below.⁹⁴ However, these regulations only apply to systems operated by companies that are subject to DPU jurisdiction.⁹⁵

85 M.G.L. c. 187, § 5; *see also Cotuit Partners Ltd. P’ship v. Emery*, No. 366431 (KCL), 2008 WL 2861671 (Mass. Land Ct. July 25, 2008) (holding that plaintiff had right to install poles and wires under this statute).

86 M.G.L. c. 187, § 5.

87 *Id.*

88 M.G.L. c. 166, § 24.

89 M.G.L. c. 166, § 25.

90 M.G.L. c. 164, § 87; *see also* DNV Kema, *supra* note 17, at 9-6.

91 M.G.L. c. 164, § 25; *see also* M.G.L. c. 164, § 90 (allowing selectmen and aldermen to impose “such other terms as they deem public interest requires”).

92 M.G.L. c. 166, § 32.

93 220 CMR 125.10(1)(a).

94 220 CMR 126.30(2).

95 *Id.*

G. Selling Electricity and Ancillary Services to the Macrogrid

Some microgrids may be able to offer surplus electricity or other ancillary services to the macrogrid. Both federal law and DPU regulations provide that microgrids may offer these services to obtain additional revenue. The federal Public Utility Regulatory Policies Act (“PURPA”) and implementing regulations promulgated by the Federal Energy Regulatory Commission (“FERC”) require, in general, that distribution companies purchase electricity from qualifying facilities (“QFs”) unless the QFs have nondiscriminatory access to the wholesale electricity markets.⁹⁶ Most microgrids are likely to be considered QFs.

To be considered a QF, a microgrid must meet certain efficiency requirements. In particular, typically at least 5% of the total energy output, i.e., the sum of the electricity generated and the thermal output, must be in the form of useful thermal energy⁹⁷ and the useful electrical output plus one-half of the useful thermal output must be greater than 42.5% of the total energy input.⁹⁸ A microgrid seeking to obtain QF status must file with FERC either a self-certification or an application for QF status, unless the microgrid has a capacity less than 1 MW.⁹⁹

PURPA and DPU regulations give guidance as to the price for electricity sold by a QF to a distribution company. Although distribution companies and QFs are free to negotiate their own rates and terms for electricity purchase and sale,¹⁰⁰ PURPA specifies that rates must “be just and reasonable,” “in the public interest,” and must “not discriminate” against QFs.¹⁰¹ FERC regulations create a rebuttable presumption that purchases at the “avoided cost” rate, i.e., the rate at which a distribution company would have purchased electricity from another source, are both “just and reasonable” and “non-discriminatory.”¹⁰² DPU regulations specify that these requirements are met for QFs with a design capacity of greater than 1 MW if the selling price equals “the payments received by the Distribution Company from the ISO power exchange for such output for the hours in which the” QF sold electricity.¹⁰³

96 16 U.S.C. § 824a-3(a)(2), (m); 18 C.F.R. § 292.303, 309; 220 CMR 8.00. Note that the DPU regulations do not include the exception to the purchase obligation if a QF has non-discriminatory access to the wholesale market.

97 18 C.F.R. § 292.205(a).

98 18 C.F.R. § 292.205(a)(2).

99 18 C.F.R. § 292.203(a)(3), (b)(2), (d).

100 18 C.F.R. § 292.301(b); 220 CMR 8.03(1).

101 18 C.F.R. § 292.304(a)(1); 16 U.S.C. § 824a-3(b).

102 18 C.F.R. § 292.304(b)(2).

103 220 CMR 8.05(2)(a).

A microgrid may also be able to offer ancillary services to the macrogrid and be paid for providing those services. For example, a microgrid's ability to island means that it will have the ability to balance its own load and generation; as a result, it may be able to provide demand response services. FERC has issued a rule specifying that demand response should be compensated at the "market price for energy" at the time that the demand response is sold; however, the D.C. Circuit recently vacated this order.¹⁰⁴ A microgrid may also be able to offer frequency regulation service if it has on-site storage capacity. FERC has recently issued two orders that may make it easier for a microgrid to sell a frequency regulation service.¹⁰⁵

104 Demand Response Compensation in Organized Wholesale Energy Markets, Order No. 745, 76 Fed. Reg. 16,658 (Mar. 24, 2011) (codified at 18 C.F.R. 5.28(g)(1)(v)); *Electric Power Supply Association v. F.E.R.C.*, 753 F.3d 216 (D.C. Cir. 2014), *en banc rehearing denied* Sept. 17, 2014.

105 Third-Party Provision of Ancillary Services; Accounting and Financial Reporting for New Electric Storage Technologies, Order No. 784, 78 Fed. Reg. 46,178 (July 30, 2013) (codified at 18 C.F.R. 35 and 18 C.F.R. 101); Frequency Regulation Compensation in the Organized Wholesale Power Markets, Order No. 755, 76 Fed. Reg. 67,260 (October 31, 2011) (codified at 18 C.F.R. 35).

V. CONCLUSION

Microgrids are feasible and permissible under Massachusetts law. Nonetheless, there remains some uncertainty about the specific legal structures for microgrid ownership and operations that are allowed under the franchise clause. It would be useful for the DPU to clarify its interpretation of “generation company” as applied to microgrids.



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