

# MASSACHUSETTS MICROGRIDS: OVERCOMING LEGAL OBSTACLES

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June 27, 2014

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# Overview

- Microgrids can be constrained by state-level law and regulation.
- Commonly assumed issues that present hurdles.
  - “franchise” law
  - Utility rights to cross a public right-of-ways
- Massachusetts is a great example of how these laws apply to microgrids.
- Keep in mind that laws and regulations are highly jurisdictional dependent.

Analysis presented here was part of a project by the  
Emmett Environmental Law & Policy Clinic at Harvard Law on behalf of the City of Boston



# Key Insights

- Conventional wisdom and common practices do not always correspond with Massachusetts statutes.
- Statutory and engineering descriptions of grid operations use completely different vocabulary.
- Massachusetts law is different than neighboring states.
- Creative structures may be able to overcome some legal hurdles.



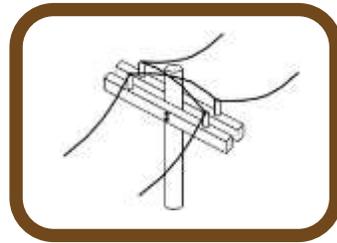
# Legal Components of a Microgrid



Microgrid  
Participants



Microgrid  
Generator



Microgrid  
Distribution  
Infrastructure



Microgrid  
Operator

# Distribution Company

## Distribution Company

- ◉ Provides “distribution service” in the macrogrid.
- ◉ Could build and operate wires “behind” the meter.
- ◉ In combination with a generation-owning affiliate, may be able to offer one-stop microgrid service including operation and generation.
- ◉ Could be paid through a tariff, or by contract. Either would likely require regulator approval.



# Microgrid Participant



- ◉ Single legal entity that consumes electricity.
- ◉ Could be single building with a single owner.
- ◉ Could be multiple buildings with a single owner.
- ◉ Could have tenants.
- ◉ Could own on-site generating assets. Could provide electricity to microgrid or macrogrid.
- ◉ Could contract with operator, generator, competitive supplier and distribution company.



# Microgrid Generator



- Provides electricity to participants and macrogrid.
- Could be CHP natural gas, solar, wind, storage.
- Operates during islanding event.
- Could be paid by participants through distribution company or directly by contract.
- Could be third party, could be a participant, could be jointly owned and controlled by participants, competitive suppliers, or a distribution company affiliate.



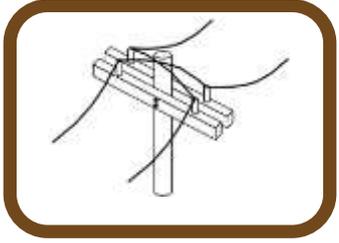
# Microgrid Operator



- ◉ Operates the microgrid by balancing supply with demand, especially when islanding.
- ◉ “Controls” the electricity, in the engineering sense, but not the legal sense.
- ◉ Does not need to take ownership of the electricity.
- ◉ Does not necessarily sell electricity.
- ◉ Could be any participant, a third party under contract, a distribution company, or the generator.



# Microgrid Distribution Infrastructure



- ◉ Owns and operates the internal distribution infrastructure, in the engineering sense.
- ◉ In a single participant microgrid, could be a participant, a third party under contract, or a distribution company.
- ◉ In Massachusetts, a ownership/operation of the internal distribution structure in a multi-participant microgrid is constrained by a distribution company's franchise.



# How does Massachusetts Law constrain microgrids?

- Sets the minimum and maximum involvement of a Distribution Company.
- Imposes obligations on microgrid participants, operators, and generators.



# The minimum role of a Distribution Company is set by the Franchise Clause

“ the 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.” M.G.L. c. 164, § 1B(a).



# Definitions of Distribution and Distribution Service

- **“distribution service”** = “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.” M.G.L. c. 161, § 1.
- **“Distribution”** = “the delivery of electricity over lines which operate at a voltage level typically equal to or greater than 110 volts and less than 69,000 volts to an end-use customer within the commonwealth.” M.G.L. c. 161, § 1.



# Possible synthesis of franchise law and distribution definitions

A DC, operating in its service territory, is the only entity legally permitted to deliver electricity to a customer over lines operating between 110 and 69,000 volts from either the transmission system or a generating plant.

“delivery” is suggested by case law to be the “transfer of control and ownership of electricity.” *Massachusetts Electric Company, D.T.E.* 98-122, 2002 WL 1162710 (Mass. D.T.E. Feb. 7, 2002).



# Noticeable omissions from the statute

- No reference to:
  - Meters
  - Public rights-of-way
  - Property ownership
  - Sale of electricity
- No statutory definition of “customer” or “delivery.”



# Possible limits on the role of a Distribution Company: generation ownership

Distribution Companies are prohibited from “directly owning, operating or controlling ... generating facilities.” M.G.L. c. 164, § 1A.

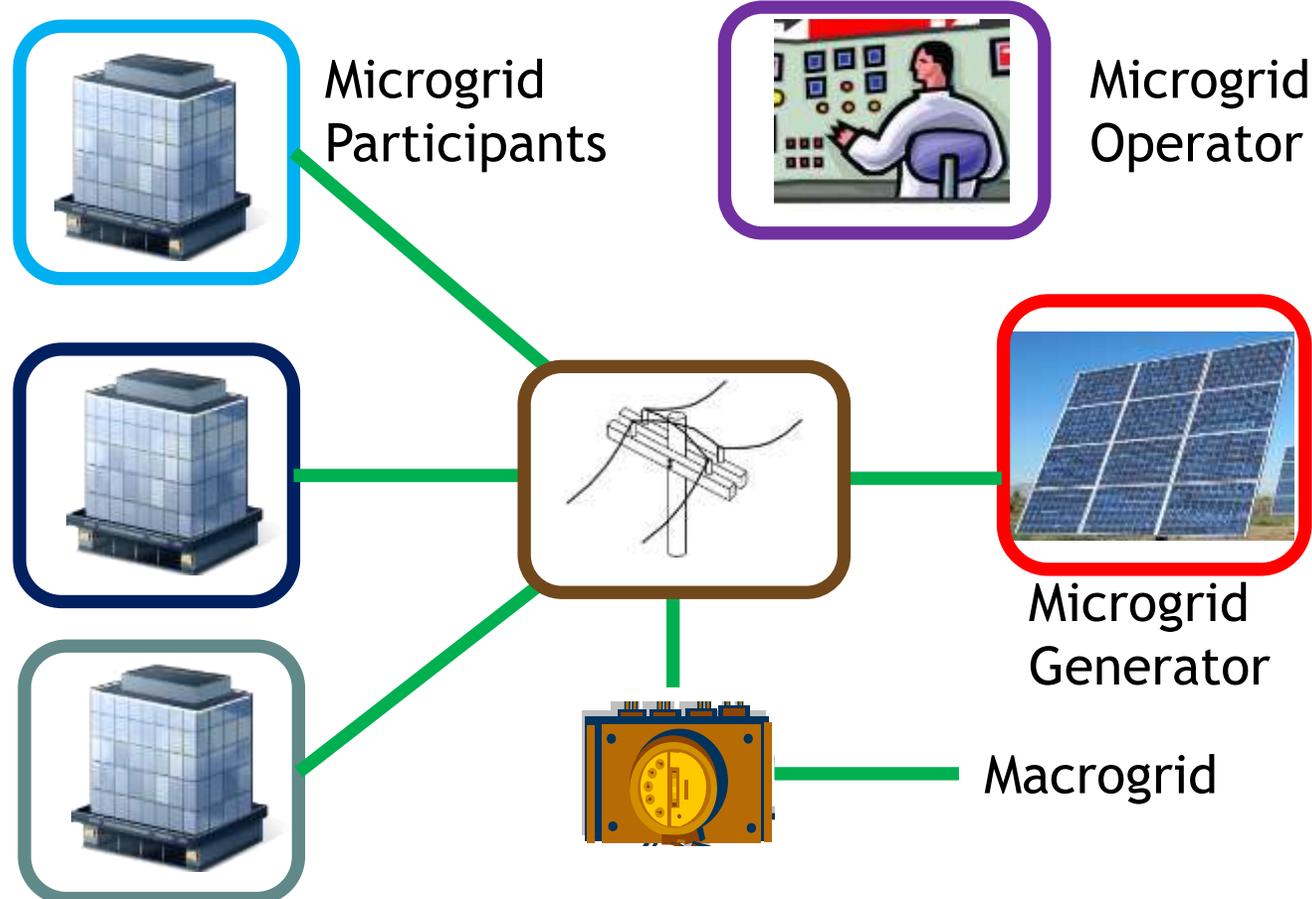


How do these bounds apply to distribution company microgrids?



# Possible roles in a distribution company-wired microgrid

Participants, operator, generator, and utility can all enter into contracts that define their respective roles and relationships.

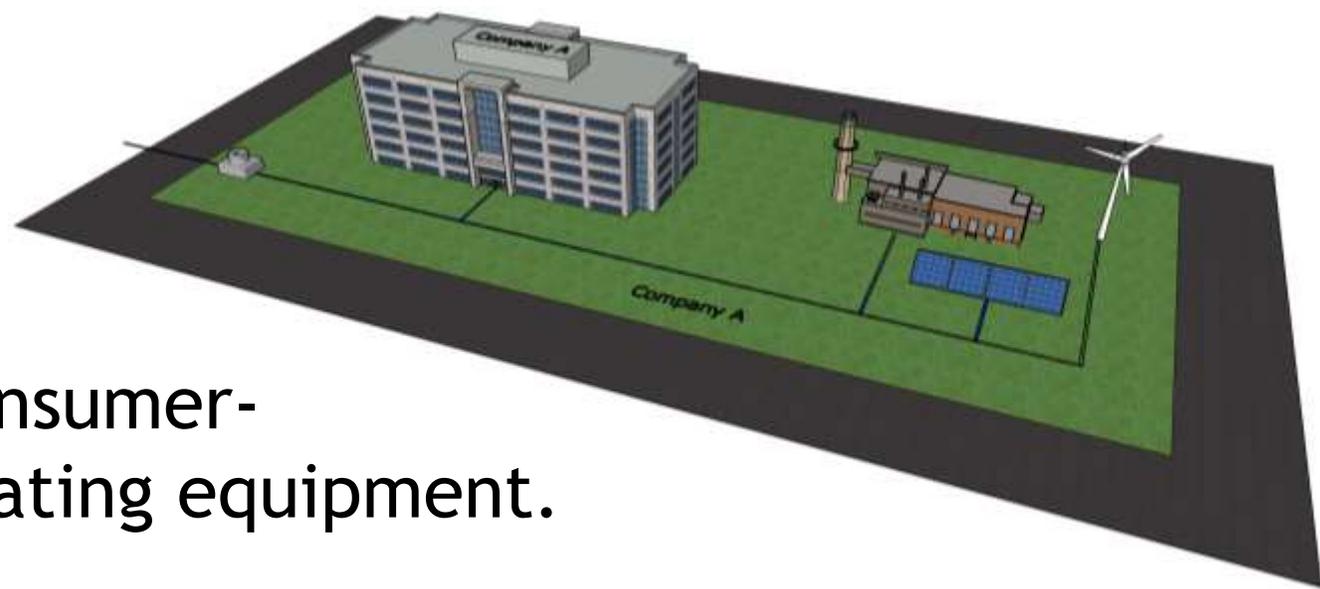


Lines represent wires, not contracts

Distribution company owns and operates the microgrid distribution infrastructure

How do these bounds apply to non-utility microgrids?

# Scenario 1



Single consumer with consumer-controlled on-site generating equipment.

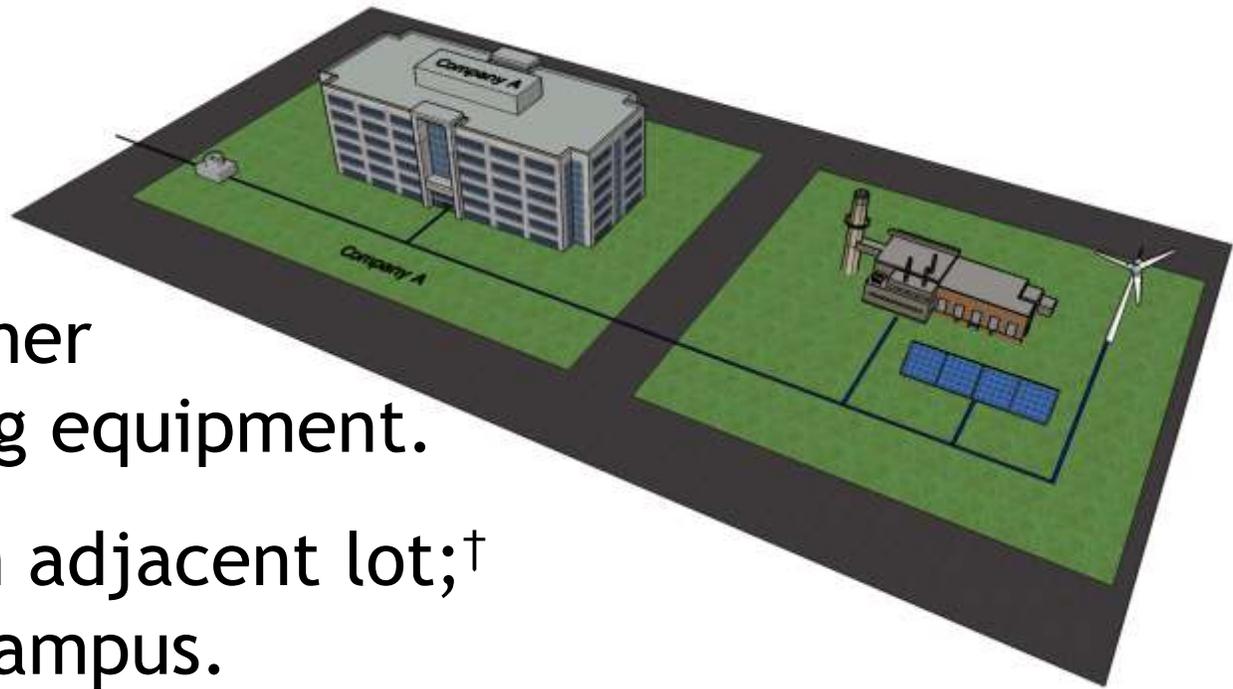
Examples: solar panels on a homeowner's roof, co-generation at an industrial facility.

- ⦿ This scenario should not violate the franchise clause.
  - Electricity generated on-site is continuously owned by the consumer.
  - Electricity generated on-site is always on the premises.
  - Consumer has continuous control of the electricity.

# Scenario 2

Single consumer with consumer controlled off-site generating equipment.

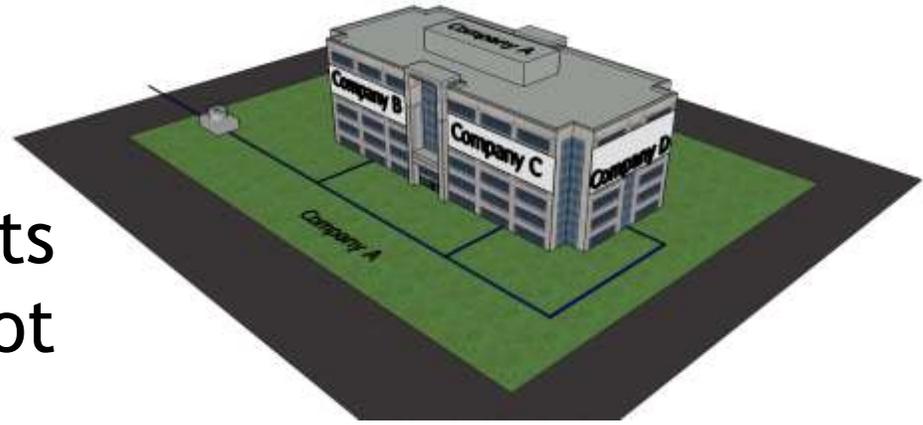
Examples: solar panels on an adjacent lot;<sup>†</sup> urban university campus.



- ⦿ Crossing a right-of-way does not, itself, implicate the franchise clause.
- ⦿ This scenario should not violate the franchise clause.
  - Electricity generated is continuously owned by the consumer.
  - Consumer has continuous control of the electricity.

# Scenario 3

Landlord provides electricity to tenants in a multi-tenant building, but does not submeter or sell the electricity.

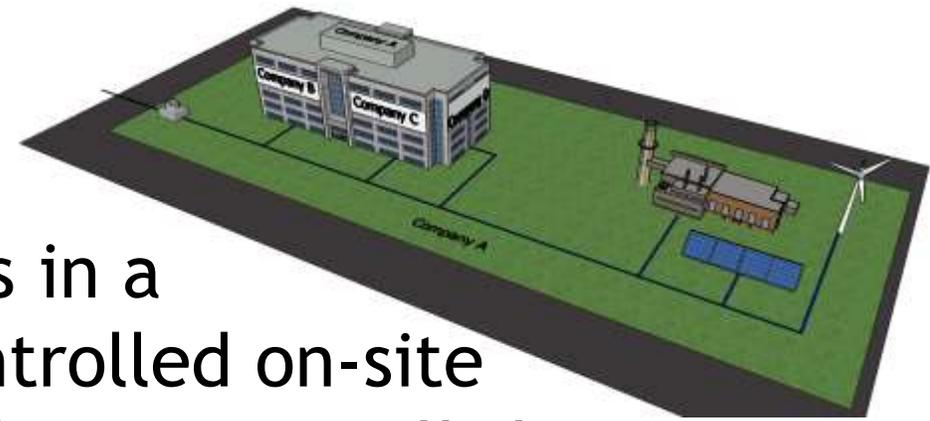


Examples: common commercial buildings

- Franchise law would appear to prohibit landlord provided electricity :
  - The landlord is transferring electricity to different premises.
  - The landlord is transferring ownership and control of electricity to each tenant.
- However, landlord provided electricity has never been challenged as a violation of the franchise.



# Scenario 4

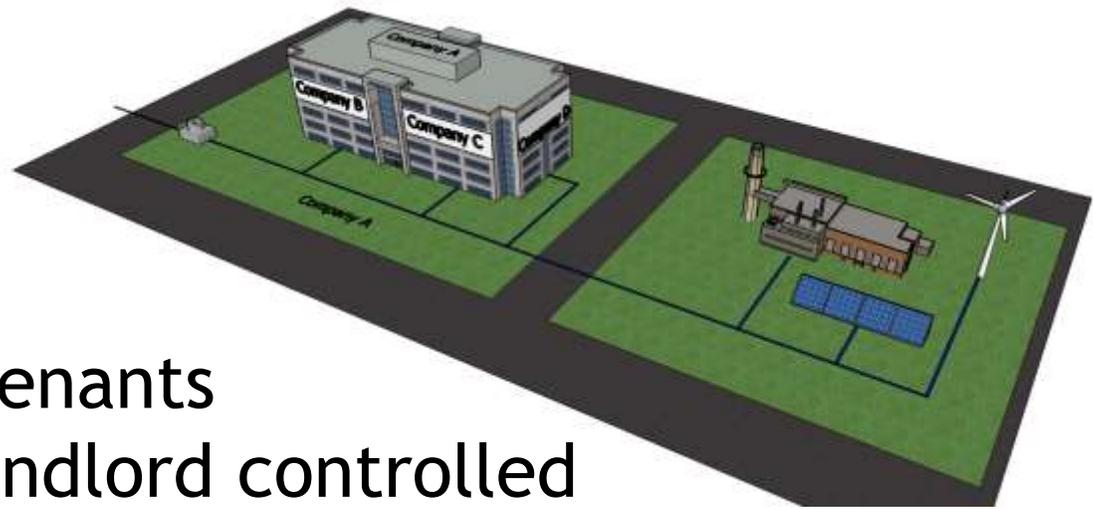


Landlord provides electricity to tenants in a multi-tenant building with landlord controlled on-site generating equipment, but does not submeter or sell the electricity.

Example: traditional research park.

- From whom the landlord buys the electricity should not affect a franchise clause analysis.
  - Landlord still owns the electricity prior to providing to a tenant whether the electricity comes from the macrogrid or onsite generating equipment.
- This scenario should not violate the franchise clause.

# Scenario 5

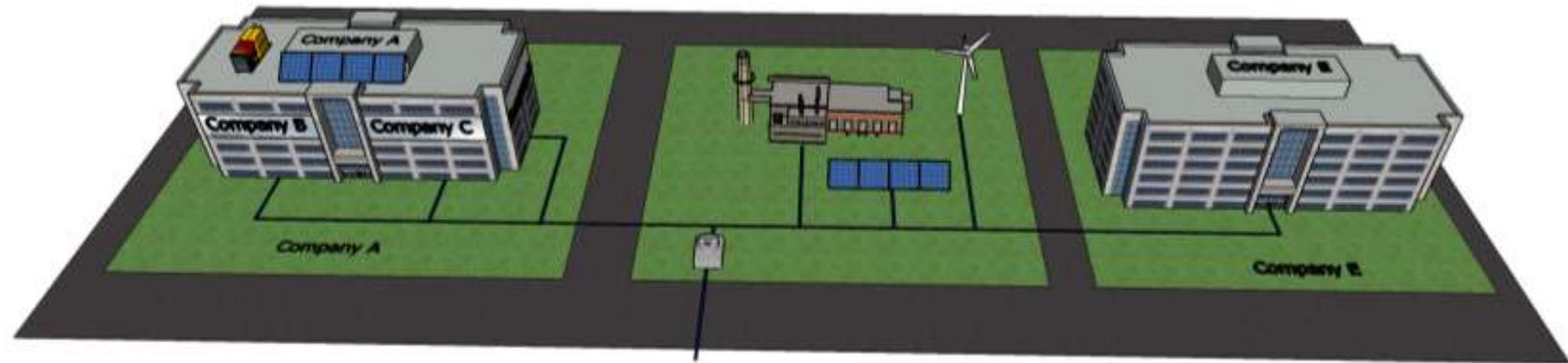


Landlord provides electricity to tenants in a multi-tenant building with landlord controlled off-site generating equipment, but does not submeter or sell the electricity.

Example: urban innovation incubator

- Crossing a right-of-way should not affect a franchise clause analysis. No different than Scenario 4.
- This scenario should not violate the franchise clause.

# Scenario 6



Multi-owner “microgrid” with on-site and off-site generating equipment.

- ◉ The ownership structure of the microgrid assets determines the applicability of the franchise clause.
- ◉ Unaffiliated ownership/operation of the microgrid distribution infrastructure likely violates the franchise.
- ◉ If participants jointly own and control electricity then this scenario is simply a merger of two scenario 2s and may not violate the franchise clause.

# Department of Public Utility Regulation

Any of these scenarios may be subject to regulatory oversight, even if they comply with the franchise.

- ◉ DPU has general supervisory authority over all “electric companies.” M.G.L. ch. 164 § 76.
- ◉ Electric companies are all entities which own or operate “works” for the sale or distribution of electricity. M.G.L. ch. 164 § 2(i).
- ◉ DPU has authority to license generation companies, aggregators, suppliers, energy marketers and energy brokers.
- ◉ Licensure has a variety of consequences. For example, licensure precludes net metering by statute.

# Conclusion

- Role of a Distribution Company may not be as well defined as commonly thought.
- Wide range of contracts are possible in a microgrid with distribution company operated wires.
- Franchise clause in Massachusetts has broad language that may allow more types of distributed generation and microgrids than commonly assumed.
- An engineer's view of the grid is not the statute's view.