



# ENERGY SYSTEM PLANNING

Bradford Swing , Director of Energy Policy and Programs

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Presentation Office of Environment Energy and Open Space

Boston Nature  
Center



1999

Building Design

2002

Building Dedication

2003-2004

Mayor's Green Building Task Force

2007

Article 37:  
Green Building  
integrated into  
Zoning Code

# ENERGY SYSTEM PLANNING

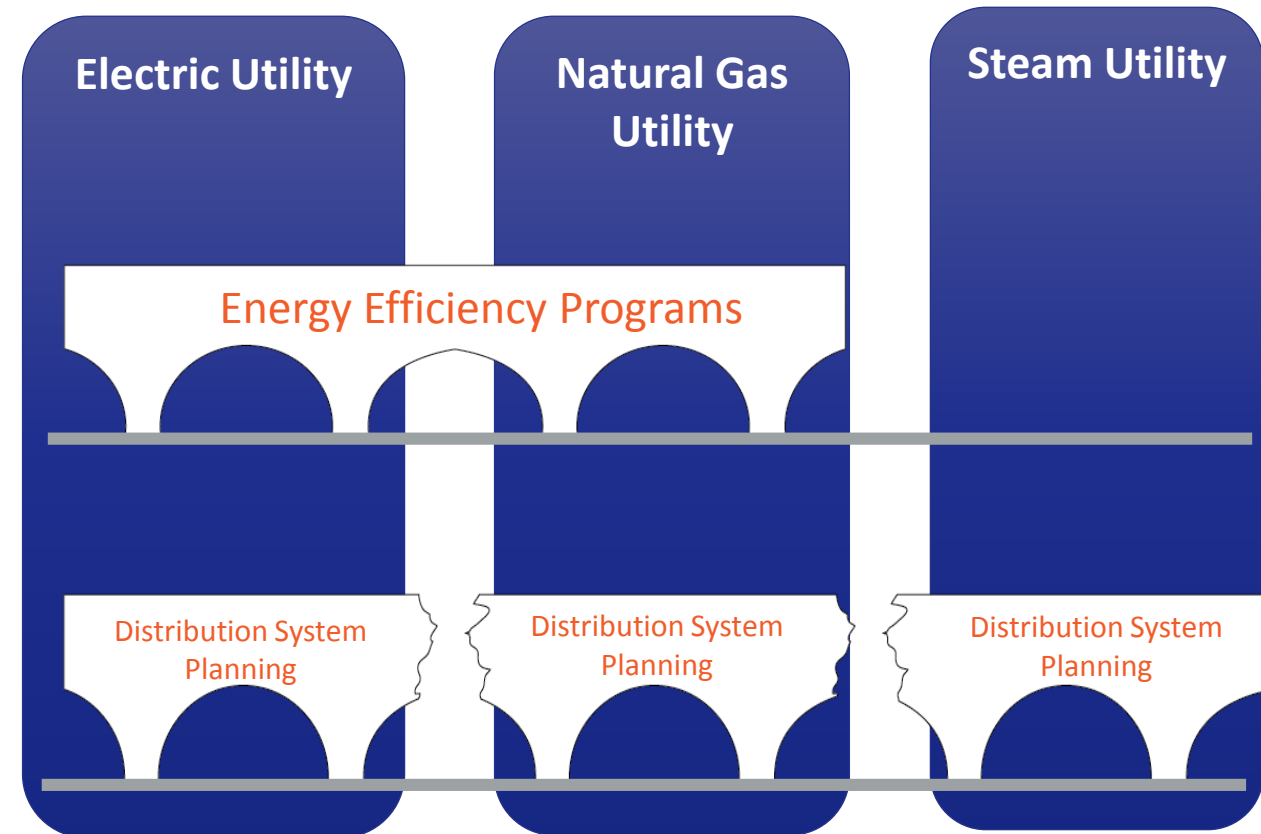
Why involve city government?

## A policy of the Climate Action Plan

- Increased cogeneration, district energy, solar installation
- Lower total cost of energy, reduced GHG emissions, increased resiliency

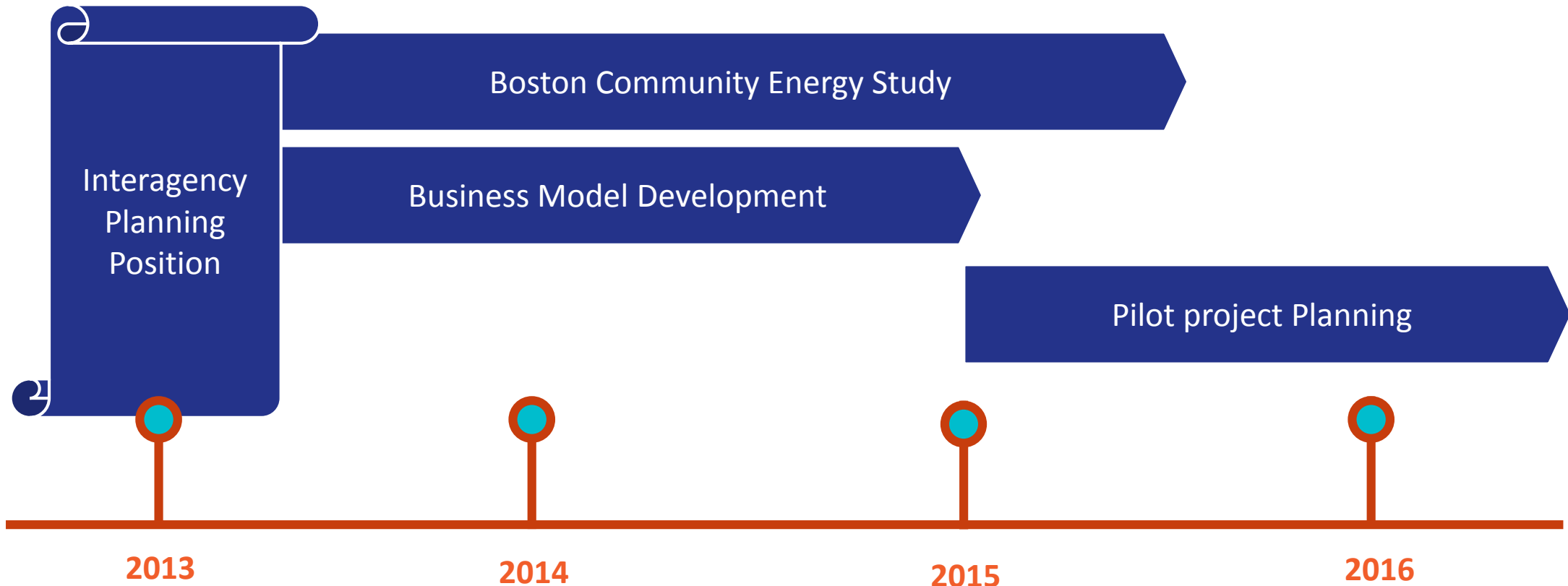
## Challenges

- Boston has many DE systems because campuses
- Vision: Campus-like technology in commercial buildings
- No business model



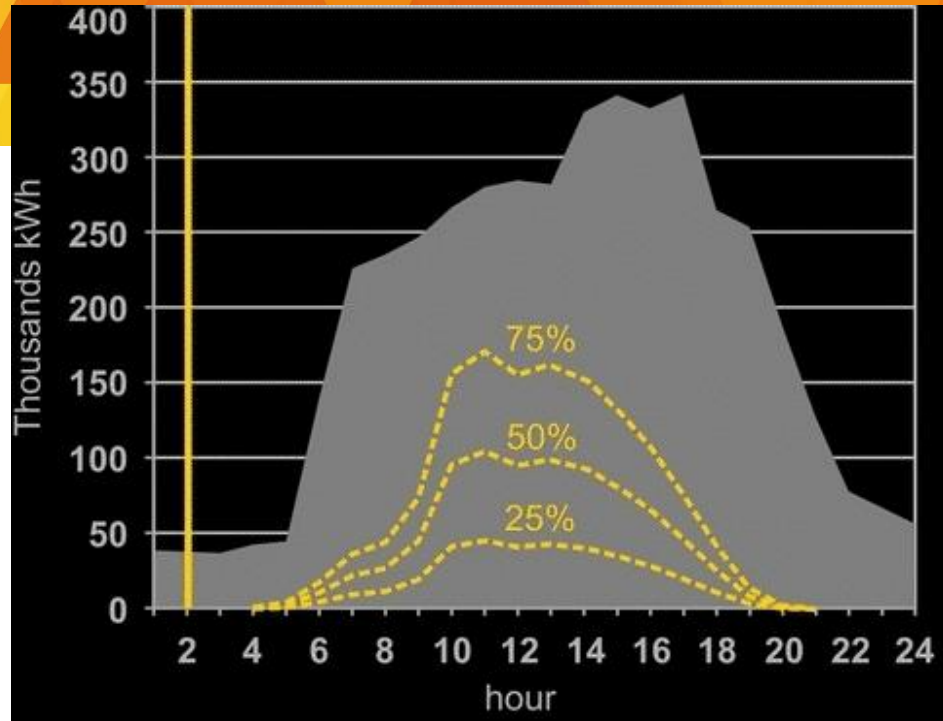
# ENERGY SYSTEM PLANNING- CITY STRATEGY

## 3- Year Plan



# BOSTON COMMUNITY ENERGY STUDY

- Commissioned by the Boston Redevelopment Authority in August of 2014. Funded by a grant from Mass Clean Energy Center for microgrid planning to be replicated in Cities across Massachusetts. Additional funding from Department of Homeland Security (Science and Technology).
- Project Partners: MIT Sustainable Design Lab, MIT Lincoln Laboratories, Eversource
- Uses advanced modeling and energy data to establish city wide consumption patterns and localized generation/distribution scenarios
- To be used as foundational data to explore the viability of advanced energy systems



■ Total electricity demand (kWh)  
- - - Potential roof (%) PV production



Data and Analysis by  
**MIT SUSTAINABLE DESIGN LAB**

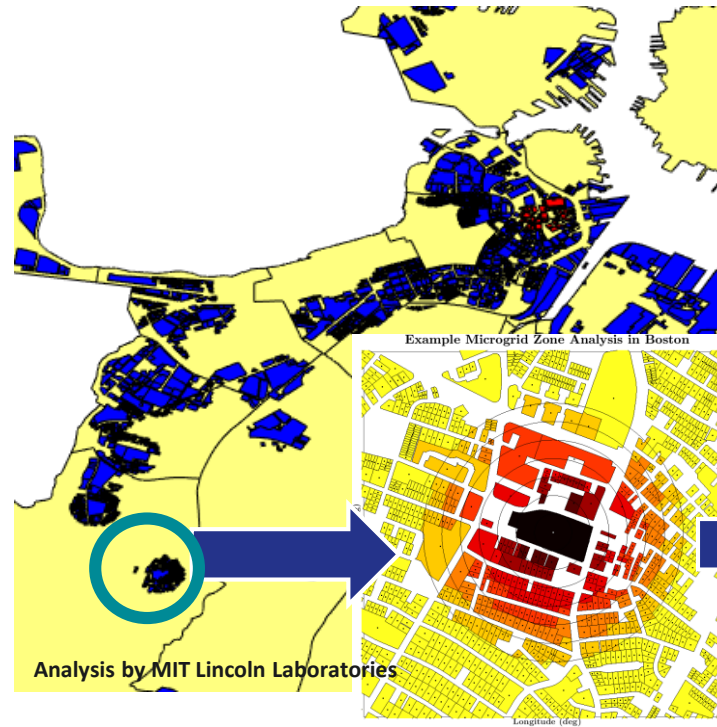
10 kWh 2000+

# BOSTON COMMUNITY ENERGY STUDY

## (1) Boston Energy Map



## (2) Boston Community Energy Simulations



- Citywide Results
  - Cost-Benefit analysis
  - Total capacity for local energy supply
- District Scale results
  - Design of network
    - Renewables
    - CHP
    - Thermal Storage

	Low	High
Range in \$ Savings	\$168,614	\$3,095,087
Range of CO2 savings	-15%	13%

# BUSINESS MODEL

Stage: Complete

Boston on Forefront of Microgrid  
Policy and Business Case Development

Developed 3-part microgrid workshop series

“Microgrids and District Energy for Critical Infrastructure  
and Multi-Users”

Ultimately won microgrid development participation from  
MA utility Eversource

Convened Urban Sustainability Directors Network  
workshop 2015

New York City, Washington DC , MA Communities : Somerville,  
Cambridge, Northampton

Housed by International District Energy Association  
Conference with 950+ Attendees

Technology and Policy innovations replicable

## USDN Microgrid/District Energy (DE) Workshop Overview

USDN | urban sustainability  
directors network



USDN Microgrids and District Energy Workshops Hynes Convention Center, Boston | June 29, 2015







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