Missed Connections: Working with your Local Utility to Fund School Energy Efficiency Projects

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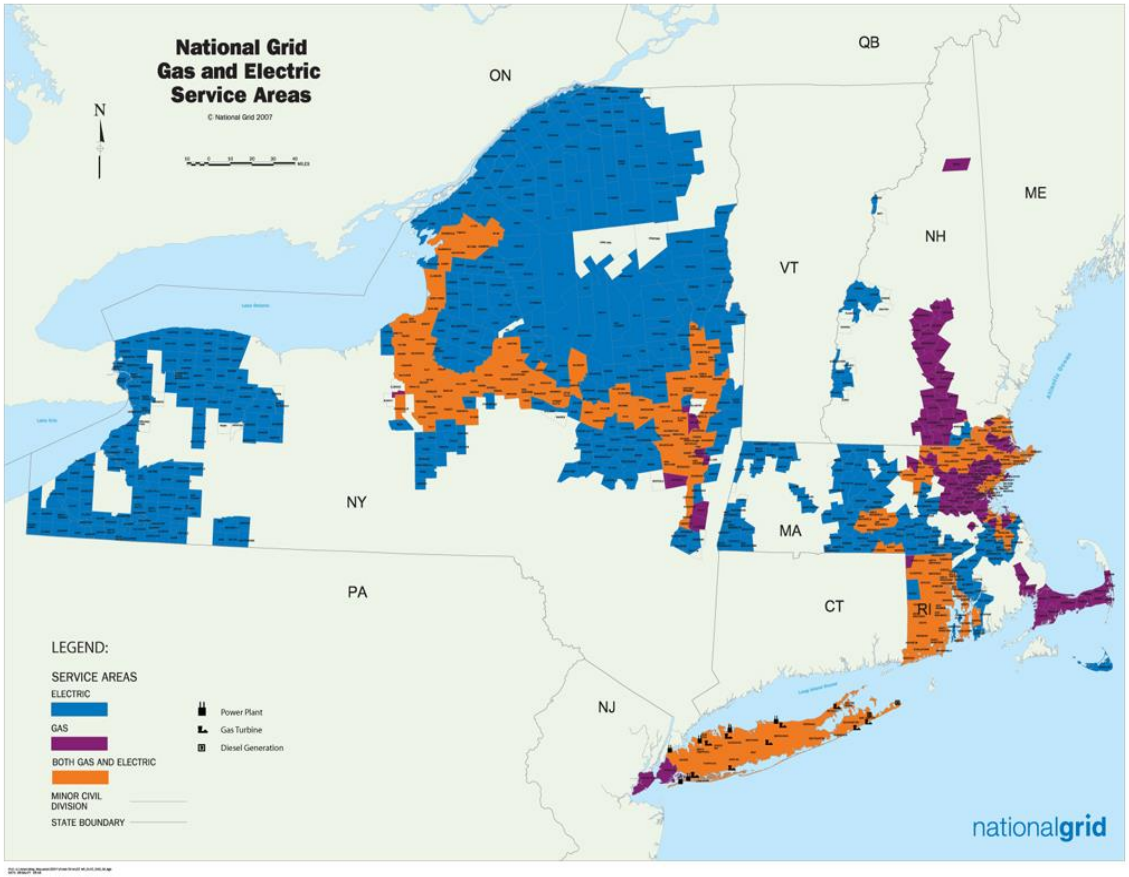
NATIONAL GRID

Electricity and Gas Service Areas - US



Largest utility in UK; one of the largest in the US:

- 27,000-plus employees
- Almost 18 million customers

Northeast US:

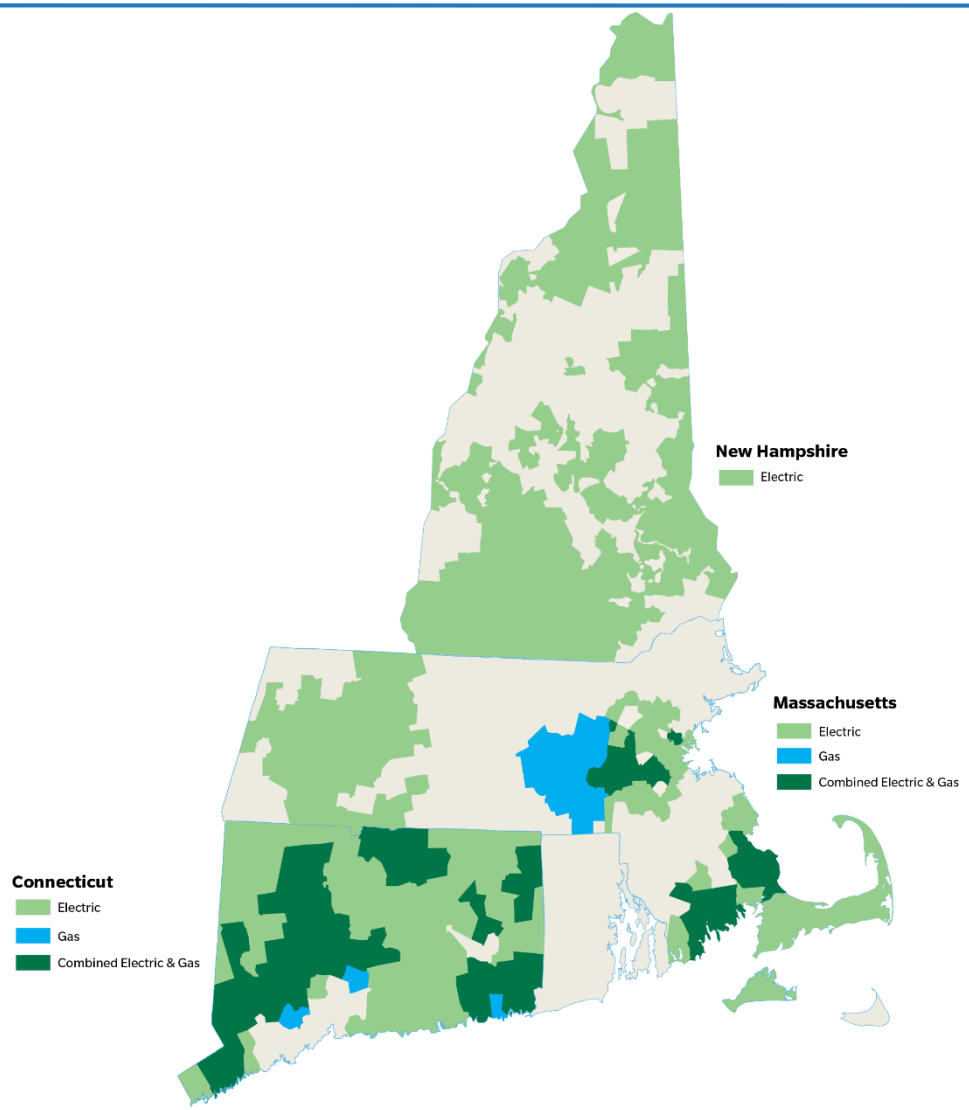
- Distributes electricity to 3.3 million customers
- Provides natural gas to 3.5 million customers
- Currently owns over 4,000MW of generation
- Territories include Massachusetts, Rhode Island, Upstate and downstate New York and Long Island

*Massachusetts the number one state for energy efficiency for the 4th straight year, according ACEEE

AGENDA:

- Introductions
- Mass Save Program Overview
- New Construction Services – Eversource/NGRID
- Offerings
- Success Stories

EVERSOURCE



- Largest utility in New England
- 9,300 employees
- Serves 3.5 million customers through six regulated electric and gas utilities in three states
- Provides natural gas to over 500,000 customers

MASS SAVE PROGRAM OVERVIEW

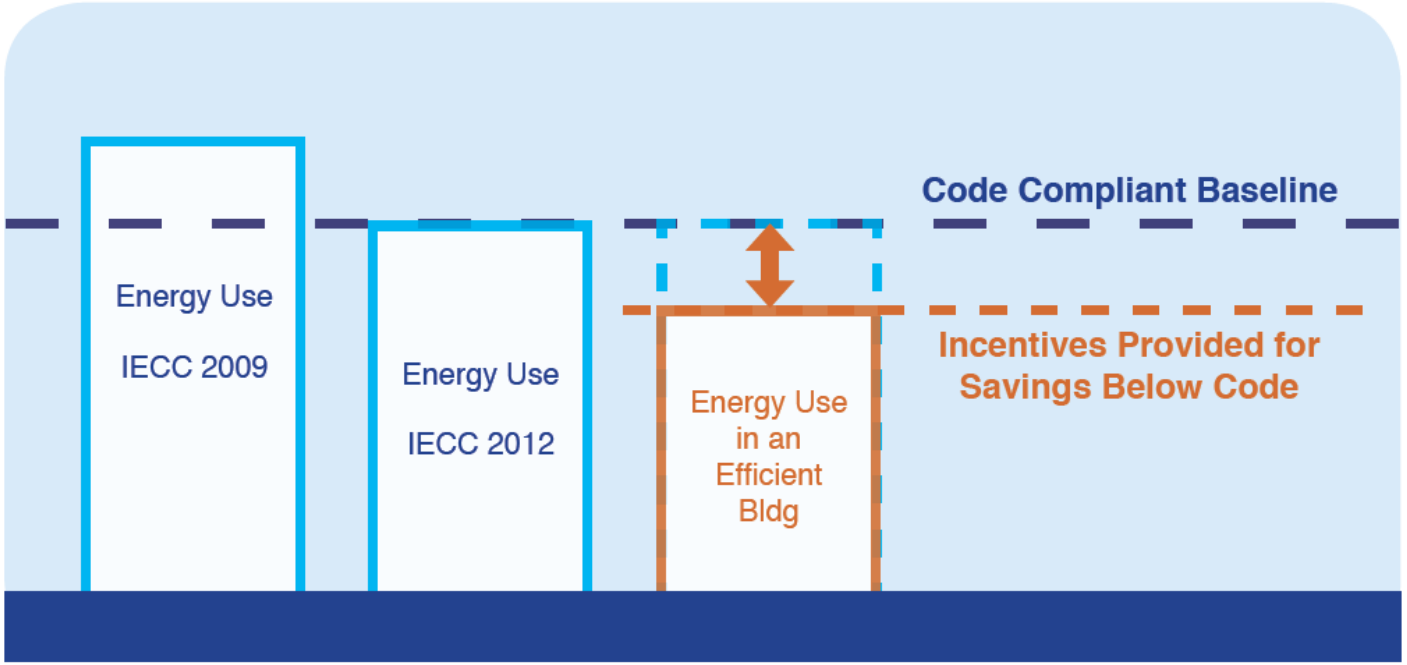
- Through the Mass Save Program, utilities collaborate to help reduce building-related energy consumption
- As part of the Massachusetts Green Communities Act, a system benefit surcharge is applied to all gas and electric utility bills
  - ✓ Funds are collected and turned around to customers in the form of technical assistance and incentives
  - ✓ Retrofit, New Construction, and Technical Assistance programs

PEAK CHARGES:						
DISTRIBUTION	0.008201	X	61045	KWH	=	500.68
TRANSITION*	0.003120	X	61045	KWH	=	190.46
RENEWABLE ENERGY	0.000500	X	61045	KWH	=	30.52
ENERGY CONSERVATION	0.002500	X	61045	KWH	=	152.61
OFF PEAK CHARGES:						
DISTRIBUTION	0.008201	X	126875	KWH	=	1,040.62
TRANSITION*	0.003120	X	126875	KWH	=	395.85
RENEWABLE ENERGY	0.000500	X	126875	KWH	=	63.44
ENERGY CONSERVATION	0.002500	X	126875	KWH	=	317.19
TOTAL KWH			187920	TOTAL KWH CHARGE		2,691.37

mass save
Savings through energy efficiency

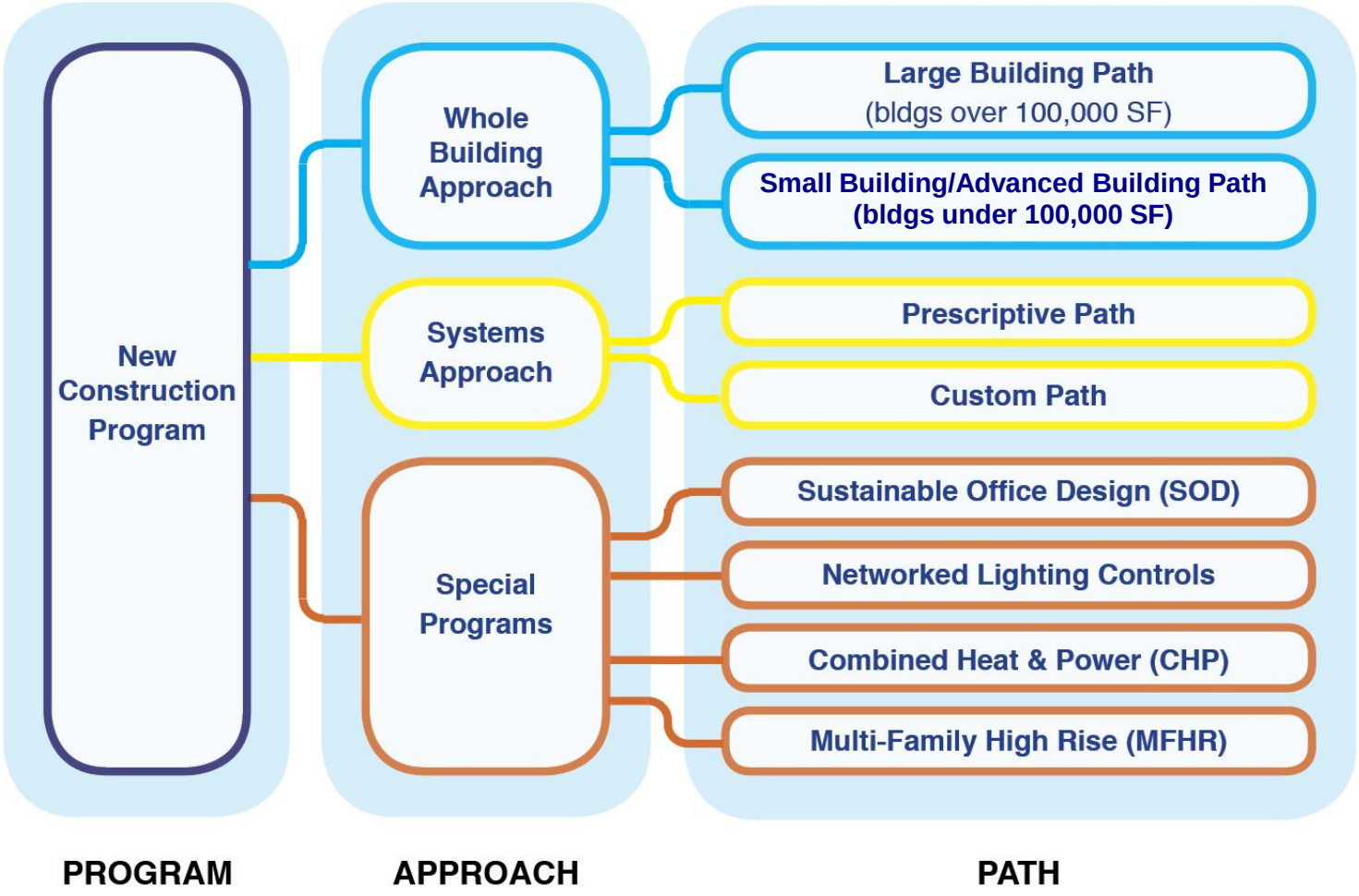
NEW CONSTRUCTION PROJECT TYPES

1. **Ground-up new construction*** (commercial, industrial and institutional)
2. **Major renovations, Additions, and Tenant Fit-outs*** (code triggering)
3. **New equipment*** (Systems Approach)



**Project must be located in Program Administrator's service area*

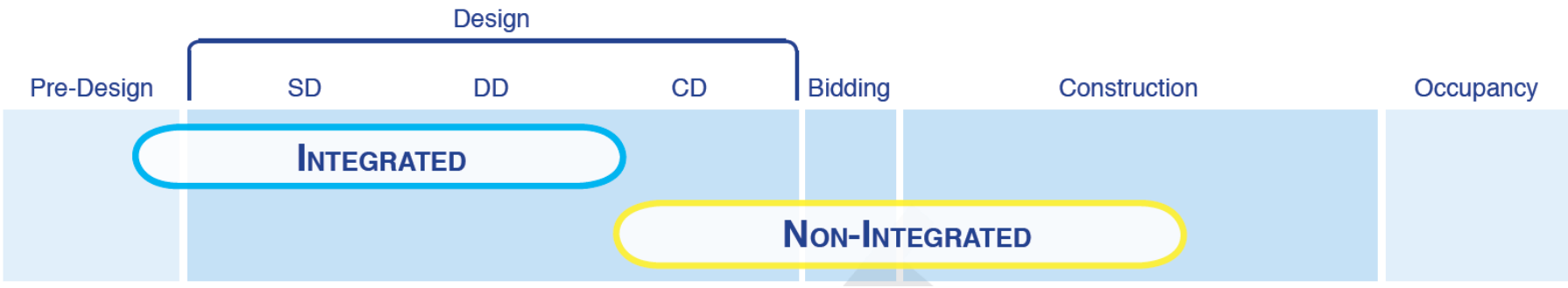
MULTIPLE PATHWAYS FIT VARIOUS PROJECT TYPES



WHOLE BUILDING APPROACH

Integrated vs. Non-integrated

- More time to investigate options and costs
- More opportunity to increase energy savings
- Whole Building Approach vs. Prescriptive



WHOLE BUILDING APPROACH & DESIGN TECHNICAL ASSISTANCE

Large Buildings, ≥ 100,000 sf, where team engages utilities *early* in design:

- A $3,000 stipend for an Energy Charrette to brainstorm energy efficiency options
- Design team incentive
- PA's will pay up to 75% of the design technical assistance
- Work together to achieve 15% whole building saving target

WHOLE BUILDING APPROACH: UNDER 100,000 SQUARE FEET

- **Eversource – Small Buildings Path (20,000 – 100,000 sf)**
  - ✓ Same incentive tiers as for Large Buildings Path, modeling required
  - ✓ Same design support as for Large Buildings Path except up to 100% energy modeling support for Small Buildings
- **National Grid – Advanced Buildings – New Buildings Inst.**
  - ✓ Prescriptive menu based items to get to >15% above current energy code for projects from 10,000 to 100,000 square feet
  - ✓ Fixed Incentives based on tiers and performance pathways $2.00/sf. up to $2.75/sf
  - ✓ Designed for typical building types with standard run hours including offices, schools, and retail
  - ✓ Energy modeling not required

nationalgrid

NATIONAL GRID INCENTIVE RATE

Program Goals:

- **Integrated Approach**
  - ✓ Rewards early engagement
- **Increased Rates**
  - ✓ Needed due to potential reduced savings resulting from code change
- **Put in Writing**
  - ✓ No more guessing

Summary of Whole Building Pathways and Incentives		
Integrated Design	**Electric Incentive**	**Gas Incentive**
Building Owner	0.35 $/kWh	1.70 $/therm
Design Team	0.07 $/kWh	0.34 $/therm
Design Team	$3,000 for participation in energy efficiency charrette	
Advanced Buildings	**Base Criteria Incentive**	**Enhanced Criteria Incentive**
Building Owner	$2.00/square feet	$0.25/sqft per criteria*
Design Team	$2.00/square feet	$0.25/sqft per criteria*
Design Team	$3,000 for participation in energy efficiency charrette	

*a maximum of three criteria and $2.75/square feet

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Whole Building Approach Large Building/Integrated Design program			
Integrated Owner's Incentive (pre-design thru end of DD)		$/kWh	$/therm
	≥ 30%	0.35	2.00
	≥ 15% <30%	0.27	1.85
	<15%	0.20	1.70
Design Team Incentive for integrated projects only		$/kWh	$/therm
	≥ 30%	0.07	0.34
	≥ 15% <30%	0.04	0.20
	Contributions capped at $15,000 from each PA		
Energy Charrette for integrated projects only	**$3,000** To design team lead from all PA's		
Energy Model Cost-Share	**Up to 75% - Integrated** Contributions capped at $20,000 from each PA		

EVERSOURCE

CPS Cambridge Public Schools

Project Team

Architect: Perkins Eastman
MEP Engineer: AKF
Energy Modeler: In Posse

Success Story: Martin Luther King Jr. School, Cambridge, MA

The MLK School is a 172,00 sq ft facility that supports about 740 students range from K-5 grade. The school is designed for after hour use within Cambridge for greater community engagement and is 45% more energy efficient than the code.

Energy Conservation Measures

- Envelope Enhancements
- High Efficiency Lighting Systems
- Day Lighting Harvesting
- High Efficient Geothermal Heat Pumps
- Heat Recovery Ventilation

Savings

- 1 million kwh/year saved
- 1,700 therm/year saved
- $72,000/year savings in utility bill

Eversource Incentive: $179,417

Success Story:

Paul W. Crowley East Bay Met Center, Newport, RI

Type ≈ Career + Technical Center
Size ≈ 16,000 sf
Owner ≈ RIDE/Met Center
Certification ≈ NE-CHPS

Savings Summary/Energy Use Index/Payback

Predicted Energy Use: 35 kBTU/sf/year
Energy Savings: 52,971 kWh & 1,335 therms/year
Annual Cost Savings: $7,892
Upgrade Cost: $76,539
Total Incentives: $24,000 ($1.50 per sf)
Payback: 6.5 years (with Incentives)

Project Team

Robinson Green Beretta ≈ OPM
Robinson Green Beretta ≈ Architect
Stantec ≈ Mechanical Engineers
Stantec ≈ Electrical Engineers
Gilbane ≈ Construction Manager
SMMA ≈ Advanced Buildings Reviewer
National Grid ≈ Electric & Gas Utility

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