Are we Breaking Up?
The Future of Residential Lighting Programs

2016 Northeast Residential Lighting Workshop
Tuesday, September 20th
1:15pm-2:30pm
Background

• Lighting programs are in flux
  – Nearing market transformation/Regional goal
  – EISA legislation on the horizon

• Viable now, but for how long? Depends where...

• This discussion:
  – Present immediate, near, medium, and long term opportunities
Speakers

• Brad Piper, Lockheed Martin
• Jesus Pernia, Eversource CT
• Glenn Reed, Energy Futures Group
Immediate Opportunities

Brad Piper
Increasing Savings While Decreasing Incentives

- As retail prices of LED lamps naturally fall, incentives can be reduced.

- Addition of 15k lamps with even lower price points and a shorter lifespan require lower incentives.

- Combine promotions, package well known products like LED lamps with lesser known products like Tier 2 APS.
Opportunities in Replacement?

• Per a Massachusetts study, the CFL median burnout rate is 6% per year.
  – Based on all CFLs regardless of time in service

• At this rate, the 2013 socket saturation, and households in Utility territory,
  – 3,523,714 CFLs will need replacing each year for near-term future.

• The replacement opportunities for remaining incandescent and halogen bulbs should be much, much higher.

• There should be strong replacement opportunities for LEDs if aggressively promoted.
Connecticut Residential Lighting Program

September 20, 2016

Jesus Pernia
Where We Are Now in CT Homes:

- Onsite Socket Saturation Study: 56% efficient lamps

Note: Other includes cold cathode lamps, xenon lamps, lamps whose type could not be identified, and empty sockets.

Source: CT LED Lighting Study Report FINAL, January 28, 2016
Potential Energy Savings

If all inefficient sockets were changed to LEDs, CT Homes could potentially save 983 kWh annually.

*Source: CT LED Lighting Study Report FINAL, January 28, 2016*
What to Expect in Coming Years

- In 2017, remove support for CFLs and transition to all LED program

- LED penetration will likely continue to increase as prices fall and CFLs are less available

- Target LEDs in hard-to-reach markets

- Prices on high lumen bulbs are still high so additional efforts maybe needed

- Impacts of EISA 2020 remain unclear
What to Expect in Coming Years

- Exploring smart lighting, lighting controls, and day lighting opportunities
- Cross-promote lighting design with new construction projects
- Evaluating and expanding the appliances and consumer electronics program:
  - Air purifiers
  - Room air conditioners
  - Dehumidifiers
  - Sound bars
- Evaluating smart appliances integration with home energy management systems (HEMS)
Thank you

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Are We Breaking Up?
The Role of Lighting In PA Residential & Low Income Portfolios

NEEP Lighting Workshop
September 20, 2016
Lighting is Critical to Meeting PA Savings Goals

MA 2013-2015 Residential Annual Savings

- 46.7% from Retail lighting
- 19.9% from Direct Install (DI) lighting
  → 67% from all Lighting
- 23.8% from Home Energy Reports
- 9.7% from everything else

MA 2016-2018 Plan is even more dependent on lighting: 69% of all Residential Annual Savings
LIGHTING IS CRITICAL TO MEETING PA SAVINGS GOALS (cont.)

MA 2013-2015 Portfolio Savings
- 27% of Annual Savings from Residential and LI Lighting
- 22% of Lifetime Savings from Residential and LI Lighting

MA 2016-2018 Portfolio Savings
- 31% of Annual Savings from Residential and LI Lighting
- 29% of Lifetime Savings from Residential and LI Lighting
MA 2013-2015 LIGHTING SAVINGS CONTRIBUTION

Lighting Savings by Sector (MWh)

Residential
- Annual = 957,695 (67%)
- Lifetime = 8,962,272 (82%)

Low Income
- Annual = 87,858 (66%)
- Lifetime = 754,515 (56%)

Chart showing percentage savings for New Construction, Multi-Family Retrofit, Home Energy Services, Lighting, Residential Sector, Low Income Sector, and Portfolio.
WHEN (NOT IF) LIGHTING SAVINGS ARE GONE, HOW DO WE FILL THE HOLE?

- Can we realistically find savings to make up a loss of over 50% of residential savings?

- Challenges in the Northeast
  - Low penetrations of electric space heat and hot water
  - Low, but growing, penetration of central cooling
    - Low cooling FLHs compared to much of the country
  - Federal standards – and the market- have addressed much, but not all, of appliance and consumer electronics opportunities
When (not if) lighting savings are gone, how do we fill the hole? (cont.)

- Will the cost effectiveness of whole house programs be imperiled?
  - From an electric PA perspective:
    - Depends in large part on inclusion of non-electric resource (oil) and non-resource benefits

- Opportunities
  - Controls, e.g., Home Energy Management Systems
  - Heat pump technologies: space & water heating, dryers
  - Highly efficient cooling systems
Should multifuel MMBtu savings goals be considered?

Allows consideration of savings from combined gas and electric PA activities, e.g., new construction

Better aligns with emerging efforts to promote strategic electrification/thermal renewables to address greenhouse gas reduction goals.

Lighting is (much) less dominant
COMBINED INITIATIVE ALL FUELS
PERFORMANCE SUMMARY: MA 2013-2015

Program Costs ($ Millions)

- Home Energy Services
- Low Income Sector
- HVAC & DHW
- Multi-Family Retrofit
- New Construction
- Consumer Products

Participants (Millions)

- 4
- 6
- 8
- 10

Behavior/Feedback

- 2

Annual Savings Key (MMBtu)
- 100 thousand
- 1 million
- 3 million

(2) 4 6 8 10

Electric
Gas
Oil
Propane
THANK YOU

CONTACT INFORMATION:

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Discussion

• How can we make the most of today’s lighting programs?
• How can we realistically plan for the next 3 years?
• How can we position ourselves to take advantage of forthcoming opportunities?
• What is around the bend?
Remaining Savings opportunity in Residential Lighting:

Savings, More Than One Type?
Passive vs. Active savings

• Lighting savings has traditionally been based on a “passive” methodology

For example: a lamp is sold, installed and the kWh associated with the lamp is accredited.

• Technology is evolving, and so must our approach and understanding of the potential savings. We (the industry) needs to get a better grasp of the potential of “Active” savings

For example: Lamps, fixtures or switches left “on” while the room or dwelling is left unoccupied can be automatically turned “off” without a negative impact on the customer life.
Other opportunities around the bend?

- Tomorrow and next: Home Energy Management Systems (HEMS) and the Smart Home
- HVAC: Air Source Heat Pumps
- Home performance retrofits, building improvements
- Behavioral programs
- Heat Pump Water Heaters
- Plug loads
- Retail Products Platform
- NEEP’s shifting lighting priorities
  - From Residential, which is in great shape
  - To Commercial, where further market developments and regional coordination seem needed
  - Currently seeing project funding, Development team
Final Questions?