NEEP EM&V FORUM ANNUAL MEETING

USING GEOGRAPHICALLY TARGETED ENERGY EFFICIENCY TO DEFER T&D INVESTMENTS

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ENERGY FUTURES GROUP

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Presentation Overview

1. The concept of geo-targeting efficiency
2. NEEP geo-targeting meta-study overview
   - Case studies examined
   - Lessons learned
   - Policy considerations

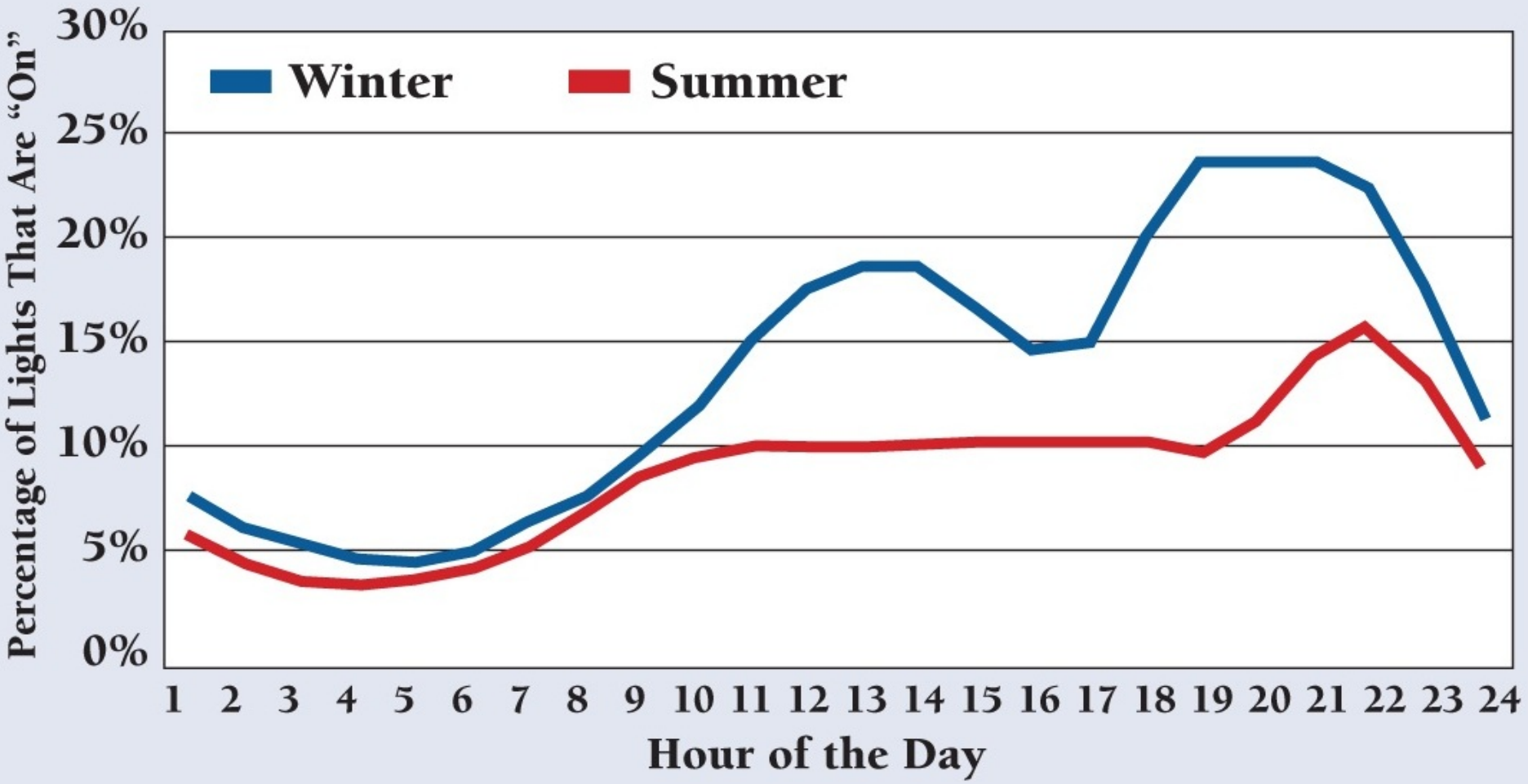
The Concept of Geo-Targeting

Efficiency as a T&D Resource

- Only affects growth-related T&D investment
  - Not all T&D investment is growth-related
- Can happen both "passively" and "actively"
  - Passive: by-product of system-wide efficiency programs
  - Active: by design, through geo-targeted programs

NOTE: This presentation focuses on the role efficiency can play in deferring T&D investments. However, efficiency can and should be considered in tandem with other demand resources (e.g. Demand Response & Distributed Generation)

Average Hourly CFL Usage Patterns



Source: Nexus Market Research, *Residential Lighting Markdown Impact Evaluation, submitted to Markdown and Buydown Program Sponsors* in Connecticut, Massachusetts, Rhode Island, and Vermont, January 20, 2009 (from Figures 5-1 and 5-2).

T&D Peak Season & Time Matter

Hypothetical Annual Savings from Different Efficiency Programs (MW)

	Peak Season	Peak Time	Res. CFLs	Res. A/C Retrofits	Com. HPT8 Retrofits	Total
Substation A	Summer	3:00 PM	0.4	0.9	0.7	2.0
Substation B	Summer	7:00 PM	0.4	1.4	0.3	2.1
Substation C	Winter	7:00 PM	0.9	0.0	0.4	1.3

Note: savings values are illustrative only.

Level of Savings Matters

Hypothetical scenario:

- existing substation load = 90 MW
- max capacity = 100 MW
- baseline peak load growth = 3% per year

Level of Savings	Net Growth Rate	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
No EE programs	3.0%	90	93	95	98	101	104	107	111	114	117	121	125	128
0.5% savings/year	2.5%	90	92	95	97	99	102	104	107	110	112	115	118	121
1.0% savings/year	2.0%	90	92	94	96	97	99	101	103	105	108	110	112	114
1.5% savings/year	1.5%	90	91	93	94	96	97	98	100	101	103	104	106	108
2.0% savings/year	1.0%	90	91	92	93	94	95	96	96	97	98	99	100	101

Different Geo-Targeting Approaches

- Accelerate uptake of existing programs in target areas
  - More intensive marketing in those areas
  - Higher financial incentives in those areas
- New measures/programs
- RFPs / Performance contracts
- Combinations (2 or more of the above)

Remember: Efficiency does not have to be 100% of the answer. It can be married with demand response, distributed generation and/or other options as part of a multi-faceted strategy.

NEEP Geo-Targeting Study

Case Studies

- Bonneville Power Authority (2014 status)
- California: PG&E (early 1990s, new 2014 efforts)
- Maine (2012 to present)
- Michigan: Indiana & Michigan/AEP (2014)
- Nevada: NV Energy (late 2000s)
- New York: Con Ed (2003 to present)
- New York: LIPA (2014 proposal)
- Oregon: PGE (early 1990s)
- Rhode Island: (2012 to present)
- Vermont (mid-1990s pilot, statewide 2007 to present)

Presentations by other panelists

Note: deeper dive case studies shown in green

Conclusions (1)

The Big Picture

- Growing number of electric examples
- Growing sophistication of leaders
- Initial results are very promising
  - Deferrals have been successful
  - NWAs often considerably less expensive
  - EE usually cheapest of NWAs…
  - …but often needs to be paired w/DR, DG, others
- Legislation/regulation was catalyst in almost all cases

Conclusions (2)

Implementation

- Senior Management buy-in is invaluable
- Cross-disciplinary communications & trust is critical
  - EE planners
  - T&D system planners
- Smaller is easier
- Distribution is easier; transmission is harder
- New analytical tools, big data offer great promise
- Modularity has great value
  - Buys time
  - Allows for calibration of forecasted need

Conclusions (3)

Evaluation

- Results mostly measured at substation (or equiv.)
  - So far, evaluation has primarily been a determination of whether construction could be deferred, or not….
  - Traditional EM&V still has value…but more for informing better planning and implementation in the future

Policy Considerations for States

1. Least cost solutions for T&D
   - Consider adopting explicit requirements, or…
   - Consider financial incentives for minimizing T&D costs
2. Long-term forecasts of T&D needs (to address lead times)
   - Consider requiring such forecasts (10 years? 20 years?)
3. "First cut" screening criteria
   - Consider establishing triggers for detailed assessment of NWAs
4. Equitable allocation of non-transmission costs
   - Consider assessing what comparable treatment of Transmission & NTA options might be
   - Consider advocating for comparable treatment in key venues

Screening Criteria Examples

Current Screening Criteria for Detailed Assessment of NWAs

	Must Be Load Related	Minimum Years Before Need	Maximum Load Reduction Required	Minimum T&D Project Cost	Source
Transmission					
Vermont	Yes	1 to 3 4 to 5 6 to 10	15% 20% 25%	$2.5 Million	Regulatory policy
Maine	Yes			>69 kV or >$20 Million	Legislative standard
Rhode Island	Yes	3	20%	$ 1 Million	Regulatory policy
Pacific Northwest (BPA)	Yes	5		$3 Million	Internal planning criteria
Distribution					
PG&E (California)	Yes	3	2 MW		Internal planning criteria
Rhode Island	Yes	3	20%	$ 1 Million	Regulatory policy
Vermont	Yes		25%	$0.3 Million	Regulatory policy

Q&A

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