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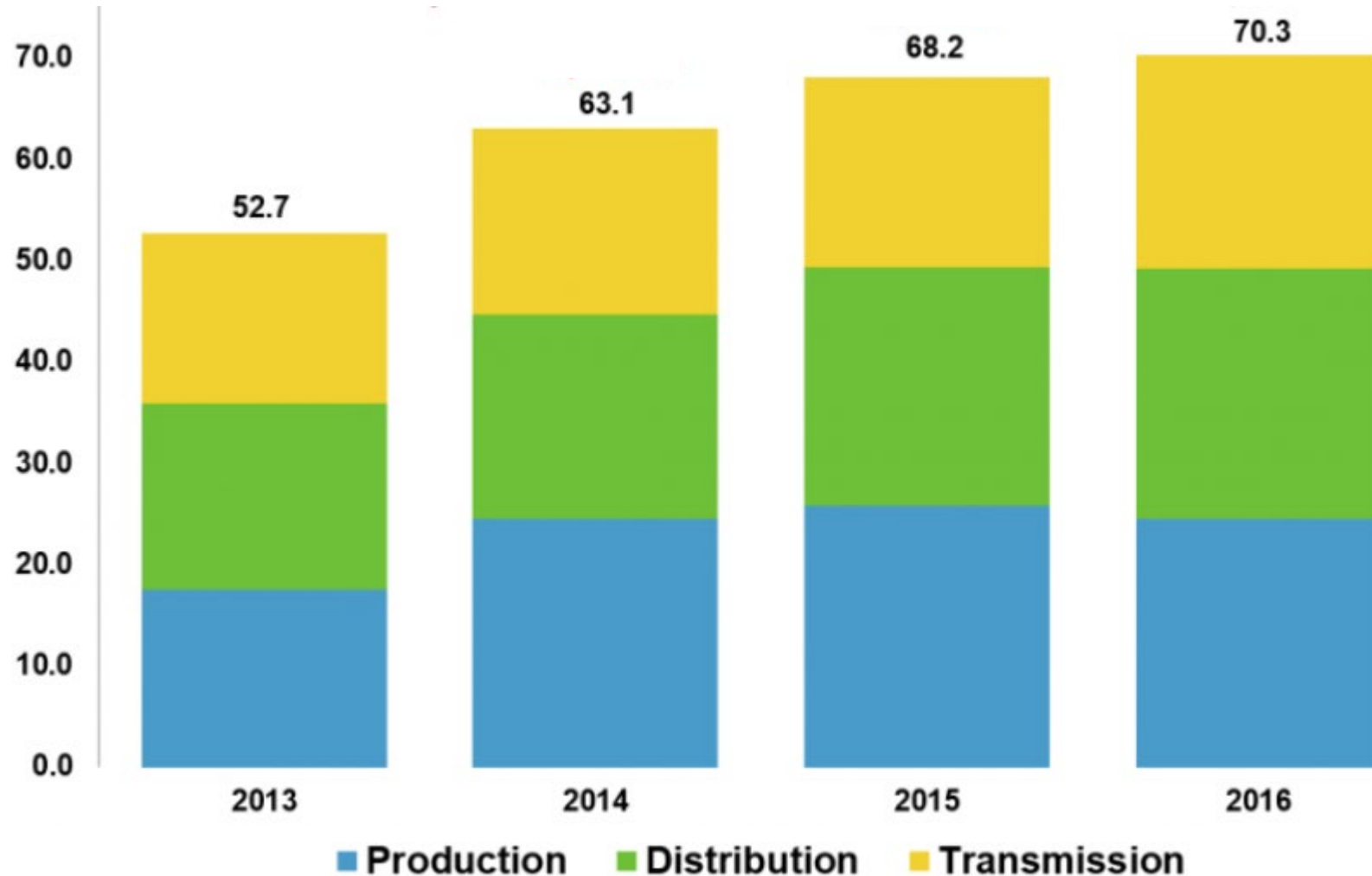
# Non-Wires Alternatives

INTRO TO THE CONCEPT AND MIDWEST INITIATIVES

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## U.S. Electric Utility Plant in Service Capital Additions (billions \$)



Source: Enerlytics (2017) analysis of data from “all 193 U.S. operating companies required to report financial and operating statistics between 2013 and 2016.” (FERC Form-1 filings)

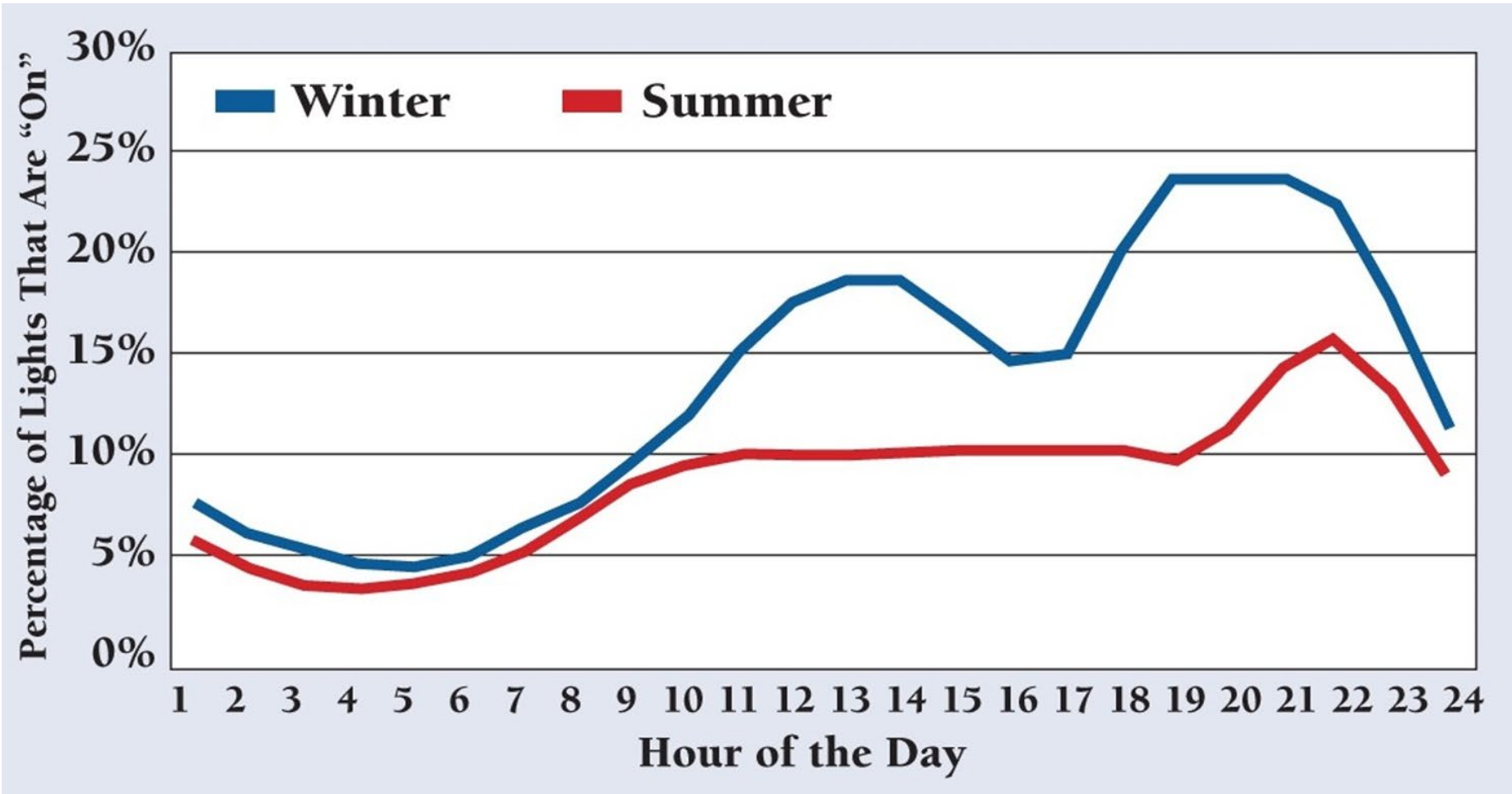
# The Concept of Non-Wires Alternatives (NWAs)

- Some T&D investments are driven by localized peak load growth
- Geo-targeted DERs can slow/eliminate load growth
  - Energy efficiency...
  - ...but also DR, DG, storage, etc.
- Slower load growth can defer T&D capital investment
  - Or even reduce or eliminate investment
- Deferral has economic value
- If deferral benefits outweigh costs, consumers win

# Energy Efficiency as an NWA

- Most EE programs/measures save energy at every hour
  - Not true for every participant...
  - ...but true for large groups of participants as a whole
  - Limited exceptions
    - Street lighting programs (night only)
    - Programs addressing only cooling or heating (though still often valuable for T&D)
- Thus, most EE programs provide some T&D deferral
- System-wide programs provide “passive deferral”
- EE as NWA is about “active deferral”
  - *Intentionally* getting *additional* savings in a specific geographic area

# Residential Lighting Load Shape



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).

# Peak Time & Savings Mix Matter

## Hypothetical DSM Program Impacts

Substation	Customer Mix	Peak Season	Peak Hour	Annual Peak MW Savings by Program			
				Residential LEDs	Residential A/C	Commercial Lighting Retrofits	Total
A	Primarily Business	Summer	3:00 PM	0.4	0.9	0.7	2.0
B	Primarily Residential	Summer	7:00 PM	0.4	1.4	0.3	2.1
C	Primarily Residential w/Electric Heat	Winter	7:00 PM	1.0	0.0	0.4	1.4

Note: savings values are illustrative only.

## Depth of Savings Matters Too

Level of Savings	Net Growth		2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
	Rate														
No EE programs	3.0%		47	48	50	51	53	54	56	58	60	61	63	65	67
0.5% savings/year	2.5%		47	48	49	51	52	53	55	56	57	59	60	62	63
1.0% savings/year	2.0%		47	48	49	50	51	52	53	54	55	56	57	58	60
1.5% savings/year	1.5%		47	48	48	49	50	51	51	52	53	54	55	55	56
2.0% savings/year	1.0%		47	47	48	48	49	49	50	50	51	51	52	52	53

### Hypothetical scenario:

- Existing substation load = 47 MW
- Max capacity = 50 MW
- Initial upgrade increases capacity to 65 MW
- Second upgrade increases capacity to 80 MW

# Different Approaches to Geotargeting Efficiency

- 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 DR, DG, other options*



# NRDC-Midwest Utility Collaboration on NWAs

- Consumers Energy Pilot (MI)
  - Initially conceived 2015
  - Field test late 2017 thru 2018 – Swartz Creek Substation
    - Test of planning and program delivery concepts
  - Full scale NWA project on 2<sup>nd</sup> substation to begin later in 2019
- DTE (MI)
  - Phase 1: Spring 2018 thru Summer 2019 – Hancock Substation
    - Develop frameworks/systems – cost-effectiveness, evaluation approach, potential assessment
    - Field test select program concepts
  - Phase 2: Full scale NWA project on 2<sup>nd</sup> substation
    - Substation selection by June 2019
    - Launch programs in field late 2019 or early 2020
- First Energy (OH)
  - Feasibility assessment (2017-2018)
  - Several potential projects passed initial screen and may be candidates for future pilot program



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