# A National Assessment of Demand Response Potential: Overview and Discussion

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Federal Energy Regulatory Commission
For September 2009 Webinar

# Agenda

- Statutory Requirements
- Approach and Features
- National Results
- Selected State Results
- Barriers to Demand Response, and Recommendations
- The NADRP Model Spreadsheet
- Action Plan for Demand Response
- Q&A

# Purpose and Content of the Assessment

- FERC Staff report to Congress, as required by the Energy Independence and Security Act of 2007
  - Demand response potential
  - Barriers to demand response
  - Recommendations

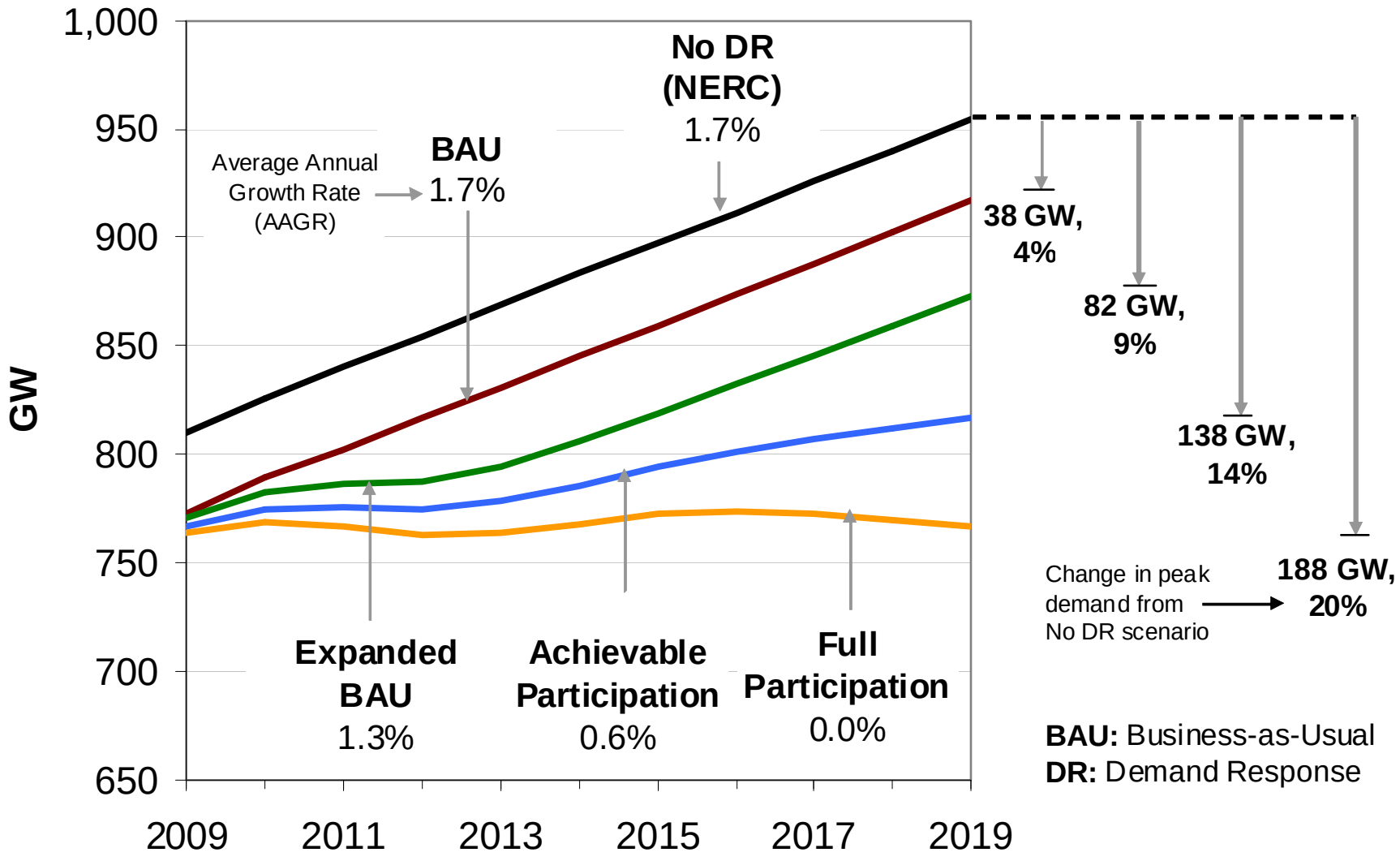
# Unique Features

- Bottom-up, state-by-state analysis
- 15 pilot programs synthesized
- User-friendly spreadsheet model
- Review of barriers
- Recommendations to achieve potential

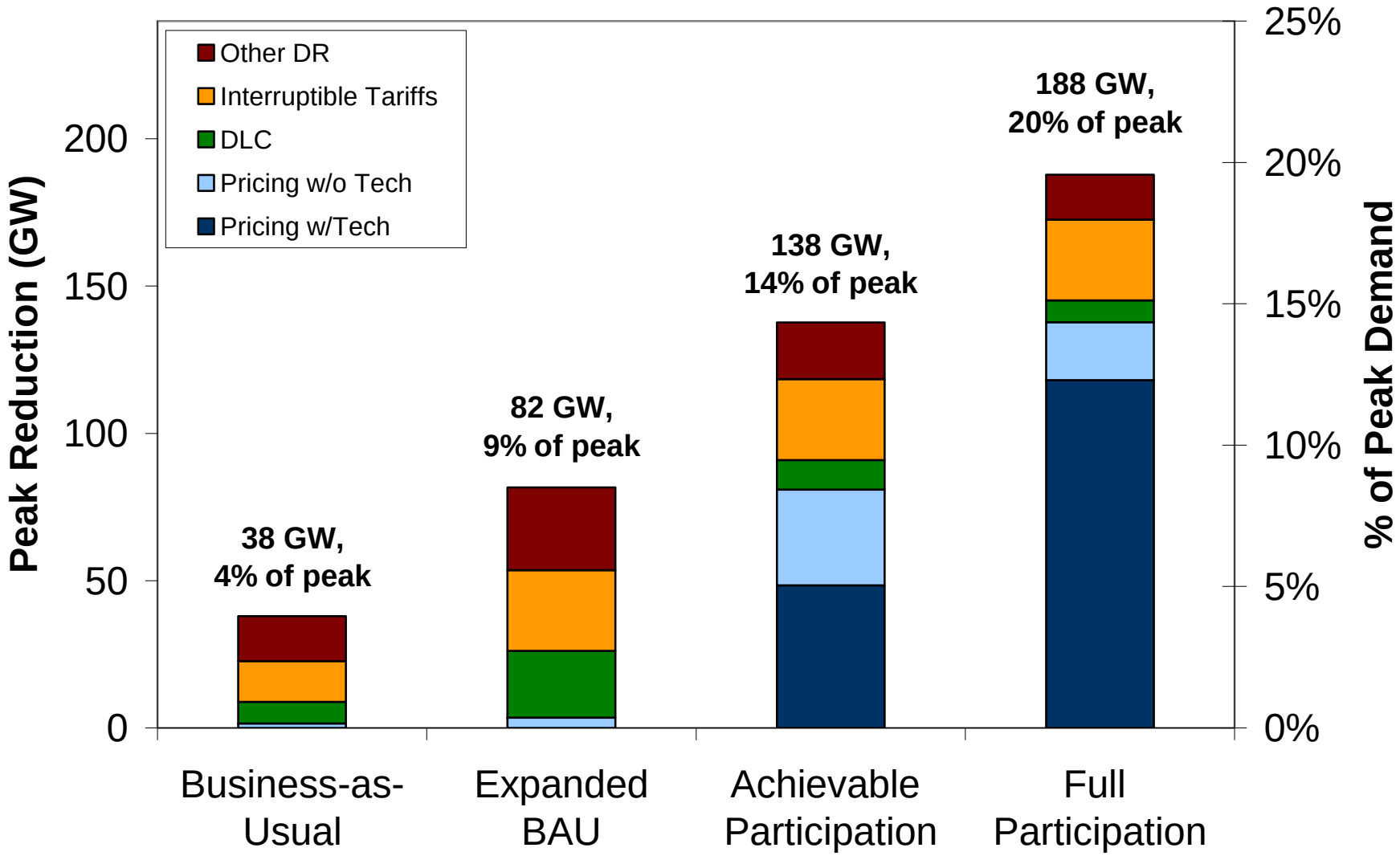
# Approach: Scenarios

- Business-as-Usual (baseline)
- Expanded Business-as-Usual
- Achievable Participation
- Full Participation

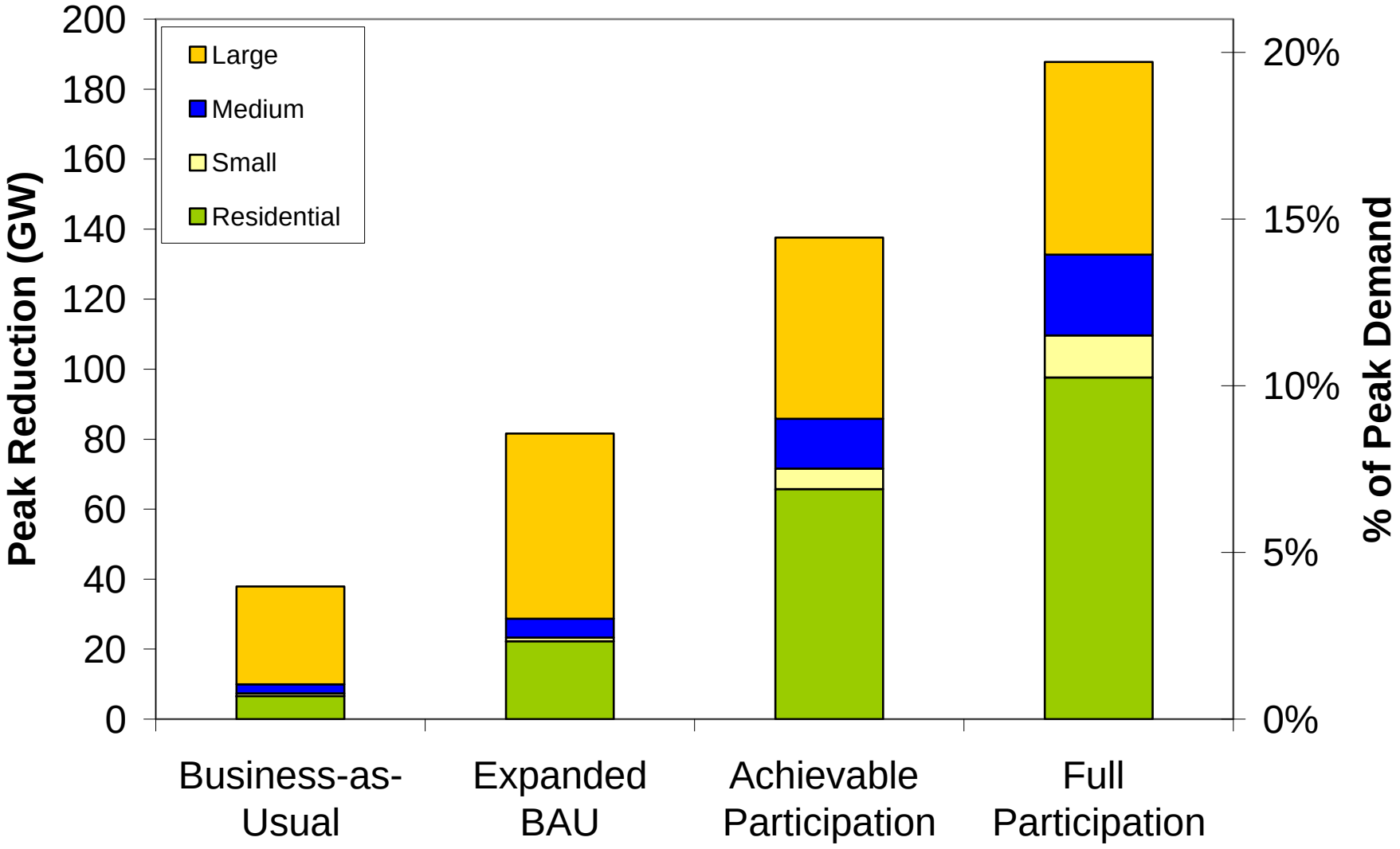
# U.S. Peak Demand & NADRP



# DR Potential by Program Type (2019)



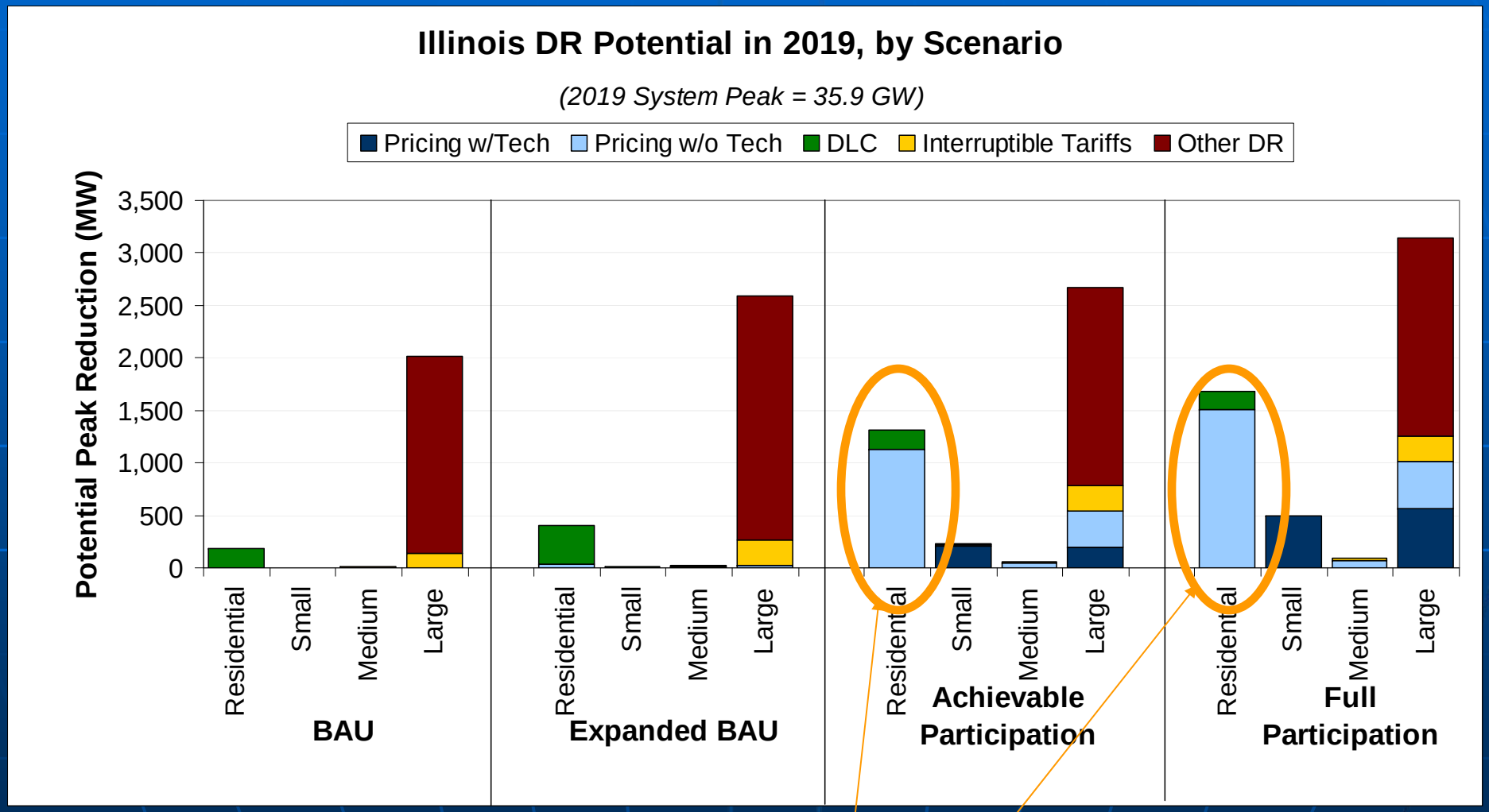
# DR Potential by Customer Class (2019)



# Range of State Results (Achievable Participation Scenario)

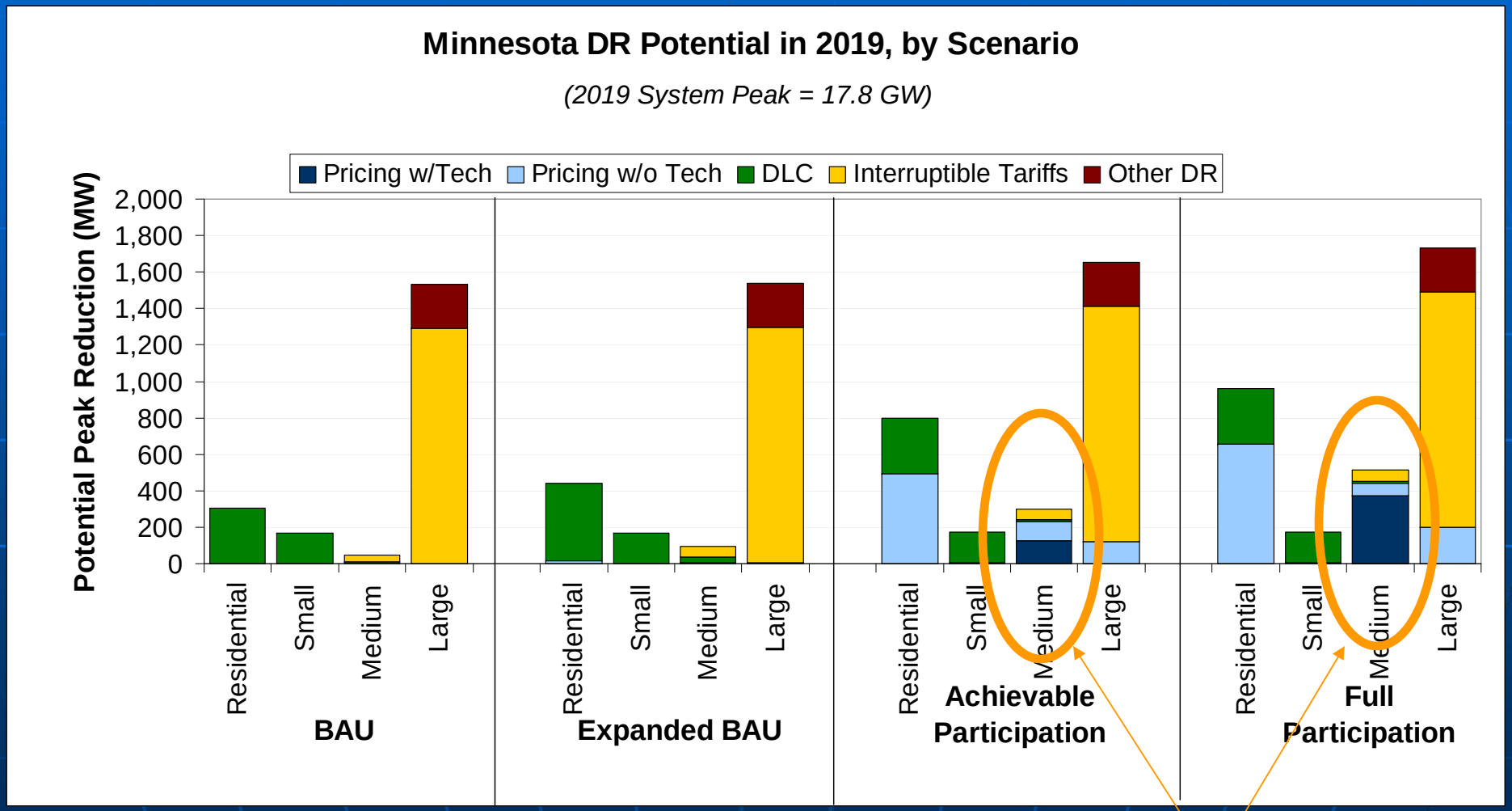
| *Gigawatt Basis* | *Peak Load Fraction* |
| --- | --- |
| Texas (13.2 GW) | Conn. (26%) |
| Florida (11 GW) | Maryland (24%) |
| California (8.8 GW) | Maine (22%) |
| Hawaii (0.2 GW) | Wisconsin (8.5%) |
| Vermont (0.01 GW) | Hawaii (8.5%) |
| Alaska (0.01 GW) | Alaska (4.6%) |

# Illinois Results



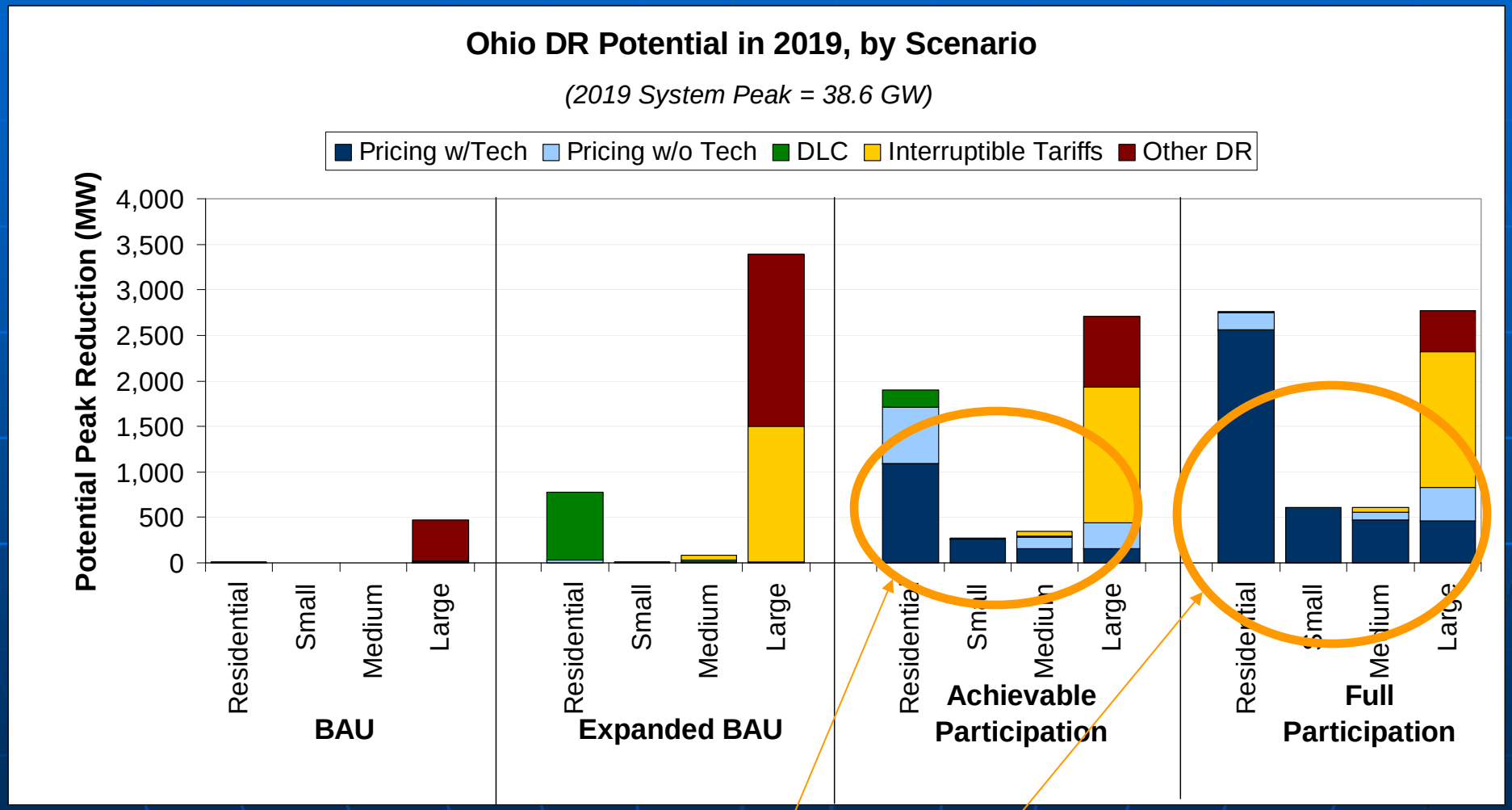

Enabling Technologies Not Cost-Effective for Residential

# Minnesota Results




Enabling Technologies Cost-Effective for Medium C&I only

# Ohio Results




Enabling Technologies Cost-Effective for all classes

# State Details in Appendix D



Table D-6: Average Per-Customer Peak Load by Rate Class

| State | Average peak load per customer (kW) | | | |
|---|---|---|---|---|
| | Residential | Small C&I | Medium C&I | Large C&I |
| Alabama | 3.4 | 15.1 | 192 | 748 |
| Alaska | 0.9 | 4.5 | 80 | 1,029 |
| Arizona | 3.8 | 16.9 | 165 | 822 |
| Arkansas | 2.8 | 9.1 | 93 | 801 |
| California | 1.2 | 3.2 | 38 | 555 |
| Colorado | 1.5 | 1.9 | 40 | 901 |
| Connecticut | 1.6 | 3.9 | 63 | 206 |
| Delaware | 1.9 | 15.2 | 125 | 951 |
| District of Columbia | 1.6 | 9.5 | 158 | 745 |
| Florida | 3.1 | 2.9 | 40 | 696 |
| Georgia | 3.4 | 5.4 | 60 | 602 |
| Hawaii | 1.0 | 4.2 | 45 | 842 |
| Idaho | 2.9 | 3.9 | 31 | 636 |
| Illinois | 1.7 | 7.3 | 28 | 450 |
| Indiana | 2.4 | 6.3 | 52 | 798 |
| Iowa | 1.9 | 4.1 | 47 | 709 |
| Kansas | 2.8 | 6.4 | 44 | 318 |
| Kentucky | 3.0 | 10.5 | 176 | 959 |
| Louisiana | 3.5 | 14.6 | 39 | 771 |

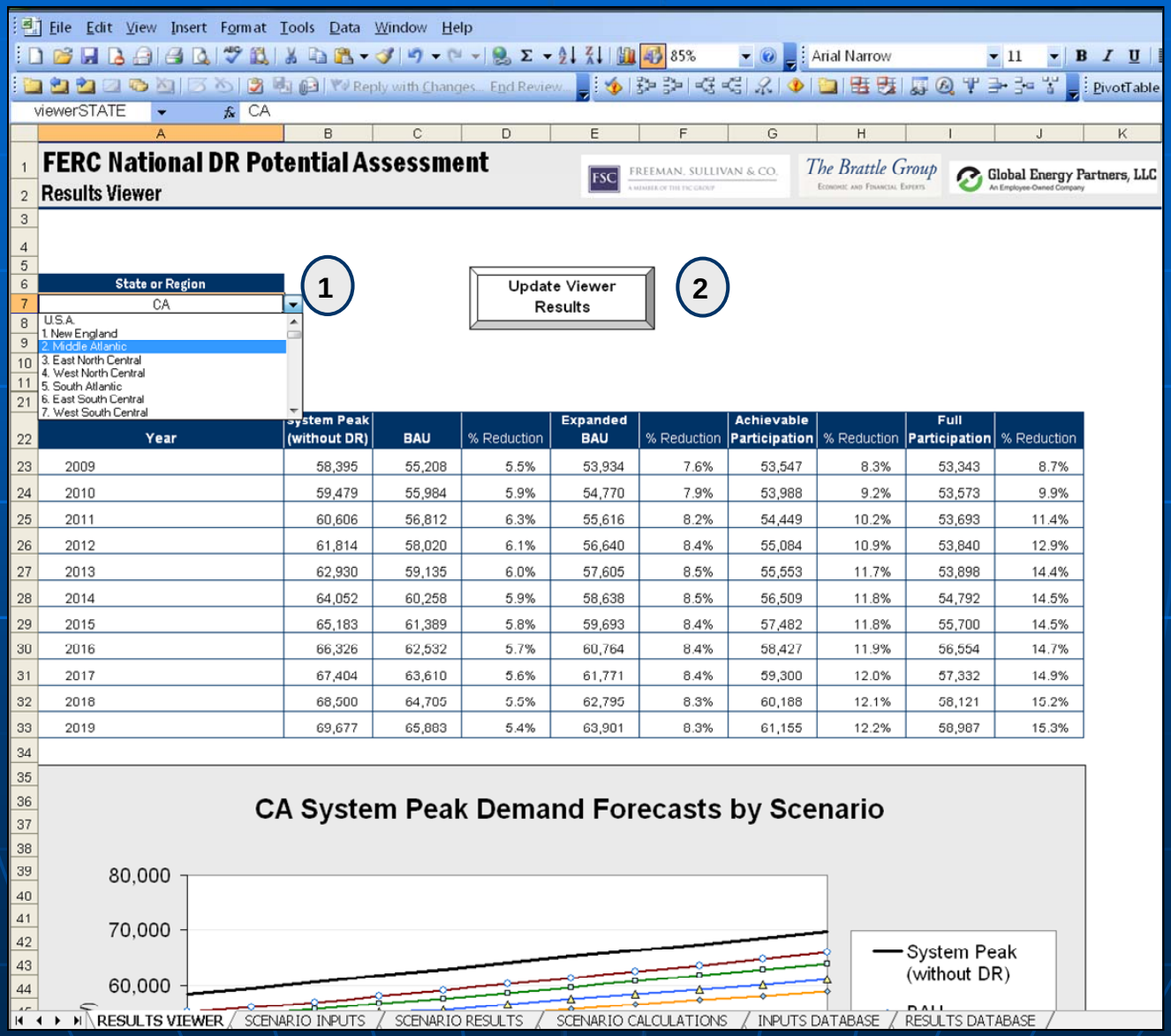
# Barriers
# (in no particular order)

- Disconnect between wholesale and retail prices
- Measurement and verification challenges
- Lack of advanced metering
- Lack of interoperability and open standards
- Lack of customer awareness

# Recommendations

- Educate customers about demand response, AMI, dynamic pricing
- Share program information with utilities, state and local regulators
- Coordinate programs at wholesale and retail levels
- Develop standards for measurement and verification at wholesale and retail

# Build Your Own Estimate



**FERC National DR Potential Assessment**

**Results Viewer**

FREEMAN, SULLIVAN & CO. | The Brattle Group | Global Energy Partners, LLC

State or Region: CA

1. U.S.A.
1. New England
2. Middle Atlantic
3. East North Central
4. West North Central
5. South Atlantic
6. East South Central
7. West South Central

1

Update Viewer Results

2

| Year | System Peak (without DR) | BAU | % Reduction | Expanded BAU | % Reduction | Achievable Participation | % Reduction | Full Participation | % Reduction |
|---|---|---|---|---|---|---|---|---|---|
| 2009 | 58,395 | 55,208 | 5.5% | 53,934 | 7.6% | 53,547 | 8.3% | 53,343 | 8.7% |
| 2010 | 59,479 | 55,984 | 5.9% | 54,770 | 7.9% | 53,988 | 9.2% | 53,573 | 9.9% |
| 2011 | 60,606 | 56,812 | 6.3% | 55,616 | 8.2% | 54,449 | 10.2% | 53,693 | 11.4% |
| 2012 | 61,814 | 58,020 | 6.1% | 56,640 | 8.4% | 55,084 | 10.9% | 53,840 | 12.9% |
| 2013 | 62,930 | 59,135 | 6.0% | 57,605 | 8.5% | 55,553 | 11.7% | 53,898 | 14.4% |
| 2014 | 64,052 | 60,258 | 5.9% | 58,638 | 8.5% | 56,509 | 11.8% | 54,792 | 14.5% |
| 2015 | 65,183 | 61,389 | 5.8% | 59,693 | 8.4% | 57,482 | 11.8% | 55,700 | 14.5% |
| 2016 | 66,326 | 62,532 | 5.7% | 60,764 | 8.4% | 58,427 | 11.9% | 56,554 | 14.7% |
| 2017 | 67,404 | 63,610 | 5.6% | 61,771 | 8.4% | 59,300 | 12.0% | 57,332 | 14.9% |
| 2018 | 68,500 | 64,705 | 5.5% | 62,795 | 8.3% | 60,188 | 12.1% | 58,121 | 15.2% |
| 2019 | 69,677 | 65,883 | 5.4% | 63,901 | 8.3% | 61,155 | 12.2% | 58,987 | 15.3% |

# Report and Model online at

www.ferc.gov/industries/electric/indus-act/demand-response/dr-potential.asp

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    - Transmission Line Siting
  - General Information
- Hydropower

Industries >> Electric >> Industry Activities >> Demand Response

## A National Assessment of Demand Response Potential

**June 18, 2009** - New FERC study assesses State-by-State potential for demand response News Release | Chairman's Statement | Commissioner's Statement: Kelly's, Moeller's and Spitzer's | Presentation PDF | Report PDF

The Energy Independence and Security Act of 2007 required the Commission to perform a national assessment of demand response potential.

**Definition:** Changes in electric usage by end-use customers from their normal consumption patterns in response to changes in the price of electricity over time, or to incentive payments designed to induce lower electricity use at times of high wholesale market prices or when system reliability is jeopardized.

The Energy Independent and Security Act of 2007 requires the Commission to conduct a National Assessment of Demand Response Potential and report the result to Congress on:

- The estimated nationwide demand response potential in 5 and 10 year horizons
- Barriers to demand response programs, and
- Recommendations for overcoming barriers to more use of demand response.

**Model Used in Assessment**

- Model XLS
- Model Guide PDF

**Contact Information**

All questions regarding the Model should be sent to: NADRModel@ferc.gov

**Additional Information**

- Energy Independence and Security Act of 2007 PDF

# Next Steps: National Action Plan

- Discussion Draft
  - Possible elements of an Action Plan
  - To be issued prior to technical conferences
- Technical Conferences
  - Oct. 22 in Washington, DC
  - Oct. 27 in Portland, OR
- Submission to Congress
- Implementation Proposal

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