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 & NADR

Average Annual Growth Rate (AAGR)

BAU: 1.7%

Expanded BAU: 1.3%

Achievable Participation: 0.6%

Full Participation: 0.0%

No DR (NERC): 1.7%

38 GW, 4%

82 GW, 9%

138 GW, 14%

Change in peak demand from No DR scenario: 188 GW, 20%

BAU: Business-as-Usual

DR: Demand Response
DR Potential by Customer Class (2019)

- **Large**
- **Medium**
- **Small**
- **Residential**

### Peak Reduction (GW)

#### Business-as-Usual

- Large: 0%
- Medium: 0%
- Small: 0%
- Residential: 0%

#### Expanded BAU

- Large: 5%
- Medium: 5%
- Small: 5%
- Residential: 5%

#### Achievable Participation

- Large: 10%
- Medium: 10%
- Small: 10%
- Residential: 10%

#### Full Participation

- Large: 15%
- Medium: 15%
- Small: 15%
- Residential: 15%
### Range of State Results (Achievable Participation Scenario)

#### Gigawatt Basis
- Texas (13.2 GW)
- Florida (11 GW)
- California (8.8 GW)
- Hawaii (0.2 GW)
- Vermont (0.01 GW)
- Alaska (0.01 GW)

#### Peak Load Fraction
- Conn. (26%)
- Maryland (24%)
- Maine (22%)
- Wisconsin (8.5%)
- Hawaii (8.5%)
- Alaska (4.6%)
Illinois Results

Illinois DR Potential in 2019, by Scenario

(2019 System Peak = 35.9 GW)

- Pricing w/Tech
- Pricing w/o Tech
- DLC
- Interruptible Tariffs
- Other DR

Potential Peak Reduction (MW)

BAU

Expanded BAU

Achievable Participation

Full Participation

Enabling Technologies Not Cost-Effective for Residential
Minnesota Results

Minnesota DR Potential in 2019, by Scenario
(2019 System Peak = 17.8 GW)

Enabling Technologies Cost-Effective for Medium C&I only
Ohio Results

Ohio DR Potential in 2019, by Scenario

(2019 System Peak = 38.6 GW)

Enabling Technologies Cost-Effective for all classes
State Details in Appendix D

<table>
<thead>
<tr>
<th>State</th>
<th>Residential</th>
<th>Small C&amp;I</th>
<th>Medium C&amp;I</th>
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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

<table>
<thead>
<tr>
<th>Data or Region</th>
<th>CA</th>
</tr>
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#### Year | Peak Yearly Demand (without DR) | BAU Demand | % Reduction | Expanded BAU | % Reduction | Achievable Participation | % Reduction | Full Participation | % Reduction |
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<tr>
<th></th>
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### CA System Peak Demand Forecasts by Scenario

**System Peak (without DR)**
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, Mowler's and Raitner's] [Presentation] [Report]


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
- Model Guide
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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