# What Remains to be Done with Demand Response? A National Forum from the FERC National Action Plan on Demand Response Tries to Give an Answer

## *Tools and Methods Working Group*

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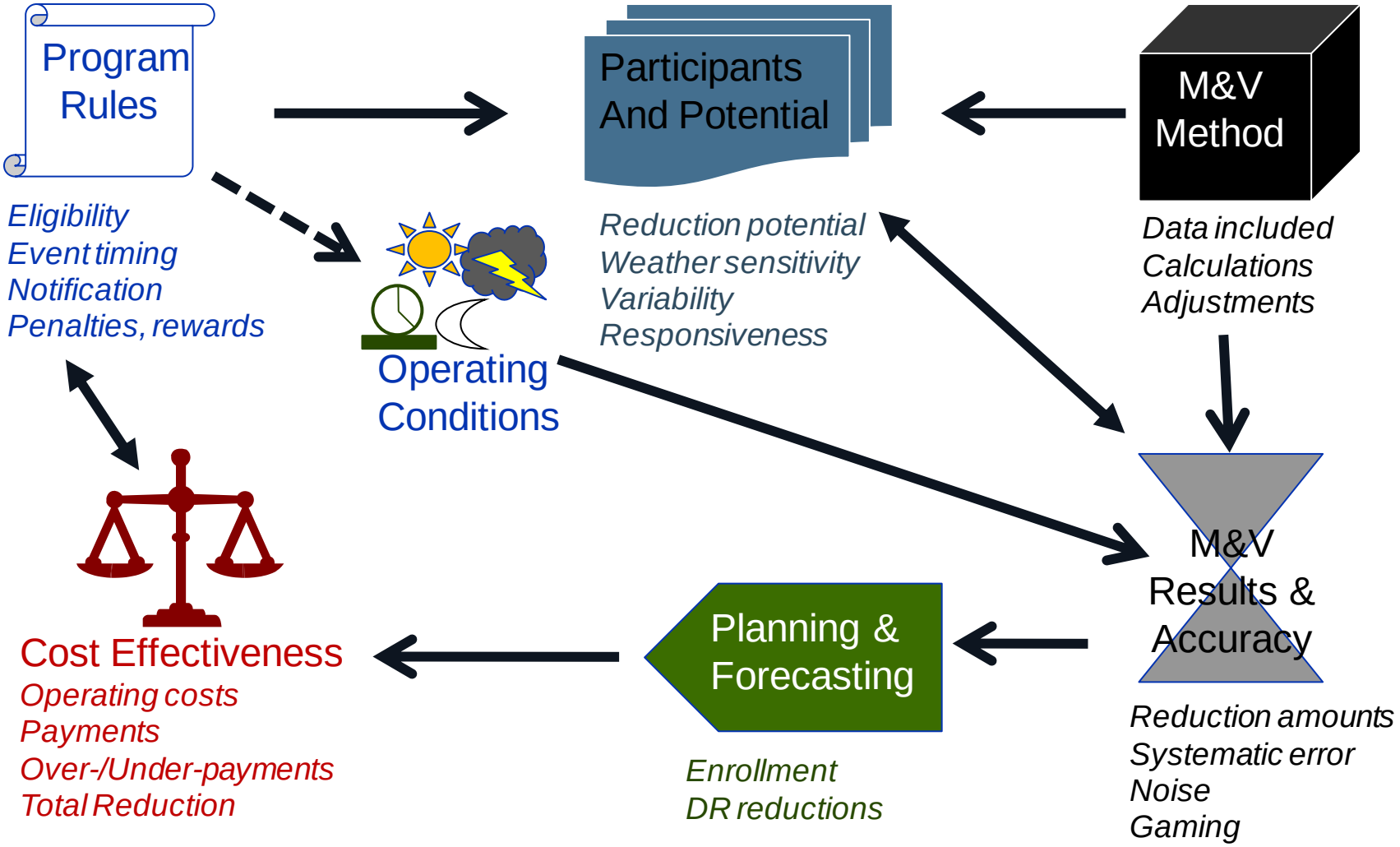
# Outline of Presentation

- **Introduction and background: DR Estimation Tools and Methods Working Group**
- **Working group members**
- **Work plan**
- **Identification of estimation tools and methods needs**
- **Preliminary gap analysis**
- **Next steps**

# Introduction and Background

- **Tools and techniques have been developed to help characterize demand response (DR) resources**
- **Given diversity in types of DR programs and relative maturity, methodology and approaches vary widely**
- **Scope of this Working Group project:**
  - Inventory existing DR estimation tools and methods
  - Identify gaps in the existing tools
  - Develop a design document for the creation of new tools for estimating DR resources

# Tools and Methods Support DR Program Design, Evaluation, and Assessment



# Working Group Members

| Participant | Organization |
|---|---|
| Ahmad Faruqui | The Brattle Group |
| Andy Satchwell | Lawrence Berkeley National Laboratory (LBNL) |
| Angela Chuang | Electric Power Research Institute (EPRI) |
| Anthony Star | Illinois Commerce Commission |
| Bernard Neenan | Electric Power Research Institute (EPRI) |
| Charles Goldman | Lawrence Berkeley National Laboratory (LBNL) |
| Hossein Haeri | The Cadmus Group |
| Ingrid Rohmund | Global Energy Partners |
| Mark Lesiw | The Cadmus Group |
| Michael Brown | NV Energy |
| Michael Perry | Freeman, Sullivan & Co. |
| Peter Cappers | Lawrence Berkeley National Laboratory (LBNL) |
| Syd France | Puget Sound Energy |

# Work Plan

## Data Collection ✓

- Literature review
- Interviews and surveys of working group members and other tool developers

## Analysis of Existing Tools and Methods ✓

- Needs assessment
- Follow-up surveys to tool developers

## Reporting

- Complete Gap analysis
- Prepare Design document

# Estimation Tools and Methods Needs

- **The working group developed a list of tools and methods *needs***
  - **This list was based on the ability for DR to function as peak-shaving and load shifting, as well as the ability of DR to provide energy, capacity, and ancillary services**
- **Estimation tools and methods should respond to the user community as new DR program definitions are developed**
- **The list is not meant to define only one tool or method**
  - **The working group recognizes the need for multiple tools and methods to achieve various analytical functions**

# List of Tools and Methods Needs

1. Flexibility in defining appropriate load profiling periods to support program DR objectives
2. Measure savings potential
3. Ability to forecast savings across segments
4. Ability to predict program participation and assess customer preferences
5. Synergies with public policy objectives
6. Cost-effectiveness analysis
7. Determine impacts on participants and non-participants
8. Integration of DR into regulatory ratemaking and market price signals
9. Transferability of results

# Tools and Methods Needs Assessment

- **Based on interviews and surveys of working group members and tool developers, we identified major categories of needs:**
  - **Potential Assessment – technical, economic, participation**
  - **Impact Evaluation – peak load and energy**
  - **Financial Assessment – benefits quantification, cost-effectiveness**
  - **Transactions – bidding, demand buy-back**
  - **Dispatch/Planning – RTO/ISO, resource planning, load balancing**
  - **Facility End Use Load Strategies– Auto DR, manual planning**

# Preliminary Analysis (1)

| Tool | Potential Assessment | Impacts Evaluation | Financial Assessment | Transactions | Dispatch/Planning | Facility End Use Load Strategies |
|---|---|---|---|---|---|---|
| iGrid | ■ | ■ | ■ | | | |
| DR Pro | ■ | | | | | |
| IntelliMEASURE | | ■ | | | | |
| IntelliSOURCE | ■ | ■ | | | ■ | |
| VirtuaWatt | | | | ■ | | ■ |
| Cost Effectiveness Screening Tool | | | ■ | | | |
| PRISM (Pricing Impact Simulation Model) | ■ | ■ | | | | |
| SMARTmeter / OptNET | | ■ | | | | ■ |
| DemandSMART | | ■ | | ■ | | ■ |
| LoadMAP | ■ | | ■ | | | |
| Cost Benefit Analysis Framework for Smart Grid | ■ | ■ | ■ | ■ | ■ | ■ |

# Preliminary Analysis (2)

| Tool | Potential Assessment | Impacts Evaluation | Financial Assessment | Transactions | Dispatch/Planning | Facility End Use Load Strategies |
|---|---|---|---|---|---|---|
| Cost Benefit Guidebook for Smart Grid | | | ■ | | | |
| DRIVE Model | ■ | | ■ | | | |
| National Demand Response Potential Model | ■ | | | | | |
| Beacon | ■ | ■ | ■ | | | ■ |
| Sector Energy End-Use Model | | ■ | ■ | | | ■ |
| Integrated Planning Model | ■ | | | | | |
| Demand Response Quick Assessment Tool | | | | | | ■ |
| Benefits Calculator Model | | | ■ | | | |
| Demand Response Tool | | | | ■ | ■ | |
| Demand Response Market Model | ■ | | | | | |

# Preliminary Analysis: Summary

- **Our initial surveys identified ~20 DR tools and methods**
  - **Developers: Five public institutions and 10 private sector entities**
- **Existing DR tools cover many attributes across the six major needs categories**
- **Potential assessment, impact evaluation, and financial assessment tools are prevalent**
  - **Potential need for additional tool development to support DR transactions, dispatch and planning, and facility end-use load strategies**

# Work Plan – Next Steps

## Data Collection

- Literature review (complete)
- Interviews and surveys of working group members and other tool developers (complete)

## Analysis of Existing Tools and Methods

- Needs assessment (complete)
- Follow-up surveys to tool developers (complete)

## Reporting

- Complete Gap analysis (August)
- Prepare Design document (September)

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