

**Bonneville Power Administration**  
**Load Forecasting Customer Data**  
**Support for NERC Reliability Standards Compliance**

**February 4, 2008**

January 2008



# Agenda

- Agency Support
- NERC/WECC Standards/Requirements & Agency Response
- Annual Process

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# Agency Support

- Applies to registered Load-Serving Entities, Transmission Planners, Resource Planners, Planning Authorities
- Load Forecasting NERC Mandatory Reliability Standards relevant to this briefing:
  - MODs 016, 017, 018, 019, 020, 021
  - Can be found at:  
[http://www.nerc.com/~filez/standards/Reliability\\_Standards\\_Regulatory\\_Approved.html](http://www.nerc.com/~filez/standards/Reliability_Standards_Regulatory_Approved.html)
- While not currently eligible for delegation, BPA has a strong support role
  - BPA committed to continue doing things with and for customers as it has in the past
  - New standards require more formalized processes for compliance



## Agency Support (cont.)

- Agency will use meter readings to provide actual data required by the standards
- Agency load forecasting staff will complete annual load forecasts required by the standards
- Customer has the right at any time to supply other data to WECC as evidence of compliance



# NERC Standard, Requirements – MOD-016

- **MOD-016-1:** Documentation of Data Reporting Requirements for Actual and Forecast Demands, Net Energy for Load, and Controllable Demand-Side Management
- **Applicability:** Planning Authority; Regional Reliability Organization
- **R1** The [entities] shall have documentation identifying the scope and details of the actual and forecast (a) Demand data, (b) Net Energy for Load data, and (c) controllable DSM data to be reported for system modeling and reliability analyses.
  - **R1.1.** The aggregated and dispersed data submittal requirements shall ensure that consistent data is supplied for Reliability Standards [several]. The data submittal requirements shall stipulate that each Load-Serving Entity count its customer Demand once and only once, on an aggregated and dispersed basis, in developing its actual and forecast customer Demand values.
- **Key points:**
  - Documentation on the scope and details of actual and forecasted demand, net energy, and controllable DSM
  - Make sure that aggregated and dispersed submitted data is consistent for several standards
  - Count customer Demands only once



# Agency Response – MOD-016

- **Agency Support:**

- Response prepared for delivery to customer to give to WECC upon request
- Customer develops own response if desired
- Full document in attachments

**SAMPLE Proposed Response:**

Actual load data is compiled from hourly meter reads and aggregated into customer level hourly data. .... To avoid missing LSE forecasts or double counting loads, BPA will managed and aggregate on customer/LSE basis. In order to ensure consistency, BPA will indicate which customer/LSE forecasts have been included in aggregations and which customers/LSEs are responsible for reporting directly to WECC.



# NERC Standard, Requirements – MOD-017

- **MOD-017-0:** Aggregated Actual and Forecast Demands and Net Energy for Load
- **Applicability:** Load-Serving Entity; Planning Authority; Resource Planner
- **R1** The [entities] shall each provide the following information annually on [several] basis to NERC, the RRO and others in documentation on MOD-016-1\_R1.
  - R1.1 Integrated hourly demands in megawatts (MW) for the prior year.
  - R1.2 Monthly and annual peak hour actual demands in MW and Net Energy for Load in gigawatthours (GWh) for the prior year.
  - R1.3 Monthly peak hour forecast demands in MW and Net Energy for Load in GWh for the next two years.
  - R1.4 Annual Peak hour forecast demands (summer and winter) in MW and annual Net Energy for Load in GWh for at least five years and up to ten years into the future as requested.
- **Key points:**
  - Provide information annually
  - Actual for last year, hourly, monthly and annually for peak MW and GWh
  - Forecasts for next two years, monthly of peak MW and GWh
  - Forecast for 5 yrs to 10 yrs of summer & winter peak MW and GWh

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# Agency Response – MOD-017

- Agency Support:
  - Response prepared for delivery to customer to give to WECC upon request
  - Customer develops own response if desired
  - Full document in attachments

## ***SAMPLE:***

### DRAFT - Template for WECC Reporting Requirements

Customer Name	Name #1
Customer BES Number	444444
WECC Type (LSE, PA, RP)	LSE

Historical Period Start Date 1/1/2006  
 Historical Period End Date 12/31/2006

Forecast Period Start Date 1/1/2008  
 Forecast Period End Date 12/31/2013

Date	Hour #	Hour ID	Hourly Energy
1/1/2006	1	1	400
1/1/2006	2	2	300
1/1/2006	3	3	400
1/1/2006	4	4	600
1/1/2006	5	5	700
1/1/2006	6	6	500
1/1/2006	7	7	600
1/1/2006	8	8	700
1/1/2006	9	9	900
1/1/2006	10	10	1000
1/1/2006	11	11	1200
1/1/2006	12	12	1200
1/1/2006	13	13	1300
1/1/2006	14	14	1400
1/1/2006	15	15	1500
1/1/2006	16	16	1550
1/1/2006	17	17	1600
1/1/2006	18	18	1500
1/1/2006	19	19	1400
1/1/2006	20	20	1200
1/1/2006	21	21	1000
1/1/2006	22	22	700
1/1/2006	23	23	600
1/1/2006	24	24	400
1/2/2006	1	25	400

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Month	Peak (MW)	Net Energy (MWh)	Net Energy (GWh)
1 Jan-06	1,600	702,150	702
2 Feb-06	1,600	634,200	634
3 Mar-06	1,600	702,150	702
4 Apr-06	1,600	679,500	680
5 May-06	1,600	702,150	702
6 Jun-06	1,600	679,500	680
7 Jul-06	1,600	702,150	702
8 Aug-06	1,600	702,150	702
9 Sep-06	1,600	679,500	680
10 Oct-06	1,600	702,150	702
11 Nov-06	1,600	679,500	680
12 Dec-06	1,600	702,150	702
<b>Total</b>		<b>8,267,250</b>	<b>8,267</b>
<b>Annual Peak</b>	<b>1,600</b>		

Month	Peak (MW)	Net Energy (MWh)	Net Energy (GWh)
1 Jan-08			
2 Feb-08			
3 Mar-08			
4 Apr-08			
5 May-08			
6 Jun-08			
7 Jul-08			
8 Aug-08			
9 Sep-08			
10 Oct-08			
11 Nov-08			
12 Dec-08			
13 Jan-09			
14 Feb-09			
15 Mar-09			
16 Apr-09			
17 May-09			
18 Jun-09			
19 Jul-09			
20 Aug-09			
21 Sep-09			
22 Oct-09			
23 Nov-09			
24 Dec-09			

Year	Summer Peak (MW)	Winter Peak (MW)	Net Energy (MWh)	Net Energy (GWh)
2008				
2009				
2010				
2011				
2012				
2013				
2014				
2015				
2016				
2017				



# NERC Standard, Requirements – MOD-018

- **MOD-018-0:** Treatment of Nonmember Demand Data and How Uncertainties are Addressed in the Forecasts of Demand and Net Energy for Load
- **Applicability:** Load-Serving Entity; Planning Authority; Transmission Planner; Resource Planner
- **R1 The [entities] report of actual and forecast demand data shall:**
  - R1.1 Indicate whether the demand data of nonmember entities within an area or RRO are included
  - R1.2 Address assumptions, methods, and the manner in which uncertainties are treated in the forecasts of aggregated peak demands and Net Energy for Load.
  - R1.3 Items shall be addressed as described in MOD-016-0\_R1.
- **R2 The [entities] shall each report data associated with MOD-018-0\_R1 to [entities] on request (within 30 calendars).**
- **Key points:**
  - Information in MOD-017-0\_R1 should include
    - Identification of nonmember entities
    - Assumptions, method and manner for treating uncertainties
  - Available within 30 days upon request

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# Agency Response – MOD-018

- Agency Support:
  - Response prepared for delivery to customer to give to WECC upon request
  - Customer develops own response if desired
  - Full document in attachments

## **SAMPLE:**

Historical Period Start Date 1/1/2006  
 Historical Period End Date 12/31/2006  
 Forecast Period Start Date 1/1/2008  
 Forecast Period End Date 12/31/2013

### **MOD-018-0 - Requirements:**

**R1.1. Indicate whether the demand data of nonmember entities within an area or Regional Reliability Organization are included**

Answer Below  
 Forecasts are developed at the LSE/Customer level. Any aggregation of LSE/Customer forecasts will indicate which LSEs are included in the aggregated forecast.

This forecast is for the individual LSE/Customer listed above..

**R1.2. Address assumptions, methods, and the manner in which uncertainties are treated in the forecasts of aggregated peak demands and Net Energy for Load.**

Answer Below (EXAMPLE)  
 The forecast is based on 10 years of historical data with an average load growth of \_\_\_%.  
 Regression analysis of the historical trends indicated load growth of \_\_\_% and demand growth of \_\_\_% over the next 10 years.  
 The regression estimate was adjusted to reflect the addition of a two subdivisions in years 3 and 4 of the forecast and the addition of a small industrial facility in year 2. These adjustments were based on discussions with the customer entity.

Uncertainties are not explicitly addressed in the forecast aside from the known adjustments reflected above.

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# NERC Standard, Requirements – MOD-019

- MOD-019-0: Reporting of Interruptible Demands and Direct Control Load Management
- **Applicability:** Load-Serving Entity; Planning Authority; Transmission Planner; Resource Planner
- R1 The [entities] shall each provide annually its forecast of interruptible demands and Direct Control Load Management (DCLM) data for at least five years and up to ten years into the future, as requested for summer and winter system conditions to [entities] as specified by documentation on MOD-016-1\_R1.
- **Key points:**
  - Provide forecast for 5 to 10 years of
    - Interruptible demands
    - Direct control load management
    - Summer and winter impacts



# Agency Response – MOD-019

- **Agency Support:**
  - Response prepared for delivery to customer to give to WECC upon request
  - Customer develops own response if desired
  - Full document in attachments

## **SAMPLE:**

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**[Customer Name] has no Interruptible Demands or any Direct Control Load Management. The forecast for any interruptible Demands and Direct Control Load Management for the next five years is zero. That will be reported during [Customer Name's] normal compliance reporting channels.**



# NERC Standard, Requirements – MOD-020

- **MOD-020-0:** Providing Interruptible Demands and Direct Control Load Management Data to System Operators and Reliability Coordinators
- **Applicability:** Load-Serving Entity; Transmission Planner; Resource Planner
- **R1** The [entities] shall each make known its amount of interruptible demands and Direct Control Load Management (DCLM) to upon request within 30 calendar days.
- **Key points:**
  - Provide actual
    - Interruptible demands
    - Direct control load management
    - As requested within 30 days



## Agency Response – MOD-020

- **Agency Support:**
  - Response prepared for delivery to customer to give to WECC upon request
  - Customer develops own response if desired
  - Full document in attachments

**SAMPLE:**

**[Customer Name] has no Interruptible Demands or any Direct Control Load Management. The forecast for any interruptible Demands and Direct Control Load Management for the next five years is zero. That will be reported through [Customer Name's] normal compliance reporting channels. [Customer Name] will respond to requests pertaining to Interruptible Demands or Direct Control Load Management from Transmission Operators, Balancing Authorities, and Reliability Coordinators within 30 days of receipt.**



# NERC Standard, Requirements – MOD-021

- **MOD-021-0:** Documentation of the Accounting Methodology for the Effects of Controllable Demand-Side Management in Demand and Energy Forecasts
- **Applicability:** Load-Serving Entity; Transmission Planner; Resource Planner
- **R1** The [entities] shall each clearly document how the Demand and energy effects of DSM programs (such as conservation, time-of-use rates, interruptible Demands and Direct Control Load Management (DCLM) are addressed.
- **R2** The [entities] shall each include information clearly detailing how Demand Side Management measures are addressed in the forecasts of its peak Demand and annual Net Energy in the data reporting procedures of MOD-016-1\_R1.
- **R3** The [entities] shall each make documentation on the treatment of its DSM programs available to NERC on request (within 30 calendar days).
- **Key points:**
  - Provide documentation
    - Detailing DSM
    - As requested within 30 days

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## Agency response – MOD-021

- Agency Support:
  - Response prepared for delivery to customer to give to WECC upon request
  - Customer develops own response if desired
  - Full document in attachments

### **SAMPLE:**

**[Customer Name] has no Time of Use Rates, Interruptible Demands, or any Direct Control Load Management. Those are forecast to be zero. Energy conservation is embedded in existing and future energy forecasts. The paper appended to the end of this MOD (021) describes in greater detail how that is done. Forecasts pertaining to MODs 016 – 018 include energy conservation resulting from customer programs.**



## Process

- MOD Standards 016, 019, 020, 021 data can be obtained at any time from the Customer Service Engineer
- MOD Standards 017, 018 data available once per year after end of calendar year once it is available
- Information will be made available in electronic format to individual customers for distribution to WECC



## Process (cont.)

- BPA forecasting staff working with customer develops load forecast in summer and fall of each year
  - Completed by October of calendar year
- MOD 017 and 018 templates completed and delivered to customer November 15 of each year
- Customer retains records and delivers data to WECC and other entities as appropriate

