MAY 7, 2013 | WEB CONFERENCE



# CLAIM10 and CLAIM30 Auditing Changes

Customer Training Web Conference

**Kory Haag** 

LEAD OPERATIONS ANALYST

### Topics

This presentation discusses:

- How a CLAIM10\* value is determined for a resource.
  \*The same principles apply to the CLAIM30 value.
- Operating Procedure 23 (OP-23): Generator Auditing
- Changes to Fast Start Dispatch



#### **CLAIM10** Overview

- On Sept 2, 2010, ISO failed to comply with NERC Disturbance Control Standard (DCS).
- An in-depth review of operations following the DCS Event raised questions about generator capabilities.
- Historical generator performances did not match the CLAIM values for a number of reasons.
- In order for ISO to model generator performance more accurately, the reserve auditing rules were changed and take effect June 1, 2013.

### **CLAIM10** Capability

ISO calculates the reserve capability of an offline resource as the lower of the **CLAIM10** value or the **Offered CLAIM10**.



- Replaces "cap value" used under the current rules
- Maximum amount of Ten-Minute Non-Spinning Reserve (TMNSR) that can be allocated to a resource

### **CLAIM10** Value



### **Maximum Output Level**



- The highest output a resource has reached at ten minutes in the current or previous like Forward Reserve Procurement Period.
- Resource must stay in service for 60 minutes following dispatch (Unit Control Mode (UCM) 2 or higher)



### How is Generator Output Measured?

- Measured using SCADA values saved in Plant Information (PI) System
- Measured at 4 second intervals (data sent to ISO may be sent at longer intervals)



### **Increasing a Resource's Maximum Output Level**

#### Economic Dispatch\*

- 1. Normal economic dispatch
- 2. Output at ten minutes greater than current maximum output level
- The maximum output level is raised prospectively (limited by DDP)

#### Formal Audit

- 1. Market Participant requests an audit
- 2. Requested DDP is sent on unannounced dispatch
- Output at ten minutes is greater than current maximum output level
- 4. The maximum output level is raised prospectively (limited by requested DDP)

\*Dispatch changes will be covered later in this training.

### **Maximum Output Level Carryover**



- Becomes effective from the week of the increase and going forward for the current Forward Reserve Procurement Period
- Will carry forward to the next like Forward Reserve Procurement Period

#### **Performance Factor Overview**



- A **performance factor** allows ISO to model a generator's historical ability to achieve **target value** from an offline state
- Calculated for each resource based on the performance in its previous **ten** startups (limited by 3 years)

10

• Uses weighted average calculation

### **Performance Factor and Target Value**

• Each time a fast start resource is dispatched from an offline state its performance is evaluated based upon its output at ten minutes, in relation to its target value.



### **Target Value**

- Minimum output the generator should meet at 10 minutes
- Compared to actual generator output at 10 minutes to determine whether the generator met expectations
- Directly affected by Participant Supply Offer Parameters:
  - DDP (dependent upon startup time, notification time, manual response rate)
  - CLAIM10 Capability
  - EcoMax/EcoMin

#### How a Target Value is Determined



Target	t Value So	cenarios	Tł ca	The <b>Target Value</b> is compared to actual generator output to calculate the Performance Factor.					
The <b>Target Value</b> is the <b>minimum</b> of these values.									
	Find the <b>m</b> these two	<b>inimum</b> of numbers.	Find the <b>r</b> these tw	Find the <b>maximum</b> of these two numbers.					
Scenario	CLAIM10	Offered CLAIM10	Desired Dispatch Point (DDP)	Economic Minimum Limit	Target Value				
1	50	50	50	30	50				
2	50	20	50	30	20				
3	50	50	30	30	30				
4	50	50	40	30	40				

. ....

-

The second second

## **Calculating Performance Factor**

Weighting Factor / Start Number	<del>∢10</del>	9	Ad	d thes	e nun	nbers	togeth	her3	2	-1+
Target Value										
Actual Output										
Dispatch Performance (Actual Output / Target Output)										
Weighted Dispatch Performance (Dispatch Performance x Weighting Factor)			Ad	d thes	e num	nbers	togeth	ner.		<b></b>



#### **Generator Sustainability Caveat**



#### **Generator Sustainability**



#### **Generator Sustainability**



## **Questions?**



#### Next:

- Examples of Calculating Performance Factor
- Specific Scenarios which Affect CLAIM10



### **Performance Factor Example 1**

Weighting Factor / Start Number	10	9	8	7	6	5	4	3	2	1
Target Value	60	60	60	60	60	60	60	60	60	60
Actual Output	60	60	60	60	60	60	60	60	60	60
Dispatch Performance (Actual Output / Target Output)	1	1	1	1	1	1	1	1	1	1
Weighted Dispatch Performance (Dispatch Performance x Weighting Factor)	10	9	8	7	6	5	4	3	2	1

- Unit has a Starting Performance Factor of 1.0:
  - 10 starts in last 3 years
  - Unit reached target value during each start
- Unit receives a startup DDP

	Results from the most recent start:	
Example 1	Desired Dispatch Point (DDP)	60
1. Find the Target Value	Target Value	48
	Actual Output	40
<b>Example 1</b> 1. Find the Target Value	Dispatch Performance (Actual Output / Target Output) 40	0/48
	Weighted Dispatch Performance (Dispatch Performance x Weighting Factor)	8.3



#### **Example 1** 2. Calculate Performance Factor

#### **Results from most recent start:**

Desired Dispatch Point (DDP)	60
Target Value	48
Actual Output	40
Dispatch Performance (Actual Output / Target Output)	40/48
Weighted Dispatch Performance (Dispatch Performance x Weighting Factor)	8.3

		-								
Weighting Factor / Start Number	10	9	8	7	6	5	4	3	2	1
Target Value	48	48	48	48	48	48	48	48	48	48
Actual Output	40	48	48	48	48	48	48	48	48	48
Dispatch Performance (Actual Output / Target Output)	40/48	1	1	1	1	1	1	1	1	1
Weighted Dispatch Performance (Dispatch Performance x Weighting Factor)	8.3	9	8	7	6	5	4	3	2	1

This becomes the most recent start.



## Example 1

#### 2. Calculate Performance Factor

			Add these numbers together.							
Weighting Factor / Start Number	10	9	8	7	6	5	4	3	2	1
Target Value	60	60	60	60	60	60	60	60	60	60
Actual Output	48	60	60	60	60	60	60	60	60	60
Dispatch Performance (Actual Output / Target Output)	1	1	1	1	1	1	1	1	1	1
Weighted Dispatch Performance (Dispatch Performance x Weighting Factor)	8.3	9	8	7	6	5	4	3	2	1
	Ado	d thes	e num	bers t	ogeth	ier.				

Performance Factor = 
$$\frac{\sum_{n=1}^{10} \left( \frac{\text{Actual Output at 10 minutes}}{\text{Target Value}} * n \right)}{\sum_{n=1}^{10} n} = 0.969$$

#### **Performance Factor Example 2**

- Using the same target value as the previous example
- Assume that same unit has had only 3 previous starts in last 3 years and each one the unit has reached target value
  - Starting Performance Factor is 1.0
- Unit receives startup DDP

#### **Results from most recent start:**

Desired Dispatch Point (DDP)	60
Target Value	48
Actual Output	40
Dispatch Performance (Actual Output / Target Output)	40/48
Weighted Dispatch Performance (Dispatch Performance x Weighting Factor)	8.3

#### **Example 2** *Calculate Performance Factor*

#### **Results from most recent start:**

Desired Dispatch Point (DDP)	60
Target Value	48
Actual Output	40
Dispatch Performance (Actual Output / Target Output)	40/48
Weighted Dispatch Performance (Dispatch Performance x Weighting Factor)	8.3

Weighting Factor / Start Number	10	9	8	7	6	5	4	3	2	1
Target Value	48	48	48	48						
Actual Output	40	48	48	48						
Dispatch Performance (Actual Output / Target Output)	40/48	1	1	1						
Weighted Dispatch Performance (Dispatch Performance x Weighting Factor)	8.3	9	8	7						



## Example 2

#### Calculate Performance Factor

Weighting Factor / Start Number	10	9	8	7	6	5	4	3	2	1
Target Value	48	48	48	48						
Actual Output	40	48	48	48						
Dispatch Performance (Actual Output / Target Output)	40/48	1	1	1						
Weighted Dispatch Performance (Dispatch Performance x Weighting Factor)	8.3	9	8	7						

Performance Factor = 
$$\frac{8.3 + 9 + 8 + 7}{10 + 9 + 8 + 7} = 0.95$$

### **Specific Scenarios Which Affect CLAIM10**

- 1. How a resource can increase their maximum output level and CLAIM10
- 2. How a resource can control the amount of reserves it offers to ensure that it can achieve its target value
- 3. How a resource that underperforms gets a reduced CLAIM10
- 4. How a resource that meets its target value increases its CLAIM10



#### 1. Increasing CLAIM10

**WEEK 1:** 

Ecomin / DDP = 60 MW

CLAIM10 Capability = 50 MW

**Actual Output = 56 MW** 



#### 1. Increasing CLAIM10

Increasing the maximum output level will increase the CLAIM10 of a resource.



#### ISO dispatches a resource from an offline state with these assumptions:

Week	Maximum Output Level	Performance Factor	CLAIM10	Offered CLAIM10	Economic Min	DDP	Target Value	Actual Output	
1	50	1.0	50	50	60	60	50	56	
			ISC con a	D honors Istraint ar DDP of <b>6</b>	Ecomin nd sends <b>0 MW</b>		Resource <b>56 MW</b> at 2	produces 10 minute	s es

#### 1. Increasing CLAIM10

Assuming no additional dispatches in Week 1, the maximum output level in Week 2 will increase to 56 MW since it demonstrated the ability to reach 56 MW.



#### **ISO dispatches a resource from an offline state with these assumptions:**

Week	Maximum Output Level	Performance Factor	CLAIM10	Offered CLAIM10	Economic Min	DDP	Target Value	Actual Output
1	50	1.0	50	50	60	60	50	56

The resource performed up to its target value, so the **performance factor** remains at **1.0**.

#### 1. How Maximum Output Affects CLAIM10



Week	Maximum output level	Performance factor	CLAIM10 value	Offered CLAIM10	Economic Min	DDP	Target value	Actual output
1	50	1.0	50	50	60	60	50	56
2	56	1.0	56					



#### 2. Achieve Target Value by Controlling Reserves

If the Economic Minimum of the resource continues to be 60 MW, ISO will send a **DDP** of 60MW.



#### ISO dispatches a resource from an offline state with these assumptions:

Week	Maximum Output Level	Performance Factor	CLAIM10	Offered CLAIM10	Economic Min	DDP	Target Value	Actual Output
1	50	1.0	50	50	60	60	50	56
2	56	1.0	56	20	60 븕	60		

#### 2. Achieve Target Value by Controlling Reserves

The resource reached the Target Value in 10 minutes, so Week 3 performance factor remains at 1.0 and the CLAIM10 remains at 56 MW.



#### **ISO dispatches a resource from an offline state with these assumptions:**

Week	Maximum Output Level	Performance Factor	CLAIM10	Offered CLAIM10	Economic Min	DDP	Target Value	Actual Output
1	50	1.0	50	50	60	60	50	56
2	56	1.0	56	20	60	60	20	22
3	56	1.0	56					



**WEEK 3:** 

Ecomin / DDP = 60 MW

CLAIM10 Capability = 20 MW

Actual Output = **10** MW



. .

#### 3. Effect on CLAIM10 When a Resource Does Not Reach Target Value

A Market Participant offers a CLAIM10 of 20 MW for the resource from Example 2, but the resource does not meet its target value.



#### **ISO dispatches a resource from an offline state with these assumptions:**

Week	Maximum Output Level	Performance Factor	CLAIM10	Offered CLAIM10	Economic Min	DDP	Target Value	Actual Output
1	50	1.0	50	50	60	60	50	56
2	56	1.0	56	20	60	60	20	22
3	56	1.0	56	20	60	60	20	10

# 3. Effect on CLAIM10 When a Resource Does Not Reach Target Value

Weighting Factor / Start Number	10	Q	8	7	6	5	А	2	2	1
Weighting ractor / Start Number	10	2	Ŭ	· ·	Ŭ	2	-		-	-
Target Value	20	20	50	50	50	50	50	50	50	50
Actual Output	10	22	56	50	50	50	50	50	50	50
Dispatch Performance (Actual Output / Target Output)	10/20	1	1	1	1	1	1	1	1	1
Weighted Dispatch Performance (Dispatch Performance x Weighting Factor)	5	9	8	7	6	5	4	3	2	1

This becomes the most recent start.



#### 3. Effect on CLAIM10 When a Resource Does Not Reach Target Value

When performance factor decreases in Week 3, it causes the CLAIM10 to decrease in Week 4.



#### ISO dispatches a resource from an offline state with these assumptions:

Week	Maximum Output Level	Performance Factor	CLAIM10	Offered CLAIM10	Economic Min	DDP	Target Value	Actual Output
1	50	1.0	50	50	60	60	50	56
2	56	1.0	56	20	60	60	20	22
3	56	1.0	56	20	60	60	20	10
4	56	0.909	50.9					



**WEEK 4:** 

Output (MW)

# 4. Actual Output>= Target value



Week	Maximum Output Level	Performance Factor	CLAIM10	Offered CLAIM10	Economic Min	DDP	Target Value	Actual Output
1	50	1.0	50	50	60	60	50	56
2	56	1.0	56	20	60	60	20	22
3	56	1.0	56	20	60	60	20	10
4	56	0.909	50.9					

# 4. Actual Output>= Target value

- Performance factor will increase because, for this dispatch, a value of 1 will be utilized in calculating the performance factor.
- CLAIM10 will increase because the performance factor increased.



Week	Maximum Output Level	Performance Factor	CLAIM10	Offered CLAIM10	Economic Min	DDP	Target Value	Actual Output
1	50	1.0	50	50	60	60	50	56
2	56	1.0	56	20	60	60	20	22
3	56	1.0	56	20	60	60	20	10
4	56	0.909	50.9	48	60	60	48	48
5	56							

#### Example 4: Actual output >= Target value

Weighting Factor / Start Number	10	9	8	7	6	5	4	3	2	1
DDP	60	60	60	60	60	60	60	60	60	60
Target Value	48	20	20	50	50	50	50	50	50	50
Actual Output	48	10	22	56	50	50	50	50	50	50
Dispatch Performance (Actual Output / Target Output)		.5	1	1	1	1	1	1	1	1
Weighted Dispatch Performance (Dispatch Performance & Weighting Factor)	10	4.5	8	7	6	5	4	3	2	1
Performance Factor = $\frac{10}{10}$	+ 4.5 +	8 + 1 8 + 1	7 + 6 7 + 6	+ 5 +	4 + 3 4 + 3	3 + 2 · 3 + 2 ·	+ 1	= 0.9	918	

#### Example 4: Actual output >= Target value (cont.)



Week	Maximum Output Level	Performance Factor	CLAIM10	Offered CLAIM10	Economic Min	DDP	Target Value	Actual Output
1	50	1.0	50	50	60	60	50	56
5	56	0.918	51.4					

### **Questions?**

#### Next:

- MIS Report Information
- OP-23 Details
- Performance Factor Cure
- Changes to UDS Dispatch Software



### CLAIM10 and CLAIM30 Reports

- Market Information Server (MIS) Reports are available via File Transfer Protocol (FTP) site
  - Secure site
  - Access required to view reports
  - Your Security Administrator (SA) assigns FTP access
- Participant will receive a report with all unit starts for the day
- Report weekly providing Claim values and performance factor for all units for the next week

Click here to visit the MIS FAQ online.



Reports are in Comma Separated Value (CSV) format.

#### **MIS Reports**

#### Weekly Claim 10/30 Report

OL\_WEEKLYCLAIM1030\_<customer ID>\_<settlement date>\_<version>.CSV <Customer Name>

#### Date: <mm/dd/yyyy> and Version: <mm/dd/yyyy hh:mm:ss> GMT

Asset	Data						Start	p Information						
													30-	
										10-Minute	30-Minute	10-Minute	Minute	
Asset Short		Start		10-Minute	10-Minute	30-Minute	30-Minute		60 Min In-	Requested	Requested	Cure	Cure	Start
Name	Asset ID	Number	Date of Start	Target	Output	Target	Output	Eco Min	service Flag	audit flag	audit flag	audit flag	audit flag	Veighting
String 💌	Number 💌	Numt 💌	Date 💌	MW 💌	MW 💌	MW 💌	MW 💌	MW 💌	Flag 💌	Flag 💌	Flag 💌	Flag 💌	Flag 💌	Flag 💌

#### Claim 10/30 Notification of Starts

 $Ol\_CLAIM1030STARTNOTIFICATION\_coustomer\,IDb\_csettlement\,dateb\_cversionb.CSV$ 

<Customer Name>

#### Date: <mm/dd/yyyy> and Version: <mm/dd/yyyy hh:mm:ss> GMT

Asset Data		Startup Information												
							60 Min In-	10-Minute	30-Minute	10-Minute	30-Minute			
Asset Short			10-Minute	10-Minute	30-Minute	30-Minute	service	Requested	Requested	Cure audit	Cure audit	10-Minute	30-Minute	Contingency
Name	Asset ID	Date of Start	Target	Output	Target	Output	Flag	audit Flag	audit Flag	Flag	Flag	Exclude	Exclude	Flag
String	Number	Date	MW	MW	MW	MW	Flag	Flag	Flag	Flag	Flag	Flag	Flag	Flag

#### **Operating Procedure 23 (OP-23)**

**Generator Auditing** 



- Projected effective date June 7, 2013
- Provides guidance for Participant-Requested Audits
  - Submit form in Appendix A to ISO through Customer Support Tracking System
  - Will be performed within 5 business days of submittal
  - Will be performed between 0700-2300

### **Performance Factor Cure**

- May be requested if unit has:
  - Chronic problem that meets criteria in Market Rule
  - Major overhaul
- Submit plan to ISO
- Perform maintenance
- Perform audit
- Following audit:
  - All prior history is removed
  - Performance factor set to 1



#### **ISO Dispatch Software Changes**

- ISO is modifying Unit Dispatch Software (UDS) to better reflect generator startup parameters.
- These changes may require Supply Offer modifications by Participants



## Definitions



**Start-Up Time** is the time it takes the Generator Asset, after synchronizing to the system, to reach its Economic Minimum Limit and, for dispatchable Generator Assets, be ready for further dispatch by the ISO.

**Notification Time** is the time required for a Generator Asset to synchronize to the system from the time a startup Dispatch Instruction is received from the ISO.

Manual Response Rate (MRR) is the rate, in MW/Minute, at which the output of a Generator Asset is capable of changing. There can be multiple MRRs offered for a unit.

### **Changes to UDS Dispatch**

#### **Current UDS Dispatch**

- If Cold Startup + Cold Notification time <= 30 minutes then will see the unit as a Fast Start Generator
- Will issue a Desired Dispatch Point (DDP) based solely upon Manual Response Rate x Look Ahead interval (generally 15 minutes)

#### UDS Changes (Mid-May 2013)

- If Cold Startup + Cold Notification time <= 30 minutes then will see the unit as a Fast Start Generator
- Will honor Startup and Notification times as supplied in Offered Parameters

\* not changing

### **Example 1: Maximum DDP Changes**

Startup Time	5 minutes
Notification Time	5 minutes
MRR	5 MW/min
Ecomin	75 MW
Ecomax	100 MW
UDS Look Ahead (LA) ISO Operator Input	15 minutes
Current Max DDP (MRR * LA)	= 5 MW/min * 15 min = 75 MW
<b>New Maximum DDP</b> (Ecomin + [LA – (Notification + Startup)] * MRR)	= 75 MW + [15 min – (5 min + 5 min)] * (5 MW/min) = 100 MW

### **Example 2: Maximum DDP Changes**

Startup Time	5 minutes
Notification Time	5 minutes
MRR	10 MW/min
Ecomin	50 MW
Ecomax	100 MW
UDS Look Ahead (LA) ISO Operator Input	10 minutes
Current Max DDP (MRR * LA)	= 10 MW/min * 10 min = 100 MW
<b>New Maximum DDP</b> (Ecomin + [LA – (Notification + Startup)] * MRR)	= 50 MW + [10 min – (5 min + 5 min)] * (10 MW/min) = 50 MW

#### **Market Participant Actions**

- Ensure that Supply Offer Parameters are accurate for:
  - Startup Time
  - Notification Time
  - Manual Response Rate
- Providing accurate Supply Offer Parameters ensures:
  - Proper Dispatch modeling
  - Proper Economic Dispatch
  - Proper Reserve Dispatch

### Summary

You have now learned:

- How a CLAIM10\* value is determined for a resource.
  \* The same principles apply to the CLAIM30 value.
- Operating Procedure 23 (OP-23): Generator Auditing
- Changes to Fast Start Dispatch

# Questions



