

Recent Changes to iCRS Generation Advisor

JOC Meeting

May 5th, 2010



Agenda

- Background on Operational Controls for Variable Generators
- ICCP and RTU status
- iCRS Generation Advisor changes
- Strikes/waivers
- Questions and Answers



Background for Operational Controls for Variable Generators

- The purpose of the Operational Controls for Variable Generators project was to implement automated tools and communications protocols to:
 - Limit actual wind generation to schedule, or
 - Curtail e-Tags to actual generation
- The amount of balancing reserves deployed were identified in the 2010/2011 wind integration rate.
- Dispatchers Standing Orders (DSO) 216 were implemented on October 1, 2009.



ICCP and RTU Status

- By October 1st, 2009, all wind plants were expected to have in place telemetered communication links via GenICCP, SCADA ICCP, or SCADA RTU's (either BETAC or GE D20) to receive data from BPA on the status of balancing reserves and actions required.
- However, as a supplement to the above mentioned telemetered communication links, BPA developed and made available to wind operators/owners an external web application called iCRS Generation Advisor.
- INC and DEC warning alarms, limits, curtailments and MW levels for DSO 216 events are provided to all wind generators through whichever communication mechanism each facility has available to them.



ICCP and RTU Status (cont'd)

- For additional information on communication requirements associated with Operational Controls for Variable Generators please see Connecting Variable Generating Resources to the Federal Columbia River Transmission System (FCRTS) posted on March 5, 2009.
- This information is posted at:
 - <http://www.bpa.gov/corporate/WindPower/WIT-Discuss.cfm>
- Reminder: 24/7 support is provided for Gen ICCP, SCADA ICCP, or SCADA RTU's.



Overview of Recent Changes to iCRS Generation Advisor Screens



Recent Changes to DSO 216 Automation

- iCRS Generation Advisor
 - Overall appearance change to display
 - Display time since last action
 - List previous 24 hours of events
 - Display potential reserves deployed
 - Display reserves thresholds for 85% and 90%
 - Calculation includes netting for DSO 216 events
 - Added various audible alarms
 - New Login warning and disclaimer panel



Overall Appearance Change to Display

Overall change to color scheme

RBC% added to Deployed Reserves

Screen shot tabs have been moved for better visibility

Ability to see only BA Info, only Plant Info or both

Plant info moved to between views

iCRS Generation Advisor 2.5.002 (STAGING) Test Marketer - DMO **Log Out**

May 03 HE: 9 **DEPLOYED RESERVES: 23% (24%)** **NORMAL** 0:00

Alarms Updated: 08:04:38 May 03, 2010

Balancing Authority Info

- Balancing Reserves
 - Max Inc Reserves 835 MW
 - Deployed Reserves 194 MW
 - Potential Dep Reserves 200 MW
 - Max Dec Reserves -1,045 MW
- Wind
 - Total Generation 1,892 MW
 - Total Scheduled 2,012 MW
 - Total SCE -123 MW
- System
 - Net Generation 13,510 MW
 - Net Load 6,655 MW
 - Net Actual Interchange 6,855 MW
 - Net Sched Interchange 6,750 MW
 - Frequency 59.993 Hz

BA Trended Values

24 H 8 H 2 H 30 M 5 M

Megawatts

7:00 8:00

Plant Info Wind Hydro Thermal Other

Plant Name	Plant	Operator	Actual	Sched	SCE	Dec Res Alloc	Dep Res	Inc Res Alloc	Limit Target	Curtail Target	Limit Ack
ALL PLANTS	TOTAL	ALL OPERATORS	243	338	-95	-161	95	113	484	358	
Gale Farm Hills	GFH	Demo Energy	46	96	-50	-27	50	19	122	65	
iCRS Canyon Wind Phase 1	ICW	Demo Energy	55	138	-83	-53	83	37	183	92	
Velma Creek	VLM	Demo Energy	101	81	20	-27	-20	19	108	120	
Chaff Point Wind	CPW	Demo Energy	41	77	18	54	18	28	71	81	



Display Time Since Last Action

May 03 HE: 10	DEPLOYED RESERVES: -14% (-13%)	NORMAL 0:00	<input checked="" type="checkbox"/> Alarms Clear	Updated: 09:46:53 May 03, 2010
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- At the top of the Generation Advisor Screen there is a timer displaying the elapsed time since the last state change (not including Normal).
- When a DSO 216 event occurs, the timer (as shown above), will indicate when the wind state changes to Warning, to Limit 1 or to Limit 2.
- Wind Generators have 10 minutes to comply with the Dispatchers directive to take action.



Potential Reserves Deployed Description

- The light gray (top) trace is an instantaneous projection of Potential Reserves Deployed.
- The trace includes the ACE and indicates that ACE is currently suppressing the Deployed Reserves and where the Reserves Deployed would be in the absence of ACE.
- If the ACE is corrected at some point in time, the Reserves Deployed trace will head toward the Potential Reserves Deployed value.
- It is BPA's decision to switch to tighter control if needed, and we will try to avoid making the reserves deployed worse, but no warranty is stated or implied.



Potential Reserves Deployed

ES: 74.0% (93.0%)

NORMAL
0:00

Alarms

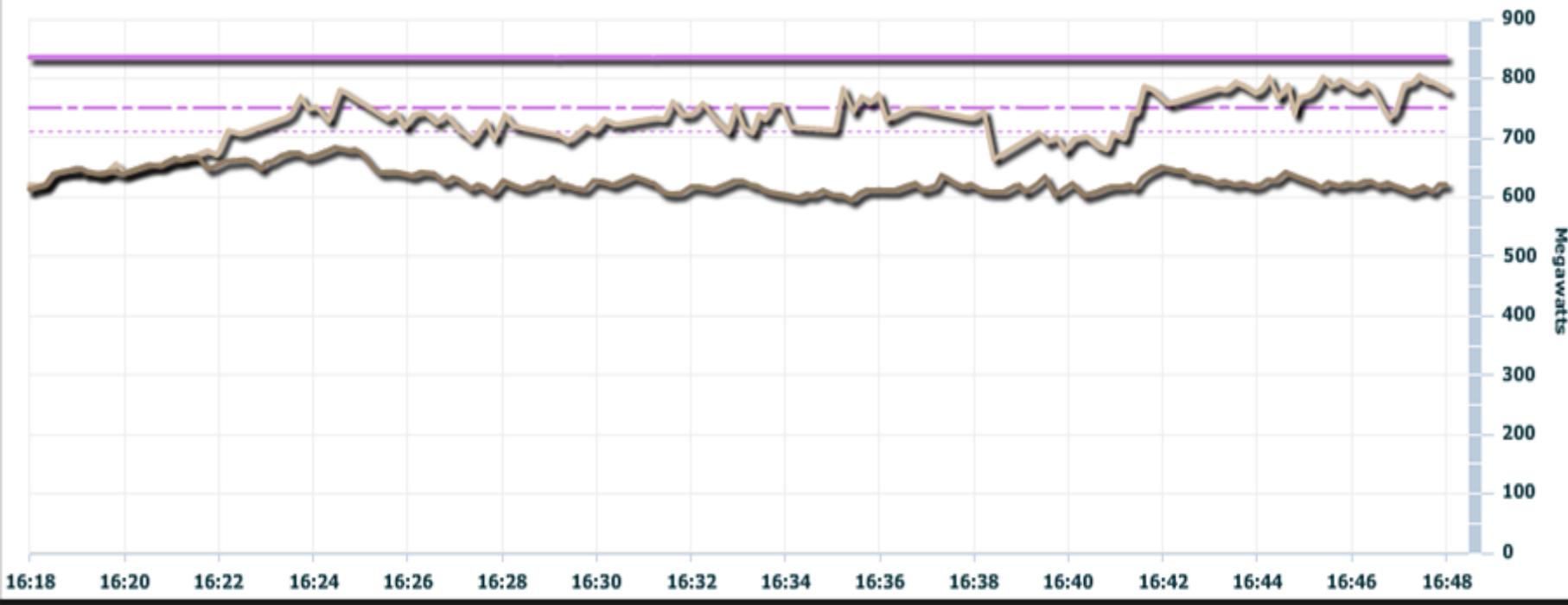
Clear



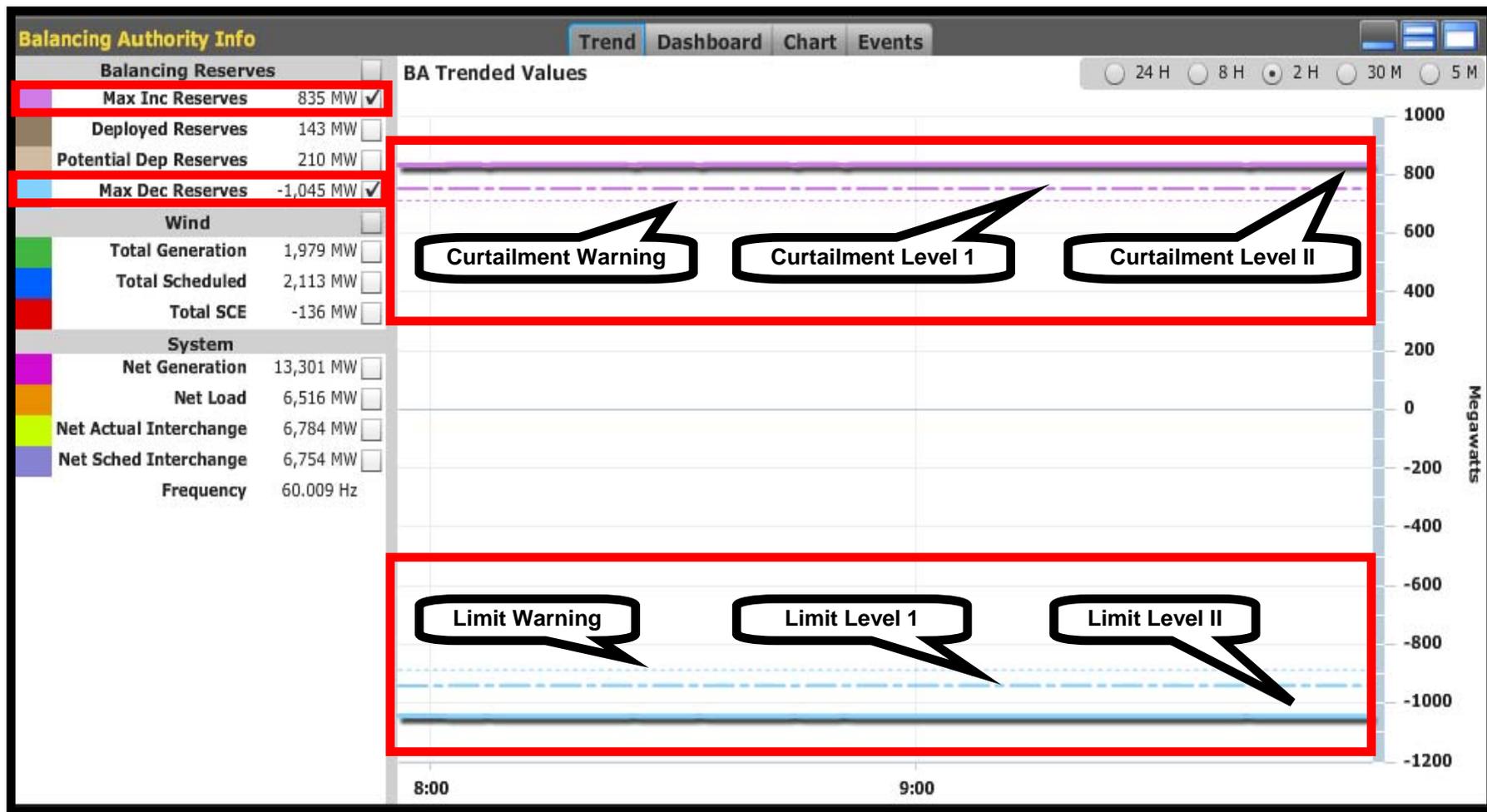
Updated: 26 Apr 16:48:14
Data Latency: 11.6 S
Time Delta: -275 mS

Balancing Authority Trended Values

Chart Options: 24 Hour 8 Hour 2 Hour 30 Minute 5 Minute



New Reserves Thresholds



Limit Condition Example

Hide Plant Information											
Plant Name	Plant	Operator	Actual	Sched	SCE	Dec Res Alloc	Dep Res	Inc Res Alloc	Limit Target	Curtail Target	Limit Ack
ALL PLANTS	TOTAL	ALL OPERATORS	126	58	68	-146	-68	101	208	227	
Chaff Point Wind	CPW	Demo Energy	29	25	4	-49	-4	34	71	63	
Gale Farm Hills	GFH	Demo Energy	8	10	-2	-24	2	17	34	24	
Velma Creek	VLM	Demo Energy	9	0	9	-25	-9	17	25	26	
iCRS Canyon Wind Phase 1	ICW	Demo Energy	80	23	57	-48	-57	33	71	114	

The SCE is 57MW which means iCRS Canyon Wind Phase 1 is using -57MW of reserves

iCRS Canyon Wind Phase 1 has a Dec reserve allocation of only -48MW

If a Limit Condition Occurs, the wind plant will be expected to REDUCE GENERATION to 71MW

- iCRS Canyon Wind Plant Phase 1 would need to REDUCE GENERATION to 71MW if a Limit Condition occurs.
- The Limit Target is displayed in black text when relevant!



Curtailment Condition Example

Hide Plant Information												
Plant Name	Plant	Operator	Actual	Sched	SCE	Dec Res Alloc	Dep Res	Inc Res Alloc	Limit Target	Curtail Target	Limit Ack	
iCRS Canyon Wind Phase 1	ICW	Demo Energy	62	50	12	-48	-12	33	98	95		
Gale Farm Hills	GFH	Demo Energy	22	40	-18	-24	18	17	64	39		
Chaff Point Wind	CPW	Demo Energy	36	33	3	-49	-3	34	82			
Velma Creek	VLM	Demo Energy	8	20	-12	-25	12	17	45			
ALL PLANTS	TOTAL	ALL OPERATORS	128	143	-15	-1	15	101				

Gale Farm Hills is UNDER GENERATING and exceeding their Increment Reserve Allocation

If a curtailment condition occurs, the wind plant's e-Tags would be curtailed to 39MW

- The e-Tags for Gale Farm Hills would be CURTAILED to 39MW if a Curtailment Condition occurs.



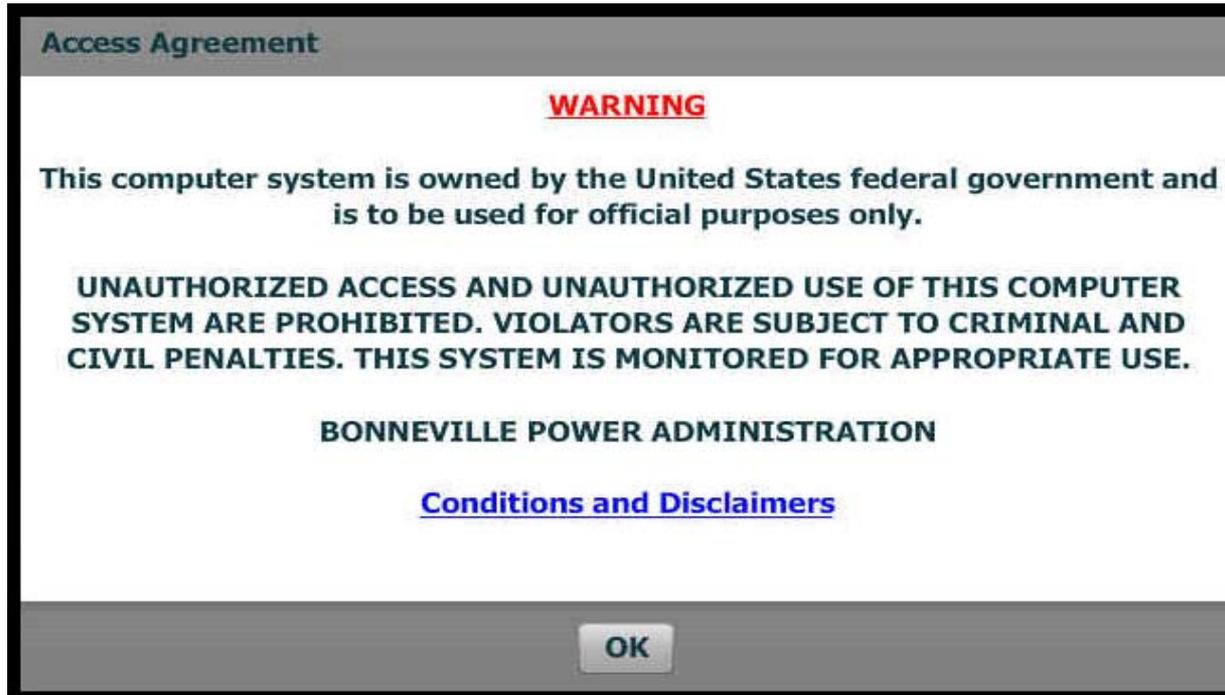
Discuss Various Audible Alarms



- To get audible alarms for connectivity issues, request them from WindOperations@bpa.gov
- The checkbox allows the user to hear audible alarms when selected.



Login Warning and Disclaimer



- This will appear when users first access the site.



What Do Users Need to Know?

- iCRS Generation Advisor changes will go into effect on May 19th.
- BPA will provide a reminder of this action via windoperations@bpa.gov the day before, on May 18th.
- BPA will also update the User Guide, accessible within the application, that will provide information about the changes.
- iCRS Generation Advisor changes will be automatic and therefore, the users should not have to take action to get the upgrades applied.
- In a small number of cases, some users may need to refresh their browsers to get the update.



Strikes and Waivers for DSO 216 Events



5/5/2010



DSO 216 Event Report

As of April 30, 2010

Limit (DEC) Events	2009 Oct - Dec Total		2010 Jan - Mar Total		April	
	Act	Est	Act	Est	Act	Est
Level 1	5	12.2	5	12.9	1	3.6
MW per L1 Event	380	277	198	264	596	147
L1 MW per Month	634	1126	330	1136	596	531
Average Number of Sources	11	n/a	8	n/a	14	n/a
Average MW by Source	36	n/a	26	n/a	43	n/a
Curtailment (INC) Events	2009 Oct - Dec Total		2010 Jan - Mar Total		April	
	Act	Est	Act	Est	Act	Est
Level 1	9	12.4	4	12.6	3*	4.0
MW per L1 Event	267	277	402	235	265*	242
L1 MW per Month	800	1146	536	986	794*	967
Average Number of Sources	10	n/a	13	n/a	15	n/a
Average Number of PODs	10	n/a	10	n/a	14	n/a
Average MW by Source	27	n/a	35	n/a	19	n/a

* These numbers include one Level 2 event.

Installed Capacity (as of the end of each month)	As of Dec 2009	As of Mar 2010	April
	2680	2780	2780



DSO 216 Event Strikes Process

- Wind generator owners/operators have 10 minutes to respond to a limitation and get the actual plant output below the target level provided by BPA.
- They must stay below the limit target plus 4 MW or 3% of plant capacity, whichever is greater, for the remainder of the hour or a strike will be assessed as appropriate.
- If a wind generator fails to fully respond three times within a 24 month period, they will be required to receive generation limits from BPA directly into their facility's energy management system.
- The necessary equipment to receive generation limits directly from BPA must be installed within 6 months of notice of the third limit violation.



DSO 216 Event Strikes Process

- In order to be removed from receiving limits directly from BPA:
 - The wind generator must prove that necessary corrections have been made and it is able to fully respond within 10 minutes.
 - This demonstration can be made no less than two years from the date the facility started receiving limits directly from BPA.
- This information is provided in the Connecting Variable Generating Resources to the Federal Columbia River Transmission System (FCRTS) posted on March 5, 2009 at:
 - <http://www.bpa.gov/corporate/WindPower/WIT-Discuss.cfm>



Requests for Waivers to Strikes

- Request for waivers must be received by windoperations@bpa.gov no later than 10 business days from receipt of the strike message.
- Only the information provided in your original waiver request will be used for further evaluation.
- If a waiver request is received, BPA has 10 business days from the close of the waiver request period to respond to the wind generator.
- The strike criteria and waiver request information is identified in the "BPA Final Clarifications on the DSO216" document posted:

http://www.transmission.bpa.gov/wind/docs/Final_Clar_on_DSO216_12_11_09.pdf.



Questions and Answers

