



Western
Area Power
Administration

Boulder Canyon Project

July 26, 2017

MSI Implementation



Agenda

- Introductions, Logistics & Purpose
- Customer Portal
- Metering & Scheduling Instruction (MSI) Items
 - Time Zone
 - Scheduling Logistics
 - Rounded Contractor's Available Capacity
 - Energy Target
 - Pre-Scheduling
 - Real Time Operations
 - Monthly Energy Monitoring
 - Checkouts/Energy Accounting
- Next Steps, Important Dates, Points of Contact



Introductions, Logistics & Purpose

- PowerPoint available at:
<https://www.wapa.gov/regions/DSW/PowerMarketing/Pages/power-marketing.aspx>
- Introductions
- Mute phones, unless speaking
- Preparation for successful October 1, 2017
- Opportunity for dialogue on scheduling matters
- Points of Contact for WAPA BCP Implementation
- Lay out future sessions as needed



Customer Portal (Portal)

- Portal Definition
- WAPA Portal & the Hoover application
- Manage additional Hoover customers
- Most recent data available on demand
- Present forecast data, view Contractor's Available Capacity, pre-schedule capacity, monitor Target, check out & view settlements/energy accounting data
- Ability to download data
- Does not replace most real-time interactions
- At this time, not yet external facing



Time Zone

- Mountain Standard Time is the basis for WAPA's calculations of capacity and energy available for all months of the year
 - Portal will allow views in PST for select data for prescheduling purposes
- Accounting will also be in MST for all months
 - Any reductions or overrun penalties will be based on period and monthly energy totals in MST



Scheduling Logistics (Scheduling Entity)

- Scheduling Entity
 - Contractors required to appoint
 - Implements schedules with WAPA on behalf of Contractors
 - Will be day-to-day point of contact with WAPA to make sure capacity and energy are scheduled correctly
 - Multiple scheduling entities per contract or multiple contracts per scheduling entity are allowed



Scheduling Logistics (Scheduling Entity) continued

[Link to MSI Contact Page](#)



Scheduling Logistics (Static vs Dynamic)

- Dynamic Energy Schedules
 - Separate Capacity Schedule
 - Losses accrue
 - Process to establish dynamic signal is through separate agreement and must be customer funded
 - MSI Attachment #6
- 15 Minute Schedules
 - Separate Capacity Schedule
 - Losses accrue
- Static Schedule
 - Energy = Capacity
 - No losses



Hoover Capacity

- Capacity – The maximum level of electric power that can be supplied at a point in time, measured in Megawatts (MW) or Kilowatts (kW)
- Contingent Capacity
 - The aggregate of Schedule A, B, and D Contingent Capacity as listed in Attachment 1 to the ESC
 - Hoover's maximum rating is 2,074 MW when Lake Mead is full and all 17 units are operating optimally
- Available Capacity (Plant)
 - Lower lake levels have reduced Available Capacity to the current rating of 1,581 MW; future lake levels will affect Available Capacity
 - Taking units out of service also reduces Available Capacity
 - Each contractor receives its share of Available Capacity based on their percentage of Contingent Capacity. Available Capacity fluctuates with what is available at any given time



Contractor's Available Capacity (CAC)

- WAPA will compile current unit ratings and availability to allocate Available Capacity at the Plant to each contractor
- That capacity available to schedule is Contractor's Available Capacity (CAC)
 - CAC is a contractor's Contingent Capacity share relative to Available Capacity at the plant.



Scheduling Logistics (Schedule Definition)

- Scheduling Entities will have flexibility to schedule CAC assigned to them based on host Balancing Authority (BA), Transmission Arrangements, Dynamic or Static scheduling, or other considerations
 - The term for these combined portions will be “Schedule Definition”
 - Purpose is to allow flexibility and to roll up capacity percentages as they will be scheduled to minimize rounding error



Scheduling Logistics (Schedule Definition) continued

- Schedule Definitions will be the basis for hourly CAC which can be scheduled

Example:				
	%	BA:	SE:	SD:
Contractor A	25%	APS	SE1	50%
Contractor B	25%	APS	SE1	
Contractor C	25%	SRP	SE2	25%
Contractor C	25%	WALC	SE3	25%



Contractor's Available Capacity (CAC) continued

- CAC will fluctuate based on changes to unit status and ratings whenever those changes occur.
 - Forecasted CAC by Schedule Definition will be available on the Portal up to 17 months in the Future
 - Round up/Round down
 - CAC by Schedule Definition will be available on the Portal by 5AM MST based on the Pre-Schedule calendar
 - Hourly
 - CAC will be revised on the Portal ASAP for any changes after Pre-Schedule



Scheduling Logistics (One More Time)

- Contractors will appoint Scheduling Entities who will work directly with WAPA to make sure capacity and energy are scheduled correctly hourly
- Scheduling Entities will communicate to WAPA how they plan to schedule the CAC assigned to them on a long term basis
- WAPA will roll up the CAC for how Scheduling Entities plan to schedule energy into Schedule Definitions
- CAC by Schedule Definition for each Pre-Schedule day or as Available Capacity at the Plant changes will be made available on the Portal



Rounded CAC

- Total Hoover Available Capacity is scheduled in whole MWs equal to the plant output
 - Schedule definitions based on kW Contingent Capacity shares need to be rounded to the nearest MW
- Currently, rounding is a minimal concern based on limited number of contractors and a minimum Contingent Capacity share of no less than 2,000 kW
- Rounding was identified early on as a matter that would need to be addressed in the implementation of the new contracts
- Argonne National Labs coordination
 - Integerizer Product - Tracks the remainder from rounding and uses criteria such as amount of remainder and or the relative value of scheduling hours to decide how to correct for rounding differences



Rounded CAC continued

- The Integerizer rounding correction tool will calculate hourly CAC by Schedule Definition and the results will be published on the Portal
- The corrections will occur on an hourly basis

	10/1/2015	10/1/2015	10/1/2015	10/1/2015	10/1/2015	10/1/2015	10/1/2015	10/1/2015	10/1/2015	10/1/2015	10/1/2015	10/1/2015	10/1/2015
	12	13	14	15	16	17	18	19	20	21	22	23	24
Real Capacity	6.767	6.790	6.790	6.767	6.767	6.767	6.767	6.216	6.216	6.216	6.812	6.812	6.761
Integer Capacity	6	7	7	7	6	7	7	6	6	7	6	7	7
Hour Difference	-0.767	0.210	0.210	0.233	-0.767	0.233	0.233	-0.216	-0.216	0.784	-0.812	0.188	0.239
Cumulative Cap (MW)	-0.352	-0.141	0.069	0.302	-0.465	-0.232	0.001	-0.215	-0.431	0.353	-0.459	-0.272	-0.033
Relative Value	5%	5%	5%	6%	6%	6%	6%	5%	5%	5%	5%	4%	4%



Energy Targets (Target)

- Energy will be made available based on Bureau of Reclamation (BOR) release requirements.
 - Master Schedule
 - 24 Month Study Projections
- Monthly “Target”
 - BOR plans and adjusts releases from Hoover Dam to manage lake levels in downstream reservoirs and facilitate water deliveries to AZ & CA
 - Initial monthly Target is provided to WAPA 10-15 days prior to the start of the month
 - Target values can go up or down during the month based on BOR requirements.
 - WAPA calculates Available Energy
 - Integration
 - Adjustments



Target continued

- Contractor's Available Energy is published to the Portal
- Contractors must Schedule energy by Period Target totals
- Period Targets for each month will be divided into 7 day periods starting on Monday and ending on Sunday
 - Periods will not cross months
 - First and last periods may be more or less than 7 days
 - Months will have 3-5 periods
 - Contractor's energy usage must match the Period targets
 - Within +/- 2% for Period 1
 - Within +/- 5% for Periods 2-5
- Monthly Energy
 - Within +/- 2%
 - 5% Requests
- Minimum Energy Schedules
 - BA Requirements
 - Water Requirements



Pre-Scheduling

- Monthly/Weekly:
 1. View energy Target values for your Schedule Definition(s)
 2. View forecasted CAC for your Schedule Definition(s)
 1. Use for month/week ahead planning
- Each Business day:
 1. Log in to Portal to view CAC
 2. Track weekly energy usage
 3. Make a plan for energy usage for the next day
 4. Enter Capacity Schedule
 1. Dynamic
 2. 15 Minute
 5. Submit e-Tag



Pre-Scheduling (e-Tag Requirements)

- e-Tag requirements - section 7.9 of Metering & Scheduling Instructions(MSI)
 - DSWM01 (DSW Merchant) will be the PSE assigned to the Generator
 - e-Tag approval rights to monitor Available Capacity Usage
 - Physical segment 1 will be Mead230 to Mead230 with WALC as the TP
 - This transmission allocation will be equal to hourly CAC and will be the basis for approval or denial by DSW Merchant
 - Physical Segment 2 will begin with Mead230 and then list individual transmission arrangements for delivery of Hoover Power



Pre-Scheduling (e-Tag Requirements) continued

Physical Path							
BA	TSP	PSE	POR	POD	Sched Entities	Contract	Misc Info
WALC		DSWM01(1)	Source: Hoover				No
	WALC	DSWM01(1)	MEAD230	MEAD230	WALC		No
WALC		DSWM01(2)	Sink: SSEA				No

Transmission Allocation					
TSP	Owner	Product	OASIS	NITS Resource	Misc Info
WALC	DSWM01	7-F	BLDCHVR		No

Test Tag opportunities...



Real Time Operations

- Routine Real Time Changes
- Static Schedule Changes
 - Tag revisions due 20 minute before start of the hour
- Dynamic Schedule
 - Capacity schedule changes entered in Portal by 30 minutes before start of the hour
- Unplanned changes to CAC
 - Unplanned outages & early returns to service
 - Rating changes
 - Changed CAC posted to the Portal ASAP



Monthly Energy Monitoring & Checkouts

- Dashboard
- Actual schedule values available to compare with Period Targets on Portal
 - Track your monthly progress
 - WAPA will help you monitor your period and monthly energy usage
- Mechanism on Portal to facilitate checkouts for energy and capacity



Timetable of Energy & Capacity Schedule Checkouts

- Daily – Dynamic Energy Schedule
 - Ensure e-Tag matches the accepted values and make adjustments to e-Tags if necessary (7 day limit on dynamic e-Tag adjustments)
- Weekly – Energy & Capacity Schedule Checkouts
 - Month to date energy & capacity schedules
- Monthly – Energy & Capacity Schedule Checkouts
 - Monthly energy & capacity schedules



Energy Accounting

- Use of Portal
- Monthly Energy Accounting Report
- Deemed Delivered Report
- Annual Energy Accounting Report



Next Steps

- Scheduling Entity & Contact Info
- Configure Schedule Definitions
- Additional Portal Demo & Testing
- Testing of e-Tags
- Complete revisions to MSI



Important Dates

- August 2017 – Begin e-Tag Testing
- August 2017 – Portal Customer Testing
- Mid-September 2017 – October Transmission Prepayment Invoice issued, if applicable
- Mid-September 2017 – Update to Master Schedule & Contractor's Available Capacity, Issue Target Schedule
- September 13, 2017 – TRC Meeting
- September 29, 2017 – Preschedule for Day 1 of New Contract



Important Dates

- Early Oct 2017 – October Transmission Invoice payment due
- October 2nd – Daily Checkout
- October 6th – Weekly Checkout
- Early November 2017 – Monthly Checkout
- November 3, 2017 – October Capacity & Energy Invoice issued
- November 23, 2017 – October Capacity & Energy Invoice due



Points of Contact

- Portal - Tina Ramsey, ramsey@wapa.gov
- Targets/Pre-scheduling - John Paulsen, paulsen@wapa.gov
- Operations (Balancing) - Kim Clark, kclark@wapa.gov
- Operations (Transmission Scheduling) - Craig Halber, halber@wapa.gov
- Energy Accounting: Rose Statler, rstatler@wapa.gov
- General inquiries: POST2017BCP@wapa.gov

