This business practice implements the two committed scheduling options that are available for customer election in the 2014-2015 rate period. They are Committed 30/30 Scheduling and Committed 30/60 Scheduling (both referred to as Committed Scheduling). Committed 30/30 must schedule in a way that meets or exceeds the accuracy of schedules that use the 30 minute persistence signal for a 30 minute intra-hour schedule. Committed 30/60 must schedule in a way that meets or exceeds the accuracy of schedules that use the 30 minute persistence signal for a 60 minute hourly schedule. Metrics used to compare schedule accuracy are described in this business practice. Under the Initial Proposal, wind generators that commit to scheduling and meet scheduling accuracy metrics for 30 minute schedules are eligible for a reduced Variable Energy Resource Balancing service (VERBS[1]) rate and are exempt from Persistent Deviation penalties. Wind generators that commit to scheduling and meet scheduling accuracy metrics for 60 minute schedules are exempt from Persistent Deviation penalties. BPA will provide participants with the schedule level that meets the accuracy standard for each interval.

This business practice takes effect on October 1, 2013 and sets forth BPA's requirements for participation in Committed Scheduling and other details.

A. Eligible Committed Scheduling Participants and Resources

1. Any Customer[2] that operates a wind facility within BPA's Balancing Authority Area and meets the conditions outlined in this Business Practice may participate in Committed Scheduling. For a wind facility being developed in phases, any phase of a wind facility may participate in Committed Scheduling so long as the phases are each metered and scheduled independently and is not otherwise interdependent with any other phase. Each subsequent phase will need to prequalify independently if the phase is to be included in Committed Scheduling.

B. Prequalifying Information Required

1. Potential Participants are required to:
   a. Notify their BPA Transmission Account Executive in writing of interest in participating.
   b. Identify the Committed Scheduling Resources and provide POR[3] for the wind energy and, if sinking internally to the BPA BAA, POD[4](s).

      If the POD for a Committed 30/30 Scheduling Resource is to load inside BPA's Balancing Authority Area, the potential participant must provide BPA with

[1] "Variable Energy Resource Balancing Service" as described in the ACS-14 rate schedule and General Rate Schedule Provisions.
[2] Any customer taking service under Use of Facilities (UFT), Formula Power Transmission (FPT), Integration of Resources (IR), Generation Integration Services, Part II or Part III of the OATT.
[3] Point of Receipt is an interconnection on the Transmission Provider's Transmission System where capacity and energy will be made available by the Delivering Party: An OASIS field on a TSR that is the scheduling POR.
[4] Point of Delivery is a point on the Transmission Provider's Transmission System where capacity and energy transmitted by the Provider will be made available to the Receiving Party; An OASIS field on a TSR that is the scheduling POD.

acknowledgment from the load that it has a Balancing Resource that it will schedule on each half hour to the load. The acknowledgement must include the resource name and POR. Participants may qualify a portfolio of balancing resources.

c. Inform BPA about the methods by which the potential participant expects to achieve scheduling accuracy that is consistent with or superior to the schedule error metrics described below. BPA will apply the same performance metric regardless of the scheduling method used.

d. Prior to BPA allowing a customer to receive a lower rate associated with Committed Scheduling, the potential participant must demonstrate for at least two weeks its ability to meet the scheduling accuracy metric, regardless or whether the resource is new or existing.

e. The Uncommitted Scheduling VERBS Base Rate (Section III.E. 2 of BPA's ACS-14 rate schedules) will apply during the period that the potential participant is providing prequalifying information to BPA and demonstrating the ability to meet the scheduling accuracy metric.

f. A resource planned to come on-line during the rate period that elects to participate in committed scheduling will have two weeks from their commercial operations date to test their ability to meet the scheduling accuracy metrics for their elected scheduling option.
1. The Uncommitted Scheduling rate will apply until the customer receives Notification of Participation, as defined in Section G, below.
2. The rate for the elected, and qualified for, Committed Scheduling option will take effect on the first day of the next billing cycle.

C. Generation Imbalance and Energy Imbalance

1. Energy Imbalance[5] risk: For Committed 30/30 Scheduling Resources with wind energy sinking to loads within the BPA BA, a Balancing Resource [6] must be identified, as noted above in B.1.b. If the intra-hour schedule is adjusted for the wind plant but Energy Imbalance was increased instead of adjusting the Balancing Resource output, such increases or patterns of imbalance could result in Persistent Deviation Penalties for Energy Imbalance.
2. Committed Scheduling Resources and Balancing Resources are subject to Generation Imbalance. Generation Imbalance accounting for Committed Scheduling Resources and Balancing Resources is on the actual schedule interval, 30 minute or 60 minute. (See the Generation Imbalance Business Practice).
3. Committed Scheduling Resources are exempt from Persistent Deviation Penalties for Generation Imbalance.

[5] Difference occurring between hourly scheduled amount and hourly metered (actually-delivered) amount associated with transmission to a load located in the BPA Balancing Authority area or from a generation resource located within BPA's Balancing Authority Area.
[6] A dispatchable resource within or outside of the BPA Balancing Authority that is available to the load served by the Committed Scheduling Resource on the half hour.

4. Balancing Resources are subject to Persistent Deviation Penalties.

D. Compliance with Dispatch Orders

1. Committed Scheduling participants are subject to Dispatch Orders, including Curtailments, generation limits and Dispatch Standing Order No. 216.

2. A Committed Scheduling participant that does not respond appropriately to a Dispatch Order[7] is subject to a Failure to Comply Penalty[8].

E. Committed Resource Scheduling for DSO-216, Curtailments, and iCRS System Failures

1. During a DSO-216 limit generation event, the Committed Scheduling Resource is expected to comply with the limit while the DSO-216 is in effect. For the subsequent scheduling interval, the Customer should schedule as accurately as possible. In recognition that inaccuracy could result from using the generation value during the DSO-216 limit generation event, BPA will exclude the subsequent schedule interval from scheduling accuracy metrics.
2. During a DSO-216 schedule curtailment the generator does not need to limit their generation in response to the DSO-216 schedule curtailment if there are no other transmission curtailments affecting e-Tags sourced at the Committed Scheduling Resource. In recognition that inaccuracy could result from using the generation value during a DSO-216 schedule curtailment event, BPA will exclude the current interval in scheduling accuracy metrics.
3. During a transmission curtailment, Customers are expected to comply and limit generation to not exceed the sum of remaining approved e-Tags during the curtailment. In recognition that scheduling inaccuracy in subsequent intervals could result from using the generation value during the transmission curtailment, BPA will exclude the period of curtailment and subsequent schedule interval from scheduling accuracy metrics.
4. During an iCRS[9] Generation Advisor System Failure whereby iCRS ceases to produce the average generation value that we will use for determining scheduling accuracy performance (as explained further in Section F below), the Customer should schedule the subsequent scheduling interval as accurately as possible. In recognition that inaccuracy could result from unavailability of the average generation value, BPA will exclude the subsequent schedule interval from scheduling accuracy metrics.

[7] An order or directive from Transmission Services to dispatch, curtail, redispatch, limit output, or shed load. Dispatch orders may be communicated by various methods including, but not limited to : phone call (e.g. to redispatch generation up or down); electronic signal (e.g. via direct telemetry or private web application to limit generation according to DSO216); or NERC e-tagging system (e.g. to curtail transmission schedules and the generation using those schedules).

[8] The consequences of non-compliance as defined in the Failure to Comply Business Practice in effect at the time.

[9] BPA's Integrated Curtailment and Redispatch System, as implemented through BPA's Generation Advisor web application.

F. Schedule Accuracy Metrics

1. Committed 30/30 Scheduling

a. BPA will verify on an ongoing basis that the intra-hour scheduling used is at least as accurate as 30-minute persistence scheduling. The baseline metrics for accuracy comparison include a capacity, energy, and accumulated energy component.
b. 30-Minute Persistence for 30 minute Scheduling (Committed 30/30): The generator's schedule for the next schedule interval is the generator's 1-minute average of the actual generation 30 minutes prior. For example, the generator's schedule for 2:00 to 2:30 is the generator's actual average generation from 1:29 to 1:30 and the generator's schedule for 2:30 to 3:00 is the generator's actual average generation from 1:59 to 2:00. Through iCRS Generation Advisor, BPA will provide the average generation value that we will use for determining scheduling accuracy performance. The average value will be updated within 1 minute after H-x:30 and H-x:00.
c. A 20 minute ramp duration is used to ramp from the second half of the hour schedule to first half of the hour schedule beginning at XX:50 and ending at XX:10. A 10 minute ramp duration is used to ramp from the first half of the hour schedule to the second half of the hour schedule beginning at XX:25 and ending at XX:35.
d. Capacity Component: For the capacity component, the largest absolute value of the actual 1-minute averaged station control error should be less than or equal to the largest absolute value of the 1-minute averaged station control error calculated from 30-minute persistence schedule plus a capacity component dead band over the last seven (7) days. The capacity component dead band is the greater of 1 MW or 2 percent of the largest absolute value of the 1-minute averaged station control error calculated from 30-minute persistence schedule over the last seven (7) days.

$$MAX\left(\left|SCE_{1\min\ Ave,Actual}\right|\right) \le MAX\left(\left|SCE_{1\min\ Ave,Persistence}\right|\right) + DB_{capacity}$$

$$DB_{capacity} = \text{Greater of } 1\,MW \text{ or } 2\% \text{ of last } 7 \text{ day's } MAX\left(\left|SCE_{1\min\ Ave,Persistence}\right|\right)$$

$$SCE_{1\min\ Ave,Actual} = \text{Last } 7 \text{ day's actual } 1 \text{ minute average SCE}$$

$$SCE_{1\min\ Ave,Persistence} = \text{Last } 7 \text{ day's } 30\text{-minute persistence schedule's } 1 \text{ minute average SCE}$$

Equation 1- Capacity Component

e. Energy Component: For the energy component, the sum of the absolute value of the actual integrated imbalance over each 30-minute schedule interval should be less than or equal to the sum of the absolute value of the integrated imbalance over each 30-minute schedule interval from a calculated 30-minute persistence schedule plus an energy component dead band over the last seven (7) days. The energy component dead band is the greater of 50MWh or 2 percent of the sum of the absolute value of the integrated imbalance over each 30-minute schedule interval from a calculated 30-minute persistence schedule over the last seven (7) days.

$$\sum \left| \frac{SCE_{30\min Ave,Actual}}{2} \right| \leq \sum \left| \frac{SCE_{30\min Ave,Persistence}}{2} \right| + DB_{energy}$$

DB_{energy} = The greater of 50 MWh or 2% of last 7 day's $\sum \left| \frac{SCE_{30\min Ave,Persistence}}{2} \right|$

$SCE_{30\min Ave,Actual}$ = Last 7 day's actual 30 minute averaged SCE

$SCE_{30\min Ave,Persistence}$ = Last 7 day's 30 - minute persistence schedule's 30 minute avera

Equation 2 - Energy Component

f. Accumulated Energy Imbalance Component: In addition, the absolute value of the bias in energy imbalance accumulation over the last seven (7) days should be less than or equal to the bias resulting from 30-minute persistence scheduling plus an imbalance component dead band.

$$\left| \sum \frac{SCE_{30\min Ave,Actual}}{2} \right| \leq \left| \sum \frac{SCE_{30\min Ave,Persistence}}{2} \right| + DB_{imbalance}$$

$DB_{imbalance}$ = The greater of 50 MWh or 2% of last 7 day's $\sum \left| \frac{SCE_{30\min Ave,Persistence}}{2} \right|$

$SCE_{30\min Ave,Actual}$ = Last 7 day's actual 30 minute average SCE

$SCE_{30\min Ave,Persistence}$ = Last 7 day's 30-minute persistence schedule's 30 minute average SCE

Equation 3 - Accumulated Energy Imbalance

g. A Committed 30/30 Scheduling Participant scheduling to the BPA-provided 30-minute persistence value for every 30-minute schedule interval will satisfy the schedule accuracy metrics for capacity, energy, and accumulated energy imbalance.
h. For Committed 30/30 Resources scheduling generation to loads within the BPA BA, BPA will also verify that the Balancing Resource is adjusting in conjunction with the wind resource schedule changes. BPA will check the intra-hour change in the sum of schedules for the Balancing Resource against the intra-hour change for the Committed 30/30 Scheduling Resource to ensure that use of FCRPS balancing reserve capacity is reduced.

2. Committed 30/60 Scheduling

a. BPA will verify on an ongoing basis that the hourly schedule used is at least as accurate as the 30-minute persistence signal. The baseline metrics for accuracy comparison shall include a capacity, energy, and accumulated energy component.
b. 30-Minute Persistence Signal for 60 minute Scheduling (Committed 30/60): The generator's schedule for the next schedule interval is the generator's 1-minute average of the actual generation 30 minutes prior to the hour. For example, the

generator's schedule for 2:00 to 3:00 is the generator's actual average generation from 1:29 to 1:30. Through iCRS Generation Advisor, BPA will provide the average generation value that we will use for determining scheduling accuracy performance. The average value will be updated within 1 minute after H-x:30.

c. A 20 minute ramp duration is used to ramp from the end of the previous hour schedule to the next hour schedule beginning at XX:50 and ending at XX:10.

d. Capacity Component: For the capacity component, the largest absolute value of the actual 1-minute averaged station control error should be less than or equal to the largest absolute value of the 1-minute averaged station control error calculated from 30-minute persistence schedule plus a capacity component dead band over the last seven (7) days. The capacity component dead band is the greater of 1 MW or 2 percent of the largest absolute value of the 1-minute averaged station control error calculated from 30-minute persistence schedule over the last seven (7) days.

$$MAX\left(\left|SCE_{1\,\min Ave,Actual}\right|\right) \leq MAX\left(\left|SCE_{1\,\min Ave,Persistence}\right|\right) + DB_{capacity}$$

$DB_{capacity}$ = Greater of 1 MW or 2% of last 7 day's $MAX\left(\left|SCE_{1\,\min Ave,Persistence}\right|\right)$

$SCE_{1\,\min Ave,Actual}$ = Last 7 day's actual 1 minute average SCE

$SCE_{1\,\min Ave,Persistence}$ = Last 7 day's 30-minute persistence schedule's 1 minute average SCE

Equation 1- Capacity Component

e. Energy Component: For the energy component, the sum of the absolute value of the actual integrated imbalance over each 60-minute schedule interval should be less than or equal to the sum of the absolute value of the integrated imbalance over each 60-minute schedule interval from a calculated 30-minute persistence schedule plus an energy component dead band over the last seven (7) days. The energy component dead band is the greater of 50MWh or 2 percent of the sum of the absolute value of the integrated imbalance over each 60-minute schedule interval from a calculated 30-minute persistence schedule over the last seven (7) days.

$$\sum\left|SCE_{60\,\min Ave,Actual}\right| \leq \sum\left|SCE_{60\,\min Ave,Persistence}\right| + DB_{energy}$$

DB_{energy} = The greater of 50 MWh or 2% of last 7 day's $\sum\left|SCE_{60\,\min Ave,Persistence}\right|$

$SCE_{60\,\min Ave,Actual}$ = Last 7 day's actual 60 minute average SCE

$SCE_{60\,\min Ave,Persistence}$ = Last 7 day's 30-minute persistence schedule's 60 minute average SCE

Equation 2 - Energy Component

f. Accumulated Energy Imbalance Component: In addition, the absolute value of the bias in energy imbalance accumulation over the last seven (7) days should be less than or equal to the bias resulting from 30-minute persistence scheduling plus an imbalance component dead band.

$$\left|\sum SCE_{60\,\text{min}\,Ave,Actual}\right| \leq \left|\sum SCE_{60\,\text{min}\,Ave,Persistence}\right| + DB_{imbalance}$$

$DB_{imbalance}$ = The greater of 50 MWh or 2% of last 7 day's $\sum \left|SCE_{60\,\text{min}\,Ave,Persistence}\right|$

$SCE_{60\,\text{min}\,Ave,Actual}$ = Last 7 day's actual 60 minute average SCE

$SCE_{60\,\text{min}\,Ave,Persistence}$ = Last 7 day's 30-minute persistence schedule's 60 minute average SCE

Equation 3 - Accumulated Energy Imbalance

g. A Committed 30/60 Scheduling Participant scheduling to the BPA-provided 30-minute persistence value for every 60-minute schedule interval will satisfy the schedule accuracy metrics for capacity, energy, and accumulated energy imbalance

G. Notification of Participant Qualification for Committed Scheduling VERBS Base Rate

1. BPA will notify a potential Committed Scheduling Participant when the potential participant has met the pre-qualification requirements and request written acknowledgment that the terms of this business practice will govern participation in Committed Scheduling. BPA must receive the written acknowledgement from the Committed Scheduling Participant no later than 5 business days before the end of a month for the Committed Scheduling VERBS Base Rate Section III.E.2 of BPA's ACS-14 rate schedules) to apply beginning on the first day of the next month.

   Testing for qualification to start Committed Scheduling on October 1, 2013 will be performed during September of 2013. In planning the time necessary for testing participants are encourage to build in time for edits and revisions to systems and processes.

2. BPA encourages Committed Scheduling Participants to automate their scheduling at the time they initiate participation.

H. Notification of Failure to Meet Scheduling Accuracy and Termination

1. If the Committed Scheduling Participant's schedule accuracy does not meet the Scheduling Accuracy Metrics, BPA will notify the Committed Scheduling Participant within 10 Business Days by written notice. Upon receipt of such notice, the Committed Scheduling Participant is expected to correct the scheduling accuracy within 1 business day.
2. If the failure to meet the scheduling accuracy metrics was caused by factors outside the control of the participant, such as a failure of iCRS or other data acquisition system problems, the Customer may submit the reasons and documentation and request that BA waive the failure. Customer must submit the written request within 10 business days of receipt of BPA's notice of failure. If BPA grants the request for waiver, BPA will

notify the customer within 10 business days of receipt of the request and the failure will not count against the Customer.

3. After BPA issues two such unwaived failures for a single performance metric over a 30 day period, the next notice will require the Committed Scheduling Participant to automate scheduling to the BPA-provided persistence value in a manner consistent with applicable DOE cyber security standards. Upon receipt of a notice with this requirement, the Committed Scheduling Participant must notify BPA of their intent to comply within two Business Days, and execute the change in their scheduling systems within two weeks of receiving BPA's new signal. During the intervening period the Committed Scheduling Participant is expected to exercise due diligence to continue to achieve the expected scheduling accuracy.

4. BPA may initiate moving a Committed Scheduling participant to a longer scheduling option as defined in VERBS Base Rate Section III.E.2 of the 2014-2015 ACS Rate Schedule upon failure to automate scheduling or on the third unwaived failure of performance.

5. The Participant will be billed for uncommitted scheduling at the start of the next billing cycle if the Participant fails to convert to automated scheduling of the BPA-provided persistence value within two weeks of receiving the new signal from BPA. Termination will take effect on the last day of the current billing cycle.

6. When a Committed 30/30 Scheduling Resource is sinking to load within the BPA BA and the Balancing Resource is not changing schedules in response to the intra-hour adjustments BPA will issue a notice to the Committed Scheduling Resource and the Balancing Resources.
    a. After two such unwaived failures over a 30 day period BPA may disqualify the poor performing Balancing Resource upon two weeks notice. During this period the Balancing Resource is expected to exercise due diligence to continue to achieve the expected response.
    b. Failure to bring a new balancing resource within the two weeks notice period will result in termination from participation in committed scheduling. During this period the Balancing Resource is expected to exercise due diligence to continue to achieve the expected response.
    c. BPA may disqualify a non-performing Balancing Resource upon 7 days written notice. If the Committed Scheduler does not have another qualified resource the Committed Scheduler will be billed the uncommitted scheduling rate on the first day of the next billing cycle.
    d. A resource may requalify as a Balancing Resource after 30 days and at the start of the next billing cycle by providing documentation to BPA, and receiving approval from BPA, that it has corrected the causes for its disqualification. BPA will work with the Committed Scheduling participant and the Balancing Resource to develop solutions.
7. A Committed Scheduling Participant moved to a longer schedule interval option by BPA will receive the VERBS Base Rate for the level the Customer is scheduling to for the remainder of the rate period. Upon termination from a committed scheduling option the appropriate VERBS Base Rate for the scheduling option will take effect on the first day of the next billing cycle. For example, a Committed 30/30 scheduler moved to Committed 30/60 scheduling will pay the Committed 30/60 Base VERBS Rate or a

Committed 30/60 scheduler moving to Uncommitted Scheduling will pay the Uncommitted Scheduling Base VERBS rate, for the whole month.

7. A change in a customers scheduling option will result in the direct assignment of the cost of acquisitions caused by the unplanned increase in the reserve requirements for the BPA BAA. See the Type 4 Acquisition Costs in Section III.E.6.4 of the 2014-2015 ACS Rate Schedule.

J. Additional Information

Policy Reference

• 2014-2015 Transmission and Ancillary Service Rates

Related Business Practices

- Redispatch and Curtailment
- Requesting Transmission Service
- Scheduling Transmission Service
- Generation Imbalance
- Failure to Comply
- On Demand Resource Scheduling
- Oversupply Management Protocol