

**Discussion Paper for the RTO West Metering,
Communications and Control Task Group On Self-Tracking
By Avista Corporation
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Various RTO West documents discuss the concept of “Self-Tracking”. Much of the material concerning the topic of self-tracking refers to the tight regulation requirement of exactly matching loads with generation resources on a moment by moment basis. This discussion paper attempts to separate the requirement to perform self-tracking (certification) from the performance measures and continued operation as a self-tracker. This discussion paper is written as if part of an RTO West document describing self-tracking. However, the “requirements” are the opinion of Avista Corporation and not reflective of RTO West work on this issue.

Definition

The RTO West Stage II filing document Appendix “G” entitled “RTO West Ancillary Services Model” defines Self-Tracking as “...Scheduling Coordinators use their own resources or resources under contract to meet their needs for Regulation and Frequency Response and Load Following...”. This is a similar concept to the traditional Control Area’s ability to direct Automatic Generation Control units (AGC) to meet ACE requirements. However, self-trackers will operate within the RTO West single control area framework and their obligations are restricted to matching generation and load. A self-tracker may avoid charges associated with load following and regulation and frequency response but will be subject to congestion charges caused by their control actions.

Metering considerations

A self-tracked boundary can consist of individually metered loads and or resources (aggregated model) or loads & resources contained within a net metered boundary. In either case, Load Forecast or some terminology depicting the self-tracker’s function to control the net-metered actual powerflow between itself and RTO West will replace today’s Control Area concept of Scheduled Interchange. All self-tracked loads and resources must be contained within the RTO West Control Area.

Ability to perform AGC “RTO West Certification”

The self-tracker is required to certify with RTO West that it can continuously monitor net actual metered powerflow on a data scan rate consistent with RTO West policy (e.g. NERC Policy 1, four second data scan rate). The self-tracker must have the ability to direct generation and or controllable loads to raise/lower regulation at the same data scan rate. This technology is widely available through EMS/SCADA vendors. The ability to perform AGC should not be confused

with the performance of and continued RTO West certification of the self-tracker. The self-tracker should be certified on the basis of AGC ability but should be evaluated on compliance with current CPS standards.

Compliance with CPS “Continued Certification”

There has been much discussion concerning the “acceptable performance” of the self-tracker’s ability to match net-metered actual powerflow against its hourly load forecast. However, mandating an exact match between metered actuals and forecast load conflicts with Control Performance Criteria (CPS). CPS is a statistical performance measure of a Control Area’s ability to support interconnected frequency within predetermined error limits. Any requirement that mandates a time specific exact match of metered actual and forecast is detrimental to interconnected frequency and therefore, will decrease overall system reliability. The self-tracker’s “continued” certification to perform AGC regulation should be directly related to CPS performance or similar measure. CPS values are based on 1-minute and 10-minute ACE average values. Both are directly adaptable to the load forecast model and can be set at various averaging intervals.

Hourly accounting for Energy Imbalance

Energy Imbalance between the self-tracker and RTO West will be settled on an hourly basis without deadband. Any penalties assessed by RTO West for Energy Imbalance that exceed hard limits (e.g. $\pm 1.5\%$ of Load Forecast) will not be assessed for contingency hours (sudden & unexpected loss of generation and or load). There has been some discussion about creating an Energy Imbalance deadband that would mimic today’s treatment of Inadvertent Energy between Control Areas. However, any use of deadband would be arbitrary and inconsistent with RTO West market mechanisms.

Frequency Response Bias

Control Areas are required per NERC Policy 1 to add a term to their ACE equation to account for their Frequency Response Characteristic so that AGC does not “defeat” generator governor response. This is commonly referred to as frequency bias or tie-line bias. For the self-tracking examples, this practice conflicts with the requirement of Energy Imbalance and would impact the self-tracker’s ability to match net-metered actual powerflow and forecast. Presumably, generators will be required through Interconnection Agreements to maintain active speed-governors consistent with Regional and National standards. It would logically follow that self-trackers ability to perform AGC not defeat governor response and therefore, RTO West would stipulate the amount of frequency bias contribution for each self-tracker.

Time Error Correction

Another AGC requirement for the Control Area is participation in WECC manual time error corrections. CALISO is the time monitor for the Western Interconnection and routinely requests that Control Areas operate to a scheduled frequency target of 59.98 or 60.02 Hz (slow or fast time correction, respectively). This allows the electric reference clock to be reconciled against the atomic reference. Again, in a pure treatment, time error correction would impact the self-tracker's ability to match net-metered actual powerflow with the forecast.

During the February 28, 2002 WECC Operating Committee meeting the Operating Committee approved a plan to implement automatic time error correction. A mathematical model has been developed which discriminates between Primary and Secondary Inadvertent Energy. Primary Inadvertent is accumulated as the result of a Control Area's direct AGC actions. Therefore, the proposed automatic time error correction added to the ACE equation will be limited to the unilateral payback of Primary Inadvertent. This concept could be extended to the AGC response for the self-tracker or maintained solely by RTO West.