

Ancillary Service Provision and Obligations Analysis

The purpose of this paper is to clarify the types of ancillary services that Scheduling Coordinators would be required to either purchase from RTO West, self-provide or self-track. The RTO West stage 2 filing lists 12 ancillary services, whereas FERC’s SMD NOPR contains only 7 (including energy market Replacement Reserve provisions). RTO West’s 12 services are based on the NERC Interconnected Operation Services standards applicable to control areas (or Balancing Authorities in the CACTF Reliability Model). While the objective of unbundling Ancillary Services for customers is important, ensuring that services are not double-charged to customers has been a valid concern in many FERC proceedings. Furthermore, the current practice of pooling certain services (e.g. operating reserves) should not be diminished by the terms for Self-Provision. The ERCOT ISO has developed an extensive document describing most details of how Ancillary Services are procured, provided and paid for.

Provision of RTO West Ancillary Services

The following table provides a list of the RTO West proposed services summarizing the RTO West and Scheduling Coordinators as purchasers/providers, and comparison between those services and the SMD services.

RTO Ref.	RTO West Service	RTO West	Scheduling Coordinator	Comments	SMD Trf #	SMD Group
C.1.	Regulation & Frequency Response	<ul style="list-style-type: none"> RTO West sends an AGC signal to generators to maintain RTO West ACE. 	<ul style="list-style-type: none"> Self Provision permitted. Self Tracking permitted. Cost recovery depends on credit received for Self Prov/Track if applicable [H.1.d] 	<ul style="list-style-type: none"> Should permit RTO AGC signal to be directed to a <u>generator or system of generators</u> Not clear how Self Tracking “credit” will be determined. 	C.3	Regulation Service
C.2.	Load Following Up	<ul style="list-style-type: none"> RTO purchases generator Inc capacity or load Decs 	<ul style="list-style-type: none"> Self Provision permitted. Self Tracking permitted. Cost recovery depends on credit received for Self Prov/Track if applicable [H.1.d] 	<ul style="list-style-type: none"> ERCOT has Regulation Up and Regulation Down services, but not 3 different services. 		
C.3.	Load Following Down	<ul style="list-style-type: none"> RTO purchases generator Dec capacity or load Incs 	<ul style="list-style-type: none"> Self Provision permitted. Self Tracking permitted. Cost recovery depends on credit received for Self Prov/Track if applicable [H.1.d] 	<ul style="list-style-type: none"> ERCOT has Regulation Up and Regulation Down services, but not 3 different services. 		

RTO Ref.	RTO West Service	RTO West	Scheduling Coordinator	Comments	SMD Trf #	SMD Group
C.9.	Balancing Energy	<ul style="list-style-type: none"> Coordinated use of other ancillary services C.1., C.2., C.3., C.6., C.8., C.4. and C.5. 	<ul style="list-style-type: none"> Charged to SCs with energy imbalance [H.1.b] Imbalance penalties apply if “reasonable use threshold” is exceeded [I.1] 	<ul style="list-style-type: none"> If the RTO operates a real-time balancing energy market, this service will be implicit in that market. Customers that fail to follow load will pay or be paid nodal, real-time prices that reflect the imbalance between injections and withdrawals. The discussion in Appdx G gives the impression that discrete charges for Balancing Energy service may result in double-charging a customer. 	C.4	Energy Imbalance provided through Day-Ahead and Real-Time Markets
C.8.	Supplemental Energy	<ul style="list-style-type: none"> RTOW purchases to provide Balancing Energy or eliminate congestion in real-time [C.8] 	<ul style="list-style-type: none"> Cost recovery not discussed in Appendix G. 			
C.4.	Spinning Reserve	<ul style="list-style-type: none"> RTO purchases generating capacity that is synchronized and capable of producing additional power. 	<ul style="list-style-type: none"> Self Provision permitted. Cost recovery depends on credit received for Self Provision if applicable [H.1.e] 	<ul style="list-style-type: none"> Must ensure that Self Providers continue to realize the benefits of reserve sharing. 	C.5(i)	Operating Reserve - Spinning
C.5.	Non-Spinning Reserve	<ul style="list-style-type: none"> RTO purchases generating capacity that may not be synchronized, but capable of producing additional power in response to contingencies. 	<ul style="list-style-type: none"> Self Provision permitted. Cost recovery depends on credit received for Self Provision if applicable [H.1.e] 	<ul style="list-style-type: none"> The SMD NOPR differentiates the forms of Supplemental Operating Reserves in terms of quality characteristics (e.g. time to synch and reach output level) 	C.5(ii)	Operating Reserve - Supplemental
C.6.	Replacement Reserve	<ul style="list-style-type: none"> RTO purchases generating capacity that may not be synchronized, but capable of producing additional power within 60 minutes. 	<ul style="list-style-type: none"> Self Provision permitted. 	<ul style="list-style-type: none"> The SMD NOPR only requires that an ITP procure replacement reserves when insufficient resources have been scheduled to meet the Day-Ahead load forecast. The RTO West for of this service looks a lot like Non-Spinning Reserve service. 	F.1.8	Replacement Reserves (committed Day-Ahead when needed to ensure sufficiency)

RTO Ref.	RTO West Service	RTO West	Scheduling Coordinator	Comments	SMD Trf #	SMD Group
C.7.	Congestion Redispatch	<ul style="list-style-type: none"> RTOW is sole provider 	<ul style="list-style-type: none"> Charged to SCs that have an obligation to pay for redispatch [H.1.c] Not clear what the basis of the charge would be. 	<ul style="list-style-type: none"> Redispatch occurs by selection and clearing of locational bids. Energy costs for redispatch are already accounted for in Real-Time market settlement. Potential for double-charging exists. The computational/administrative cost should be recovered in the GMC. 	None	Not an Ancillary Service Provided through operation of Day-Ahead and Real-Time Markets
C.11.	Black Start	<ul style="list-style-type: none"> RTOW is sole provider May require long-term supply contract 	<ul style="list-style-type: none"> Cost to be allocated to SCs [H.1.a] 	<ul style="list-style-type: none"> Could be recovered in GMC 	None	Not addressed in SMD NOPR
C.12.	Scheduling & Dispatch	<ul style="list-style-type: none"> RTOW is sole provider 	<ul style="list-style-type: none"> Cost to be allocated to SCs [H.1.a] 	<ul style="list-style-type: none"> Could be recovered in GMC SMD allows ITP to determine cost recovery 	C.1	Scheduling, System Control and Dispatch
C.10.	Voltage Support	<ul style="list-style-type: none"> RTOW procures from VAR sources May require long-term supply contract 	<ul style="list-style-type: none"> Cost to be allocated to SCs [H.1.a] 	<ul style="list-style-type: none"> Could be recovered in GMC SMD allows ITP to determine cost recovery 	C.2	Reactive Supply and Voltage Control from Generation Sources

ERCOT Provisions

ERCOT currently provides for the following 11 ancillary services:

ERCOT Ref	Description	Comparable to	ERCOT Provider Restrictions	RTO West Provider Restrictions
6.1.1	Balancing Energy Service	Comparable to Balancing Energy and Supplemental Energy service in RTO West and Energy Imbalance in SMD.	ERCOT Sole Provider	
6.1.2	Regulation Service – Down	Capacity-based service to respond to an increase in interconnection frequency	May be Self-Arranged	Self-Provision and Self-Tracking permitted
6.1.3	Regulation Service – Up	Capacity-based service to respond to a decrease in interconnection frequency	May be Self-Arranged	Self-Provision and Self-Tracking permitted
6.1.4	Responsive Reserve Service	Comparable to the Spinning Reserve service in RTO West and SMD.	May be Self-Arranged	Self-Provision permitted
6.1.5	Non-Spinning Reserve Service	Comparable to the Non-Spinning Reserve service in RTO West and Operating Reserve – Supplemental in SMD.	May be Self-Arranged	Self-Provision permitted
6.1.6	Replacement Reserve Service	Comparable to Replacement Reserve service in RTO West and SMD	ERCOT Sole Provider	Self-Provision permitted
6.1.7	Voltage Support	Comparable to Voltage Support service in RTO West and Reactive Supply and Voltage Control in SMD	ERCOT Sole Provider	RTO West Sole Provider
6.1.8	Black Start Service	Comparable to Black Start in RTO	ERCOT Sole Provider	RTO West Sole

		West		Provider
6.1.9	Reliability Must-Run Service	No comparable RTO West or SMD service	ERCOT Sole Provider	N/A
6.1.10	Out-Of-Merit Capacity Service	No comparable RTO West or SMD service	ERCOT Sole Provider	N/A
6.1.11	Out-Of-Merit Energy Service	No comparable RTO West or SMD service	ERCOT Sole Provider	N/A

Replacement Reserve Service, Voltage Support Service (VSS) and Black Start Service have comparable services in the RTO West proposal. SMD does not include Black Start Service, but provides more explicit conditions for the applicability of Replacement Reserve Service. The last three services have no equivalents in RTO West or SMD. A similar form of service may be needed in RTO West pending analysis of whether certain units in the region, that are not committed to bilateral energy production for load service, would need to be subject to RMR or OOM service requirements.

ERCOT differs from RTO West on which services can be “self-arranged” and those that ERCOT is the sole provider of. RTO West definition of “Balancing Energy” is overly broad as it appears to cover the energy component of many other services. In ERCOT, Balancing Energy is used to minimize regulation energy.

Conclusions

The RTO West Stage 2 filing proposes a list of Ancillary Services representing the technical requirements of the NERC IOS proposed standard. While these are important to consider during operations, they are not reconciled with the billing and settlement processes that will emerge from the Market Operations design. As a result, many of the proposed RTO West Ancillary Services may be difficult to reconcile from a Scheduling Coordinator’s perspective since the interactions of multiple services produce a single, real-time, locational price that the SC is obligated to pay in the settlement process. It may be unproductive for the RTO to attempt to further unbundle this locational price (e.g. into energy components for each of the capacity-based services described). Furthermore, additional research is needed to determine the metrics that would be used to assign Ancillary Service responsibilities to SCs since this would affect Self-Provision, Self-Tracking and cost assignment by RTO West when it is provider of last resort.