

Priority Services Hierarchy Framework

A Priority Services Hierarchy (PSH) is a key building block to a successful AOCE implementation. During phase one of the AOCE process an ISO is required to issue Capacity Supply Obligations (CSO) to the Owners of Approved Capacity Commitment (ACC), and pay the owner an uplift, perhaps 10% over and above the ACC's face value, in return for taking the risk to secure the ACC. This process is referred to as the CSO Issuance Process (CSOIP).

After issuing CSO's to satisfy individual State based energy targets – the first priority in AOCE, the next step is to secure services based on a PSH. In phase two of CSOIP, CSO's are issued based on cost and the precedence order of services indicated in the PSH, in sufficient quantity to meet reliability requirements. The Acquisition Target column, shown below, represents the percentage of “forecasted demand” that is needed from a supply resources (adjusted for losses) in order to ensure a reliable/resilient system. For example, if forecasted demand is 10,000 MW and an ISO requires 1% of Fast Frequency Response (FFR) the total would be 100 MW's (plus a loss factor) of capacity from resources offering this type of service.

A strawman example of a PSH follows:

Precedence	Purpose	Service Type	Response Requirement	Performance Operating Range	Minimum Duration	Subject to Minimum Offer Price	Acquisition Target %
1	Essential Reliability Services (ERS)	Fast Frequency Response (FFR) (i.e. AGC and UFR on DR side)	4 seconds	1 MW – 3 MW	24 hours	Y	1
2	Essential Reliability Services (ERS)	Frequency Regulation (PFR) (i.e. rapid ramping)	5 minutes	1 MW – 2000 MW	24 hours	Y	1
3	Essential Reliability Services (ERS)	Voltage Control (Reactive Power)	15 minutes	1 Mvar – 100 Mvar	24 hours	Y	
4	Essential Reliability Services (ERS)	Voltage Ride through (see IEEE 1547-2018)	5 minutes	3 volts	24 hours	Y	
5	Essential Reliability Services (ERS)	Frequency Ride Through (see IEEE 1547-2018)	10 seconds	59.7 – 60.3	24 hours	Y	
6	Essential Reliability Services (ERS)	Synchronized Reserves	10 minutes	100 MW – 500 MW	24 hours	Y	10

7	Essential Reliability Services (ERS)	Non-Synchronized Reserves	30 minutes	100 MW – 500 MW	24 hours	Y	5
8	Baseload Gen	Bulk Power Generation	1 day	5 MW – 2500 MW	24 x 7	Y	65
9	Balancing	Flexible Dispatch	15 minutes	1 MW – 500 MW	24 hours	Y	10
10	Balancing	Fast Up Ramping	5 minutes	20 MW – 500 MW	1 hour	Y	3
11	Balancing	Fast Down Ramping	5 minutes	20 MW – 500 MW	1 hour	Y	3
12	Contingency Response	Inertial Response					

Guidance for construction of the PSH should follow the NERC guidelines for Grid Reliability Services, available here: <https://www.nerc.com/comm/Other/essntlrbltysrvcstskfrDL/ERSTF%20Concept%20Paper.pdf#search=erstf> or the latest version is of this NERC document and proposed changes to reserve acquisition proposed by PJM in section I.B.2 of <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=15199895>

Mike Milligan’s article on “Sources of grid reliability services”

<https://www.sciencedirect.com/science/article/pii/S104061901830215X?openDownloadIssueModal=true>