

Clearing of DR Capacity Products in RPM Auctions

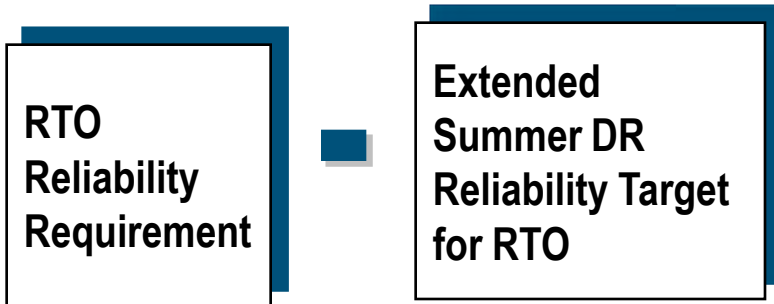
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- DR Reliability Targets are established to ensure reliability standards are maintained by recognizing the availability limitations of DR
- Limited DR Reliability Target is maximum quantity of Limited DR to be consistent with maintenance of reliability
- Extended Summer (ES) DR Reliability Target is maximum quantity of combination of Limited DR and ES DR to be consistent with maintenance of reliability
- Reliability Targets established for the RTO and each LDA
- Reliability Target expressed as % of peak load and converted to UCAP terms

- DR Reliability Targets implemented in RPM auctions as Minimum Resource Requirements for less limited, better availability products
- Minimum Annual Resource Requirement sets a minimum level of Annual capacity to be procured
- Minimum Extended Summer Resource Requirement sets a minimum level of combined Annual and ES capacity to be procured
- Established for the RTO and each LDA
- Determined in a manner that reserves the entire 2.5% holdback to be procured in future IAs entirely in the form of Limited DR
- RPM BRA auction clearing process will select Annual Resources and/or Extended Summer Resources out-of-merit order, if necessary, to satisfy Minimum Resource Requirements

Minimum Annual Resource Requirement = Minimum amount of capacity PJM seeks to procure from Annual Resources (generation, Annual DR, and energy efficiency resources) located in RTO/LDA

RTO Minimum Annual Resource Requirement =



LDA Minimum Annual Resource Requirement =



Minimum Extended Summer Resource Requirement = Minimum amount of capacity PJM seeks to procure from Annual Resources (generation, Annual DR, and energy efficiency resources) and Extended Summer DR located in RTO/LDA

RTO Minimum Extended Summer Resource Requirement =

RTO
Reliability
Requirement

Limited DR
Reliability
Target for RTO

LDA Minimum Extended Summer Resource Requirement =

LDA
Reliability
Requirement

LDA CETL

Limited DR
Reliability
Target for LDA

2016/2017 BRA Planning Parameters (UCAP MW)	
Reliability Requirement	166,128
Short Term Resource Procurement Target (STRPT)	4,153
Reliability Requirement less STRPT	161,974
Extended Summer DR Reliability Target	16,658
Minimum Annual Resource Requirement	149,469
Limited DR Reliability Target	7,615
Minimum Extended Summer Resource Requirement	158,512

Constraints on Clearing of Resource Types	Base Case
Target Reliability Requirement	161,974
Minimum Annual Resource Requirement	149,469
Minimum Extended Summer Resource Requirement	158,512
Maximum Limited DR	not applicable
Maximum Limited + Extended Summer DR	not applicable

Cleared Quantities	2016/17 BRA
Annual	156,840
Extended Summer	2,470
Limited	9,850
Total Cleared	169,160
Cleared Quantity above Target Reliability Requirement	7,185
(as Annual Capacity)	0
(as Extended Summer DR)	798
(as Limited DR)	6,387
Total Cleared Limited DR for Delivery Year assuming all STRPT clears as Limited in Incremental Auctions	
	14,003

2016/17 BRA Resource Clearing Prices (\$/MW-Day)

	RTO	MAAC	PSEG / PS-North	ATSI / ATSI-Cleveland
RCP (Annual)	\$59.37	\$119.13	\$219.00	\$114.23
RCP (Extended Summer)	\$59.37	\$119.13	\$219.00	\$114.23
RCP (Limited)	\$59.37	\$119.13	\$219.00	\$94.45

- Total cleared capacity quantity above the target reliability requirement is 7,185 MW and is almost entirely comprised of cleared Limited DR
- No price separation between product types across most of RTO
 - Minimal price separation between product types in ATSI
- Cleared Limited DR quantity is 9,850 MW in BRA with potential to clear additional 4,153 MW of Limited DR in Incremental Auctions for a total Limited DR quantity of 14,003 MW
 - The Limited DR Reliability Target is 7,615 MW

- Request made at last CSTF to run BRA simulation using different approach to implementation of DR Reliability Targets
 - Enforce Limited DR Reliability Target
 - Enforce Extended Summer DR Reliability Target
- The 2016/17 and 2015/16 BRAs were rerun under this scenario
- The inputs and results of this scenario are compared to those of the 2016/17 BRA and 2015/16 BRA on following pages

2016/2017 BRA Planning Parameters (UCAP MW)	
Reliability Requirement	166,128
Short Term Resource Procurement Target (STRPT)	4,153
Reliability Requirement less STRPT	161,974
Extended Summer DR Reliability Target	16,658
Minimum Annual Resource Requirement	149,469
Limited DR Reliability Target	7,615
Minimum Extended Summer Resource Requirement	158,512

Constraints on Clearing of Resource Types	2016/17 BRA	Scenario 1
Target Reliability Requirement	161,974	161,974
Minimum Annual Resource Requirement	149,469	not applicable
Minimum Extended Summer Resource Requirement	158,512	not applicable
Maximum Limited DR	not applicable	3,462
Maximum Limited + Extended Summer DR	not applicable	12,505

Cleared Quantities	Base Case	Scenario 1	Delta
Annual	156,840	157,452	612
Extended Summer	2,470	7,831	5,361
Limited	9,850	3,462	-6,387
Total Cleared	169,160	168,745	-414
Cleared Quantity above Target Reliability Requirement	7,185	6,771	-414
(as Annual Capacity)	0	0	0
(as Extended Summer DR)	798	6,771	5,973
(as Limited DR)	6,387	0	-6,387
Total Cleared Limited DR for Delivery Year assuming all STRPT clears as Limited in Incremental Auctions	14,003	7,615	6,387

2016/17 BRA Resource Clearing Prices (\$/MW-Day)

	RTO	MAAC	PSEG / PS-North	ATSI / ATSI-Cleveland
RCP (Annual)	\$59.37	\$119.13	\$219.00	\$114.23
RCP (Extended Summer)	\$59.37	\$119.13	\$219.00	\$114.23
RCP (Limited)	\$59.37	\$119.13	\$219.00	\$94.45

Scenario 1 Resource Clearing Prices (\$/MW-Day)

	RTO	MAAC	PSEG / PS-North	ATSI / ATSI-Cleveland
RCP (Annual)	\$85.15	\$130.07	\$219.00	\$115.00
RCP (Extended Summer)	\$85.15	\$130.07	\$219.00	\$115.00
RCP (Limited)	\$16.44	\$61.36	\$150.29	\$27.40

2015/2016 BRA Planning Parameters (UCAP MW)	
Reliability Requirement	162,777
Short Term Resource Procurement Target (STRPT)	4,069
Reliability Requirement less STRPT	158,708
Extended Summer DR Reliability Target	16,323
Minimum Annual Resource Requirement	146,455
Limited DR Reliability Target	7,462
Minimum Extended Summer Resource Requirement	155,316

Constraints on Clearing of Resource Types	2015/16 BRA	Scenario 1
Target Reliability Requirement	158,708	158,708
Minimum Annual Resource Requirement	146,455	not applicable
Minimum Extended Summer Resource Requirement	155,316	not applicable
Maximum Limited DR	not applicable	3,392
Maximum Limited + Extended Summer DR	not applicable	12,253

Cleared Quantities	2015/16 BRA	Scenario 1	Delta
Annual	150,112	151,719	1,607
Extended Summer	5,202	8,859	3,657
Limited	9,247	3,392	-5,855
Total Cleared	164,561	163,971	-591
Cleared Quantity above Target Reliability Requirement	5,853	5,263	-591
(as Annual Capacity)	0	0	0
(as Extended Summer DR)	0	5,263	5,263
(as Limited DR)	5,853	0	-5,853

Total Cleared Limited DR for Delivery Year assuming all STRPT clears as Limited in Incremental Auctions	13,317	7,462	5,855
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2015/16 BRA Resource Clearing Prices (\$/MW-Day)

	RTO	MAAC	ATSI / ATSI-Cleveland
RCP (Annual)	\$136.00	\$167.46	\$357.00
RCP (Extended Summer)	\$136.00	\$167.46	\$322.08
RCP (Limited)	\$118.54	\$150.00	\$304.62

Scenario 1 Resource Clearing Prices (\$/MW-Day)

	RTO	MAAC	ATSI / ATSI-Cleveland
RCP (Annual)	\$145.50	\$196.01	\$357.00
RCP (Extended Summer)	\$145.50	\$178.08	\$321.13
RCP (Limited)	\$54.00	\$86.58	\$54.79

- DR cleared in Base BRA case as Limited DR clears as Extended Summer DR in the change case
- Total capacity procured above the target reliability comprised entirely as Extended Summer DR in change case as opposed to Limited DR in the base BRA case
- Price separation between the capacity product types more evident

