



2020 RTP Assumptions: DC Ties & Wind Dispatch

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Transmission Planning Assessment

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RPG Meeting**

DC Ties

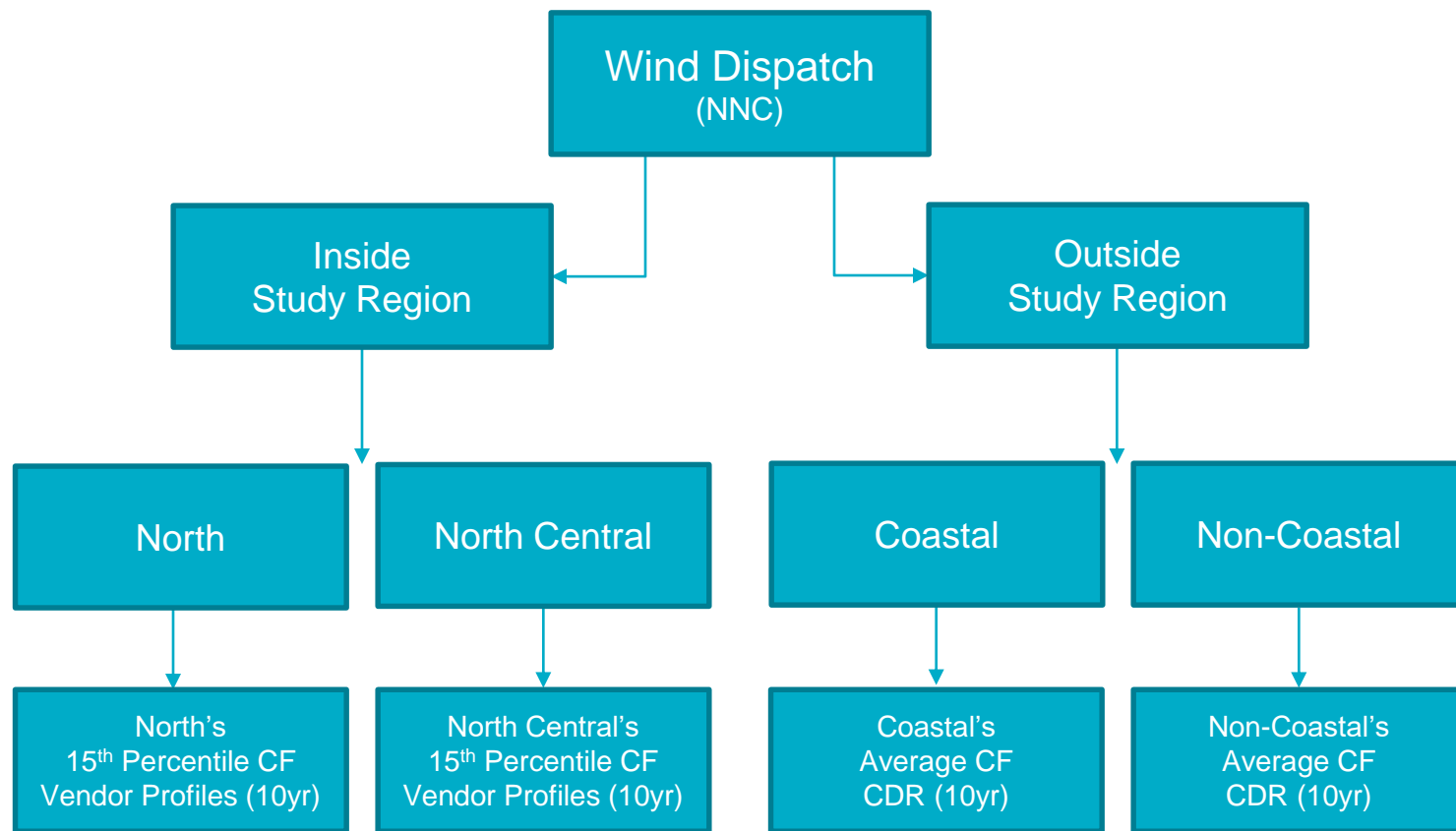
- Historically, 3 years of aggregated historical data have been used to set tie values in RTP cases.
- The CFE market began operation in 2017.
- There has been higher variability in DC tie flow post-CFE market formation than pre-CFE market formation.
- That variability is beginning to decrease, and flows are beginning to converge.
- For 2020 RTP, historical data from 2019 only will be used to set the ties.

	Summer (SUM) Peak Case		Minimum (MIN) Load Case	
	2020 RTP	2019 RTP	2020 RTP	2019 RTP
DC_E	600 MW (IMPORT)	600 MW (IMPORT)	0 MW	200 MW (IMPORT)
DC_N	225 MW (IMPORT)	225 MW (IMPORT)	225 MW (IMPORT)	140 MW (IMPORT)
DC_L	0 MW	100 MW (EXPORT)	0 MW	0 MW
DC_R	0 MW	300 MW (EXPORT)	0 MW	0 MW
DC_S	0 MW	33 MW (EXPORT)	0 MW	0 MW

See Appendix for detailed Top 20 load hourly data

Wind Dispatch: Previous Methodology

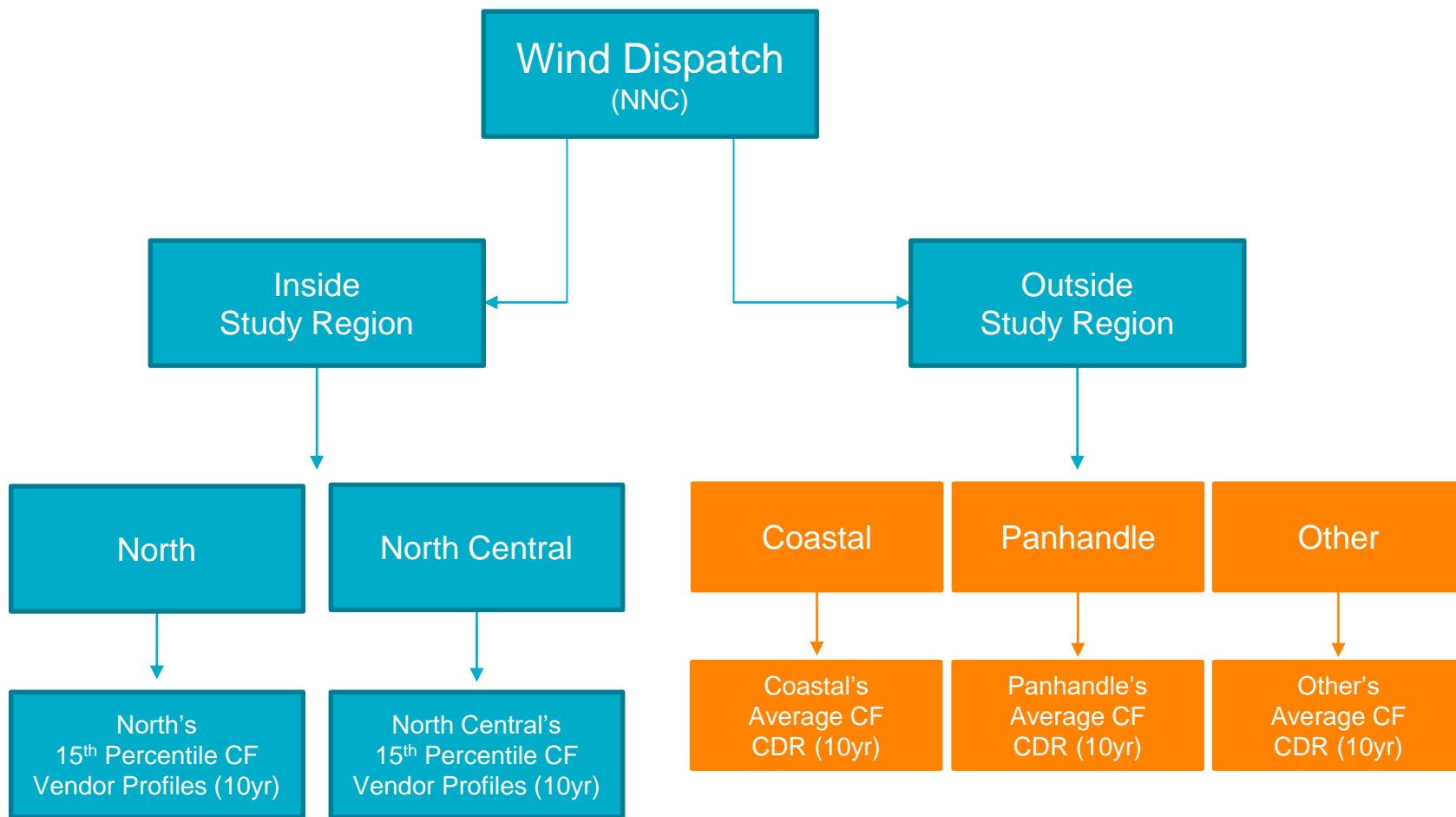
Historically, for RTP cases ERCOT has used vendor supplied wind profiles to set the wind dispatch inside study regions and the ERCOT CDR (Operations Data) for outside study regions.



10 years; Top 20 load hours per year; the 15th percentile capacity factor (CF) is the value at which 15% of the hours have a lower CF and 85% have a higher CF.

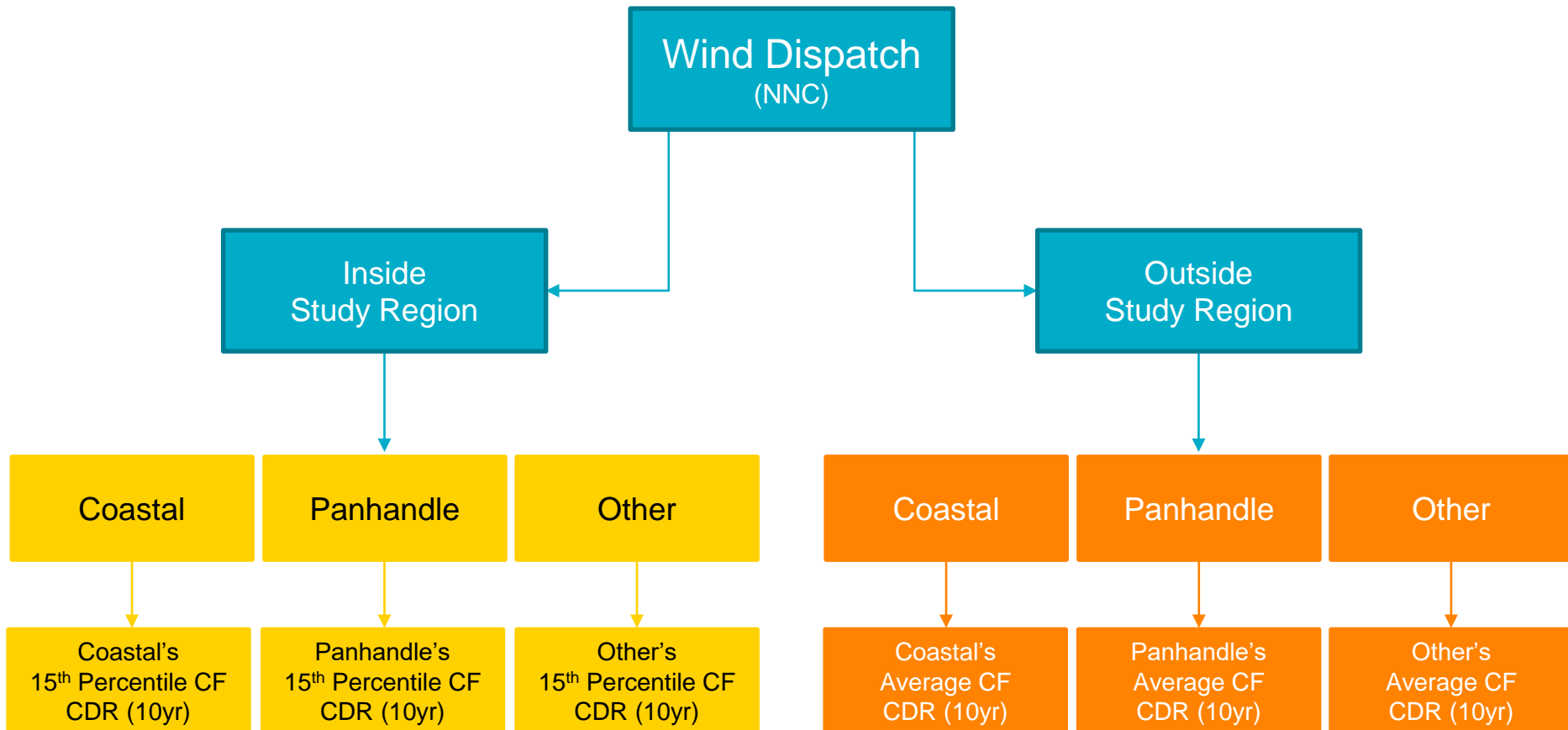
Wind Dispatch: Prev Methodology w/CDR Rev

CDR now categorizes wind as Coastal/Panhandle/Other (C/P/O), replacing Coastal/Non-Coastal classification. See NPRR958 and NPRR959.



Wind Dispatch: Revised Methodology

- Revised Methodology would use CDR as exclusive source for RTP wind dispatch.
- Solar and Hydro RTP dispatches already use CDR.
- Updated vendor profiles are not always received in time for inclusion in RTP. The most recent year included in current profiles is 2017.



Wind Dispatch: Methodologies Summary

- Outside Study Region methodology remains largely same, folding in addition of Panhandle from CDR.
- Inside Study Region methodology switches source from vendor profiles to CDR and 15th percentile values from weather zone to wind region.

2019 RTP Current Wind Dispatch Methodology		2020 RTP Revised Wind Dispatch Methodology	
INSIDE Study Region	OUTSIDE Study Region	INSIDE Study Region	OUTSIDE Study Region
Vendor Profiles	ERCOT CDR (Operations Data)	ERCOT CDR (Operations Data)	ERCOT CDR (Operations Data)
10 years	10 years	10 years	10 years
15 th Percentile	Average	15 th Percentile	Average
Weather Zone	Coastal/Non-Coastal	Coastal/Panhandle/ Other	Coastal/Panhandle/ Other

Wind Dispatch: Totals Comparison

NOTE: These are not actual 2019 or 2020 RTP wind values. Numbers below result from comparison of methodologies using normalized 8 years of historical data (2010-2017). The RTP methodology uses 10 years of historical data.

	Using 2019 RTP Current Wind Dispatch Methodology (Cap Fact)			Using 2020 RTP Revised Wind Dispatch Methodology (Cap Fact)		
	INSIDE WZ 15 th	OUTSIDE C/NC CDR Avg	TOTAL	INSIDE C/P/O 15 th	OUTSIDE C/P/O CDR Avg	TOTAL
NNC	N = 6.3% NC = 2.5%	Coastal = 58.6% NCoast = 14.4%	-	Pan = 12.5% Other = 6.5%	Coastal = 62.8% Other = 14.2%	-
SSC	S = 18.9% SC=HH=W = 4.0%	Coastal = 58.6% NCoast = 14.4%	-	Coastal = 36.9% Other = 6.5%	Coastal = 62.8% Panhandle = 28.7% Other = 14.2%	-
WFW	W = 4.0% FW = 4.8%	Coastal = 58.6% NCoast = 14.4%	-	Other = 6.5%	Coastal = 62.8% Panhandle = 28.7% Other = 14.2%	-
EC	E = n/a C = 13.4%	Coastal = 58.6% NCoast = 14.4%	-	Coastal = 36.9%	Coastal = 62.8% Panhandle = 28.7% Other = 14.2%	-

	Using 2019 RTP Current Wind Dispatch Methodology (MW)			Using 2020 RTP Revised Wind Dispatch Methodology (MW)		
	INSIDE WZ 15 th	OUTSIDE C/NC CDR Avg	TOTAL	INSIDE C/P/O 15 th	OUTSIDE C/P/O CDR Avg	TOTAL
NNC	547 MW	4,830 MW	5,377 MW	963 MW (+416 MW, 76%)	4,974 MW (+144 MW, 3%)	5,937 MW (+560 MW, 10%)
SSC	1,309 MW	3,319 MW	4,628 MW	1,748 MW (+439 MW, 34%)	4,063 MW (+744 MW, 22%)	5,811 MW (+1183 MW, 26%)
WFW	555 MW	4,413 MW	4,968 MW	829 MW (+274 MW, 49%)	5,347 MW (+934 MW, 21%)	6,176 MW (+1208 MW, 24%)
EC	20 MW (1 unit)	6,164 MW	6,184 MW	56 MW (1 unit) (+36 MW)	7,065 MW (+901 MW, 15%)	7,121 MW (+937 MW, 15%)

Questions

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Appendix

2019 Top 20 Load Hours: DC_E, DC_N

		HE14	HE15	HE16	HE17	HE18	HE19	HE20	600 MW
DC_E	2019-08-07 EXPORT				0	0			
DC_E	2019-08-07 IMPORT				597	597			
DC_E	2019-08-09 EXPORT			0	0				
DC_E	2019-08-09 IMPORT			597	597				
DC_E	2019-08-12 EXPORT		0	0	0	0	0		
DC_E	2019-08-12 IMPORT		598	597	597	597	598		
DC_E	2019-08-13 EXPORT		0	0	0	0			
DC_E	2019-08-13 IMPORT		597	597	597	597			
DC_E	2019-08-19 EXPORT			0	0	0			
DC_E	2019-08-19 IMPORT			597	597	597			
DC_E	2019-08-26 EXPORT			0	0	0	0		
DC_E	2019-08-26 IMPORT			597	597	597	597		

20 Hours

IMPORT	20 Hours	AVG = 597 MW
EXPORT	0 Hours	
ZERO	0 Hours	

		HE14	HE15	HE16	HE17	HE18	HE19	HE20	220 MW
DC_N	2019-08-07 EXPORT				0	0			
DC_N	2019-08-07 IMPORT				224	224			
DC_N	2019-08-09 EXPORT			0	0				
DC_N	2019-08-09 IMPORT			224	224				
DC_N	2019-08-12 EXPORT		0	0	0	0	0		
DC_N	2019-08-12 IMPORT		224	224	224	224	224		
DC_N	2019-08-13 EXPORT		0	0	0	0			
DC_N	2019-08-13 IMPORT		224	224	224	224			
DC_N	2019-08-19 EXPORT			0	0	0			
DC_N	2019-08-19 IMPORT			224	224	224			
DC_N	2019-08-26 EXPORT			0	0	0	12		
DC_N	2019-08-26 IMPORT			224	225	151	35		

20 Hours

IMPORT	20 Hours	AVG = 211 MW
EXPORT	0 Hours	
ZERO	0 Hours	

2019 Top 20 Load Hours: DC_L, DC_R, DC_S

	HE14	HE15	HE16	HE17	HE18	HE19	HE20	30 MW
DC_S 2019-08-07 EXPORT				0	0			
DC_S 2019-08-07 IMPORT				0	0			
DC_S 2019-08-09 EXPORT			0	0				
DC_S 2019-08-09 IMPORT			0	0				
DC_S 2019-08-12 EXPORT		0	0	0	0	0	0	
DC_S 2019-08-12 IMPORT		0	0	0	0	0	0	
DC_S 2019-08-13 EXPORT		0	0	0	0			
DC_S 2019-08-13 IMPORT		0	0	0	0			
DC_S 2019-08-19 EXPORT			0	0	0			
DC_S 2019-08-19 IMPORT			0	0	0			
DC_S 2019-08-26 EXPORT			0	0	0	0	0	
DC_S 2019-08-26 IMPORT			0	0	0	0	0	

20 Hours

IMPORT 0 Hours
EXPORT 0 Hours
ZERO 20 Hours

	HE14	HE15	HE16	HE17	HE18	HE19	HE20	100 MW
DC_L 2019-08-07 EXPORT				0	0			
DC_L 2019-08-07 IMPORT				0	0			
DC_L 2019-08-09 EXPORT			0	0				
DC_L 2019-08-09 IMPORT			0	0				
DC_L 2019-08-12 EXPORT		0	0	0	0	0	0	
DC_L 2019-08-12 IMPORT		0	0	0	0	0	0	
DC_L 2019-08-13 EXPORT		0	0	0	0			
DC_L 2019-08-13 IMPORT		0	0	0	0			
DC_L 2019-08-19 EXPORT			0	0	0			
DC_L 2019-08-19 IMPORT			0	0	0			
DC_L 2019-08-26 EXPORT			0	0	0	0	1	
DC_L 2019-08-26 IMPORT			0	0	0	0	0	

20 Hours

IMPORT 0 Hours
EXPORT 0 Hours
ZERO 20 Hours

	HE14	HE15	HE16	HE17	HE18	HE19	HE20	300 MW
DC_R 2019-08-07 EXPORT				0	0			
DC_R 2019-08-07 IMPORT				0	0			
DC_R 2019-08-09 EXPORT			0	0				
DC_R 2019-08-09 IMPORT			0	0				
DC_R 2019-08-12 EXPORT		0	0	0	0	0	0	
DC_R 2019-08-12 IMPORT		0	0	0	0	0	0	
DC_R 2019-08-13 EXPORT		0	0	0	0			
DC_R 2019-08-13 IMPORT		0	0	0	0			
DC_R 2019-08-19 EXPORT			0	0	0			
DC_R 2019-08-19 IMPORT			0	0	0			
DC_R 2019-08-26 EXPORT			0	0	0	0	0	
DC_R 2019-08-26 IMPORT			0	0	0	0	0	

20 Hours

IMPORT 0 Hours
EXPORT 0 Hours
ZERO 20 Hours

2019 EEA1 Hours: All DC Ties

		HE14	HE15	HE16	HE17	HE18	HE19	HE20	600 MW
DC_E	2019-08-13 EXPORT			0	0				
DC_E	2019-08-13 IMPORT			597	597				
DC_E	2019-08-15 EXPORT			0	0	0			
DC_E	2019-08-15 IMPORT			598	597	597			
		HE14	HE15	HE16	HE17	HE18	HE19	HE20	220 MW
DC_N	2019-08-13 EXPORT			0	0				
DC_N	2019-08-13 IMPORT			224	224				
DC_N	2019-08-15 EXPORT			0	0	0			
DC_N	2019-08-15 IMPORT			224	224	224			
		HE14	HE15	HE16	HE17	HE18	HE19	HE20	30 MW
DC_S	2019-08-13 EXPORT			0	0				
DC_S	2019-08-13 IMPORT			0	0				
DC_S	2019-08-15 EXPORT			0	0	0			
DC_S	2019-08-15 IMPORT			0	0	0			
		HE14	HE15	HE16	HE17	HE18	HE19	HE20	100 MW
DC_L	2019-08-13 EXPORT			0	0				
DC_L	2019-08-13 IMPORT			0	0				
DC_L	2019-08-15 EXPORT			0	0	0			
DC_L	2019-08-15 IMPORT			0	0	0			
		HE14	HE15	HE16	HE17	HE18	HE19	HE20	300 MW
DC_R	2019-08-13 EXPORT			0	0				
DC_R	2019-08-13 IMPORT			0	0				
DC_R	2019-08-15 EXPORT			0	0	0			
DC_R	2019-08-15 IMPORT			28	61	15			

References: CDR Changes

NPRR 958

<http://www.ercot.com/mktrules/issues/NPRR958#keydocs>

- Introduces capacity-weighted WINDPEAKPCT Values in the CDR

“Under the current methodology to calculate the Seasonal Peak Average Wind Capacity as a Percent of Installed Capacity, historic years of data are averaged together with no weighting, resulting in years with lower installed wind capacity having an outsized effect on the final capacity estimate. This NPRR changes the simple average to a weighted average, where each year is weighted by its installed capacity. This improves the calculation by counting each megawatt (MW) of capacity equally.”

NPRR 959

<http://www.ercot.com/mktrules/issues/NPRR959#keydocs>

- Introduces the Panhandle breakout

CDR Summer Peak Average Wind Capacity Percentages - November 2019 Update

http://www.ercot.com/content/wcm/lists/167025/CDR_Summer_PeakAveWindCapacityPercentages_11-26-2019.xlsx