

Moving March into the Winter Season Re-calculation

Calculation completed for December 17, 2020 Meeting

During the December 17, 2020 Parker-Davis Project (P-DP) Meeting regarding Purchase Power, Western Area Power Administration Desert Southwest Region (DSW) presented moving March into the winter season. The current P-DP service seasons are winter (October through February) and summer (March through September). During the October 8th P-DP meeting, Ann Finley from KR Saline and Elston Grubaugh from Wellton-Mohawk had suggested looking into moving March to the winter season like the Colorado River Storage Project (CRSP).

Prior to the December 17, 2020 meeting DSW calculated the proposed new firm electric service (FES) obligation with March moved into the winter season. To do this, the total calculated energy for each season was determined by multiplying each season's total CROD by the respective kWh/kW listed in the 1983 Consolidated Criteria Federal Register Notice (3441 kWh/kW for the summer season and 1703 kWh/kW for the winter season).

This resulted in a total obligation of 393,673,995 kWh for the winter season and 1,031,288,346 kWh in the summer season. Generally, the amount of energy obligated per month is determined by dividing the total seasonal kWh obligation by the number of days in the season and then multiplying by the number of days in the month. The current summer season contains 214 days, and the current winter season contains 151 days.

By moving March into the winter season, the total number of days in the winter season and summer season is changed to 183 days in the summer season and 182 days in the winter season. Therefore, to determine the results of moving March into the winter season, DSW took the calculated obligation divided by the new number of days in the season and multiplied the result by the number of days in each month to compare the old monthly obligations to the proposed new obligation:

Old Obligation:

Winter: Total CROD (231,165) x kWh/kW calculation (1703) = Total seasonal obligation (393,673,995)

Total seasonal obligation (393,673,995) ÷ Number of days in the season (151) =
Daily winter obligation (≈ 2,607,113)

Daily winter obligation (≈ 2,607,113) x Number of Days in each Month =

October Monthly Obligation ≈ 2,607,113 x 31 = 80,820,489 kWh

November Monthly Obligation ≈ 2,607,113 x 30 = 78,213,376 kWh

December Monthly Obligation ≈ 2,607,113 x 31 = 80,820,489 kWh

January Monthly Obligation ≈ 2,607,113 x 31 = 80,820,489 kWh

February Monthly Obligation ≈ 2,607,113 x 28 = 72,999,151 kWh



Summer: Total CROD (283,676) x kWh/kW calculation (3441) = Total seasonal obligation (1,031,288,346)

Total seasonal obligation (1,031,288,346) ÷ Number of days in the season (214) =
Daily summer obligation (≈ 4,819,104)

Daily summer obligation (≈ 4,819,104) x Number of Days in each Month =

March Monthly Obligation ≈ 4,819,104 x 31 = 149,392,237 kWh

April Monthly Obligation ≈ 4,819,104 x 30 = 144,573,133 kWh

May Monthly Obligation ≈ 4,819,104 x 31 = 149,392,237 kWh

June Monthly Obligation ≈ 4,819,104 x 30 = 144,573,133 kWh

July Monthly Obligation ≈ 4,819,104 x 31 = 149,392,237 kWh

August Monthly Obligation ≈ 4,819,104 x 31 = 149,392,237 kWh

September Monthly Obligation ≈ 4,819,104 x 30 = 144,573,133 kWh

Proposed New Obligation:

Winter: Total CROD (231,165) x kWh/kW calculation (1703) = Total seasonal obligation (393,673,995)

Total seasonal obligation (393,673,995) ÷ Number of days in the season (182) =
Daily winter obligation (≈ 2,163,044)

Daily winter obligation (≈ 2,163,044) x Number of Days in each Month =

October Monthly Obligation ≈ 2,163,044 x 31 = 67,054,362 kWh

November Monthly Obligation ≈ 2,163,044 x 30 = 64,891,317.86 kWh

December Monthly Obligation ≈ 2,163,044 x 31 = 67,054,362 kWh

January Monthly Obligation ≈ 2,163,044 x 31 = 67,054,362 kWh

February Monthly Obligation ≈ 2,163,044 x 28 = 60,565,230 kWh

March Monthly Obligation ≈ 5,635,455 x 31 = 67,054,362 kWh

Summer: Total CROD (283,676) x kWh/kW calculation (3441) = Total seasonal obligation (1,031,288,346)

Total seasonal obligation (1,031,288,346) ÷ Number of days in the season (183) =
Daily summer obligation (≈ 5,635,455)

Daily summer obligation (≈ 5,635,455) x Number of Days in each Month =

April Monthly Obligation ≈ 5,635,455 x 30 = 169,063,663 kWh

May Monthly Obligation ≈ 5,635,455 x 31 = 174,699,119 kWh

June Monthly Obligation ≈ 5,635,455 x 30 = 169,063,663 kWh

July Monthly Obligation ≈ 5,635,455 x 31 = 174,699,119 kWh

August Monthly Obligation ≈ 5,635,455 x 31 = 174,699,119 kWh

September Monthly Obligation ≈ 5,635,455 x 30 = 169,063,663 kWh

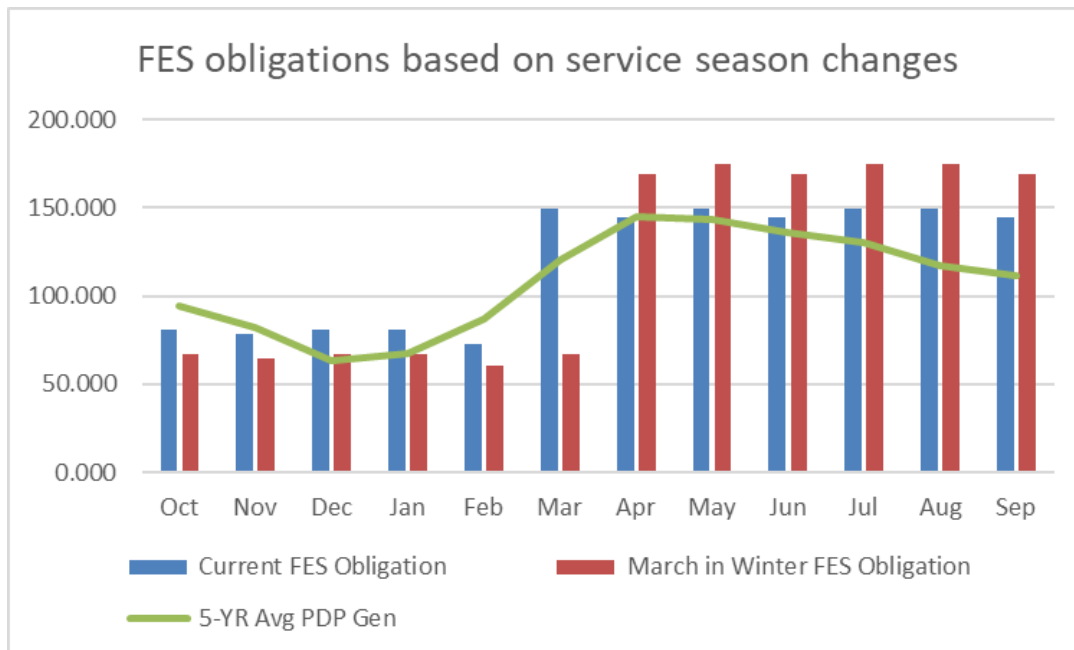


Previous Results:

Based on the above, the March obligation was reduced from 149.4 GWh to 67.1 GWh resulting in a consistent surplus of generation against the obligation much larger than the current deficit based on today’s obligations. The table below was presented in the December 17, 2020 Meeting.

March	Gen (GWh)	Current FES	(Deficit) /Surplus	New FES	(Deficit) /Surplus
FY2009	145.61	149.4	(3.79)	67.10	78.51
FY2010	132.36	149.4	(17.04)	67.10	65.26
FY2011	146.52	149.4	(2.88)	67.10	79.42
FY2012	141.64	149.4	(7.76)	67.10	74.54
FY2013	143.46	149.4	(5.94)	67.10	76.36
FY2014	162.07	149.4	12.67	67.10	94.97
FY2015	147.83	149.4	(1.57)	67.10	80.73
FY2016	142.05	149.4	(7.35)	67.10	74.95
FY2017	133.75	149.4	(15.65)	67.10	66.65
FY2018	127.55	149.4	(21.85)	67.10	60.45
FY2019	116.70	149.4	(32.70)	67.10	49.60
FY2020	82.14	149.4	(67.26)	67.10	15.04

In addition, based on the calculations above, it was determined that the winter obligation would be less each month and the summer obligation would be more each month. The following graph was presented to illustrate this outcome:



Re-Calculation

Based on a review the of the 1983 Consolidated Criteria energy calculations of 1703 kWh/kW for the winter season and 3441 kWh/kW for the summer season; it was determined that the calculations completed for the December 17, 2020 meeting were missing a crucial step.

The energy calculations of 1703 kWh/kW for the winter season and 3441 kWh/kW for the summer season are based on the capacity factors for the winter and summer season. The 1983 Consolidated Criteria Federal Register Notice lays these out as 47% of the capacity factor for the winter season and 67% of the capacity factor for the summer season. The 1703 kWh/kW and 3441 kWh/kW are calculations based on these capacity factors and the number of days in each season. The 1703 kWh/kW was calculated by taking the number of days in the winter season (151 days) multiplying by the number hours in the day (24 hours) and multiplying by the capacity factor (47%). $151 \text{ days} \times 24 \text{ hours} \times 47\% \approx 1703$. Likewise, the 3441 kWh/kW was calculated by taking the number of days in the summer season (214 days) $\times 24 \text{ hours} \times 67\% \approx 3441$.

Therefore, when recalculating the obligations for the winter and summer season based on a March move to the winter season, the kWh/kW must also be recalculated. This results in a new kWh/kW for the winter season of ≈ 2053 kWh/kW and for the summer season of ≈ 2943 kWh/kW.

After a recalculation, the following results were determined:

Current Monthly Obligation		Originally Presented Calculation		New Updated Calculation	
October	80.820	October	67.054	October	80.834
November	78.213	November	64.891	November	78.226
December	80.820	December	67.054	December	80.834
January	80.820	January	67.054	January	80.834
February	72.999	February	60.565	February	73.011
March	149.392	March	67.054	March	80.834
April	144.573	April	169.064	April	144.578
May	149.392	May	174.699	May	149.397
June	144.573	June	169.064	June	144.578
July	149.392	July	174.699	July	149.397
August	149.392	August	174.699	August	149.397
September	144.573	September	169.064	September	144.578

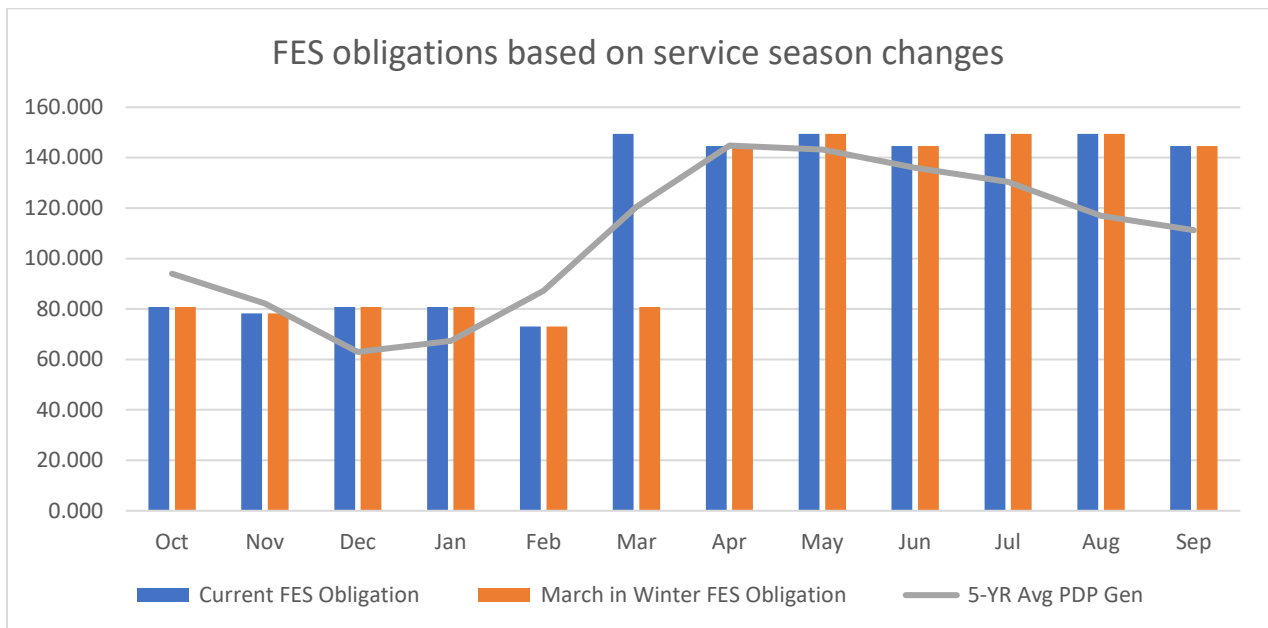
The updated calculation results in similar obligations to the old monthly obligation for all months except March rather than the presented smaller obligation in the winter and greater obligation in the summer. However, moving March into the winter season still results in a much lower obligation in March compared to the current generation. During the December 17, 2020 presentation, we presented that



moving March into the winter season results in a surplus rather than a deficit of energy in March. The table below presents how moving March into the winter season changes the generation versus obligation from a deficit to a surplus. This change results in the opposite issue of dealing with excess energy in a lower priced month as illustrated in the following chart.

March	Gen (GWh)	Current FES	(Deficit) /Surplus	New FES	(Deficit) /Surplus
FY2009	145.61	149.4	(3.79)	80.83	64.78
FY2010	132.36	149.4	(17.04)	80.83	51.53
FY2011	146.52	149.4	(2.88)	80.83	65.69
FY2012	141.64	149.4	(7.76)	80.83	60.81
FY2013	143.46	149.4	(5.94)	80.83	62.63
FY2014	162.07	149.4	12.67	80.83	81.24
FY2015	147.83	149.4	(1.57)	80.83	67.00
FY2016	142.05	149.4	(7.35)	80.83	61.22
FY2017	133.75	149.4	(15.65)	80.83	52.92
FY2018	127.55	149.4	(21.85)	80.83	46.72
FY2019	116.70	149.4	(32.70)	80.83	35.87
FY2020	82.14	149.4	(67.26)	80.83	1.31

This updated calculation does result in a similar obligation profile from the old obligation with the exception of March as illustrated in the chart below.



Recalculation Results

Moving March into the winter season does not address the differences in obligation versus generation for any of the other months; and continues to result in the dilemma of what to do with the surplus energy as presented during the December 17, 2020 P-DP Purchase Power Presentation. While the old structure results in an obligation that exceeds generation and therefore results in purchased power, moving March into the winter season results in generation that exceeds obligation causing down-regulation and sales for minimum scenarios followed by purchased power to maintain elevation. March marks the beginning of peak water deliveries, so a reduction in generation is unlikely. In addition, moving March into the winter season has little effect on the obligation for the remaining months. The change would have little effect on purchase power since the obligation for the remaining months is unchanged.

