

April 10, 2015

VIA HAND DELIVERY AND ELECTRONIC MAIL

Luly E. Massaro, Commission Clerk
Rhode Island Public Utilities Commission
89 Jefferson Boulevard
Warwick, RI 02888

RE: Docket 4371 - Long-Term Contracting for Renewable Energy Recovery Factor Responses to Commission Post-Hearing Data Requests - Set 7

Dear Ms. Massaro:

Enclosed is National Grid's¹ responses to the Rhode Island Public Utilities Commission's (PUC) Seventh Set of Post-Hearing Data Requests concerning the above-referenced proceeding.

Thank you for your attention to this filing. Please feel free to contact me if you have any questions concerning this matter at (401) 784-7288.

Very truly yours,



Jennifer Brooks Hutchinson

Enclosures

cc: Docket 4371 Service List
Steve Scialabba, Division
Leo Wold, Esq.

¹ The Narragansett Electric Company d/b/a National Grid.

Certificate of Service

I hereby certify that a copy of the cover letter and/or any materials accompanying this certificate were electronically transmitted to the individuals listed below. Paper copies of this filing were hand delivered to the Rhode Island Public Utilities Commission.



April 10, 2015

Joanne M. Scanlon
National Grid

Date

**Docket No. 4371 - National Grid – Tariff Advice Filing to Amend Long-Term Contracting for Renewable Energy Recovery Factor effective 01/01/13
Service List updated 11/21/12**

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PUC 7-1

Request:

In the responses to the Division's fourth set of data requests, did the Company include the effect of the Wind Outperformance Adjustment Credit set forth in Appendix Y of the Amended Power Purchase Agreement (PPA) for the Town New Shoreham Project?

Response:

No, the Company did not include the Wind Outperformance Adjustment credit in response to the Division's fourth set of the data requests. Division 4-2 directed the Company to provide a projection of the above market costs assuming Deepwater Wind farm operates at a capacity factor equal to 47% and keep all other assumptions consistent with the Company's response to Commission 6-1. Therefore, the Company did not make any other adjustments to the assumptions for calculations provided in response to the Division's fourth set of data requests.

PUC 7-2

Request:

Please explain the effect of the Wind Outperformance Adjustment Credit on the quantity and costs of products purchased through the PPA if the actual capacity factor is 47% each year.

Response:

The Wind Outperformance Adjustment Credit mechanism is fully described in Appendix Y of the PPA and specifies a target capacity factor of 40%. The Wind Outperformance Adjustment Credit mechanism is a volumetric credit that enables customers to share in the benefits of a higher than expected wind resource (i.e., higher than the target capacity factor of 40%) resulting in a production surplus. Specifically, the mechanism calculates surplus power production above the target capacity factor of 40% on a cumulative basis, accounting for the variability in performance from year to year. The effect of the Wind Outperformance Credit is that 50% of the aggregate production surplus at the end of a contract year is credited back to National Grid on behalf of its customers in the following year, at no cost. In other words, 50% of the aggregate production surplus is provided at no cost under the PPA in the subsequent year.

Attachment PUC 7-2-1 contains an example of how the Wind Outperformance Adjustment Credit mechanism would work assuming the current nameplate capacity of 30 MW and a fixed annual capacity factor of 47%. The example illustrates that performance of the facility at a capacity factor higher than the target of 40% has two effects — additional power is delivered, but 50% of that power is provided at no cost to customers in the following year. Since this credit is volumetric, it does not directly affect the price paid under the PPA. However, the net effect of the volumetric credit can be viewed as resulting in a reduced unit cost for power when the net amount paid under the PPA (equal to the unadjusted annual contract payments minus the equivalent value of the wind outperformance credit) is divided by the total power purchased for that year. This example is provided to illustrate how the Wind Outperformance Adjustment Credit mechanism would work with a fixed annual output and is not intended to suggest any expectations as to actual performance outcomes

A second example, Attachment PUC 7-2-2, was developed to illustrate these points with a variable capacity factor, as would likely occur in operation. This example is based on an initial year in which the annual capacity factor was fixed at just under 40%, and the production in the remainder of the years varies randomly with an average annual capacity factor of 47%. The results indicate that an average capacity factor of 47% is sufficiently higher than the target of 40%, that a surplus production is calculated each year, with the exception of the first year. The

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first year reflects initial operation of the facility, with no excess production, to better illustrate the calculations. This example is provided to illustrate how the Wind Outperformance Adjustment Credit mechanism would work with variable annual output and is not intended to suggest any expectations as to actual performance outcomes.

Example of Wind Outperformance Adjustment Credit - Fixed Output

Estimated annual production (40% CF) at PPA execution (MWh)

105,120

Estimated annual production at 47% capacity factor (MWh)

123,516

Contract Year	Production Target		Actual Production			Surplus			Credit			
	Annual Production Target (MWh) (a)	Aggregate Production Target (MWh) (b)	Actual Annual Production (MWh) (c)	Actual Annual Capacity Factor (%) (d)	Aggregate Actual Production (MWh) (e)	Aggregate Actual Production less Aggregate Production Target (MWh) (f)	Aggregate Prior Surplus (MWh) (g)	Production Surplus (MWh) (h)	Contract Price (\$/MWh) (i)	Unadjusted Annual Contract Payments (j)	Equivalent Value of Wind Outperformance Adjustment Credit (k)	Equivalent Effective Price (\$/MWh) (l)
1	105,120	105,120	123,516	47%	123,516	18,396		18,396	\$ 235.70	\$ 29,112,721		\$ 235.70
2	105,120	210,240	123,516	47%	247,032	36,792	18,396	18,396	\$ 243.95	\$ 30,131,666	\$ 2,243,848	\$ 225.78
3	105,120	315,360	123,516	47%	370,548	55,188	36,792	18,396	\$ 252.49	\$ 31,186,275	\$ 2,322,382	\$ 233.69
4	105,120	420,480	123,516	47%	494,064	73,584	55,188	18,396	\$ 261.32	\$ 32,277,794	\$ 2,403,666	\$ 241.86
5	105,120	525,600	123,516	47%	617,580	91,980	73,584	18,396	\$ 270.47	\$ 33,407,517	\$ 2,487,794	\$ 250.33
6	105,120	630,720	123,516	47%	741,096	110,376	91,980	18,396	\$ 279.94	\$ 34,576,780	\$ 2,574,867	\$ 259.09
7	105,120	735,840	123,516	47%	864,612	128,772	110,376	18,396	\$ 289.74	\$ 35,786,968	\$ 2,664,987	\$ 268.16
8	105,120	840,960	123,516	47%	988,128	147,168	128,772	18,396	\$ 299.88	\$ 37,039,511	\$ 2,758,261	\$ 277.55
9	105,120	946,080	123,516	47%	1,111,644	165,564	147,168	18,396	\$ 310.37	\$ 38,335,894	\$ 2,854,801	\$ 287.26
10	105,120	1,051,200	123,516	47%	1,235,160	183,960	165,564	18,396	\$ 321.23	\$ 39,677,651	\$ 2,954,719	\$ 297.31
11	105,120	1,156,320	123,516	47%	1,358,676	202,356	183,960	18,396	\$ 332.48	\$ 41,066,368	\$ 3,058,134	\$ 307.72
12	105,120	1,261,440	123,516	47%	1,482,192	220,752	202,356	18,396	\$ 344.11	\$ 42,503,691	\$ 3,165,169	\$ 318.49
13	105,120	1,366,560	123,516	47%	1,605,708	239,148	220,752	18,396	\$ 356.16	\$ 43,991,321	\$ 3,275,949	\$ 329.64
14	105,120	1,471,680	123,516	47%	1,729,224	257,544	239,148	18,396	\$ 368.62	\$ 45,531,017	\$ 3,390,608	\$ 341.17
15	105,120	1,576,800	123,516	47%	1,852,740	275,940	257,544	18,396	\$ 381.53	\$ 47,124,602	\$ 3,509,279	\$ 353.11
16	105,120	1,681,920	123,516	47%	1,976,256	294,336	275,940	18,396	\$ 394.88	\$ 48,773,963	\$ 3,632,104	\$ 365.47
17	105,120	1,787,040	123,516	47%	2,099,772	312,732	294,336	18,396	\$ 408.70	\$ 50,481,052	\$ 3,759,227	\$ 378.27
18	105,120	1,892,160	123,516	47%	2,223,288	331,128	312,732	18,396	\$ 423.01	\$ 52,247,889	\$ 3,890,800	\$ 391.50
19	105,120	1,997,280	123,516	47%	2,346,804	349,524	331,128	18,396	\$ 437.81	\$ 54,076,565	\$ 4,026,978	\$ 405.21
20	105,120	2,102,400	123,516	47%	2,470,320	367,920	349,524		\$ 453.13	\$ 55,969,245	\$ 4,167,922	\$ 419.39
Total									\$ 823,298,492	\$ 59,141,494		
NPV (7%)									\$ 404,085,191	\$ 30,029,883		

This example is provided to illustrate how the mechanism would work and is not intended to suggest any expectations as to actual performance outcomes.

Column Descriptions:

- (a) Annual Production Target based on 30 MW nameplate project at 40% target capacity factor
- (b) Aggregate Production Target is the cumulative aggregate of all Annual Production Targets during services term through such date
- (c) Actual Annual Production based on 30 MW nameplate project at an assumed 47% capacity factor, as directed by COMM 7-2
- (d) Column (c) ÷ [30 MW x 8760 hrs/yr]
- (e) Aggregate Actual Production is the cumulative aggregate of all Actual Annual Production during services term through such date
- (f) Column (e) minus Column (b)
- (g) Aggregate Prior Surplus is the cumulative aggregate Production Surplus from all prior Contract Years through such date
- (h) Column (f) minus Column (g)
- (i) Contract Price, escalating by a factor of 3.5% coincident with the beginning of each contract year - for illustrative purposes
- (j) Column (c) x Column (i)
- (k) [50% x Column (h) (production surplus from prior year)] x Column (i)
- (l) [Column (j) minus Column (k)] ÷ Column (c)

Example of Wind Outperformance Adjustment Credit - Variable Output

Estimated annual production (40% CF) at PPA execution (MWh) 105,120
Estimated annual production at 47% capacity factor (MWh) 123,516

Contract Year	Production Target		Actual Production			Surplus			Credit			
	Annual Production Target (MWh) (a)	Aggregate Production Target (MWh) (b)	Actual Annual Production (MWh) (c)	Actual Annual Capacity Factor (%) (d)	Aggregate Actual Production (MWh) (e)	Aggregate Actual Production less Aggregate Production Target (MWh) (f)	Aggregate Prior Surplus (g)	Production Surplus (MWh) (h)	Contract Price (\$/MWh) (i)	Unadjusted Annual Contract Payments (j)	Equivalent Value of Wind Outperformance Adjustment Credit (k)	Equivalent Effective Price (\$/MWh) (l)
1	105,120	105,120	104,989	40%	104,989	(131)		(131)	235.70	\$ 24,745,813		\$ 235.70
2	105,120	210,240	123,516	47%	228,505	18,265	-	18,265	243.95	\$ 30,131,666	\$ -	\$ 243.95
3	105,120	315,360	114,870	44%	343,374	28,014	18,265	9,750	252.49	\$ 29,003,236	\$ 2,305,794	\$ 232.41
4	105,120	420,480	122,281	47%	465,655	45,175	28,014	17,161	261.32	\$ 31,955,016	\$ 1,273,943	\$ 250.91
5	105,120	525,600	107,459	41%	573,114	47,514	45,175	2,339	270.47	\$ 29,064,540	\$ 2,320,756	\$ 248.87
6	105,120	630,720	119,811	46%	692,925	62,205	47,514	14,691	279.94	\$ 33,539,477	\$ 327,376	\$ 277.21
7	105,120	735,840	121,046	46%	813,970	78,130	62,205	15,926	289.74	\$ 35,071,228	\$ 2,128,182	\$ 272.15
8	105,120	840,960	121,046	46%	935,016	94,056	78,130	15,926	299.88	\$ 36,298,721	\$ 2,387,866	\$ 280.15
9	105,120	946,080	142,043	54%	1,077,060	130,980	94,056	36,923	310.37	\$ 44,086,279	\$ 2,471,442	\$ 292.97
10	105,120	1,051,200	140,808	54%	1,217,868	166,668	130,980	35,688	321.23	\$ 45,232,522	\$ 5,930,542	\$ 279.12
11	105,120	1,156,320	107,459	41%	1,325,327	169,007	166,668	2,339	332.48	\$ 35,727,741	\$ 5,932,780	\$ 277.27
12	105,120	1,261,440	139,573	53%	1,464,900	203,460	169,007	34,453	344.11	\$ 48,029,171	\$ 402,429	\$ 341.23
13	105,120	1,366,560	119,811	46%	1,584,710	218,150	203,460	14,691	356.16	\$ 42,671,581	\$ 6,135,385	\$ 304.95
14	105,120	1,471,680	140,808	54%	1,725,519	253,839	218,150	35,688	368.62	\$ 51,905,359	\$ 2,707,642	\$ 349.40
15	105,120	1,576,800	129,692	49%	1,855,210	278,410	253,839	24,572	381.53	\$ 49,480,832	\$ 6,808,001	\$ 329.03
16	105,120	1,681,920	130,927	50%	1,986,137	304,217	278,410	25,807	394.88	\$ 51,700,401	\$ 4,851,453	\$ 357.83
17	105,120	1,787,040	118,575	45%	2,104,713	317,673	304,217	13,455	408.70	\$ 48,461,810	\$ 5,273,659	\$ 364.23
18	105,120	1,892,160	117,340	45%	2,222,053	329,893	317,673	12,220	423.01	\$ 49,635,495	\$ 2,845,842	\$ 398.75
19	105,120	1,997,280	108,694	41%	2,330,747	333,467	329,893	3,574	437.81	\$ 47,587,377	\$ 2,675,064	\$ 413.20
20	105,120	2,102,400	137,103	52%	2,467,850	365,450	333,467		453.13	\$ 62,125,862	\$ 809,768	\$ 447.23
Average				47%					Total	\$ 826,454,127	\$ 57,587,924	
									NPV (7%)	\$ 401,334,081	\$ 27,783,338	

This example is provided to illustrate how the mechanism would work and is not intended to suggest any expectations as to actual performance outcomes.

Column Descriptions:

- (a) Annual Production Target based on 30 MW nameplate project at 40% target capacity factor
- (b) Aggregate Production Target is the cumulative aggregate of all Annual Production Targets during services term through such date
- (c) Actual Annual Production based on 30 MW nameplate project at variable annual capacity factor with an average of 47%
- (d) Column (c) ÷ [30 MW x 8760 hrs/yr]
- (e) Aggregate Actual Production is the cumulative aggregate of all Actual Annual Production during services term through such date
- (f) Column (e) minus Column (b)
- (g) Aggregate Prior Surplus is the cumulative aggregate Production Surplus from all prior Contract Years through such date
- (h) Column (f) minus Column (g)
- (i) Contract Price, escalating by a factor of 3.5% coincident with the beginning of each contract year - for illustrative purposes
- (j) Column (c) x Column (i)
- (k) [50% x Column (h) (production surplus from prior year)] x Column (i)
- (l) [Column (j) minus Column (k)] ÷ Column (c)