



DATE: July 8, 2015
TO: PJM Market Participants
FROM: The Independent Market Monitor for PJM
CC: Vincent Duane, Esq., Jacqui Hugee, Esq., Jeff Bastian (PJM)
SUBJECT: Intermittent Resources Capacity Performance Value Methodology

The Capacity Performance rules exempt Intermittent Resources from the Capacity Performance must offer requirement. Capacity Market Sellers may voluntarily offer Intermittent Resources as Capacity Performance and submit in advance of the offer period data and documentation supporting the Capacity Performance MW quantity to PJM and the IMM for review. PJM has included in draft language in Manual 18 a methodology for calculating the unforced Capacity Performance MW quantity for Intermittent Resources based on the average output during peak hours in the summer and winter and a process for Capacity Market Sellers to propose an alternative method. The IMM will also review such proposals and consider their potential impact on the efficient and competitive operation of the markets.

The IMM recognizes the complexity of estimating an appropriate Capacity Performance MW value for Intermittent Resources. The IMM recommends an alternative method for calculating Capacity Performance MW values for Intermittent Resources based on performance during peak conditions and not based on the average performance over long periods, such as an entire summer.

The IMM recommends using the following methodology for Intermittent Resources that are willing to offer as Capacity Performance and/or Base Capacity:

- Compile for each resource the hourly output for the hours in Attachment A (top 30 peak load summer hours and top 30 peak load winter hours for the 2012/2013 Delivery Year through the 2014/2015 Delivery Year.)
 - These data will be used to calculate the average historical performance during summer as the average of the hourly output during the top 30 peak load summer hours and the average historical performance during winter as the average of the hourly output during the top 30 peak load winter hours.
 - An Intermittent Resource's Capacity Performance MW value will be capped at the lowest value between the average summer peak performance and the average winter peak performance.
 - The resource owner may also include adjustments to these historical output levels based on an alternative approach to operation of the resource under the new Capacity Performance rules. This alternative approach to operation should be explained in detail.

- If a resource was not in commercial operation during the days in Attachment A, the resource owner should estimate the output of the resource based on actual conditions (wind, river flow, etc.) during such hours.
- An Intermittent Resource considered an Existing Generation Capacity Resource is subject to the RPM must offer requirement for its full installed capacity (ICAP) rating as Base Capacity, regardless of being offered fully or partially as Capacity Performance.

PJM has stated to the IMM that PJM would not reject an offer that uses this IMM methodology.

Attachment A: Top 30 Peak Load Summer Hours and Top 30 Peak Load Winter Hours

Delivery Year	Summer Peak Hour (HE)	Winter Peak Hour (HE)
2012/2013	06/20/2012 16:00	01/22/2013 8:00
2012/2013	06/20/2012 17:00	01/22/2013 9:00
2012/2013	06/20/2012 18:00	01/22/2013 18:00
2012/2013	07/05/2012 15:00	01/22/2013 19:00
2012/2013	07/05/2012 16:00	01/22/2013 20:00
2012/2013	07/05/2012 17:00	01/22/2013 21:00
2012/2013	07/05/2012 18:00	01/22/2013 22:00
2012/2013	07/06/2012 15:00	01/23/2013 7:00
2012/2013	07/06/2012 16:00	01/23/2013 8:00
2012/2013	07/06/2012 17:00	01/23/2013 9:00
2012/2013	07/06/2012 18:00	01/23/2013 10:00
2012/2013	07/06/2012 19:00	01/23/2013 11:00
2012/2013	07/07/2012 15:00	01/23/2013 18:00
2012/2013	07/07/2012 16:00	01/23/2013 19:00
2012/2013	07/07/2012 17:00	01/23/2013 20:00
2012/2013	07/16/2012 16:00	01/23/2013 21:00
2012/2013	07/16/2012 17:00	01/24/2013 8:00
2012/2013	07/16/2012 18:00	01/24/2013 9:00
2012/2013	07/16/2012 19:00	01/24/2013 18:00
2012/2013	07/17/2012 14:00	01/24/2013 19:00
2012/2013	07/17/2012 15:00	01/24/2013 20:00
2012/2013	07/17/2012 16:00	01/24/2013 21:00
2012/2013	07/17/2012 17:00	01/25/2013 8:00
2012/2013	07/17/2012 18:00	01/25/2013 9:00
2012/2013	07/17/2012 19:00	01/25/2013 10:00
2012/2013	07/17/2012 20:00	01/25/2013 11:00
2012/2013	07/18/2012 13:00	01/25/2013 12:00
2012/2013	07/18/2012 14:00	01/25/2013 18:00
2012/2013	07/18/2012 15:00	01/25/2013 19:00
2012/2013	07/18/2012 16:00	01/25/2013 20:00

Delivery Year	Summer Peak Hour (HE)	Winter Peak Hour (HE)
2013/2014	07/15/2013 16:00	01/07/2014 7:00
2013/2014	07/15/2013 17:00	01/07/2014 8:00
2013/2014	07/15/2013 18:00	01/07/2014 9:00
2013/2014	07/16/2013 15:00	01/07/2014 10:00
2013/2014	07/16/2013 16:00	01/07/2014 11:00
2013/2014	07/16/2013 17:00	01/07/2014 12:00
2013/2014	07/16/2013 18:00	01/07/2014 18:00
2013/2014	07/16/2013 19:00	01/07/2014 19:00
2013/2014	07/17/2013 14:00	01/07/2014 20:00
2013/2014	07/17/2013 15:00	01/07/2014 21:00
2013/2014	07/17/2013 16:00	01/07/2014 22:00
2013/2014	07/17/2013 17:00	01/08/2014 8:00
2013/2014	07/17/2013 18:00	01/22/2014 9:00
2013/2014	07/17/2013 19:00	01/22/2014 19:00
2013/2014	07/18/2013 13:00	01/22/2014 20:00
2013/2014	07/18/2013 14:00	01/23/2014 19:00
2013/2014	07/18/2013 15:00	01/23/2014 20:00
2013/2014	07/18/2013 16:00	01/23/2014 21:00
2013/2014	07/18/2013 17:00	01/24/2014 8:00
2013/2014	07/18/2013 18:00	01/24/2014 9:00
2013/2014	07/18/2013 19:00	01/24/2014 10:00
2013/2014	07/18/2013 20:00	01/28/2014 18:00
2013/2014	07/19/2013 12:00	01/28/2014 19:00
2013/2014	07/19/2013 13:00	01/28/2014 20:00
2013/2014	07/19/2013 14:00	01/28/2014 21:00
2013/2014	07/19/2013 15:00	01/29/2014 8:00
2013/2014	07/19/2013 16:00	01/29/2014 9:00
2013/2014	07/19/2013 17:00	01/29/2014 10:00
2013/2014	07/19/2013 18:00	01/30/2014 8:00
2013/2014	07/19/2013 19:00	01/30/2014 9:00

Delivery Year	Summer Peak Hour (HE)	Winter Peak Hour (HE)
2014/2015	06/17/2014 15:00	01/07/2015 19:00
2014/2015	06/17/2014 16:00	01/07/2015 20:00
2014/2015	06/17/2014 17:00	01/07/2015 21:00
2014/2015	06/17/2014 18:00	01/08/2015 8:00
2014/2015	06/17/2014 19:00	01/08/2015 9:00
2014/2015	06/17/2014 20:00	01/08/2015 10:00
2014/2015	06/18/2014 15:00	01/08/2015 18:00
2014/2015	06/18/2014 16:00	01/08/2015 19:00
2014/2015	06/18/2014 17:00	01/08/2015 20:00
2014/2015	06/18/2014 18:00	02/16/2015 9:00
2014/2015	06/18/2014 19:00	02/16/2015 10:00
2014/2015	07/01/2014 15:00	02/16/2015 11:00
2014/2015	07/01/2014 16:00	02/16/2015 19:00
2014/2015	07/01/2014 17:00	02/16/2015 20:00
2014/2015	07/01/2014 18:00	02/19/2015 8:00
2014/2015	07/01/2014 19:00	02/19/2015 9:00
2014/2015	07/02/2014 15:00	02/19/2015 18:00
2014/2015	07/02/2014 16:00	02/19/2015 19:00
2014/2015	07/02/2014 17:00	02/19/2015 20:00
2014/2015	07/07/2014 18:00	02/19/2015 21:00
2014/2015	07/08/2014 17:00	02/19/2015 22:00
2014/2015	07/08/2014 18:00	02/19/2015 23:00
2014/2015	07/22/2014 16:00	02/20/2015 6:00
2014/2015	07/22/2014 17:00	02/20/2015 7:00
2014/2015	07/22/2014 18:00	02/20/2015 8:00
2014/2015	07/22/2014 19:00	02/20/2015 9:00
2014/2015	09/05/2014 15:00	02/20/2015 10:00
2014/2015	09/05/2014 16:00	02/20/2015 11:00
2014/2015	09/05/2014 17:00	02/20/2015 12:00
2014/2015	09/05/2014 18:00	02/24/2015 8:00

Attachment B: Intermittent Performance Example

Resource Summer/Winter

Summer Peak Performance								
Delivery Year	Hour	Output (MWh)	Delivery Year	Hour	Output (MWh)	Delivery Year	Hour	Output (MWh)
1	1	6.3	2	1	21.7	3	1	29.2
1	2	16.2	2	2	19.8	3	2	21.1
1	3	24.8	2	3	4.5	3	3	0.3
1	4	12.9	2	4	9.9	3	4	20.9
1	5	0.6	2	5	21.2	3	5	19.9
1	6	24.6	2	6	7.5	3	6	22.3
1	7	15.5	2	7	19.7	3	7	28.6
1	8	3.0	2	8	16.2	3	8	5.0
1	9	12.6	2	9	5.6	3	9	17.4
1	10	16.5	2	10	1.4	3	10	22.7
1	11	20.2	2	11	16.9	3	11	2.1
1	12	29.2	2	12	18.2	3	12	11.5
1	13	3.0	2	13	19.7	3	13	19.3
1	14	29.4	2	14	6.8	3	14	8.5
1	15	8.3	2	15	24.3	3	15	9.1
1	16	21.9	2	16	4.4	3	16	5.0
1	17	28.2	2	17	22.8	3	17	6.2
1	18	0.3	2	18	17.4	3	18	29.8
1	19	23.0	2	19	14.7	3	19	1.7
1	20	6.3	2	20	12.1	3	20	9.1
1	21	5.2	2	21	15.3	3	21	8.7
1	22	2.3	2	22	15.1	3	22	24.2
1	23	24.6	2	23	21.7	3	23	26.3
1	24	8.3	2	24	17.1	3	24	17.6
1	25	25.6	2	25	8.9	3	25	11.1
1	26	3.0	2	26	12.6	3	26	20.6
1	27	15.4	2	27	14.7	3	27	3.5
1	28	7.8	2	28	29.5	3	28	21.1
1	29	10.1	2	29	24.9	3	29	10.1
1	30	1.5	2	30	17.3	3	30	13.4

Average Summer Peak Performance (MW) 14.6

Winter Peak Performance								
Delivery Year	Hour	Output (MWh)	Delivery Year	Hour	Output (MWh)	Delivery Year	Hour	Output (MWh)
1	1	40.8	2	1	8.3	2	1	27.9
1	2	11.9	2	2	6.9	2	2	28.5
1	3	29.7	2	3	49.9	2	3	19.5
1	4	35.3	2	4	49.3	2	4	40.5
1	5	0.1	2	5	38.7	2	5	36.8
1	6	15.7	2	6	11.0	2	6	30.9
1	7	32.0	2	7	9.9	2	7	27.1
1	8	26.2	2	8	29.2	2	8	10.0
1	9	26.1	2	9	46.0	2	9	20.4
1	10	32.2	2	10	18.3	2	10	44.3
1	11	12.8	2	11	23.0	2	11	19.7
1	12	19.2	2	12	18.9	2	12	18.7
1	13	22.6	2	13	23.0	2	13	46.8
1	14	3.0	2	14	46.6	2	14	24.2
1	15	20.5	2	15	7.4	2	15	12.6
1	16	26.8	2	16	34.6	2	16	20.5
1	17	2.2	2	17	16.2	2	17	37.0
1	18	37.1	2	18	28.5	2	18	41.7
1	19	38.0	2	19	21.3	2	19	22.9
1	20	29.8	2	20	48.4	2	20	46.5
1	21	20.7	2	21	38.8	2	21	22.6
1	22	9.5	2	22	27.8	2	22	6.9
1	23	26.0	2	23	26.9	2	23	38.6
1	24	23.6	2	24	19.6	2	24	7.9
1	25	32.7	2	25	11.4	2	25	18.2
1	26	23.0	2	26	42.2	2	26	19.2
1	27	33.8	2	27	14.5	2	27	0.6
1	28	36.9	2	28	27.9	2	28	27.4
1	29	7.7	2	29	14.2	2	29	45.1
1	30	29.9	2	30	41.4	2	30	27.0

Average Winter Peak Performance (MW) 25.5