



Distributed Solar Generation Update

Load Analysis Subcommittee
November 18, 2016

- Review of Process to incorporate Distributed Solar Generation into the Long-Term Forecast
- State to Zone Allocations
- Back-casting Procedure
 - Updates to Cloud Cover
 - Capacity Factors
- Capacity at Peak

Review of Process to Incorporate Distributed Solar Generation into the Long-Term Forecast

- Distributed solar generation:
 - Are not PJM grid- interconnected (i.e. non-wholesale)
 - Does not go through the full interconnection queue process
 - Does not offer as capacity nor energy resources
 - Nets directly with the load in terms of data submissions
 - Either at a customer site or via the distribution system
 - Does not provide metered production data to PJM

PJM is using a two-step approach to address distributed solar PV generation (aka distributed solar generation) in the PJM Load Forecast.

- Step 1:

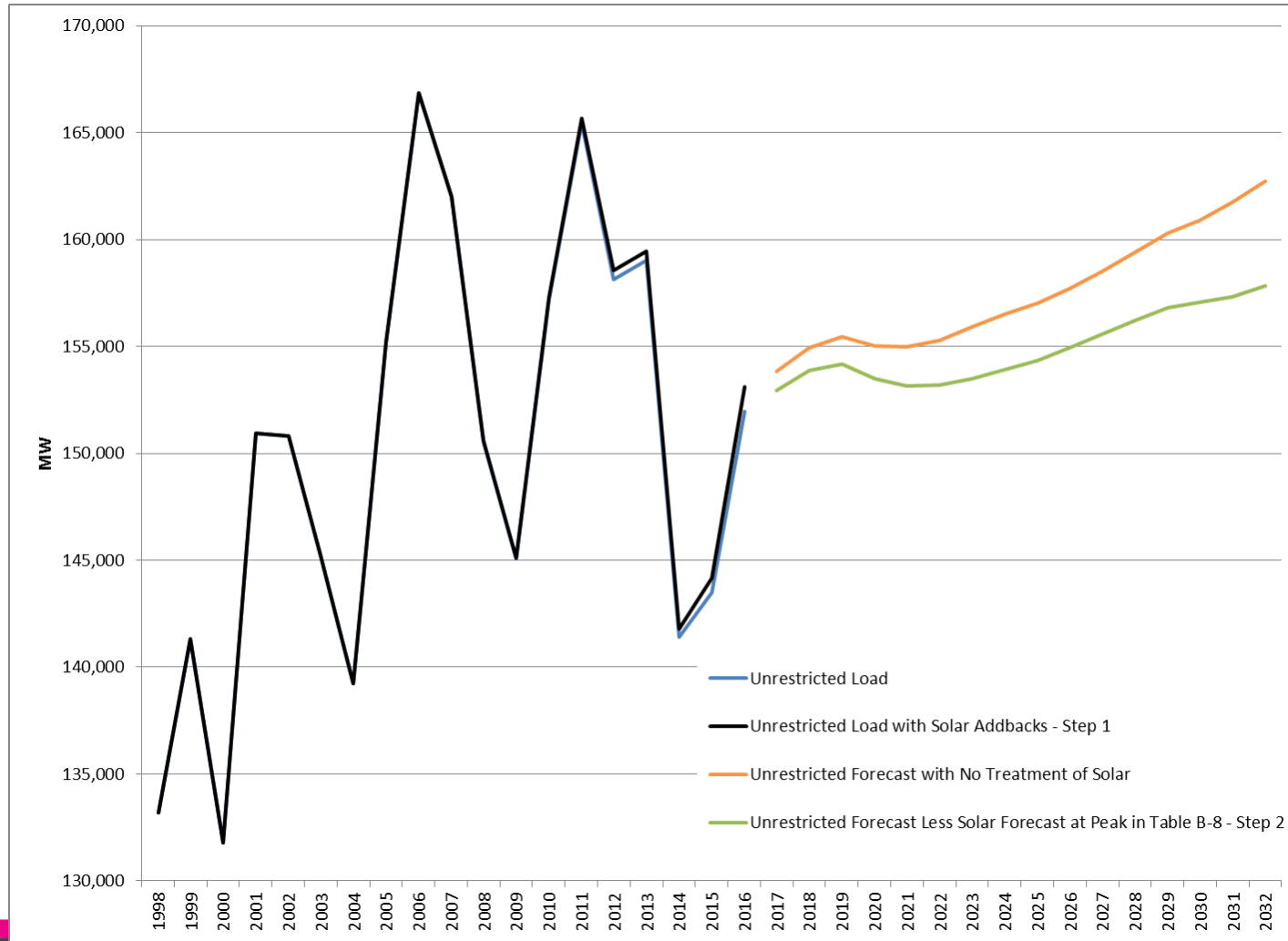
To account for the historical impacts of distributed solar generation, PJM is using the distributed solar installation data from the Generation Attribute Tracking System, adjusted for solar insolation based on a 27 degree tilt, cloud cover, efficiency degradations, and DC to AC measurement. The back-casted values are an hourly value by zone. These estimates are then added to the unrestricted load used in PJM load models to generate a forecast that essentially removes distributed solar generation impacts from the load.

- Step 2:

For the forecasted value of distributed solar capacity, PJM contracted with IHS Energy to develop a distributed solar generation forecast specific to the PJM region. The full IHS summary report is available via the link below. PJM then uses the state level forecast to determine a zonal level value for the capacity at peak. The zone level capacity value at peak is then subtracted from the forecast with the solar addbacks. Table B-1 reflects this subtraction, and the distributed solar generation forecast values are explicitly shown in the B-8 table.

IHS 2017 Distributed Solar Generation slides: <http://www.pjm.com/~media/committees-groups/subcommittees/las/20161118/20161118-item-03-ihs-distributed-solar-generation-forecast.ashx>

RTO Forecast Illustrating the Two-Step Approach PJM RTO Summer Peak



State to Zone Allocations

Distributed Solar Generation Forecast by State
IHS Scenario 1 – Policy Continuity
PJM Region Only
Annual Additions of Nameplate Capacity

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
DC	12.3	14.2	21.5	24.5	27.5	38.1	34.0	15.4	9.5	12.6	11.8	9.2	7.1	5.4	4.1	2.7
DE	12.6	21.6	38.2	61.3	85.8	59.1	22.2	5.7	2.4	2.4	2.4	5.8	14.1	17.2	17.1	15.3
IL	10.6	20.6	40.1	56.0	73.3	88.2	109.8	58.2	31.5	43.6	49.6	53.7	63.3	80.3	85.8	88.4
IN	1.1	1.6	3.5	6.0	11.3	20.2	17.4	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
KY	1.0	0.3	1.2	2.4	3.6	6.5	12.2	13.8	1.8	4.1	4.9	4.9	4.8	4.8	2.4	2.3
MD	185.9	264.5	274.7	279.6	117.9	62.3	80.4	23.2	-7.4	-7.3	-3.9	-2.2	-2.2	-2.2	-2.2	-2.5
MI	0.5	1.3	1.8	3.9	3.8	0.9	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
NC	92.0	55.7	49.9	53.9	63.3	71.5	80.3	49.2	19.1	29.7	32.9	44.3	61.7	83.7	117.0	176.0
NJ	212.6	163.8	89.1	21.4	7.7	-6.5	-6.4	-6.4	-6.3	3.3	7.8	7.7	7.7	7.6	7.5	7.4
OH	26.9	24.4	60.2	140.2	253.9	218.8	202.3	116.1	53.7	59.3	81.3	90.4	106.8	134.8	172.1	228.7
PA	21.8	61.9	92.7	118.7	195.4	321.0	430.5	211.1	123.4	213.0	398.6	571.9	757.0	1,013.3	1,355.7	1,133.5
TN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VA	60.9	83.6	121.9	162.3	199.6	145.7	149.6	56.4	8.5	19.6	36.0	40.9	51.8	67.9	83.9	87.2
WV	1.0	0.7	1.0	0.8	4.7	4.1	4.9	20.9	4.7	4.7	4.6	3.5	4.6	4.5	4.5	8.2
Total	639.3	714.3	795.8	930.9	1,047.7	1,030.1	1,137.1	562.9	240.3	384.4	625.2	829.4	1,075.9	1,416.9	1,847.3	1,746.6

Distributed Solar Generation Forecast of Additions by State Comparison of 2016 and 2017 Forecast

	2017 Forecast				2016 Forecast				Percent Change			
	2017	2018	2019	2020	2017	2018	2019	2020	2017	2018	2019	2020
DC	12.3	14.2	21.5	24.5	3.6	3.8	4.6	4.1	238%	275%	367%	499%
DE	12.6	21.6	38.2	61.3	19.4	24.1	25.4	16.8	-35%	-11%	51%	266%
IL	10.6	20.6	40.1	56.0	22.3	15.1	15.0	14.9	-52%	36%	167%	276%
IN	1.1	1.6	3.5	6.0	2.0	1.3	1.2	1.2	-42%	30%	184%	385%
KY	1.0	0.3	1.2	2.4	0.4	0.1	0.1	0.1	157%	150%	805%	1697%
MD	185.9	264.5	274.7	279.6	117.1	119.4	88.4	39.2	59%	122%	211%	613%
MI	0.5	1.3	1.8	3.9	0.4	0.4	0.6	0.7	26%	212%	221%	446%
NC	92.0	55.7	49.9	53.9	70.1	37.1	37.3	37.5	31%	50%	34%	44%
NJ	212.6	163.8	89.1	21.4	116.9	56.4	43.8	52.5	82%	190%	103%	-59%
OH	26.9	24.4	60.2	140.2	35.6	39.6	39.2	38.9	-25%	-38%	53%	260%
PA	21.8	61.9	92.7	118.7	45.7	47.8	51.5	53.7	-52%	30%	80%	121%
TN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0%	0%	0%	0%
VA	60.9	83.6	121.9	162.3	33.5	29.9	51.7	72.5	82%	180%	136%	124%
WV	1.0	0.7	1.0	0.8	3.9	5.0	4.9	4.9	-75%	-86%	-80%	-83%
Total	639.3	714.3	795.8	930.9	470.8	379.9	363.9	337.0	36%	88%	119%	176%

- The IHS state forecast of the PJM Region was converted to zone using the energy forecast
 - The energy forecast will be based on all the inputs for the final forecast and this portion will be updated accordingly as we continue to work towards a final forecast.
 - The energy forecast was converted to a state level value using EIA 826 to estimate utility sales by state for those transmission zones that span multiple states
 - Once the share of the zone to the state was calculated, that ratio was applied to the state level solar addition values.

Distributed Solar Generation Forecast by Zone Annual Additions of Nameplate Capacity

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
AE	27.7	21.2	11.5	2.8	1.0	-0.8	-0.8	-0.8	-0.8	0.4	1.0	1.0	1.0	1.0	1.0	0.9
AEP	21.4	24.8	46.3	86.3	141.3	127.3	120.4	67.5	23.8	28.3	39.1	42.5	50.9	62.9	78.2	101.6
APS	28.8	44.9	52.2	58.0	52.0	60.2	78.4	43.0	18.6	31.7	59.1	83.7	110.9	145.1	193.7	164.7
ATSI	10.8	11.4	25.9	56.5	101.5	93.3	91.4	51.0	24.6	30.1	45.3	55.3	68.4	88.9	115.9	128.3
BGE	90.4	128.4	133.3	135.7	57.2	30.2	39.0	11.2	-3.6	-3.5	-1.9	-1.1	-1.1	-1.1	-1.1	-1.2
COMED	10.6	20.6	40.1	56.0	73.3	88.2	109.8	58.2	31.5	43.6	49.6	53.7	63.3	80.3	85.8	88.4
DAYTON	2.9	2.6	6.5	15.0	27.1	23.3	21.5	12.3	5.7	6.3	8.6	9.5	11.2	14.4	18.4	24.4
DEOK	4.3	3.9	9.6	22.3	40.4	35.1	33.0	19.5	8.7	9.7	13.3	14.8	17.4	21.6	27.4	36.3
DLCO	2.0	5.6	8.4	10.8	17.8	29.3	39.2	19.2	11.2	19.3	36.2	51.8	68.5	92.5	123.7	103.4
DPL	25.7	40.1	57.8	81.6	95.7	64.7	29.1	7.8	2.0	2.1	2.5	6.0	14.5	17.7	17.7	16.0
EKPC	0.6	0.2	0.7	1.4	2.1	3.9	7.2	8.2	1.1	2.4	2.9	2.9	2.8	2.9	1.5	1.4
JCPL	62.0	47.9	26.1	6.2	2.2	-1.9	-1.9	-1.9	-1.8	1.0	2.3	2.2	2.2	2.2	2.2	2.1
METED	2.2	6.2	9.2	11.8	19.5	32.0	43.0	21.1	12.3	21.3	40.0	57.4	76.1	100.9	135.0	113.0
PECO	5.7	16.1	24.1	30.9	50.8	83.4	111.9	54.9	32.1	55.4	103.6	148.7	196.9	263.4	352.2	294.5
PENLC	2.4	6.8	10.2	13.0	21.4	35.2	47.0	23.0	13.4	23.1	43.1	61.7	81.4	111.3	148.7	124.1
PEPCO	72.6	100.0	110.7	115.4	65.8	58.3	60.1	22.9	7.1	10.2	10.5	8.4	6.4	4.7	3.4	1.9
PL	5.6	15.8	23.7	30.4	50.0	82.0	110.0	53.9	31.5	54.3	101.6	145.8	192.9	259.2	346.6	289.7
PS	118.9	91.6	49.8	12.0	4.3	-3.7	-3.6	-3.6	-3.6	1.9	4.4	4.3	4.3	4.3	4.2	4.2
RECO	4.0	3.0	1.7	0.4	0.1	-0.1	-0.1	-0.1	-0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
UGI	0.1	0.4	0.6	0.8	1.2	2.0	2.7	1.3	0.8	1.3	2.4	3.5	4.6	6.5	8.6	7.1
VEPCO	140.6	122.5	147.5	183.7	223.1	188.1	200.0	94.4	25.9	45.4	61.6	77.1	103.1	138.1	184.1	245.8
PJM RTO	639.3	714.3	795.8	930.9	1,047.7	1,030.1	1,137.1	562.9	240.3	384.4	625.2	829.4	1,075.9	1,416.9	1,847.3	1,746.6

Distributed Solar Generation Forecast by Zone Cumulative Additions of Nameplate Capacity

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
AE	27.7	48.9	60.4	63.2	64.2	63.3	62.5	61.7	60.9	61.3	62.3	63.3	64.3	65.2	66.2	67.2
AEP	21.4	46.2	92.5	178.8	320.1	447.4	567.8	635.4	659.2	687.4	726.5	769.0	819.9	882.8	961.0	1,062.6
APS	28.8	73.7	125.9	183.9	235.8	296.0	374.4	417.4	436.0	467.7	526.8	610.5	721.4	866.5	1,060.2	1,224.9
ATSI	10.8	22.3	48.2	104.7	206.2	299.6	390.9	441.9	466.4	496.5	541.8	597.1	665.4	754.4	870.3	998.6
BGE	90.4	218.9	352.1	487.8	545.0	575.3	614.2	625.5	621.9	618.3	616.5	615.4	614.3	613.2	612.2	611.0
COMED	10.6	31.2	71.3	127.3	200.5	288.8	398.5	456.7	488.3	531.9	581.5	635.2	698.4	778.8	864.6	953.0
DAYTON	2.9	5.5	12.0	27.0	54.1	77.4	98.9	111.2	116.9	123.2	131.7	141.2	152.4	166.8	185.2	209.6
DEOK	4.3	8.2	17.8	40.0	80.4	115.5	148.5	168.0	176.6	186.4	199.7	214.5	231.9	253.6	280.9	317.3
DLCO	2.0	7.6	16.1	26.9	44.8	74.0	113.2	132.4	143.6	163.0	199.1	251.0	319.5	412.0	535.7	639.0
DPL	25.7	65.8	123.6	205.3	300.9	365.6	394.7	402.5	404.5	406.6	409.1	415.1	429.6	447.3	465.0	481.0
EKPC	0.6	0.8	1.6	3.0	5.1	9.0	16.2	24.4	25.4	27.8	30.7	33.6	36.4	39.3	40.7	42.1
JCPL	62.0	109.9	136.0	142.2	144.4	142.6	140.7	138.8	137.0	137.9	140.2	142.4	144.7	146.9	149.1	151.2
METED	2.2	8.3	17.6	29.4	48.8	80.8	123.8	144.9	157.2	178.5	218.5	275.9	352.1	452.9	587.9	700.9
PECO	5.7	21.8	45.9	76.8	127.5	210.9	322.8	377.7	409.8	465.2	568.8	717.5	914.5	1,177.9	1,530.1	1,824.6
PENLC	2.4	9.2	19.4	32.4	53.8	89.0	136.0	159.0	172.4	195.5	238.7	300.3	381.7	492.9	641.6	765.8
PEPCO	72.6	172.6	283.3	398.7	464.5	522.8	582.9	605.8	612.9	623.1	633.6	642.0	648.4	653.1	656.5	658.4
PL	5.6	21.4	45.1	75.5	125.4	207.5	317.4	371.3	402.8	457.2	558.8	704.6	897.5	1,156.6	1,503.3	1,793.0
PS	118.9	210.5	260.3	272.3	276.6	273.0	269.4	265.8	262.2	264.1	268.4	272.8	277.1	281.3	285.6	289.7
RECO	4.0	7.0	8.7	9.1	9.2	9.1	9.0	8.9	8.7	8.8	8.9	9.1	9.2	9.4	9.5	9.7
UGI	0.1	0.5	1.1	1.9	3.1	5.2	7.8	9.2	9.9	11.2	13.7	17.2	21.8	28.2	36.8	43.9
VEPCO	140.6	263.1	410.5	594.3	817.4	1,005.5	1,205.5	1,299.8	1,325.7	1,371.1	1,432.7	1,509.9	1,613.0	1,751.1	1,935.2	2,181.0
PJM RTO	639.3	1,353.6	2,149.4	3,080.4	4,128.1	5,158.1	6,295.3	6,858.2	7,098.5	7,482.9	8,108.0	8,937.5	10,013.4	11,430.3	13,277.6	15,024.2

- IHS values represent a forecast of future additions of nameplate capacity of distributed solar generation
- Must still account for historical installations since these were added back to the forecast in terms of the back-casting
- Incorporate by using the installations from the Generation Attribute Tracking System (GATS) and a conservative degradation rate of 0.8% per year to determine an annual nameplate capacity value per forecast year.
- Table on next slide shows the assumed nameplate capacity for historical installations for each year in the forecast.



Consideration of Historical Installations

Distributed Solar Generation of Historical Values by Zone Cumulative Nameplate Capacity

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
AE	237.1	235.2	233.3	231.5	229.6	227.8	226.0	224.2	222.4	220.6	218.8	217.1	215.3	213.6	211.9	210.2
AEP	40.2	39.9	39.6	39.3	39.0	38.6	38.3	38.0	37.7	37.4	37.1	36.8	36.5	36.2	35.9	35.7
APS	84.8	84.2	83.5	82.8	82.1	81.5	80.8	80.2	79.5	78.9	78.3	77.7	77.0	76.4	75.8	75.2
ATSI	57.4	56.9	56.5	56.0	55.6	55.1	54.7	54.3	53.8	53.4	53.0	52.5	52.1	51.7	51.3	50.9
BGE	203.8	202.2	200.6	199.0	197.4	195.8	194.2	192.7	191.1	189.6	188.1	186.6	185.1	183.6	182.2	180.7
COMED	27.7	27.5	27.3	27.0	26.8	26.6	26.4	26.2	26.0	25.8	25.6	25.4	25.2	25.0	24.8	24.6
DAYTON	13.3	13.1	13.0	12.9	12.8	12.7	12.6	12.5	12.4	12.3	12.2	12.1	12.0	11.9	11.8	11.7
DEOK	15.5	15.4	15.3	15.1	15.0	14.9	14.8	14.7	14.5	14.4	14.3	14.2	14.1	14.0	13.9	13.7
DLCO	4.8	4.8	4.8	4.7	4.7	4.6	4.6	4.6	4.5	4.5	4.5	4.4	4.4	4.4	4.3	4.3
DPL	143.4	142.2	141.1	140.0	138.9	137.7	136.6	135.6	134.5	133.4	132.3	131.3	130.2	129.2	128.1	127.1
EKPC	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
JCPL	420.7	417.3	414.0	410.7	407.4	404.1	400.9	397.7	394.5	391.3	388.2	385.1	382.0	379.0	375.9	372.9
METED	41.1	40.8	40.5	40.1	39.8	39.5	39.2	38.9	38.6	38.3	37.9	37.6	37.3	37.0	36.7	36.5
PECO	58.2	57.7	57.2	56.8	56.3	55.9	55.4	55.0	54.5	54.1	53.7	53.2	52.8	52.4	52.0	51.6
PENLC	6.0	5.9	5.9	5.8	5.8	5.7	5.7	5.7	5.6	5.6	5.5	5.5	5.4	5.4	5.3	5.3
PEPCO	152.7	151.5	150.3	149.1	147.9	146.7	145.6	144.4	143.2	142.1	140.9	139.8	138.7	137.6	136.5	135.4
PL	98.1	97.3	96.5	95.7	95.0	94.2	93.5	92.7	92.0	91.2	90.5	89.8	89.1	88.4	87.7	87.0
PS	627.3	622.2	617.3	612.3	607.4	602.6	597.7	593.0	588.2	583.5	578.8	574.2	569.6	565.1	560.5	556.1
RECO	13.2	13.1	13.0	12.9	12.8	12.7	12.6	12.5	12.4	12.3	12.2	12.1	12.0	11.9	11.8	11.7
UGI	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
VEPCO	349.8	347.0	344.2	341.4	338.7	336.0	333.3	330.6	328.0	325.4	322.8	320.2	317.6	315.1	312.6	310.1
PJM RTO	2,596.0	2,575.2	2,554.6	2,534.2	2,513.9	2,493.8	2,473.8	2,454.0	2,434.4	2,414.9	2,395.6	2,376.5	2,357.4	2,338.6	2,319.9	2,301.3



Historical and IHS Nameplate Capacity

Distributed Solar Generation Forecast by Zone

Cumulative Nameplate Capacity

Includes Historical Degraded Values and IHS Forecast

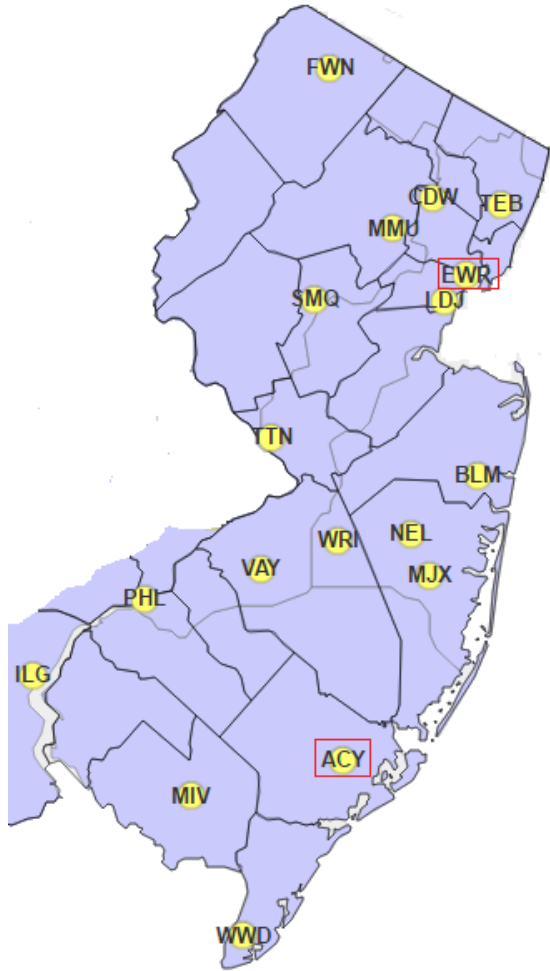
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
AE	264.8	284.2	293.8	294.7	293.8	291.1	288.5	285.9	283.3	281.9	281.1	280.4	279.6	278.9	278.1	277.4
AEP	61.7	86.1	132.1	218.0	359.0	486.0	606.1	673.4	696.9	724.9	763.6	805.8	856.4	919.0	996.9	1,098.2
APS	113.6	157.8	209.3	266.7	318.0	377.5	455.2	497.6	515.6	546.7	605.1	688.1	798.4	943.0	1,136.0	1,300.1
ATSI	68.2	79.2	104.6	160.7	261.8	354.7	445.6	496.1	520.3	549.9	594.7	649.6	717.6	806.1	921.6	1,049.4
BGE	294.3	421.1	552.7	686.8	742.4	771.1	808.5	818.2	813.0	808.0	804.6	802.0	799.4	796.9	794.3	791.7
COMED	38.3	58.7	98.6	154.3	227.4	315.4	424.9	482.9	514.2	557.7	607.0	660.5	723.6	803.7	889.3	977.5
DAYTON	16.2	18.7	25.1	40.0	67.0	90.2	111.6	123.8	129.3	135.5	144.0	153.3	164.4	178.8	197.1	221.3
DEOK	19.8	23.5	33.0	55.2	95.4	130.4	163.2	182.6	191.2	200.8	214.0	228.7	246.0	267.5	294.8	331.0
DLCO	6.8	12.4	20.8	31.6	49.4	78.7	117.8	137.0	148.2	167.5	203.6	255.4	323.9	416.3	540.0	643.3
DPL	169.1	208.1	264.7	345.2	439.8	503.4	531.4	538.1	539.0	540.0	541.4	546.4	559.8	576.5	593.2	608.1
EKPC	1.1	1.3	2.0	3.4	5.6	9.4	16.6	24.8	25.9	28.3	31.1	34.0	36.8	39.7	41.2	42.5
JCPL	482.7	527.2	550.0	552.9	551.8	546.7	541.6	536.5	531.5	529.3	528.4	527.6	526.7	525.9	525.0	524.2
METED	43.3	49.1	58.0	69.5	88.7	120.3	163.0	183.7	195.8	216.8	256.4	313.6	389.4	490.0	624.6	737.3
PECO	63.8	79.5	103.1	133.5	183.8	266.8	378.2	432.7	464.3	519.3	622.5	770.8	967.3	1,230.2	1,582.1	1,876.2
PENLC	8.4	15.1	25.3	38.2	59.6	94.7	141.7	164.7	178.0	201.1	244.2	305.8	387.1	498.3	647.0	771.1
PEPCO	225.3	324.1	433.6	547.8	612.4	669.5	728.4	750.2	756.2	765.2	774.6	781.9	787.1	790.7	793.0	793.8
PL	103.7	118.7	141.6	171.2	220.4	301.7	410.9	464.1	494.8	548.4	649.3	794.4	986.5	1,245.0	1,590.9	1,879.9
PS	746.1	832.7	877.6	884.7	884.1	875.5	867.1	858.7	850.4	847.6	847.3	847.0	846.7	846.4	846.1	845.8
RECO	17.2	20.1	21.7	22.0	22.0	21.8	21.6	21.3	21.1	21.1	21.1	21.2	21.2	21.3	21.3	21.4
UGI	0.6	1.0	1.6	2.3	3.6	5.6	8.3	9.6	10.3	11.7	14.1	17.6	22.2	28.6	37.2	44.3
VEPCO	490.4	610.0	754.7	935.7	1,156.1	1,341.5	1,538.8	1,630.5	1,653.7	1,696.5	1,755.5	1,830.0	1,930.6	2,066.2	2,247.8	2,491.1
PJM RTO	3,235.3	3,928.8	4,704.1	5,614.5	6,642.0	7,651.9	8,769.1	9,312.2	9,532.9	9,897.8	10,503.6	11,313.9	12,370.8	13,768.9	15,597.5	17,325.5

Comparison of Last year's Distributed Solar Generation Forecast to 2016 Installations

	2016 GATS Data	2016 IHS Forecast (Published 2015)
AE	239.0	219.6
AEP	40.5	50.0
APS	85.5	69.0
ATSI	57.9	57.1
BGE	205.5	169.3
COMED	27.9	71.2
DAYTON	13.4	13.8
DPL	144.5	136.3
DLCO	4.9	10.6
DEOK	15.6	15.2
EKPC	0.5	0.8
JCPL	424.1	441.4
METED	41.5	43.9
PECO	58.6	67.5
PENLC	6.0	13.1
PEPCO	154.0	129.2
PL	98.9	104.2
PS	632.3	702.7
RECO	13.3	16.4
UGI	0.5	0.9
VEPCO	352.6	223.0
PJM RTO	2,616.9	2,555.2

Back-casting Process

- Back casted values are added to the unrestricted loads in order to exclude the impact of solar from other variables in the forecast model.
- To calculate back casted values, the following was done:
 - GATS data was separated by zone, weather station, and online date
 - Weather station mappings are defined based on proximity to nearest ASOS Weather Station (more on next slide)
 - Nameplate capacity from GATS was converted using solar insolation and cloud cover values corresponding to the applicable weather station.
 - Temperatures above 55 degrees had an efficiency degradation of 0.27%.
 - Those values then were converted to consider a 27 degree tilt and a DC to AC conversion based on the applicable weather station
 - These values were calculated on an hourly basis for every day since the first date of installation



- Using publicly available cloud cover from the Automated Surface Observing System, mappings occurred based on proximity of the county to a particular weather station
- This cloud cover data is recorded as the following:

Sky Cover Condition	Recorded Value	Conversion	Assigned Value Presented Last Month	Recommended value
Clear	CLR	0 Sky Cover	0%	0%
Few	FEW	1/8-2/8 Sky Cover	25%	19%
Scattered	SCT	3/8-4/8 Sky Cover	50%	44%
Broken	BKN	5/8-7/8 Sky Cover	75%	75%
Overcast	OVC	8/8 Sky Cover	100%	100%



Historical GATS Installations

Historical Nameplate Capacity of Distributed Solar Generation (MW)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
AE					0.0	0.1	0.5	1.8	4.5	6.0	12.2	25.2	45.7	97.2	130.1	155.6	187.8	218.9	239.0
AEP					0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.5	13.4	17.2	23.1	29.1	35.7	39.5	40.5
APS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	1.0	5.0	11.2	16.4	20.4	30.0	54.9	85.5
ATSI					0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.5	5.2	18.9	36.4	44.3	47.9	53.6	57.9
BGE							0.0	0.0	0.0	0.1	1.6	3.5	8.8	22.9	39.9	53.7	78.7	159.7	205.5
COMED			0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.4	1.0	1.3	23.8	24.8	25.7	27.2	27.9
DAYTON										0.0	0.0	0.1	0.5	2.1	8.9	11.1	12.6	12.9	13.4
DEOK		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.6	1.6	6.1	11.4	11.9	13.4	15.4	15.6
DLCO							0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.1	3.6	4.1	4.3	4.8	4.9
DPL		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.8	2.2	4.8	7.9	33.2	61.3	83.0	98.2	128.2	144.5
EKPC										0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.5	0.5
JCPL			0.0	0.0	0.1	1.0	2.0	5.9	12.0	16.2	25.1	38.3	67.7	162.9	237.5	300.0	357.1	406.8	424.1
METED			0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	1.5	13.0	32.4	35.3	35.9	37.0	38.5	41.5
PECO	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.5	0.6	0.9	3.5	15.4	33.9	44.5	49.3	50.3	52.2	58.6
PENLC			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.3	3.9	4.4	5.0	5.5	5.7	6.0
PEPCO						0.0	0.0	0.0	0.1	0.1	0.4	3.3	6.4	13.4	27.6	40.9	60.2	113.7	154.0
PL								0.0	0.0	0.1	0.2	2.4	28.5	66.0	76.1	79.4	81.9	93.4	98.9
PS			0.0	0.3	0.5	0.6	1.2	4.9	14.8	22.0	33.2	66.8	117.3	265.3	416.1	509.6	550.3	597.2	632.3
RECO			0.0	0.0	0.0	0.0	0.0	0.1	0.1	1.0	1.0	1.7	2.1	5.0	11.0	12.3	12.6	13.0	13.3
UGI											0.0	0.1	0.2	0.4	0.4	0.4	0.5	0.5	0.5
VEPCO		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.6	2.8	4.5	11.3	25.4	109.3	256.4	352.6
PJM RTO	0.0	0.1	0.1	0.5	1.0	2.2	4.3	13.5	33.0	47.6	78.6	155.0	344.7	799.0	1,219.0	1,496.5	1,799.2	2,292.8	2,616.9

Please note that all years except for 2016 are based on calendar year, 2016 is through 8/31/2016



Back-casted Values by Zone

Annual GWh of Back-casted Distributed Solar Generation

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
AE					0.0	0.0	0.4	1.0	4.3	7.0	10.1	22.0	52.5	95.4	158.4	182.4	220.2	256.1	218.9
AEP					0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.4	13.6	16.1	23.2	27.8	32.5	42.1	32.1
APS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	3.5	9.6	17.9	20.9	30.1	52.9	71.9
ATSI					0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	3.5	14.7	30.2	40.1	47.1	54.3	45.1
BGE							0.0	0.0	0.0	0.1	0.3	2.7	7.5	19.1	40.4	55.5	78.4	135.7	168.3
COMED			0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.7	1.0	18.9	26.7	28.6	27.4	20.6
DAYTON										0.0	0.0	0.1	0.3	1.1	4.4	11.5	12.7	14.8	10.9
DEOK		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.5	1.1	4.2	10.1	13.1	13.9	16.4	12.8
DLCO							0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8	1.6	3.5	4.0	4.4	3.4
DPL		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8	2.4	5.3	10.3	33.3	54.6	93.2	119.8	151.7	132.7
EKPC										0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.4	0.4
JCPL			0.0	0.0	0.1	0.7	1.8	4.3	10.7	17.6	25.2	36.5	66.2	127.6	256.8	324.2	394.6	470.5	375.1
METED			0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.9	7.7	33.7	44.4	42.1	43.9	47.2	37.6
PECO	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.4	0.6	0.7	1.1	1.7	11.8	35.8	53.8	59.3	61.9	65.5	52.0
PENLC			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8	2.3	4.2	4.1	4.6	5.2	4.3
PEPCO						0.0	0.0	0.0	0.0	0.1	0.3	1.8	6.1	11.1	23.0	38.4	56.2	106.5	124.1
PL								0.0	0.0	0.1	0.2	0.7	16.6	58.3	86.7	86.4	89.7	102.2	86.7
PS			0.0	0.4	0.6	0.7	1.2	3.7	11.7	24.7	34.8	53.2	121.4	225.2	433.0	577.2	631.6	717.6	579.4
RECO			0.0	0.0	0.0	0.0	0.0	0.1	0.2	1.0	1.4	1.4	2.6	4.6	11.3	15.0	15.8	17.1	13.1
UGI											0.0	0.0	0.2	0.4	0.4	0.4	0.5	0.5	0.4
VEPCO		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.4	2.4	4.5	9.1	17.4	45.4	216.3	354.3
PJM RTO	0.0	0.0	0.1	0.6	1.0	1.9	4.0	10.0	28.3	52.8	76.9	128.8	329.0	699.0	1,282.7	1,639.3	1,931.6	2,504.8	2,343.9

Please note that all years except for 2016 are based on calendar year, 2016 is through 8/31/2016



Unrestricted Peak Loads with Back-Cast Estimate

Unrestricted Peak Loads with Estimated Solar Back-casted Value PJM RTO

Year	Date	Hour Ending	Unrestricted Load (MW)	Estimated Solar Backcasted Value (MW)	Unrestricted Load with the addition of the Estimated Solar Backcasted Value (MW)
1998	7/21/1998	17	133,188	0	133,188
1999	7/30/1999	17	141,321	0	141,321
2000	8/9/2000	17	131,803	0	131,803
2001	8/9/2001	16	150,928	0	150,928
2002	8/1/2002	17	150,830	0	150,830
2003	8/21/2003	17	145,232	1	145,233
2004	8/3/2004	17	139,219	1	139,220
2005	7/26/2005	16	155,209	4	155,213
2006	8/2/2006	17	166,866	8	166,874
2007	8/8/2007	16	161,987	16	162,003
2008	6/9/2008	17	150,560	22	150,582
2009	8/10/2009	16	145,056	54	145,110
2010	7/7/2010	17	157,187	91	157,278
2011	7/21/2011	17	165,465	218	165,683
2012	7/17/2012	17	158,150	395	158,545
2013	7/18/2013	17	159,038	405	159,443
2014	6/17/2014	18	141,402	367	141,769
2015	7/28/2015	17	143,496	684	144,180
2016	8/11/2016	16	151,945	1,143	153,088

- Capacity Factors are calculated using the hourly back-casted values divided by the value of the GATS installations
- The average capacity factor over Hour Ending 17 for the months of June, July, and August will be applied to the Zonal level Nameplate Capacity for a value at peak

Capacity Factors

	10 Coincident Peak Hours	Hour Ending 17; June, July, and August
AE	37%	28%
AEP	36%	32%
APS	32%	28%
ATSI	32%	28%
BGE	32%	26%
COMED	34%	32%
DAYTON	33%	32%
DEOK	29%	26%
DLCO	30%	25%
DPL	39%	30%
EKPC	33%	31%
JCPL	34%	26%
METED	38%	29%
PECO	35%	29%
PENLC	38%	31%
PEPCO	30%	25%
PL	36%	28%
PS	36%	27%
RECO	35%	26%
UGI	36%	27%
VEPCO	33%	27%

Capacity Factors Comparison to 2015 Process

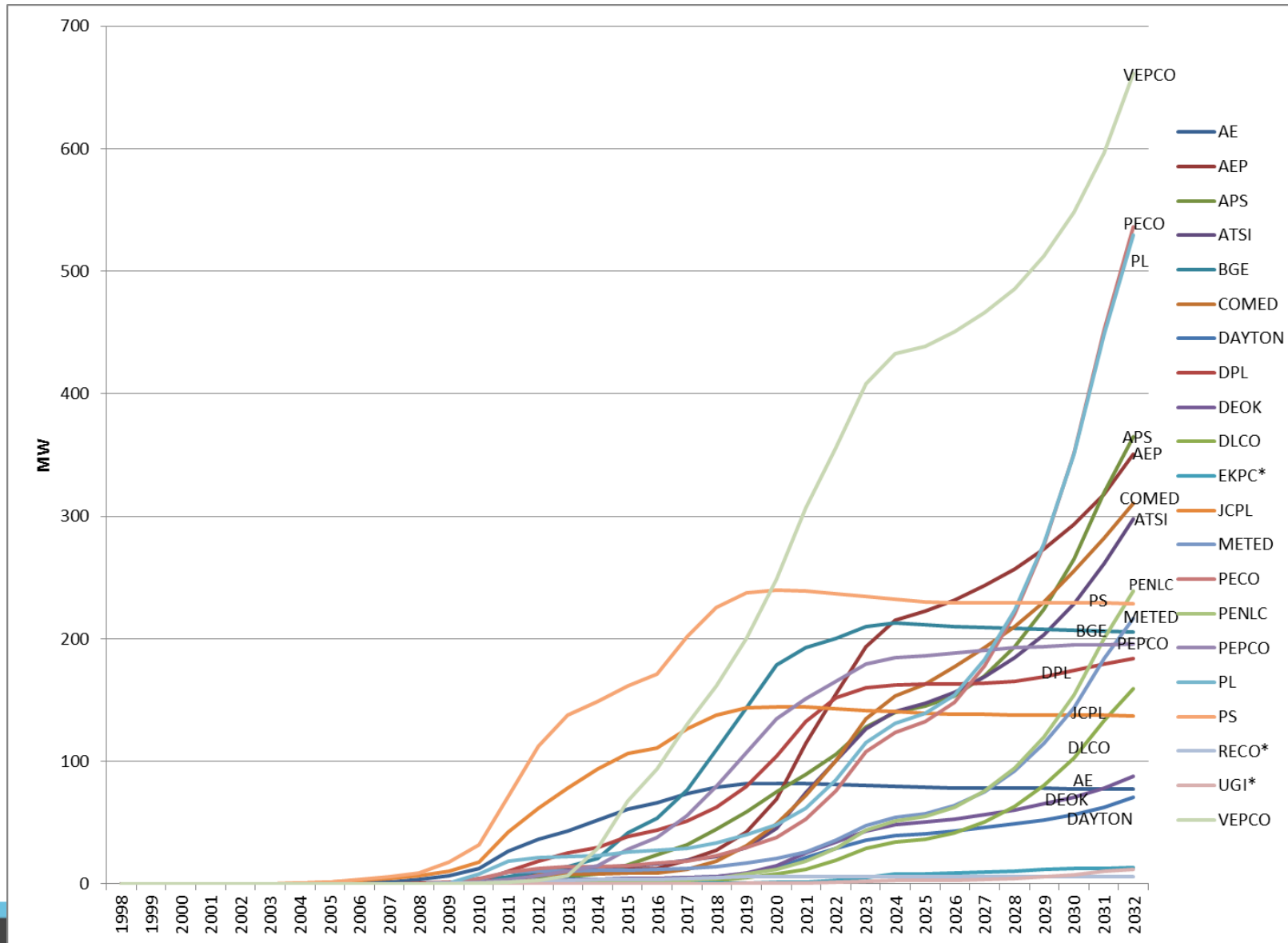
	Hour Ending 17; June, July, and August 2016 Back-casting Process	Hour Ending 17; June, July, and August 2015 Back-casting Process
AE	28%	32%
AEP	32%	22%
APS	28%	20%
ATSI	28%	31%
BGE	26%	21%
COMED	32%	24%
DAYTON	32%	25%
DEOK	26%	24%
DLCO	25%	22%
DPL	30%	29%
EKPC	31%	32%
JCPL	26%	23%
METED	29%	23%
PECO	29%	19%
PENLC	31%	33%
PEPCO	25%	19%
PL	28%	27%
PS	27%	18%
RECO	26%	18%
UGI	27%	25%
VEPCO	27%	23%

Distributed Solar Generation Forecast by Zone Annual Capacity at Peak 2017-2032

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
AE	73.7	79.1	81.8	82.0	81.8	81.1	80.3	79.6	78.9	78.5	78.3	78.1	77.8	77.6	77.4	77.2
AEP	19.7	27.5	42.1	69.6	114.6	155.1	193.4	214.9	222.4	231.3	243.7	257.1	273.3	293.3	318.1	350.4
APS	31.9	44.3	58.8	74.9	89.3	106.1	127.9	139.8	144.9	153.6	170.0	193.3	224.3	264.9	319.2	365.3
ATSI	19.4	22.5	29.7	45.6	74.3	100.7	126.5	140.8	147.6	156.1	168.8	184.4	203.6	228.8	261.5	297.8
BGE	76.5	109.5	143.7	178.6	193.0	200.5	210.2	212.7	211.4	210.1	209.2	208.5	207.8	207.2	206.5	205.8
COMED	12.2	18.6	31.3	49.0	72.2	100.1	134.9	153.3	163.3	177.1	192.7	209.7	229.8	255.2	282.4	310.4
DAYTON	5.1	5.9	8.0	12.7	21.3	28.7	35.5	39.4	41.2	43.1	45.8	48.8	52.3	56.9	62.7	70.4
DEOK	5.2	6.2	8.7	14.6	25.3	34.5	43.2	48.4	50.6	53.2	56.7	60.6	65.2	70.9	78.1	87.7
DLCO	1.7	3.1	5.2	7.8	12.2	19.5	29.1	33.9	36.7	41.4	50.4	63.2	80.1	103.0	133.6	159.1
DPL	51.1	62.8	79.9	104.2	132.8	152.0	160.4	162.5	162.7	163.1	163.5	165.0	169.0	174.1	179.1	183.6
EKPC	0.3	0.4	0.6	1.1	1.7	3.0	5.2	7.8	8.1	8.9	9.8	10.7	11.6	12.4	12.9	13.3
JCPL	126.3	138.0	143.9	144.7	144.4	143.0	141.7	140.4	139.1	138.5	138.3	138.0	137.8	137.6	137.4	137.1
METED	12.7	14.4	17.1	20.4	26.1	35.4	47.9	54.0	57.6	63.7	75.4	92.2	114.5	144.0	183.6	216.8
PECO	18.2	22.7	29.5	38.2	52.6	76.3	108.1	123.7	132.8	148.5	178.0	220.4	276.6	351.7	452.3	536.4
PENLC	2.6	4.7	7.8	11.8	18.5	29.4	43.9	51.0	55.2	62.3	75.7	94.8	119.9	154.4	200.5	238.9
PEPCO	55.5	79.9	106.9	135.0	150.9	165.0	179.5	184.9	186.3	188.6	190.9	192.7	194.0	194.8	195.4	195.6
PL	29.2	33.4	39.9	48.2	62.1	85.0	115.7	130.7	139.3	154.4	182.8	223.7	277.8	350.6	448.0	529.4
PS	202.0	225.4	237.5	239.5	239.3	237.0	234.7	232.4	230.2	229.4	229.3	229.3	229.2	229.1	229.0	228.9
RECO	4.5	5.3	5.7	5.8	5.8	5.7	5.7	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
UGI	0.2	0.3	0.4	0.6	1.0	1.5	2.2	2.6	2.8	3.1	3.8	4.7	6.0	7.7	10.0	11.9
VEPCO	130.2	161.9	200.3	248.4	306.8	356.1	408.4	432.8	438.9	450.3	466.0	485.7	512.4	548.4	596.6	661.2
PJM RTO	878.2	1,066.0	1,278.9	1,532.8	1,825.9	2,115.4	2,434.7	2,591.1	2,655.4	2,760.6	2,934.4	3,166.3	3,468.6	3,868.3	4,390.0	4,883.1

Distributed Solar Generation 2017 Forecast by Zone

Annual Capacity at Peak

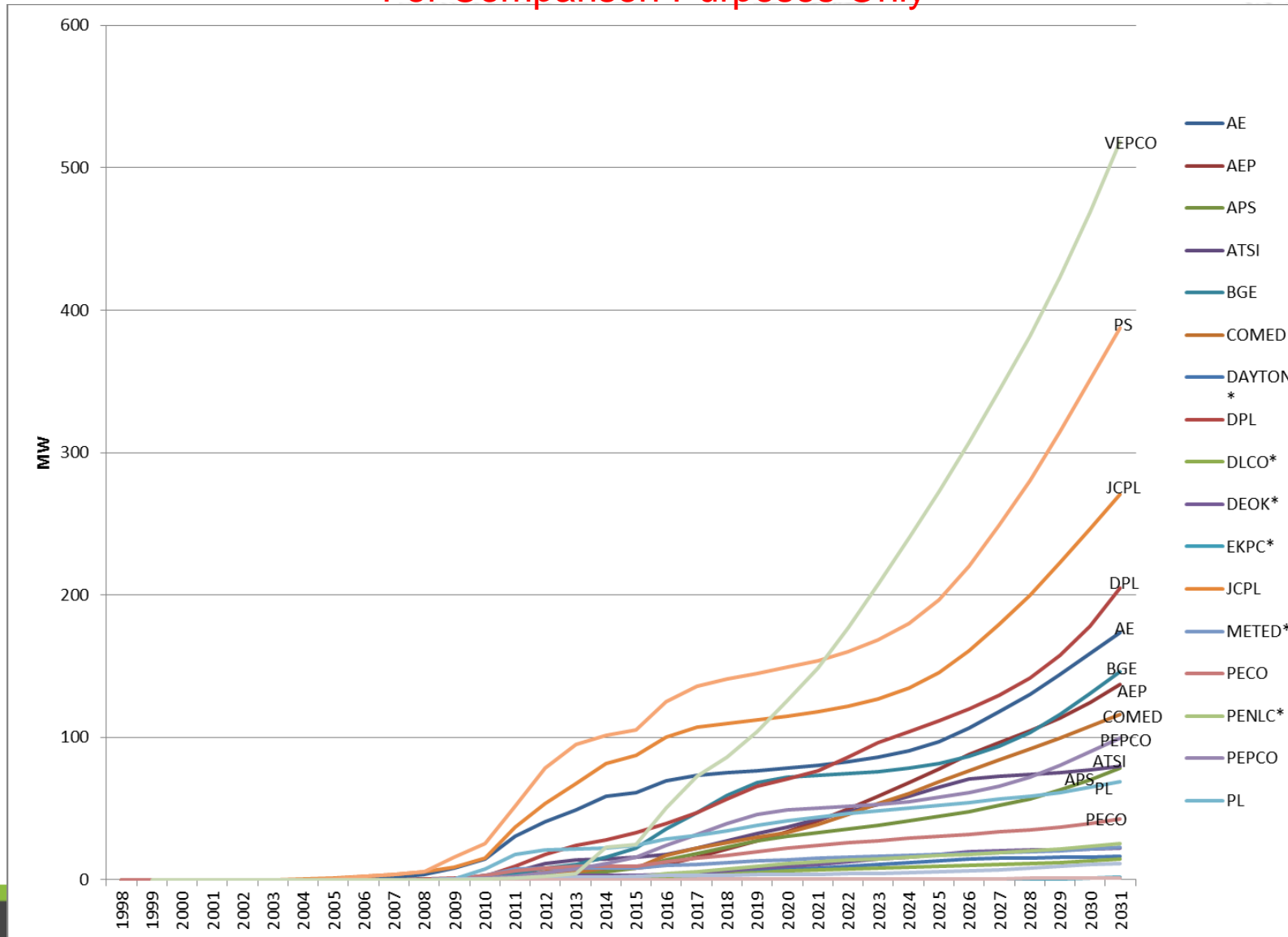


* Cumulative zonal impact is less than 20 MW at summer peak

Distributed Solar Generation 2016 Forecast by Zone

Annual Capacity at Peak

For Comparison Purposes Only



* Cumulative zonal impact is less than 26 MW at summer peak



Distributed Solar Generation Forecast by Zone Comparison of 2016 and 2017 Forecast Capacity at Peak

	2017 Forecast				2016 Forecast				Percent Change			
	2017	2018	2019	2020	2017	2018	2019	2020	2017	2018	2019	2020
AE	73.7	79.1	81.8	82.0	73.6	75.5	76.8	78.5	0%	5%	7%	5%
AEP	19.7	27.5	42.1	69.6	16.2	21.4	27.4	34.1	21%	28%	54%	104%
APS	31.9	44.3	58.8	74.9	18.4	23.2	27.5	30.9	73%	91%	114%	142%
ATSI	19.4	22.5	29.7	45.6	22.3	27.3	32.3	37.3	-13%	-18%	-8%	22%
BGE	76.5	109.5	143.7	178.6	47.4	59.5	68.3	72.2	61%	84%	110%	147%
COMED	12.2	18.6	31.3	49.0	22.5	26.1	29.7	33.2	-46%	-29%	5%	48%
DAYTON	5.1	5.9	8.0	12.7	4.4	5.4	6.4	7.4	17%	10%	25%	72%
DEOK	5.2	6.2	8.7	14.6	5.0	6.5	8.0	9.4	5%	-4%	9%	55%
DLCO	1.7	3.1	5.2	7.8	3.3	4.2	5.2	6.3	-49%	-27%	-1%	24%
DPL	51.1	62.8	79.9	104.2	47.4	56.6	65.6	71.2	8%	11%	22%	46%
EKPC	0.3	0.4	0.6	1.1	0.3	0.4	0.4	0.4	14%	1%	58%	170%
JCPL	126.3	138.0	143.9	144.7	107.0	110.0	112.2	115.0	18%	25%	28%	26%
METED	12.7	14.4	17.1	20.4	11.0	12.0	13.1	14.2	16%	20%	30%	44%
PECO	18.2	22.7	29.5	38.2	15.3	17.6	20.1	22.7	19%	29%	47%	68%
PENLC	2.6	4.7	7.8	11.8	5.9	7.6	9.4	11.3	-56%	-38%	-17%	5%
PEPCO	55.5	79.9	106.9	135.0	32.0	39.8	45.9	49.0	73%	101%	133%	175%
PL	29.2	33.4	39.9	48.2	31.6	34.7	38.2	41.8	-8%	-4%	4%	15%
PS	202.0	225.4	237.5	239.5	136.2	141.0	144.6	149.1	48%	60%	64%	61%
RECO	4.5	5.3	5.7	5.8	3.3	3.5	3.6	3.8	37%	52%	59%	53%
UGI	0.2	0.3	0.4	0.6	0.3	0.4	0.5	0.5	-47%	-33%	-15%	26%
VEPCO	130.2	161.9	200.3	248.4	72.7	86.4	104.1	125.6	79%	87%	92%	98%
PJM RTO	878.2	1,066.0	1,278.9	1,532.8	676.0	759.0	839.3	913.8	30%	40%	52%	68%

Appendix



Unrestricted Peak Loads with Estimated Solar Back-cast

Unrestricted Peak Loads with Estimated Solar Back-casted Value AE Zone

Zone	Year	Date	Hour Ending	Unrestricted Load (MW)	Estimated Solar Back-casted Value (MW)	Unrestricted Load with the addition of the Estimated Solar Back-casted Value (MW)
AE	1998	7/22/1998	18	2,265	-	2,265
AE	1999	7/5/1999	18	2,473	-	2,473
AE	2000	8/7/2000	17	2,329	-	2,329
AE	2001	8/9/2001	17	2,635	-	2,635
AE	2002	7/29/2002	18	2,677	-	2,677
AE	2003	8/22/2003	17	2,485	0	2,485
AE	2004	7/30/2004	18	2,454	0	2,454
AE	2005	7/27/2005	17	2,838	0	2,838
AE	2006	8/3/2006	17	3,009	1	3,010
AE	2007	8/8/2007	17	2,952	2	2,954
AE	2008	6/9/2008	17	2,638	3	2,641
AE	2009	8/10/2009	18	2,707	4	2,711
AE	2010	7/24/2010	17	2,936	14	2,950
AE	2011	7/22/2011	18	2,966	16	2,982
AE	2012	7/18/2012	16	2,853	60	2,913
AE	2013	7/18/2013	18	2,739	30	2,769
AE	2014	7/2/2014	18	2,443	42	2,485
AE	2015	7/20/2015	18	2,553	32	2,585
AE	2016	8/14/2016	18	2,674	64	2,738



Unrestricted Peak Loads with Estimated Solar Back-cast

Unrestricted Peak Loads with Estimated Solar Back-casted Value AEP Zone

Zone	Year	Date	Hour Ending	Unrestricted Load (MW)	Estimated Solar Back-casted Value (MW)	Unrestricted Load with the addition of the Estimated Solar Back-casted Value (MW)
AEP	1998	7/21/1998	17	21,160	-	21,160
AEP	1999	7/30/1999	17	21,882	-	21,882
AEP	2000	8/15/2000	18	20,588	-	20,588
AEP	2001	8/8/2001	17	22,911	-	22,911
AEP	2002	8/1/2002	17	23,129	0	23,129
AEP	2003	8/21/2003	17	22,577	0	22,577
AEP	2004	8/3/2004	17	21,886	0	21,886
AEP	2005	7/26/2005	16	23,920	0	23,920
AEP	2006	8/1/2006	15	24,839	0	24,839
AEP	2007	8/8/2007	15	25,301	0	25,301
AEP	2008	6/9/2008	17	23,834	0	23,834
AEP	2009	8/10/2009	15	21,887	0	21,887
AEP	2010	7/23/2010	15	23,508	3	23,511
AEP	2011	7/21/2011	17	24,546	7	24,553
AEP	2012	7/6/2012	17	23,507	9	23,516
AEP	2013	7/18/2013	15	22,947	16	22,963
AEP	2014	7/22/2014	17	21,411	10	21,421
AEP	2015	7/29/2015	16	21,876	12	21,888
AEP	2016	8/11/2016	15	22,489	15	22,504



Unrestricted Peak Loads with Estimated Solar Back-cast

Unrestricted Peak Loads with Estimated Solar Back-casted Value APS Zone

Zone	Year	Date	Hour Ending	Unrestricted Load (MW)	Estimated Solar Back-casted Value (MW)	Unrestricted Load with the addition of the Estimated Solar Back-casted Value (MW)
APS	1998	7/22/1998	19	7,314	0	7,314
APS	1999	7/6/1999	18	7,788	0	7,788
APS	2000	6/26/2000	18	7,546	0	7,546
APS	2001	8/9/2001	16	8,265	0	8,265
APS	2002	7/29/2002	17	8,340	0	8,340
APS	2003	8/14/2003	17	8,183	0	8,183
APS	2004	6/9/2004	17	7,996	0	7,996
APS	2005	7/26/2005	17	8,824	0	8,824
APS	2006	8/2/2006	17	8,734	0	8,734
APS	2007	8/8/2007	15	8,638	0	8,638
APS	2008	6/9/2008	17	8,432	0	8,432
APS	2009	8/10/2009	15	7,871	0	7,871
APS	2010	7/23/2010	17	8,532	1	8,533
APS	2011	7/21/2011	18	8,975	2	8,977
APS	2012	6/29/2012	16	8,537	8	8,545
APS	2013	7/18/2013	17	8,681	6	8,687
APS	2014	7/23/2014	17	8,084	6	8,090
APS	2015	8/17/2015	18	8,256	10	8,266
APS	2016	7/25/2016	15	8,718	40	8,758



Unrestricted Peak Loads with Estimated Solar Back-cast

Unrestricted Peak Loads with Estimated Solar Back-casted Value ATSI Zone

Zone	Year	Date	Hour Ending	Unrestricted Load (MW)	Estimated Solar Back-casted Value (MW)	Unrestricted Load with the addition of the Estimated Solar Back-casted Value (MW)
ATSI	1998	7/21/1998	16	11,657	-	11,657
ATSI	1999	7/30/1999	14	12,713	-	12,713
ATSI	2000	6/14/2000	15	11,959	-	11,959
ATSI	2001	8/8/2001	16	13,145	-	13,145
ATSI	2002	8/1/2002	17	13,299	0	13,299
ATSI	2003	8/14/2003	16	12,165	0	12,165
ATSI	2004	8/3/2004	17	12,310	0	12,310
ATSI	2005	7/26/2005	15	13,578	0	13,578
ATSI	2006	8/1/2006	16	13,804	0	13,804
ATSI	2007	8/24/2007	16	13,536	0	13,536
ATSI	2008	6/9/2008	16	12,972	0	12,972
ATSI	2009	8/10/2009	15	12,310	0	12,310
ATSI	2010	7/23/2010	15	13,177	2	13,179
ATSI	2011	7/21/2011	16	14,032	7	14,039
ATSI	2012	7/17/2012	17	13,516	5	13,521
ATSI	2013	7/18/2013	17	13,480	18	13,498
ATSI	2014	9/5/2014	15	12,365	22	12,387
ATSI	2015	7/29/2015	16	12,356	12	12,368
ATSI	2016	8/11/2016	15	12,753	26	12,779



Unrestricted Peak Loads with Estimated Solar Back-cast

Unrestricted Peak Loads with Estimated Solar Back-casted Value BGE Zone

Zone	Year	Date	Hour Ending	Unrestricted Load (MW)	Estimated Solar Back-casted Value (MW)	Unrestricted Load with the addition of the Estimated Solar Back-casted Value (MW)
BGE	1998	8/25/1998	17	6,045	-	6,045
BGE	1999	7/6/1999	17	6,670	-	6,670
BGE	2000	8/9/2000	17	6,015	-	6,015
BGE	2001	8/9/2001	17	6,867	-	6,867
BGE	2002	7/29/2002	18	6,897	-	6,897
BGE	2003	8/22/2003	17	6,572	-	6,572
BGE	2004	6/18/2004	17	6,267	-	6,267
BGE	2005	7/27/2005	17	7,376	0	7,376
BGE	2006	8/3/2006	18	7,484	0	7,484
BGE	2007	8/8/2007	17	7,478	0	7,478
BGE	2008	6/10/2008	17	7,150	0	7,150
BGE	2009	8/10/2009	17	6,596	1	6,597
BGE	2010	7/7/2010	18	7,125	1	7,126
BGE	2011	7/22/2011	17	7,616	6	7,622
BGE	2012	7/18/2012	15	7,435	15	7,450
BGE	2013	7/19/2013	16	7,038	18	7,056
BGE	2014	7/2/2014	17	6,665	18	6,683
BGE	2015	7/20/2015	18	6,507	20	6,527
BGE	2016	7/25/2016	15	6,932	109	7,041



Unrestricted Peak Loads with Estimated Solar Back-cast

Unrestricted Peak Loads with Estimated Solar Back-casted Value COMED Zone

Zone	Year	Date	Hour Ending	Unrestricted Load (MW)	Estimated Solar Back-casted Value (MW)	Unrestricted Load with the addition of the Estimated Solar Back-casted Value (MW)
COMED	1998	6/25/1998	17	19,510	-	19,510
COMED	1999	7/30/1999	16	22,157	-	22,157
COMED	2000	8/15/2000	17	20,143	0	20,143
COMED	2001	8/9/2001	17	21,574	0	21,574
COMED	2002	8/1/2002	17	21,804	0	21,804
COMED	2003	8/21/2003	17	22,054	0	22,054
COMED	2004	8/3/2004	17	19,794	0	19,794
COMED	2005	8/9/2005	18	21,635	0	21,635
COMED	2006	8/1/2006	18	23,995	0	23,995
COMED	2007	8/7/2007	18	21,970	0	21,970
COMED	2008	7/16/2008	17	20,975	0	20,975
COMED	2009	6/25/2009	16	21,218	0	21,218
COMED	2010	8/12/2010	17	21,915	0	21,915
COMED	2011	7/20/2011	18	23,753	0	23,753
COMED	2012	7/6/2012	17	23,601	10	23,611
COMED	2013	7/18/2013	17	22,290	8	22,298
COMED	2014	7/22/2014	17	19,722	8	19,730
COMED	2015	9/3/2015	18	20,165	3	20,168
COMED	2016	8/11/2016	16	21,187	11	21,198



Unrestricted Peak Loads with Estimated Solar Back-cast

Unrestricted Peak Loads with Estimated Solar Back-casted Value DAYTON Zone

Zone	Year	Date	Hour Ending	Unrestricted Load (MW)	Estimated Solar Back-casted Value (MW)	Unrestricted Load with the addition of the Estimated Solar Back-casted Value (MW)
DAYTON	1998	7/21/1998	17	3,303	-	3,303
DAYTON	1999	7/30/1999	15	3,460	-	3,460
DAYTON	2000	8/15/2000	18	3,176	-	3,176
DAYTON	2001	8/8/2001	17	3,436	-	3,436
DAYTON	2002	9/10/2002	17	3,283	-	3,283
DAYTON	2003	8/26/2003	17	3,366	-	3,366
DAYTON	2004	7/22/2004	18	3,280	-	3,280
DAYTON	2005	7/25/2005	14	3,725	-	3,725
DAYTON	2006	8/1/2006	18	3,706	-	3,706
DAYTON	2007	8/8/2007	15	3,748	0	3,748
DAYTON	2008	9/3/2008	17	3,493	0	3,493
DAYTON	2009	6/25/2009	17	3,327	0	3,327
DAYTON	2010	8/10/2010	17	3,387	0	3,387
DAYTON	2011	7/21/2011	20	3,644	0	3,644
DAYTON	2012	6/28/2012	18	3,495	1	3,496
DAYTON	2013	9/10/2013	16	3,398	4	3,402
DAYTON	2014	8/26/2014	16	3,224	6	3,230
DAYTON	2015	7/29/2015	15	3,269	5	3,274
DAYTON	2016	7/25/2016	18	3,327	6	3,333



Unrestricted Peak Loads with Estimated Solar Back-cast

Unrestricted Peak Loads with Estimated Solar Back-casted Value DEOK Zone

Zone	Year	Date	Hour Ending	Unrestricted Load (MW)	Estimated Solar Back-casted Value (MW)	Unrestricted Load with the addition of the Estimated Solar Back-casted Value (MW)
DEOK	1998	8/25/1998	17	4,851	-	4,851
DEOK	1999	7/21/1999	17	5,156	-	5,156
DEOK	2000	8/31/2000	17	4,872	0	4,872
DEOK	2001	8/7/2001	17	5,197	0	5,197
DEOK	2002	8/5/2002	16	5,423	0	5,423
DEOK	2003	8/26/2003	17	5,227	0	5,227
DEOK	2004	7/13/2004	18	5,106	0	5,106
DEOK	2005	7/25/2005	16	5,756	0	5,756
DEOK	2006	8/3/2006	17	5,595	0	5,595
DEOK	2007	8/23/2007	17	5,769	0	5,769
DEOK	2008	9/3/2008	17	5,403	0	5,403
DEOK	2009	8/10/2009	15	5,014	0	5,014
DEOK	2010	8/4/2010	15	5,545	1	5,546
DEOK	2011	7/21/2011	17	5,600	1	5,601
DEOK	2012	6/29/2012	16	5,445	4	5,449
DEOK	2013	9/10/2013	17	5,146	4	5,150
DEOK	2014	8/27/2014	17	5,039	2	5,041
DEOK	2015	7/29/2015	15	5,123	9	5,132
DEOK	2016	7/25/2016	15	5,309	10	5,319



Unrestricted Peak Loads with Estimated Solar Back-cast

Unrestricted Peak Loads with Estimated Solar Back-casted Value DLCO Zone

Zone	Year	Date	Hour Ending	Unrestricted Load (MW)	Estimated Solar Back-casted Value (MW)	Unrestricted Load with the addition of the Estimated Solar Back-casted Value (MW)
DLCO	1998	8/7/1998	16	2,484	-	2,484
DLCO	1999	7/6/1999	16	2,756	-	2,756
DLCO	2000	6/14/2000	16	2,673	-	2,673
DLCO	2001	8/9/2001	17	2,771	-	2,771
DLCO	2002	8/2/2002	17	2,917	-	2,917
DLCO	2003	8/21/2003	16	2,686	-	2,686
DLCO	2004	6/9/2004	18	2,646	0	2,646
DLCO	2005	8/12/2005	17	2,885	0	2,885
DLCO	2006	8/3/2006	16	3,053	0	3,053
DLCO	2007	8/24/2007	17	2,890	0	2,890
DLCO	2008	6/9/2008	17	2,822	0	2,822
DLCO	2009	8/17/2009	16	2,732	0	2,732
DLCO	2010	7/23/2010	15	2,889	0	2,889
DLCO	2011	7/22/2011	15	3,070	0	3,070
DLCO	2012	6/29/2012	14	3,054	1	3,055
DLCO	2013	7/18/2013	16	2,951	1	2,952
DLCO	2014	7/1/2014	17	2,693	1	2,694
DLCO	2015	7/29/2015	18	2,804	1	2,805
DLCO	2016	8/11/2016	15	2,797	1	2,798



Unrestricted Peak Loads with Estimated Solar Back-cast

Unrestricted Peak Loads with Estimated Solar Back-casted Value DPL Zone

Zone	Year	Date	Hour Ending	Unrestricted Load (MW)	Estimated Solar Back-casted Value (MW)	Unrestricted Load with the addition of the Estimated Solar Back-casted Value (MW)
DPL	1998	7/23/1998	18	3,277	-	3,277
DPL	1999	7/6/1999	17	3,714	-	3,714
DPL	2000	8/7/2000	17	3,476	0	3,476
DPL	2001	8/9/2001	17	3,793	0	3,793
DPL	2002	7/29/2002	16	3,905	0	3,905
DPL	2003	6/26/2003	17	3,687	0	3,687
DPL	2004	8/20/2004	16	3,641	0	3,641
DPL	2005	7/27/2005	17	4,235	0	4,235
DPL	2006	8/3/2006	17	4,328	0	4,328
DPL	2007	8/8/2007	17	4,349	0	4,349
DPL	2008	6/10/2008	17	4,015	1	4,016
DPL	2009	8/21/2009	15	3,843	2	3,845
DPL	2010	7/6/2010	18	4,055	2	4,057
DPL	2011	7/22/2011	17	4,338	10	4,348
DPL	2012	7/18/2012	16	4,152	18	4,170
DPL	2013	7/18/2013	17	4,019	17	4,036
DPL	2014	7/2/2014	18	3,875	18	3,893
DPL	2015	7/20/2015	15	3,821	50	3,871
DPL	2016	7/25/2016	18	4,127	45	4,172



Unrestricted Peak Loads with Estimated Solar Back-cast

Unrestricted Peak Loads with Estimated Solar Back-casted Value EKPC Zone

Zone	Year	Date	Hour Ending	Unrestricted Load (MW)	Estimated Solar Back-casted Value (MW)	Unrestricted Load with the addition of the Estimated Solar Back-casted Value (MW)
EKPC	1998	7/21/1998	18	1,486	-	1,486
EKPC	1999	7/29/1999	17	1,657	-	1,657
EKPC	2000	8/9/2000	18	1,760	-	1,760
EKPC	2001	8/8/2001	18	1,805	-	1,805
EKPC	2002	8/5/2002	18	1,911	-	1,911
EKPC	2003	8/14/2003	18	1,804	-	1,804
EKPC	2004	7/13/2004	19	1,676	-	1,676
EKPC	2005	7/25/2005	18	1,894	-	1,894
EKPC	2006	7/19/2006	18	1,884	-	1,884
EKPC	2007	8/9/2007	18	2,003	-	2,003
EKPC	2008	7/29/2008	19	1,837	0	1,837
EKPC	2009	8/10/2009	18	1,783	0	1,783
EKPC	2010	8/4/2010	16	1,966	0	1,966
EKPC	2011	7/11/2011	18	1,945	0	1,945
EKPC	2012	6/29/2012	17	1,976	0	1,976
EKPC	2013	7/16/2013	17	1,901	0	1,901
EKPC	2014	7/22/2014	18	1,896	0	1,896
EKPC	2015	7/29/2015	18	1,920	0	1,920
EKPC	2016	8/10/2016	17	2,026	0	2,026



Unrestricted Peak Loads with Estimated Solar Back-cast

Unrestricted Peak Loads with Estimated Solar Back-casted Value JCPL Zone

Zone	Year	Date	Hour Ending	Unrestricted Load (MW)	Estimated Solar Back-casted Value (MW)	Unrestricted Load with the addition of the Estimated Solar Back-casted Value (MW)
JCPL	1998	7/22/1998	17	4,907	-	4,907
JCPL	1999	7/6/1999	16	5,273	-	5,273
JCPL	2000	8/7/2000	17	4,961	-	4,961
JCPL	2001	8/9/2001	18	5,826	0	5,826
JCPL	2002	7/3/2002	16	5,919	0	5,919
JCPL	2003	6/26/2003	17	5,668	0	5,668
JCPL	2004	8/20/2004	16	5,457	1	5,458
JCPL	2005	7/27/2005	16	6,440	2	6,442
JCPL	2006	8/2/2006	17	6,751	3	6,754
JCPL	2007	8/8/2007	17	6,313	4	6,317
JCPL	2008	6/10/2008	17	6,398	7	6,405
JCPL	2009	8/10/2009	18	5,738	6	5,744
JCPL	2010	7/6/2010	17	6,448	21	6,469
JCPL	2011	7/22/2011	15	6,675	56	6,731
JCPL	2012	7/18/2012	15	6,300	110	6,410
JCPL	2013	7/19/2013	16	6,379	103	6,482
JCPL	2014	7/2/2014	17	5,637	109	5,746
JCPL	2015	7/20/2015	18	5,818	68	5,886
JCPL	2016	8/12/2016	16	5,955	169	6,124



Unrestricted Peak Loads with Estimated Solar Back-cast

Unrestricted Peak Loads with Estimated Solar Back-casted Value METED Zone

Zone	Year	Date	Hour Ending	Unrestricted Load (MW)	Estimated Solar Back-casted Value (MW)	Unrestricted Load with the addition of the Estimated Solar Back-casted Value (MW)
METED	1998	8/26/1998	17	2,225	-	2,225
METED	1999	7/19/1999	15	2,445	-	2,445
METED	2000	8/9/2000	17	2,342	-	2,342
METED	2001	8/9/2001	17	2,600	0	2,600
METED	2002	8/14/2002	15	2,616	0	2,616
METED	2003	8/21/2003	15	2,513	0	2,513
METED	2004	8/3/2004	19	2,556	0	2,556
METED	2005	8/4/2005	15	2,862	0	2,862
METED	2006	8/2/2006	16	3,000	0	3,000
METED	2007	8/8/2007	17	2,995	0	2,995
METED	2008	6/10/2008	17	3,110	0	3,110
METED	2009	8/10/2009	17	2,839	0	2,839
METED	2010	9/2/2010	16	2,940	4	2,944
METED	2011	7/22/2011	15	3,208	12	3,220
METED	2012	7/18/2012	14	3,038	22	3,060
METED	2013	7/18/2013	18	3,013	7	3,020
METED	2014	7/23/2014	17	2,817	11	2,828
METED	2015	8/17/2015	15	2,791	20	2,811
METED	2016	7/25/2016	15	2,948	23	2,971



Unrestricted Peak Loads with Estimated Solar Back-cast

Unrestricted Peak Loads with Estimated Solar Back-casted Value PECO Zone

Zone	Year	Date	Hour Ending	Unrestricted Load (MW)	Estimated Solar Back-casted Value (MW)	Unrestricted Load with the addition of the Estimated Solar Back-casted Value (MW)
PECO	1998	6/26/1998	14	7,108	0	7,108
PECO	1999	7/6/1999	17	8,230	0	8,230
PECO	2000	8/9/2000	17	7,333	0	7,333
PECO	2001	8/9/2001	17	8,186	0	8,186
PECO	2002	8/14/2002	17	8,164	0	8,164
PECO	2003	6/26/2003	17	7,696	0	7,696
PECO	2004	8/20/2004	16	7,567	0	7,567
PECO	2005	7/27/2005	17	8,847	0	8,847
PECO	2006	8/3/2006	17	8,995	0	8,995
PECO	2007	8/8/2007	17	8,850	0	8,850
PECO	2008	6/10/2008	17	8,837	0	8,837
PECO	2009	8/10/2009	17	8,009	0	8,009
PECO	2010	7/7/2010	18	8,911	2	8,913
PECO	2011	7/22/2011	17	9,286	11	9,297
PECO	2012	7/18/2012	15	8,727	22	8,749
PECO	2013	7/18/2013	17	8,655	15	8,670
PECO	2014	7/2/2014	17	8,258	14	8,272
PECO	2015	7/20/2015	16	8,094	20	8,114
PECO	2016	7/25/2016	16	8,364	31	8,395



Unrestricted Peak Loads with Estimated Solar Back-cast

Unrestricted Peak Loads with Estimated Solar Back-casted Value PENLC Zone

Zone	Year	Date	Hour Ending	Unrestricted Load (MW)	Estimated Solar Back-casted Value (MW)	Unrestricted Load with the addition of the Estimated Solar Back-casted Value (MW)
PENLC	1998	6/25/1998	15	2,419	-	2,419
PENLC	1999	7/6/1999	12	2,489	-	2,489
PENLC	2000	7/31/2000	15	2,482	0	2,482
PENLC	2001	8/9/2001	15	2,708	0	2,708
PENLC	2002	7/29/2002	15	2,706	0	2,706
PENLC	2003	8/14/2003	16	2,623	0	2,623
PENLC	2004	6/9/2004	14	2,638	0	2,638
PENLC	2005	8/4/2005	17	2,875	0	2,875
PENLC	2006	8/2/2006	15	3,069	0	3,069
PENLC	2007	8/8/2007	17	2,902	0	2,902
PENLC	2008	6/9/2008	16	2,880	0	2,880
PENLC	2009	8/17/2009	14	2,817	0	2,817
PENLC	2010	7/8/2010	17	2,970	0	2,970
PENLC	2011	7/22/2011	14	3,128	2	3,130
PENLC	2012	7/17/2012	17	2,913	1	2,914
PENLC	2013	7/18/2013	14	3,087	2	3,089
PENLC	2014	7/1/2014	15	2,788	1	2,789
PENLC	2015	8/17/2015	15	2,819	2	2,821
PENLC	2016	8/11/2016	14	2,910	2	2,912



Unrestricted Peak Loads with Estimated Solar Back-cast

Unrestricted Peak Loads with Estimated Solar Back-casted Value PEPCO Zone

Zone	Year	Date	Hour Ending	Unrestricted Load (MW)	Estimated Solar Back-casted Value (MW)	Unrestricted Load with the addition of the Estimated Solar Back-casted Value (MW)
PEPCO	1998	6/26/1998	16	5,807	-	5,807
PEPCO	1999	7/6/1999	17	6,223	-	6,223
PEPCO	2000	6/12/2000	16	5,721	-	5,721
PEPCO	2001	8/9/2001	16	6,399	-	6,399
PEPCO	2002	7/29/2002	17	6,513	-	6,513
PEPCO	2003	8/22/2003	16	6,166	0	6,166
PEPCO	2004	6/17/2004	16	6,086	0	6,086
PEPCO	2005	7/27/2005	17	6,766	0	6,766
PEPCO	2006	8/3/2006	17	6,947	0	6,947
PEPCO	2007	8/8/2007	16	6,892	0	6,892
PEPCO	2008	6/10/2008	17	6,752	0	6,752
PEPCO	2009	8/10/2009	18	6,325	0	6,325
PEPCO	2010	7/7/2010	17	6,718	2	6,720
PEPCO	2011	7/22/2011	15	7,024	5	7,029
PEPCO	2012	7/18/2012	16	6,758	7	6,765
PEPCO	2013	7/19/2013	16	6,533	11	6,544
PEPCO	2014	7/2/2014	16	6,345	17	6,362
PEPCO	2015	6/23/2015	18	6,268	21	6,289
PEPCO	2016	7/25/2016	16	6,584	90	6,674



Unrestricted Peak Loads with Estimated Solar Back-cast

Unrestricted Peak Loads with Estimated Solar Back-casted Value PL Zone

Zone	Year	Date	Hour Ending	Unrestricted Load (MW)	Estimated Solar Back-casted Value (MW)	Unrestricted Load with the addition of the Estimated Solar Back-casted Value (MW)
PL	1998	7/22/1998	18	5,809	-	5,809
PL	1999	7/6/1999	17	6,415	-	6,415
PL	2000	6/26/2000	16	6,068	-	6,068
PL	2001	8/9/2001	15	6,790	-	6,790
PL	2002	7/29/2002	16	6,946	-	6,946
PL	2003	8/14/2003	17	6,480	-	6,480
PL	2004	8/3/2004	17	6,446	-	6,446
PL	2005	7/27/2005	14	7,176	0	7,176
PL	2006	8/2/2006	17	7,688	0	7,688
PL	2007	8/8/2007	16	7,304	0	7,304
PL	2008	6/10/2008	16	7,370	0	7,370
PL	2009	8/17/2009	17	6,853	0	6,853
PL	2010	7/7/2010	17	7,216	5	7,221
PL	2011	7/22/2011	14	7,527	35	7,562
PL	2012	7/18/2012	14	7,290	40	7,330
PL	2013	7/18/2013	17	7,328	27	7,355
PL	2014	7/23/2014	16	6,732	25	6,757
PL	2015	9/8/2015	17	6,720	24	6,744
PL	2016	7/14/2016	17	6,841	50	6,891



Unrestricted Peak Loads with Estimated Solar Back-cast

Unrestricted Peak Loads with Estimated Solar Back-casted Value PS Zone

Zone	Year	Date	Hour Ending	Unrestricted Load (MW)	Estimated Solar Back-casted Value (MW)	Unrestricted Load with the addition of the Estimated Solar Back-casted Value (MW)
PS	1998	7/22/1998	16	9,291	-	9,291
PS	1999	7/6/1999	16	10,225	-	10,225
PS	2000	6/26/2000	16	9,369	-	9,369
PS	2001	8/9/2001	16	10,426	0	10,426
PS	2002	8/14/2002	16	10,188	0	10,188
PS	2003	6/26/2003	17	9,855	0	9,855
PS	2004	6/9/2004	17	9,429	0	9,429
PS	2005	7/27/2005	16	11,122	2	11,124
PS	2006	8/2/2006	16	11,229	5	11,234
PS	2007	8/8/2007	17	10,478	7	10,485
PS	2008	6/10/2008	17	10,716	10	10,726
PS	2009	8/21/2009	15	9,687	18	9,705
PS	2010	7/6/2010	17	10,761	36	10,797
PS	2011	7/22/2011	16	10,998	74	11,072
PS	2012	7/18/2012	15	10,475	172	10,647
PS	2013	7/19/2013	16	10,414	193	10,607
PS	2014	7/2/2014	17	9,515	151	9,666
PS	2015	7/20/2015	17	9,595	162	9,757
PS	2016	8/12/2016	17	9,801	145	9,946



Unrestricted Peak Loads with Estimated Solar Back-cast

Unrestricted Peak Loads with Estimated Solar Back-casted Value RECO Zone

Zone	Year	Date	Hour Ending	Unrestricted Load (MW)	Estimated Solar Back-casted Value (MW)	Unrestricted Load with the addition of the Estimated Solar Back-casted Value (MW)
RECO	1998	6/25/1998	17	364	-	364
RECO	1999	7/6/1999	16	438	-	438
RECO	2000	8/9/2000	17	386	-	386
RECO	2001	9/10/2001	16	471	0	471
RECO	2002	7/23/2002	16	437	0	437
RECO	2003	6/26/2003	17	394	0	394
RECO	2004	6/9/2004	17	383	0	383
RECO	2005	7/27/2005	16	435	0	435
RECO	2006	8/2/2006	16	441	0	441
RECO	2007	7/10/2007	16	423	0	423
RECO	2008	6/10/2008	16	440	1	441
RECO	2009	8/17/2009	17	371	0	371
RECO	2010	7/6/2010	17	430	0	430
RECO	2011	7/22/2011	16	436	2	438
RECO	2012	7/18/2012	14	430	5	435
RECO	2013	7/18/2013	17	438	3	441
RECO	2014	7/2/2014	16	389	2	391
RECO	2015	7/20/2015	17	398	1	399
RECO	2016	8/11/2016	17	402	4	406



Unrestricted Peak Loads with Estimated Solar Back-cast

Unrestricted Peak Loads with Estimated Solar Back-casted Value UGI Zone

Zone	Year	Date	Hour Ending	Unrestricted Load (MW)	Estimated Solar Back-casted Value (MW)	Unrestricted Load with the addition of the Estimated Solar Back-casted Value (MW)
UGI	1998	7/22/1998	17	156	-	156
UGI	1999	7/6/1999	14	171	-	171
UGI	2000	8/9/2000	17	159	-	159
UGI	2001	8/9/2001	14	181	-	181
UGI	2002	8/13/2002	17	184	-	184
UGI	2003	6/26/2003	17	174	-	174
UGI	2004	6/9/2004	17	171	-	171
UGI	2005	7/26/2005	18	196	-	196
UGI	2006	8/1/2006	18	211	-	211
UGI	2007	7/10/2007	17	194	-	194
UGI	2008	6/10/2008	17	195	0	195
UGI	2009	8/17/2009	17	181	0	181
UGI	2010	7/7/2010	17	197	0	197
UGI	2011	7/22/2011	17	216	0	216
UGI	2012	7/18/2012	14	200	-	200
UGI	2013	7/18/2013	18	205	0	205
UGI	2014	7/2/2014	13	188	-	188
UGI	2015	9/8/2015	17	193	0	193
UGI	2016	8/11/2016	18	200	0	200



Unrestricted Peak Loads with Estimated Solar Back-cast

Unrestricted Peak Loads with Estimated Solar Back-casted Value VEPCO Zone

Zone	Year	Date	Hour Ending	Unrestricted Load (MW)	Estimated Solar Back-casted Value (MW)	Unrestricted Load with the addition of the Estimated Solar Back-casted Value (MW)
VEPCO	1998	7/22/1998	17	15,231	-	15,231
VEPCO	1999	7/6/1999	17	16,027	-	16,027
VEPCO	2000	8/9/2000	17	15,252	0	15,252
VEPCO	2001	8/9/2001	17	16,440	0	16,440
VEPCO	2002	7/29/2002	18	16,911	0	16,911
VEPCO	2003	8/22/2003	16	16,250	0	16,250
VEPCO	2004	8/4/2004	17	16,327	0	16,327
VEPCO	2005	7/27/2005	17	19,028	0	19,028
VEPCO	2006	8/3/2006	17	19,375	0	19,375
VEPCO	2007	8/8/2007	17	19,749	0	19,749
VEPCO	2008	6/10/2008	17	19,111	0	19,111
VEPCO	2009	8/10/2009	17	18,153	0	18,153
VEPCO	2010	7/7/2010	17	19,428	1	19,429
VEPCO	2011	7/22/2011	16	20,147	2	20,149
VEPCO	2012	6/29/2012	17	19,322	2	19,324
VEPCO	2013	7/18/2013	17	18,838	5	18,843
VEPCO	2014	7/2/2014	16	18,760	11	18,771
VEPCO	2015	6/23/2015	17	19,023	59	19,082
VEPCO	2016	7/25/2016	17	19,539	160	19,699



Distributed Solar Generation Forecast by Zone and State (only represents IHS Forecast) Annual Additions 2017-2032

Zone	State	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
AE	NJ	27.7	21.2	11.5	2.8	1.0	-0.8	-0.8	-0.8	-0.8	0.4	1.0	1.0	1.0	1.0	1.0	0.9
AEP	IN	1.1	1.6	3.5	6.0	11.3	20.2	17.4	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
AEP	KY	0.3	0.1	0.4	0.8	1.2	2.1	4.0	4.6	0.6	1.4	1.6	1.6	1.6	1.6	0.8	0.8
AEP	MI	0.5	1.3	1.8	3.9	3.8	0.9	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
AEP	OH	9.8	8.9	21.9	51.1	92.6	80.0	74.0	42.5	19.7	21.8	29.9	33.3	39.4	49.1	62.8	83.6
AEP	TN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AEP	VA	9.1	12.4	18.0	24.0	29.5	21.6	22.1	8.4	1.3	2.9	5.3	6.1	7.7	10.0	12.4	12.9
AEP	WV	0.6	0.4	0.6	0.5	2.9	2.5	3.0	12.7	2.8	2.8	2.8	2.1	2.8	2.7	2.7	5.0
APS	MD	22.7	32.5	33.8	34.4	14.5	7.7	9.9	2.9	-0.9	-0.9	-0.5	-0.3	-0.3	-0.3	-0.3	-0.3
APS	PA	3.0	8.6	12.8	16.5	27.2	44.8	60.2	29.6	17.3	30.0	56.2	80.9	107.3	140.8	188.7	158.1
APS	VA	2.6	3.6	5.2	6.9	8.4	6.1	6.3	2.4	0.4	0.8	1.5	1.7	2.2	2.9	3.5	3.7
APS	WV	0.4	0.3	0.4	0.3	1.9	1.6	1.9	8.2	1.8	1.8	1.8	1.4	1.8	1.8	1.8	3.2
ATSI	OH	10.0	9.1	22.3	52.0	94.0	81.0	74.8	42.8	19.8	21.8	29.9	33.2	39.1	50.0	63.8	84.6
ATSI	PA	0.8	2.4	3.6	4.6	7.5	12.4	16.6	8.1	4.8	8.2	15.4	22.1	29.3	39.0	52.2	43.7
BGE	MD	90.4	128.4	133.3	135.7	57.2	30.2	39.0	11.2	-3.6	-3.5	-1.9	-1.1	-1.1	-1.1	-1.1	-1.2
COMED	IL	10.6	20.6	40.1	56.0	73.3	88.2	109.8	58.2	31.5	43.6	49.6	53.7	63.3	80.3	85.8	88.4
DAYTON	OH	2.9	2.6	6.5	15.0	27.1	23.3	21.5	12.3	5.7	6.3	8.6	9.5	11.2	14.4	18.4	24.4
DEOK	KY	0.1	0.0	0.1	0.2	0.3	0.5	0.9	1.1	0.1	0.3	0.4	0.4	0.4	0.4	0.2	0.2
DEOK	OH	4.2	3.8	9.5	22.1	40.1	34.6	32.0	18.4	8.5	9.4	12.9	14.4	17.1	21.3	27.2	36.2
DLCO	PA	2.0	5.6	8.4	10.8	17.8	29.3	39.2	19.2	11.2	19.3	36.2	51.8	68.5	92.5	123.7	103.4
DPL	DE	12.6	21.6	38.2	61.3	85.8	59.1	22.2	5.7	2.4	2.4	2.4	5.8	14.1	17.2	17.1	15.3
DPL	MD	12.4	17.7	18.4	18.7	7.9	4.2	5.4	1.6	-0.5	-0.5	-0.3	-0.2	-0.2	-0.1	-0.1	-0.2
DPL	VA	0.6	0.8	1.2	1.6	1.9	1.4	1.5	0.5	0.1	0.2	0.3	0.4	0.5	0.7	0.8	0.8
EKPC	KY	0.6	0.2	0.7	1.4	2.1	3.9	7.2	8.2	1.1	2.4	2.9	2.9	2.8	2.9	1.5	1.4
JCPL	NJ	62.0	47.9	26.1	6.2	2.2	-1.9	-1.9	-1.9	-1.8	1.0	2.3	2.2	2.2	2.2	2.2	2.1
METED	PA	2.2	6.2	9.2	11.8	19.5	32.0	43.0	21.1	12.3	21.3	40.0	57.4	76.1	100.9	135.0	113.0
PECO	PA	5.7	16.1	24.1	30.9	50.8	83.4	111.9	54.9	32.1	55.4	103.6	148.7	196.9	263.4	352.2	294.5
PENLC	PA	2.4	6.8	10.2	13.0	21.4	35.2	47.0	23.0	13.4	23.1	43.1	61.7	81.4	111.3	148.7	124.1
PEPCO	DC	12.3	14.2	21.5	24.5	27.5	38.1	34.0	15.4	9.5	12.6	11.8	9.2	7.1	5.4	4.1	2.7
PEPCO	MD	60.3	85.9	89.2	90.8	38.3	20.2	26.1	7.5	-2.4	-2.4	-1.3	-0.7	-0.7	-0.7	-0.7	-0.8
PL	PA	5.6	15.8	23.7	30.4	50.0	82.0	110.0	53.9	31.5	54.3	101.6	145.8	192.9	259.2	346.6	289.7
PS	NJ	118.9	91.6	49.8	12.0	4.3	-3.7	-3.6	-3.6	-3.6	1.9	4.4	4.3	4.3	4.3	4.2	4.2
RECO	NJ	4.0	3.0	1.7	0.4	0.1	-0.1	-0.1	-0.1	-0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
UGI	PA	0.1	0.4	0.6	0.8	1.2	2.0	2.7	1.3	0.8	1.3	2.4	3.5	4.6	6.5	8.6	7.1
VEPCO	NC	92.0	55.7	49.9	53.9	63.3	71.5	80.3	49.2	19.1	29.7	32.9	44.3	61.7	83.7	117.0	176.0
VEPCO	VA	48.6	66.8	97.6	129.9	159.8	116.6	119.7	45.1	6.8	15.7	28.8	32.8	41.5	54.4	67.1	69.8