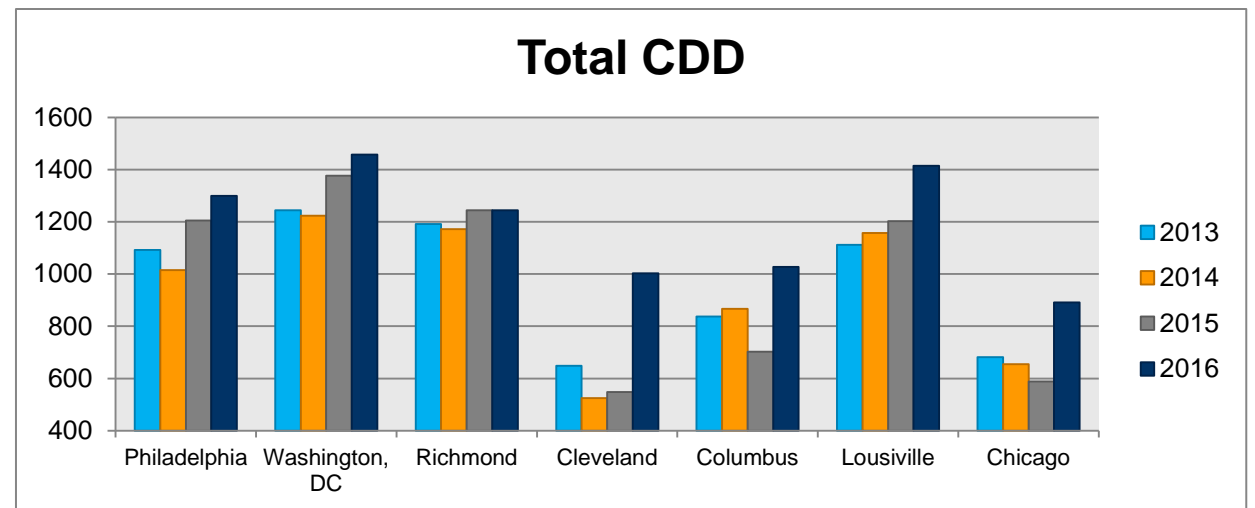
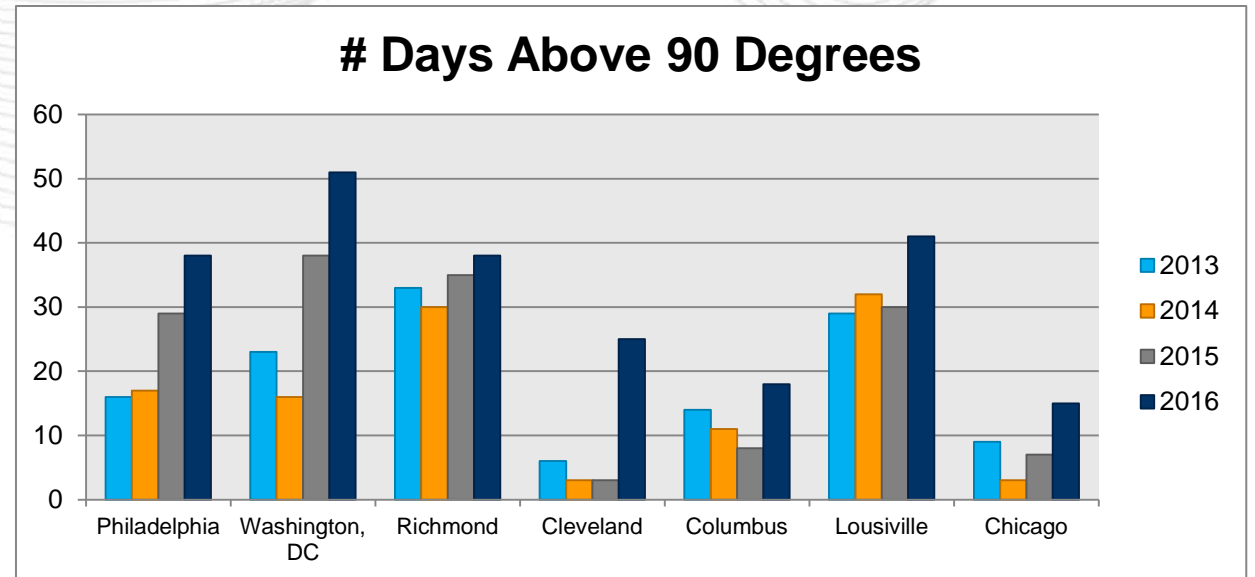


Summer 2016 overview

SOS
Chris Pulong

- 2016 was the hottest of the last four summers.
- Cooling Degree Days (CDD) reflect not only hottest days of the summer, but also persistence of the heat.
 - CDD is # of degrees that a day's average temp is $> 65^{\circ}$



	RTO Monthly Load Served			
	June	July	August	Total
2013	67,011,138	77,733,080	71,256,857	216,001,075
2014	67,792,143	71,735,968	70,401,997	209,930,108
2015	67,599,817	74,549,991	72,724,994	214,874,802
2016	67,453,544	78,556,572	80,574,518	226,584,635

Observations:

- Aligns with weather data
- More Cooling Degree Days = higher overall system demand

Procedure	2013	2014	2015	2016
Hot Weather Alerts	12	9	16	23
Load Management	12*	0	0	0
72-hr Maintenance Outage Recall	N/A	N/A	N/A	1

*8 of the 12 Load Management calls were related to September 2013 extreme hot weather

Region	2013 Peak Load	2016 Peak Load	Difference
DOM	18,763 MW	19,092	329
MIDATL	59,119	55,677	-3,442
WEST	80,179	78,125	-2,054
RTO	157,509	151,293	-6,216

City	7/18/13 Max Temp	THI	8/11/16 Max Temp	THI
Philadelphia	97	85	94	84
Washington, DC	94	85	97	85
Richmond	94	84	92	83
Cleveland	93	83	91	82
Columbus	92	82	92	83
Louisville	92	83	91	82
Chicago	94	83	92	83

- Observations:
 - Temperatures and THI on the peak day in 2016 close to those on the peak day in 2013, but load was lower. Why?
 - Possible contributors are:
 - BTM Solar & DERs
 - AC, light bulb and TV efficiency
 - Conservation efforts

	7-Jul	8-Jul	14-Jul	15-Jul	18-Jul
Hot Weather Alerts	Mid Atlantic	Mid-Atlantic & Dominion	Mid-Atlantic & Dominion	Mid-Atlantic & Dominion	Mid-Atlantic & Dominion

	21-Jul	22-Jul	23-Jul	24-Jul	25-Jul	26-Jul	27-Jul	28-Jul
Hot Weather Alerts	ComEd	RTO	RTO	RTO	RTO	Mid-Atlantic & Dominion	Mid-Atlantic & Dominion	Mid-Atlantic & Dominion
72-hr Maintenance Outage Recall		RTO (effective 7/25)						

	11-Aug	12-Aug	13-Aug	14-Aug	15-Aug	16-Aug		29-Aug
Hot Weather Alerts	none	Mid Atlantic	Mid Atlantic	Mid Atlantic	Mid-Atlantic & Dominion	Mid-Atlantic & Dominion		Mid Atlantic

	8-Sep	9-Sep	10-Sep
Hot Weather Alerts	Mid-Atlantic & Dominion	Mid-Atlantic & Dominion	Mid-Atlantic & Dominion

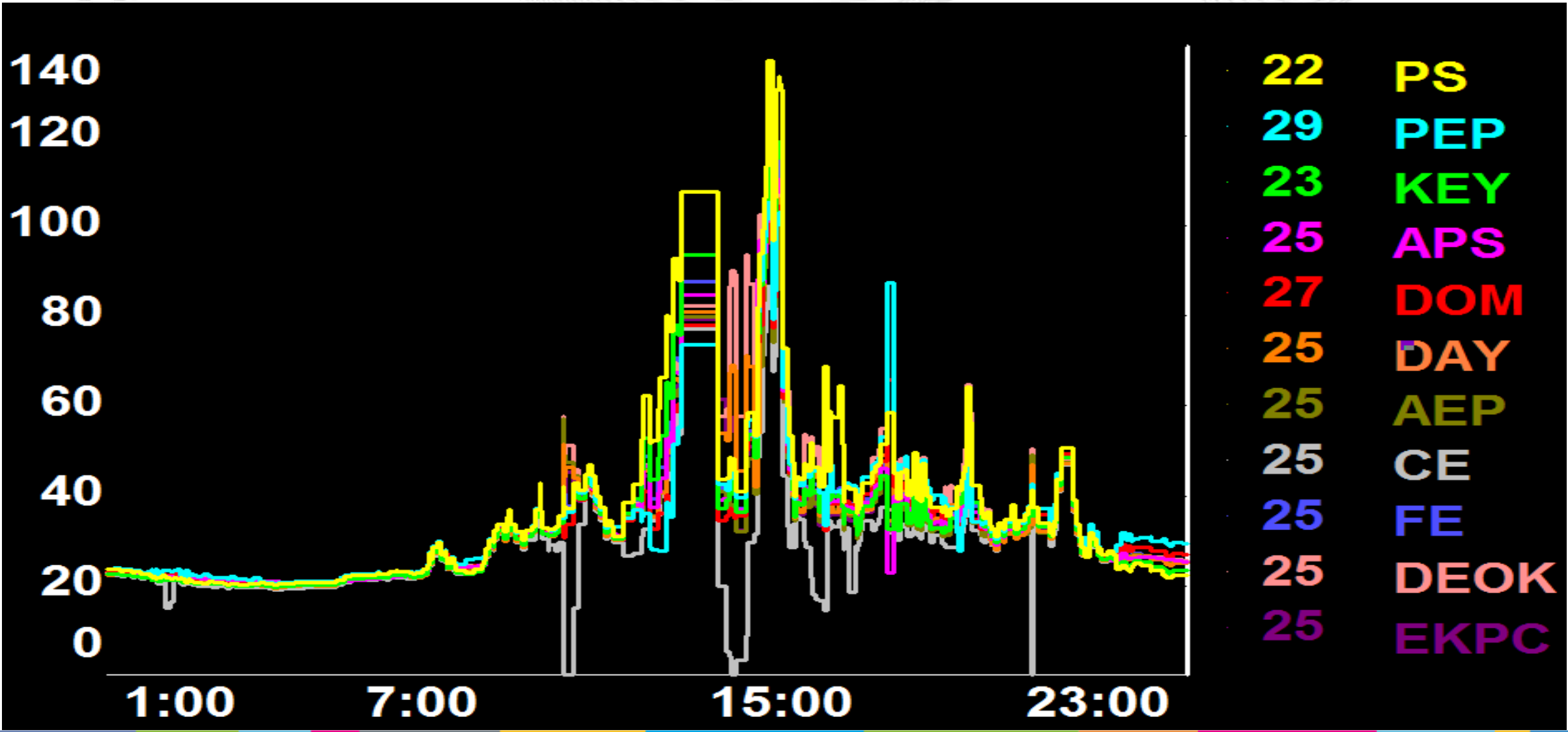
July 25, 2016 Peak

Emergency Procedures: RTO wide Hot Weather Alert, Gen M.O. recall

RTO Peak	150,826 MW @ 1600 (preliminary)
Mid Atlantic	56,881 MW @ 1600
Dominion	19,582 MW @ 1600
Combustion Turbines:	19,638 MW
Generation Outages	13,302 MW (13,302 unplanned)
RTO Net Scheduled Interchange	367 MW (Importing)
Economic Demand Response	Baltimore Gas and Electric = 600 MW

Localized congestion





August 11, 2016 Peak to Date

Emergency Procedures: None (temp forecasts escalated rapidly)

RTO Peak	151,293 MW @ 1700 (preliminary)
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Mid Atlantic	56,351MW @ 1700
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Dominion	18,632 MW @ 1700
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Combustion Turbines:	22,249 MW
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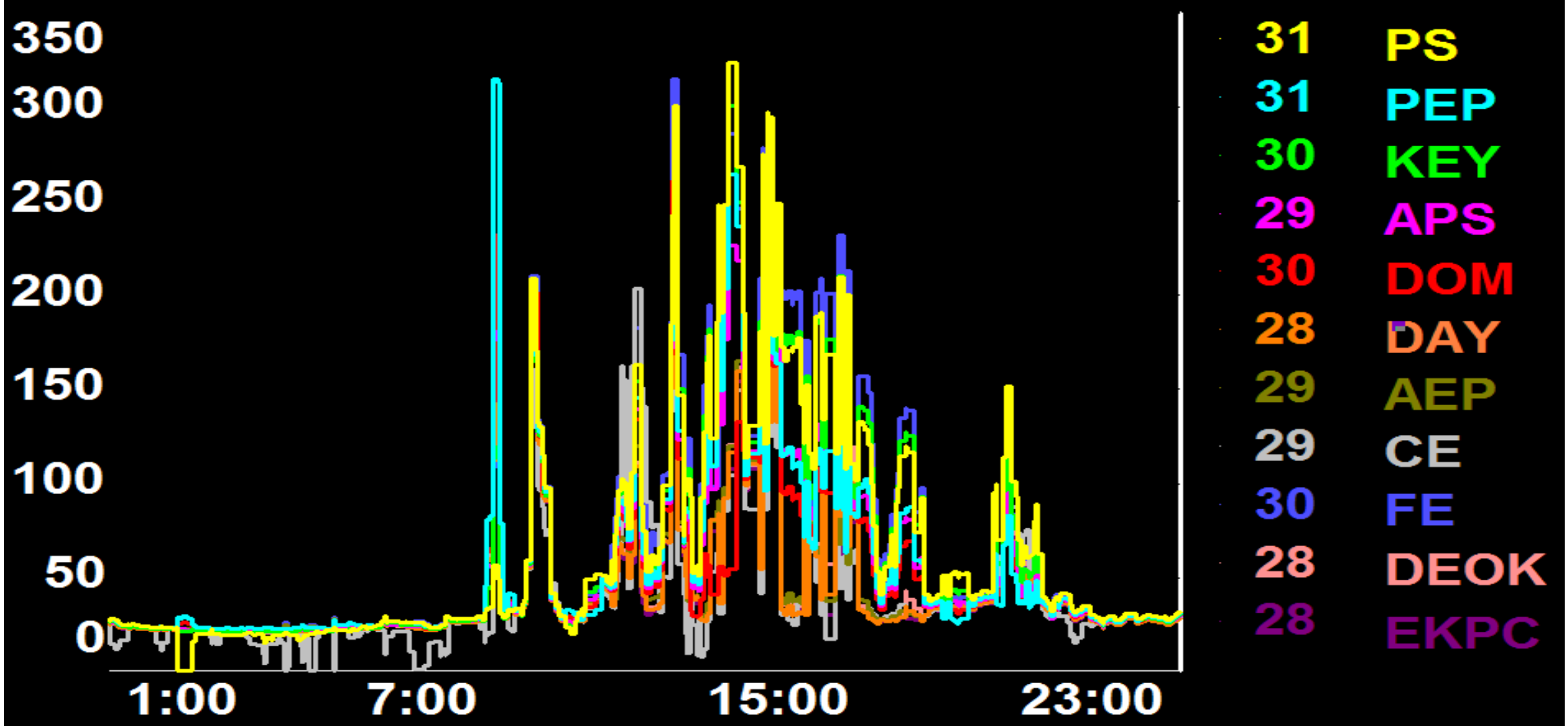
Generation Outages	10,197 MW (9,440MW unplanned)
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RTO Net Scheduled Interchange	2,042 MW (Exporting)
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Economic Demand Response	0 MW
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Localized congestion





- Strong voltage profile and adequate IROL margins.
- Less west to east flow/bias and many days with reverse flows.
- Transmission outages (unplanned):
 - Dumont T2 765/345kV XF failure 7/21-12/30
 - Dumont T1 765/345kV XF failure 8/10-8/12 (tertiary winding fault)
 - Combined outages resulted in limited export capability to Michigan.
- Generation performance:
 - 10,000-13,000MWs of unavailable generation during the HWA's.
- Interchange more biased to exporting. Contributing factors:
 - Pseudo ties are no longer 'tagged' into PJM
 - High neighboring LMPs