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Pre-Dispatch Peak vs Average Demand Forecast: Investigating Gross Inefficiencies

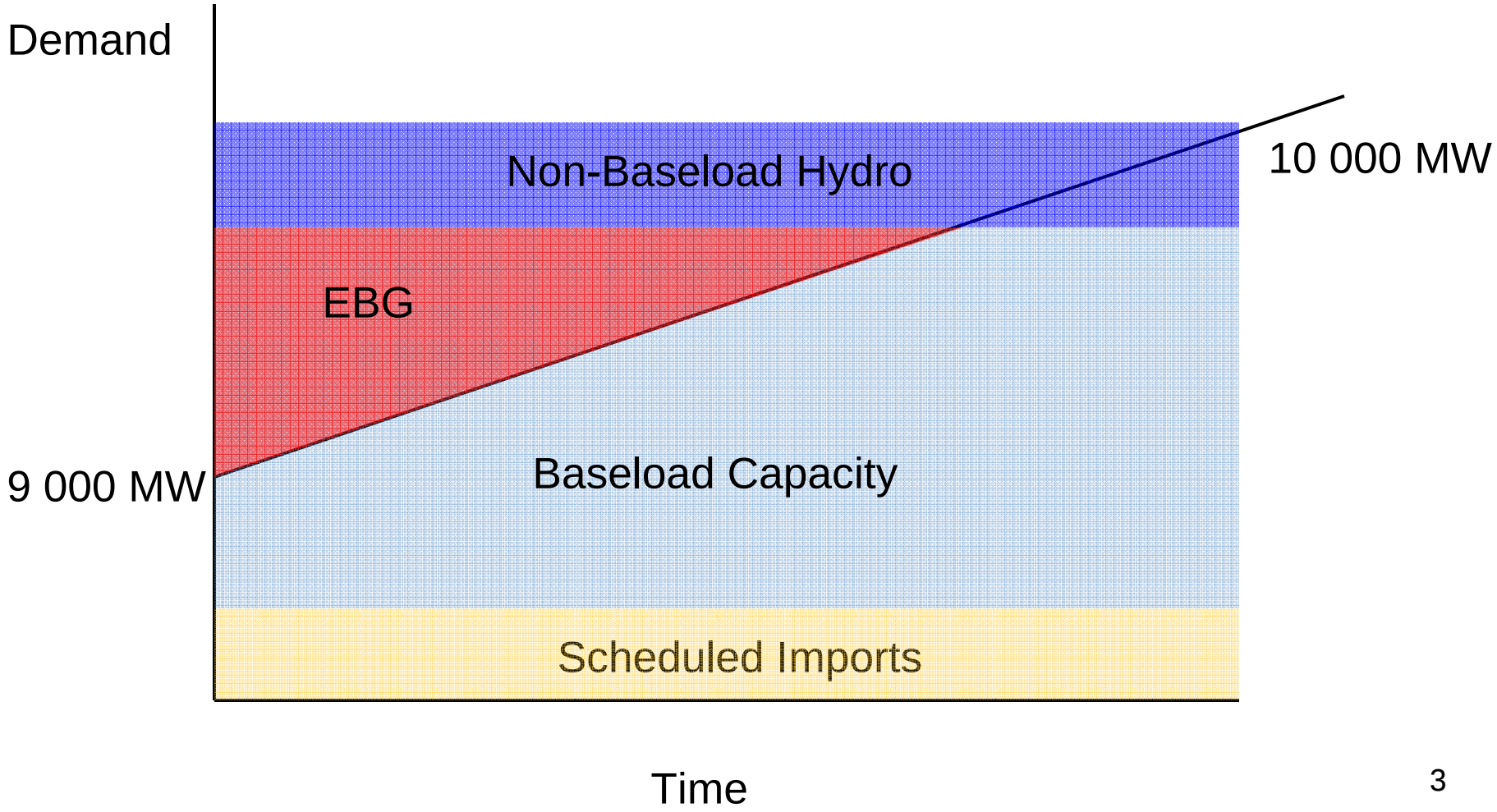
MPWG

December 6, 2006

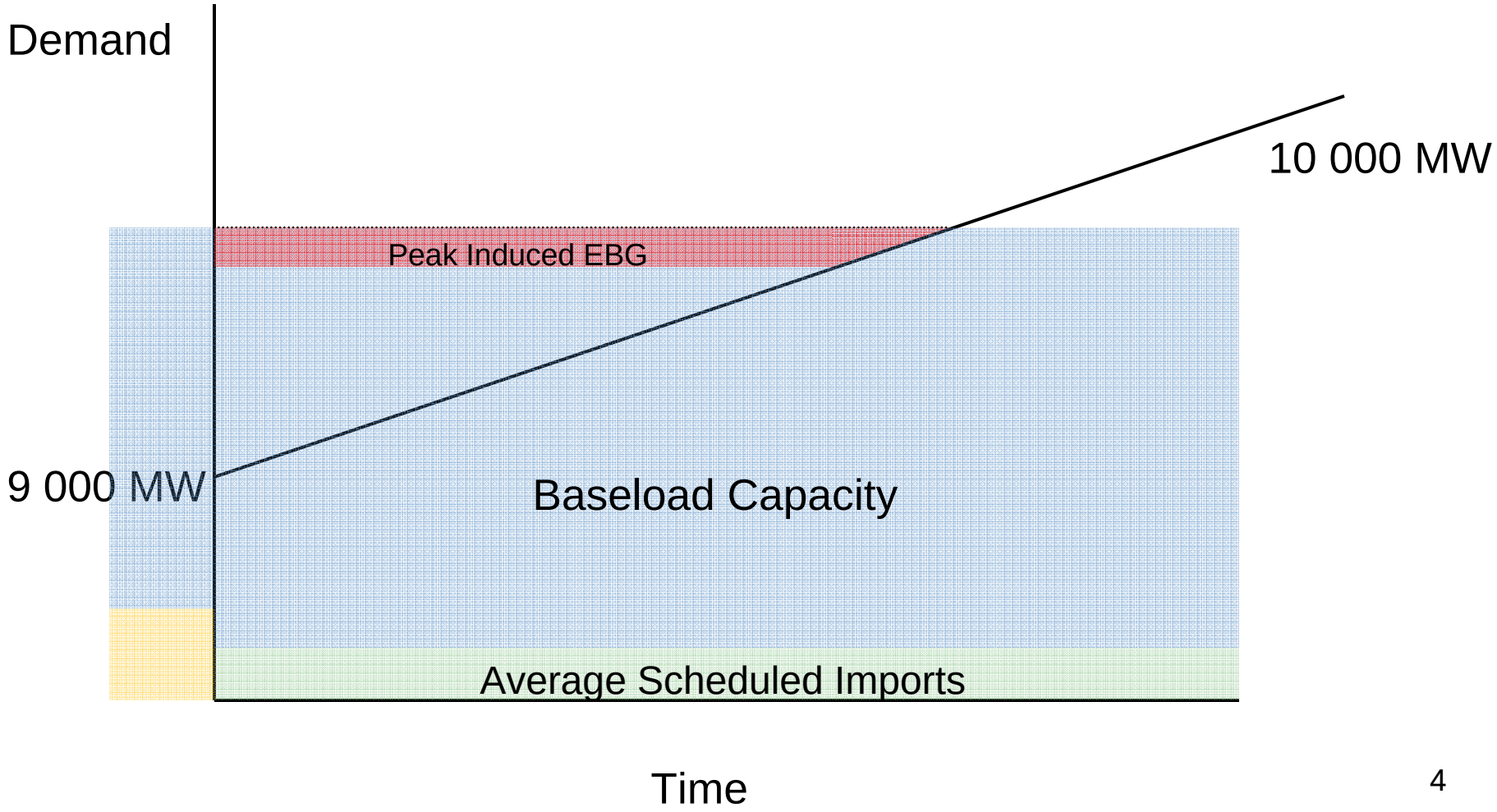
Agenda

- Excess Baseload Generation Events (EBG)
- Inefficient Imports
- Next Steps

Excess Baseload Generation Event: Imports Scheduled Using Peak Forecast



Excess Baseload Generation Event: Imports Scheduled using Avg Forecast



Finding EBG Events

- No accepted definition of EBG
- Used the 20 lowest priced hours as an indicator of EBG
- Compared those hours with Peak-Avg forecast difference and Baseload dispatch

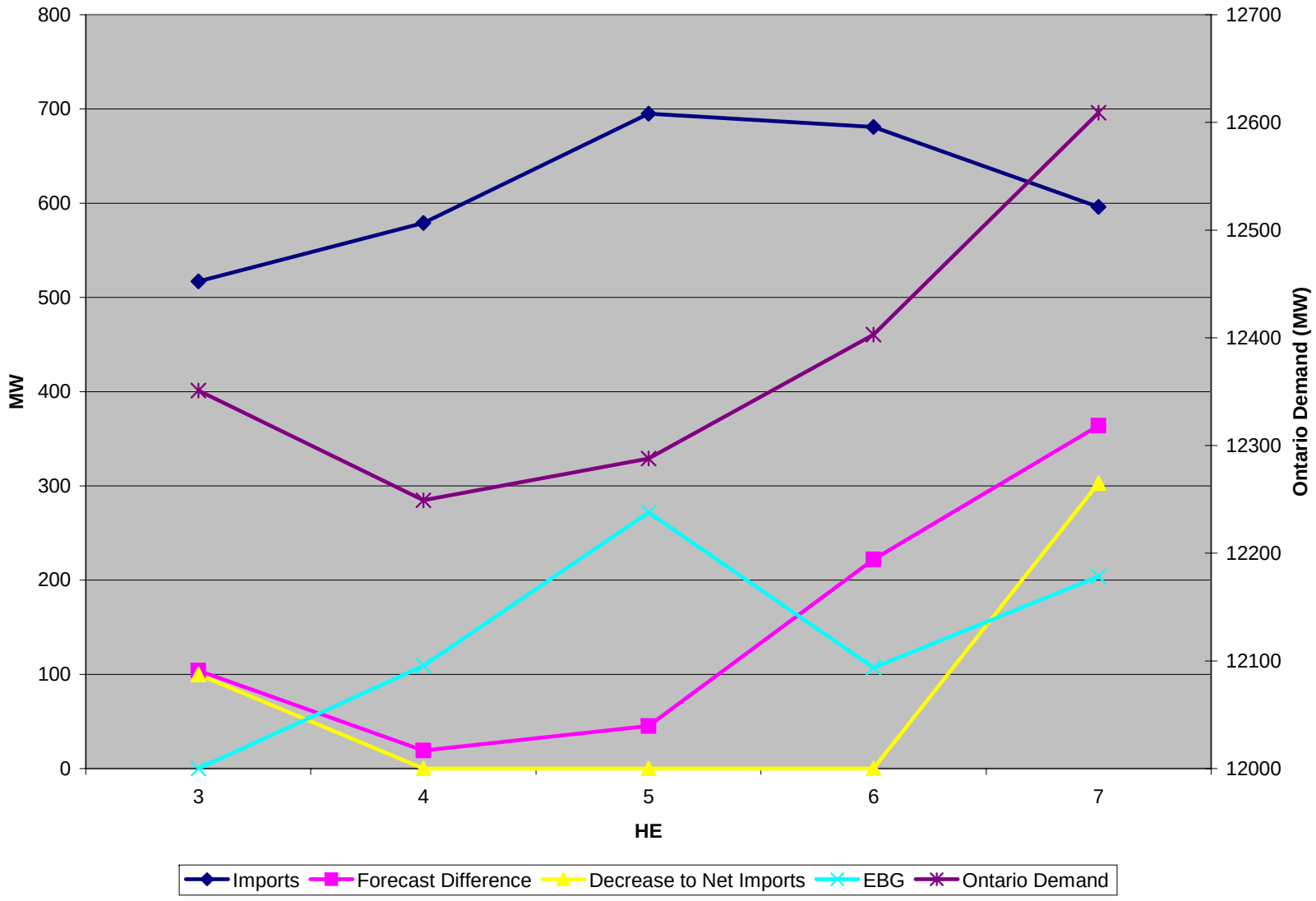
Results of the Lowest 20 HOEP

- All 20 hours are from 2006
- Looked at lowest 3 hours not in 2006
- HOEP ranged from -$3.10 to $6.57
- 4 hours where baseload units where dispatched down

Description of EBG Events

Date	HE	PD Price	HOEP
September 3, 2006	4	$ 23.54	$ 2.10
September 3, 2006	5	$14.53	- $ 3.10
September 3, 2006	6	$ 4.20	$ 2.41
September 3, 2006	7	$ 4.10	$ 0.69

Early Morning Hours September 3, 2006



Analysis of EBG Event

- September 3, 2006; HE 5; HOEP = -$3.10

Imports (MW)	Forecast Difference (MW)	Decrease to Imports (MW)	EBG (MW)	EBG with Average Pre-Dispatch forecast (MW)
695	45	0	270	270

Analysis of EBG Event

- September 3, 2006; HE 7; HOEP = $0.69

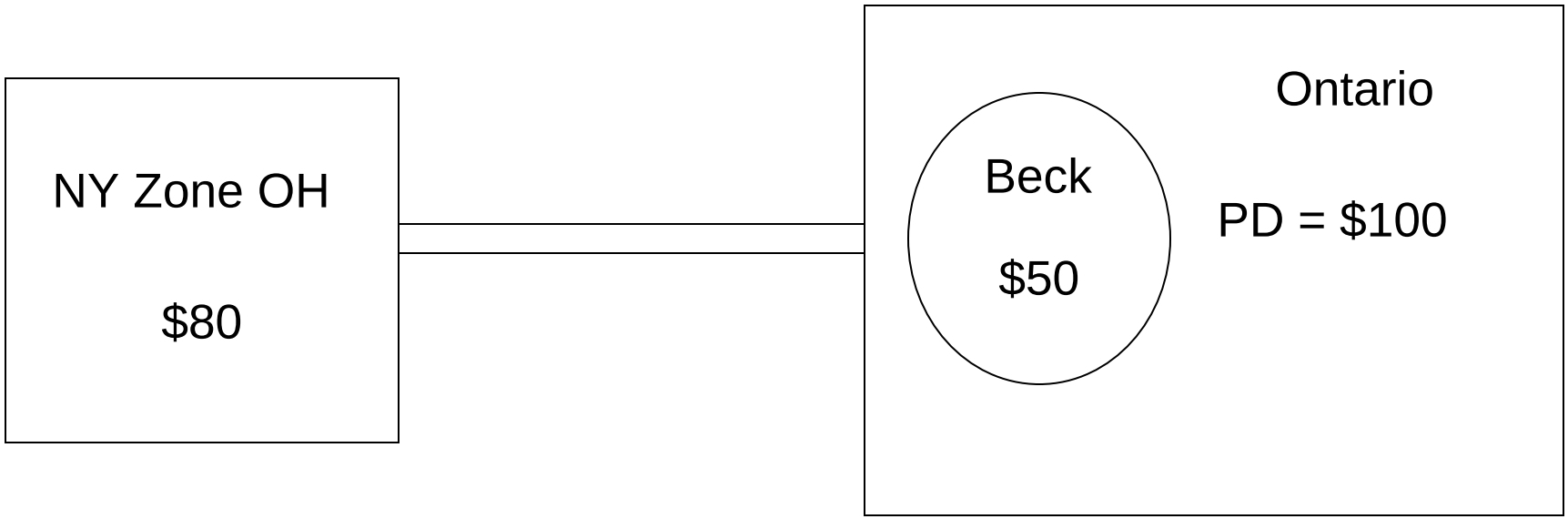
Imports (MW)	Forecast Difference (MW)	Decrease to Imports (MW)	EBG (MW)	EBG with Average Pre-Dispatch forecast (MW)
695	364	303	204	0

EBG Conclusion

- EBG events are rare
- Decrease to imports in EBG hours is small
- Peak demand forecast in pre-dispatch only has a minimal effect on EBG events

Inefficient Imports

- Have considered an inefficient import to be when the New York Zone OH price is greater than the Beck E Bus price



Inefficient Imports

- High IOG payments are associated with large differences between pre-dispatch and real time price
- Investigated hours with high IOG payments as hours which may have inefficient imports
- Defined 3 sets to investigate:
  - Highest IOG hours in simulation of 7 days
  - Highest 10 IOG hours
  - Highest 5 IOG hours not in 2002

Highest IOG Hours in Simulation

- Omitted August 3, 2005
- Imports from NY are small in these hours
- 6 of 10 hours demonstrated inefficient imports
- Additional costs to market in these 5 hours is small

Highest IOG Hours from Simulation

Date	HE	IOG	Peak-Avg Difference (MW)	Decrease to Net Imports (MW)	HOEP ($/MWh)	PD Price ($/MWh)	NY Zone OH ($/MWh)	Beck ($/MWh)	Inefficiency Cost ($/MWh)
12/13/2005	17	$154,478	842	502	$58	$174	$145	$49	$96
04/08/2005	11	$92,197	53	53	$50	$115	$72	$70	$2
12/13/2005	16	$87,644	330	330	$48	$128	$102	$61	$41
01/27/2005	17	$77,573	471	354	$68	$137	$106	$63	$43
10/17/2005	18	$69,079	255	135	$87	$90	$105	$240	
04/08/2005	7	$68,894	558	558	$52	$105	$65	$94	
04/08/2005	6	$68,791	558	306	$49	$117	$63	$107	
12/13/2005	10	$61,277	60	60	$60	$140	$97	$86	$11
04/08/2005	12	$61,105	165	164	$50	$110	$69	$74	
04/08/2005	14	$56,736	341	341	$43	$80	$62	$57	$5

IOG Conclusion

- Very few inefficient imports in the hours investigated

- Of the hours with inefficient imports, the inefficiencies are small

Natural Gas Imports Displacing Ontario Coal

- Used NY Zone OH price as indicator of fuel type supplying import and Beck E Bus price as indicator of fuel type for domestic supply

- In 3 hours we are importing expensive natural gas fired generation in place of cheaper domestic coal generation

Natural Gas Imports Displacing Ontario Coal

Date	HE	IOG	Peak-Avg Difference (MW)	Decrease to Net Imports (MW)	HOEP ($/MWh)	PD Price ($/MWh)	NY Zone OH ($/MWh)	Beck ($/MWh)	Inefficiency Cost ($/MWh)
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Recap

- EBG events are rare
- Discovered very few inefficient imports
- Peak demand forecast contributes to the inefficiencies

Next Steps

- Continue to investigate these and other inefficiencies
- Continue to work with MSO to determine which hours are appropriate for an average demand forecast
- Present price and IOG results from simulation data

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