



# **Westar Energy, Inc.**

## **Presentation for House Energy and Utilities Committee**

**March 12, 2012**

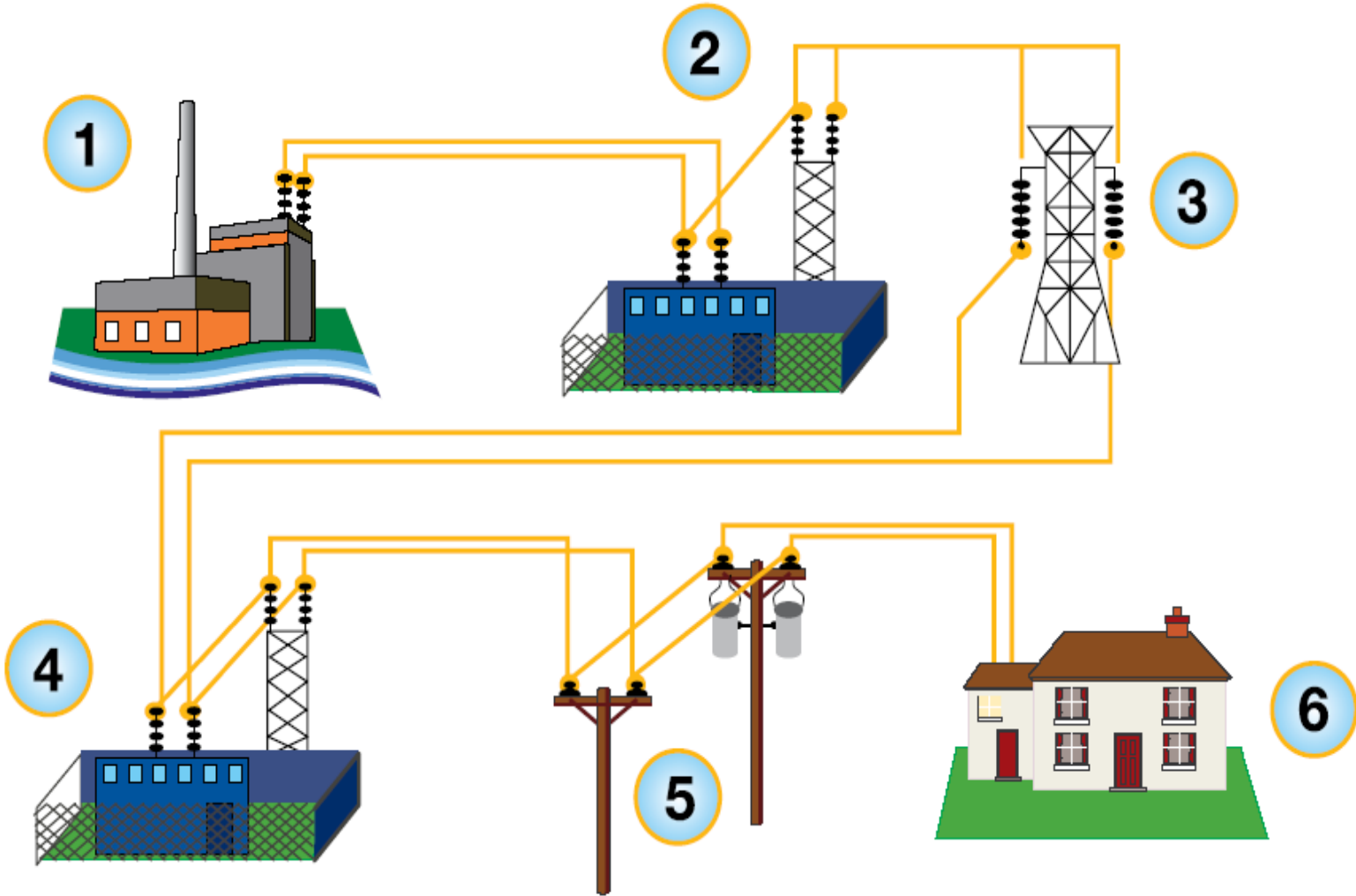
**John Olsen, Ex. Director, Bulk Power Marketing**



# Agenda for Today

- Westar's Generation Fleet
- Dispatch Operations
- Serving our Customers
- New Resources
- Questions

# Electric Companies Rely on a Complex Array of Generation, Transmission, and Distribution Facilities to Serve Their Customers

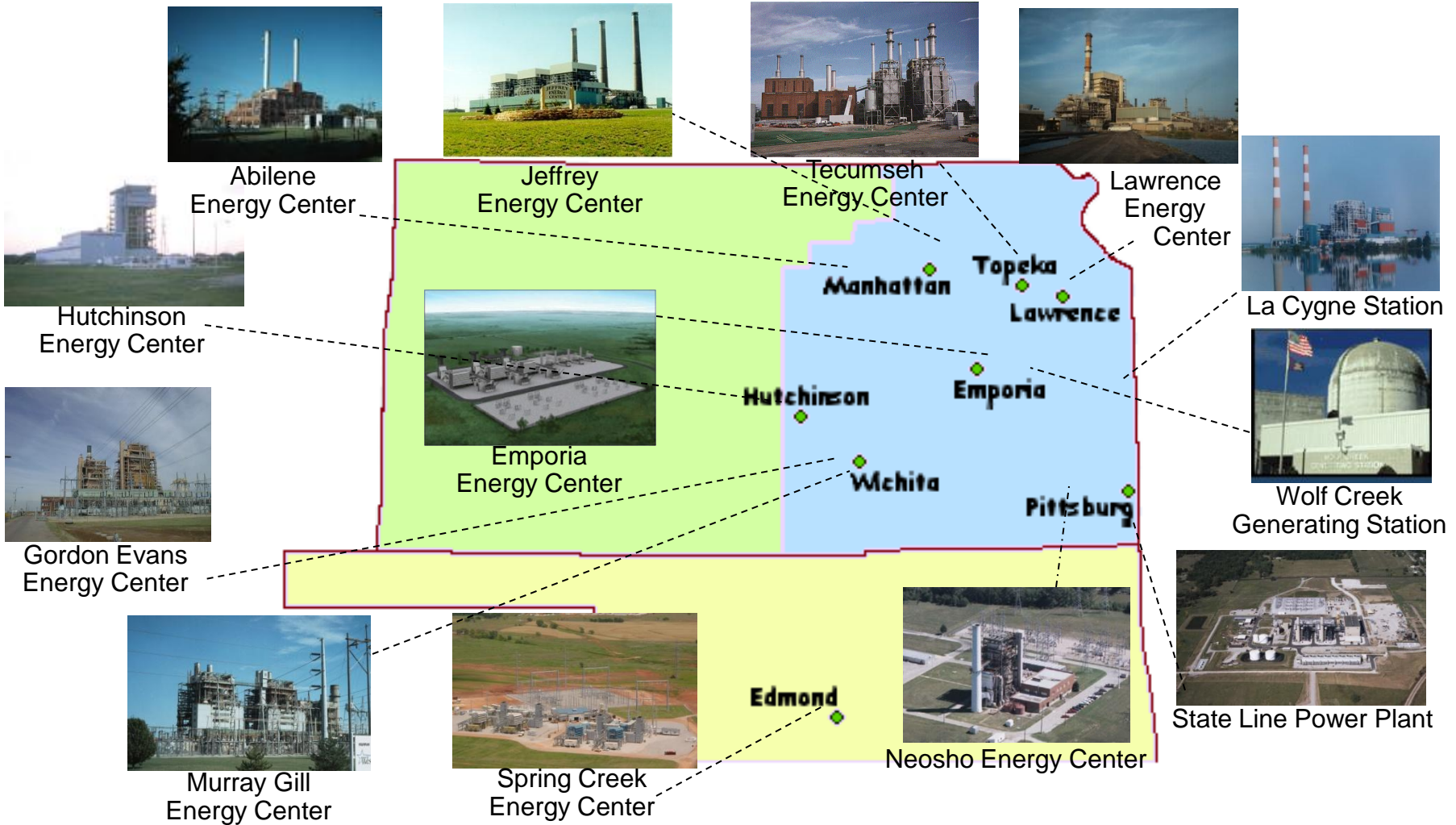




# Westar's Generation Fleet



# Traditional Generating Fleet





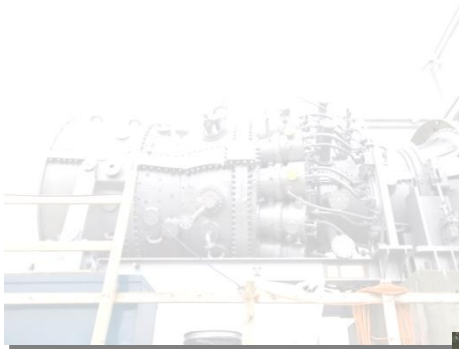
# Natural Gas Generation Technologies

## PEAKING RESOURCES





# Natural Gas Generation Technologies



## COMBINED CYCLE RESOURCE





# Renewable Generation - Wind



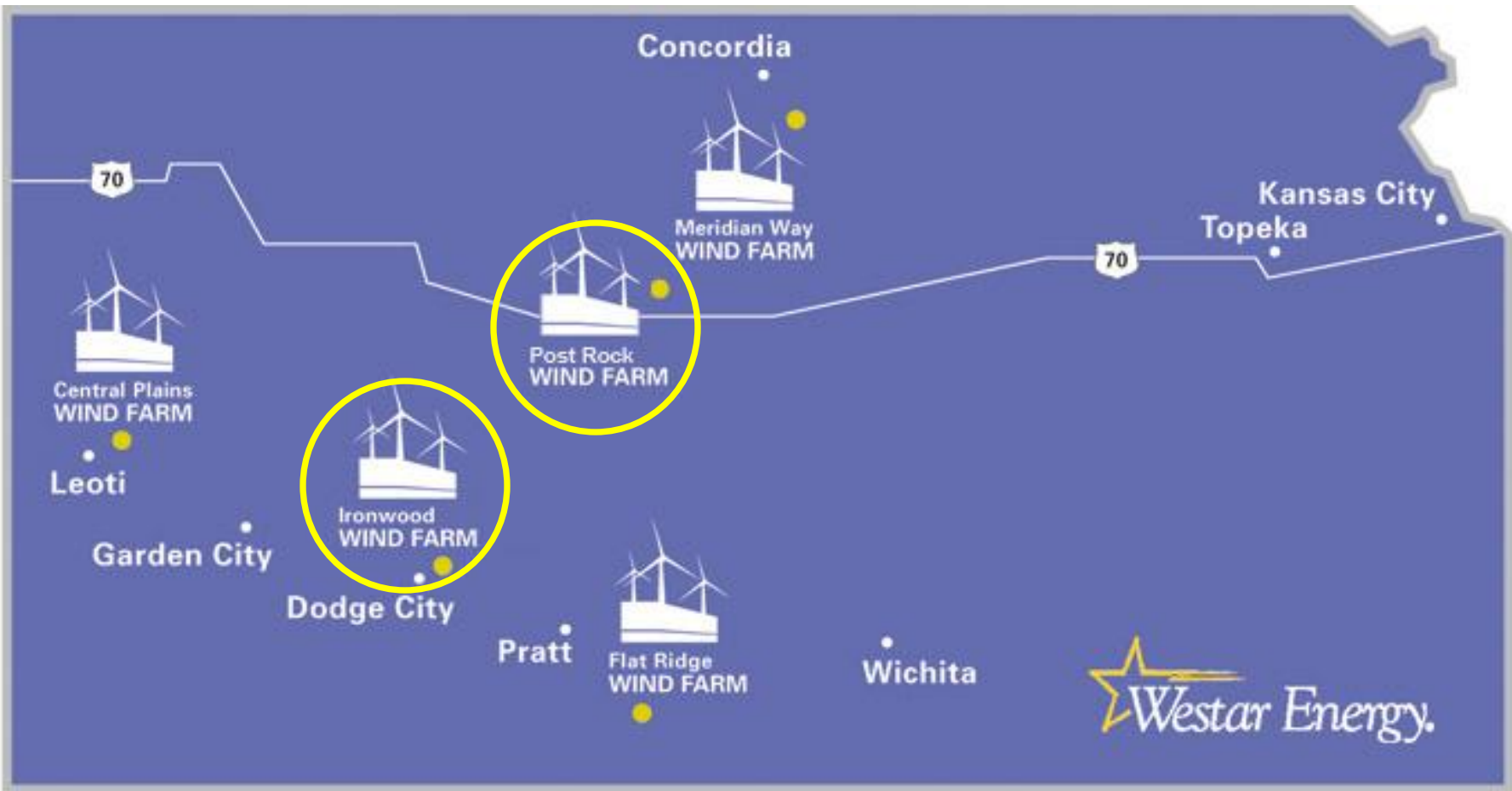
## WIND RESOURCES







# Westar's Wind Farms





# Renewable Generation - Landfill Gas





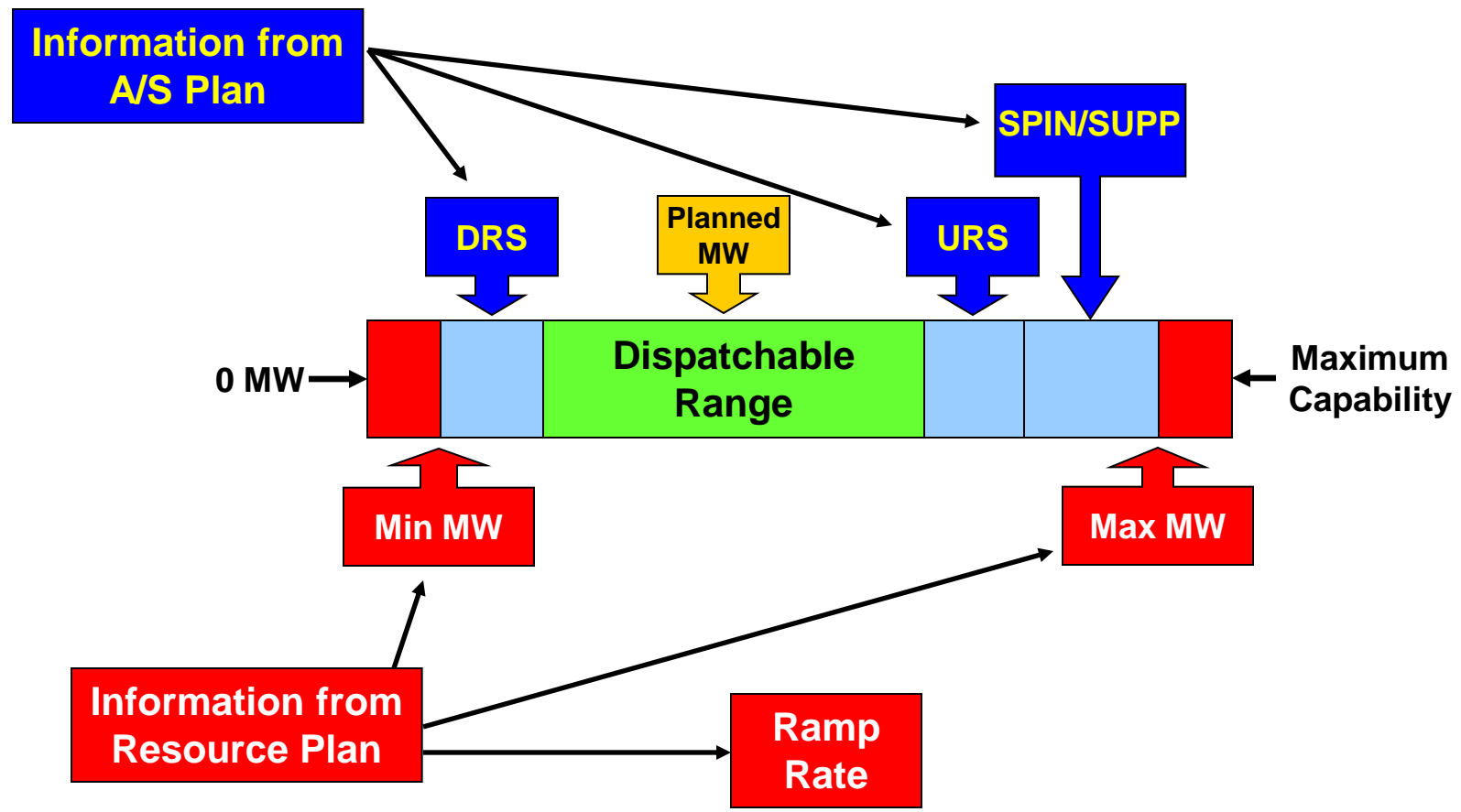
# Dispatch Operations



07.14.2009



# SPP Market - Dispatchable Range

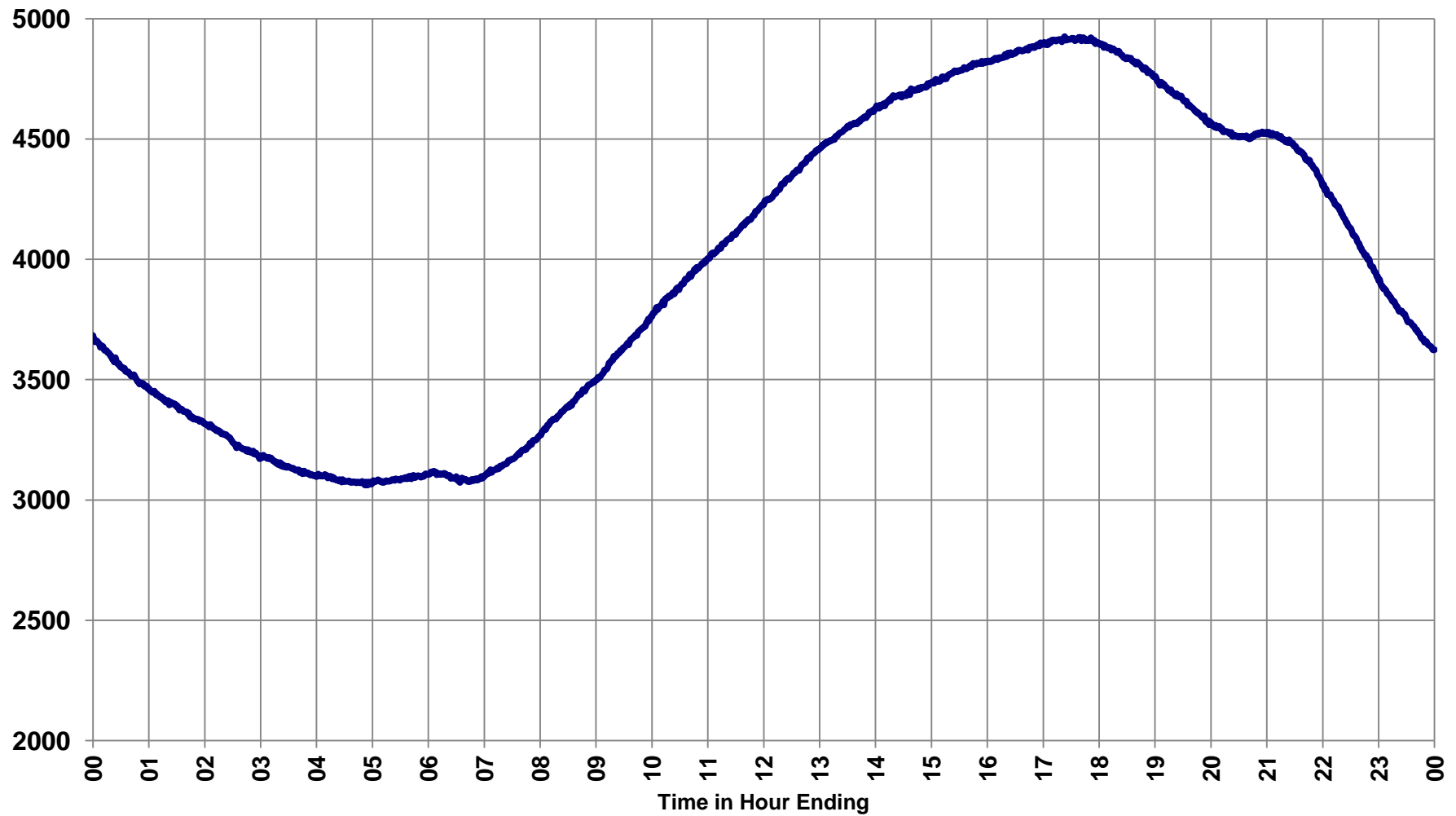


Ancillary Services Plan (A/S) : Down Regulating Service (DRS), Up Regulating Service (UR), Spinning Reserve (SPIN), Supplemental Reserve (SUPP)



# July Daily Load Shape

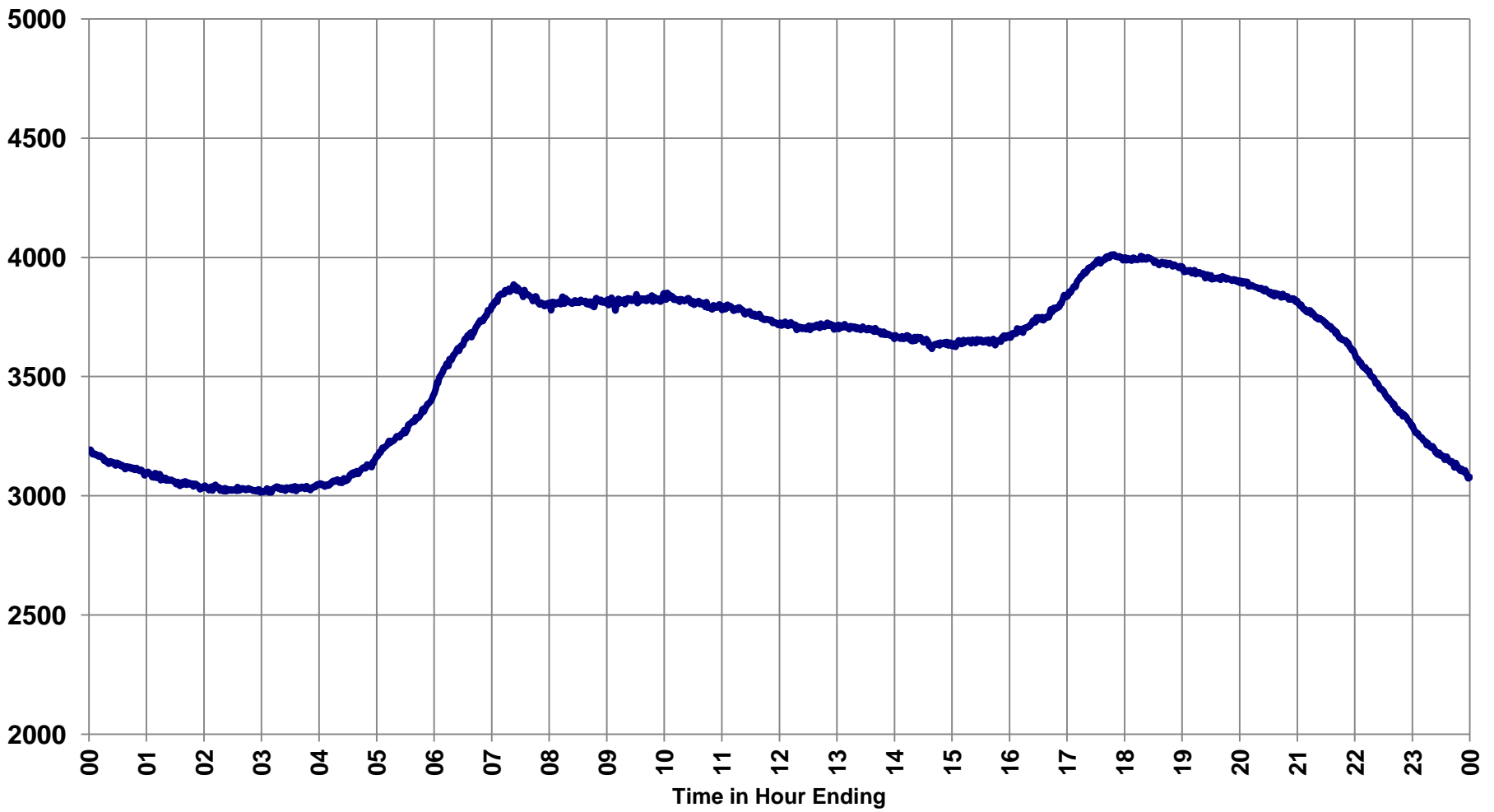
## Load for July 25th, 2010





# December Daily Load Shape

## Load for Dec 15th, 2010





# Generation Dispatch Stack

## Historic - Fuel Only Cost

\$200.00/MWH

\$100.00/MWH

Assumes natural gas price of \$7.50 / mmBTU

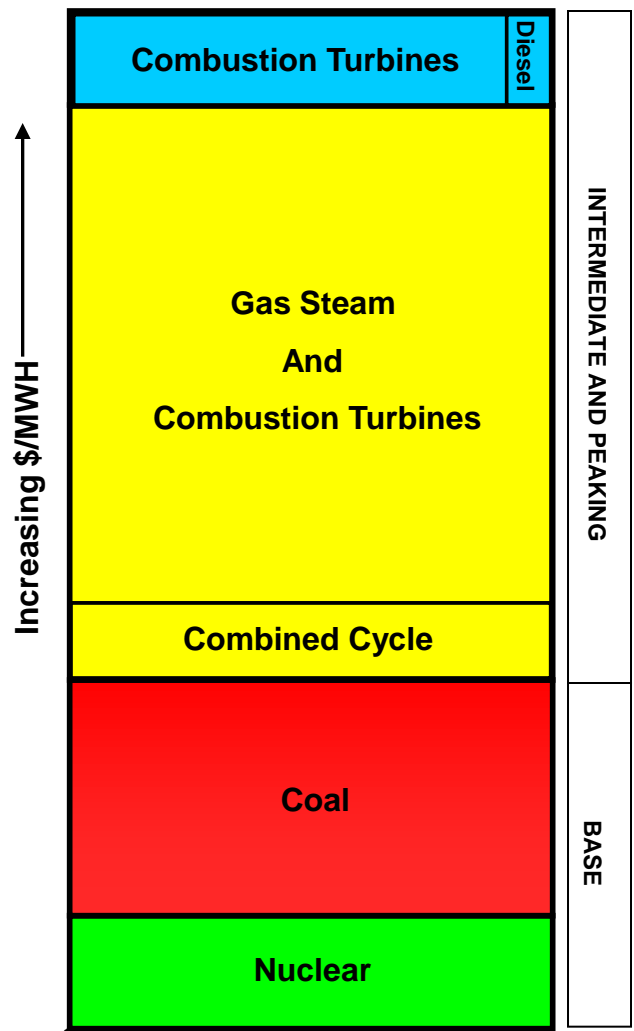
\$72.50/MWH

\$50.00/MWH

\$22.50/MWH

\$18.00/MWH

\$6.50/MWH







# Generation Dispatch Stack

Current - Fuel Only Cost

\$200.00/MWH

\$32.50/MWH

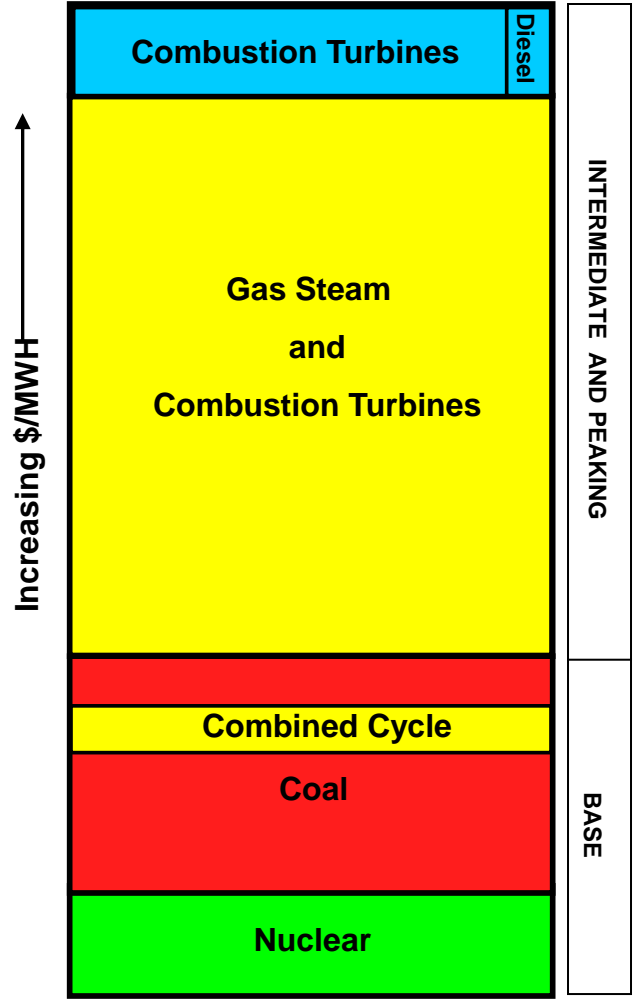
Assumes natural gas price of \$2.50 / mmBTU

\$23.75/MWH

\$22.60/MWH

\$18.00/MWH

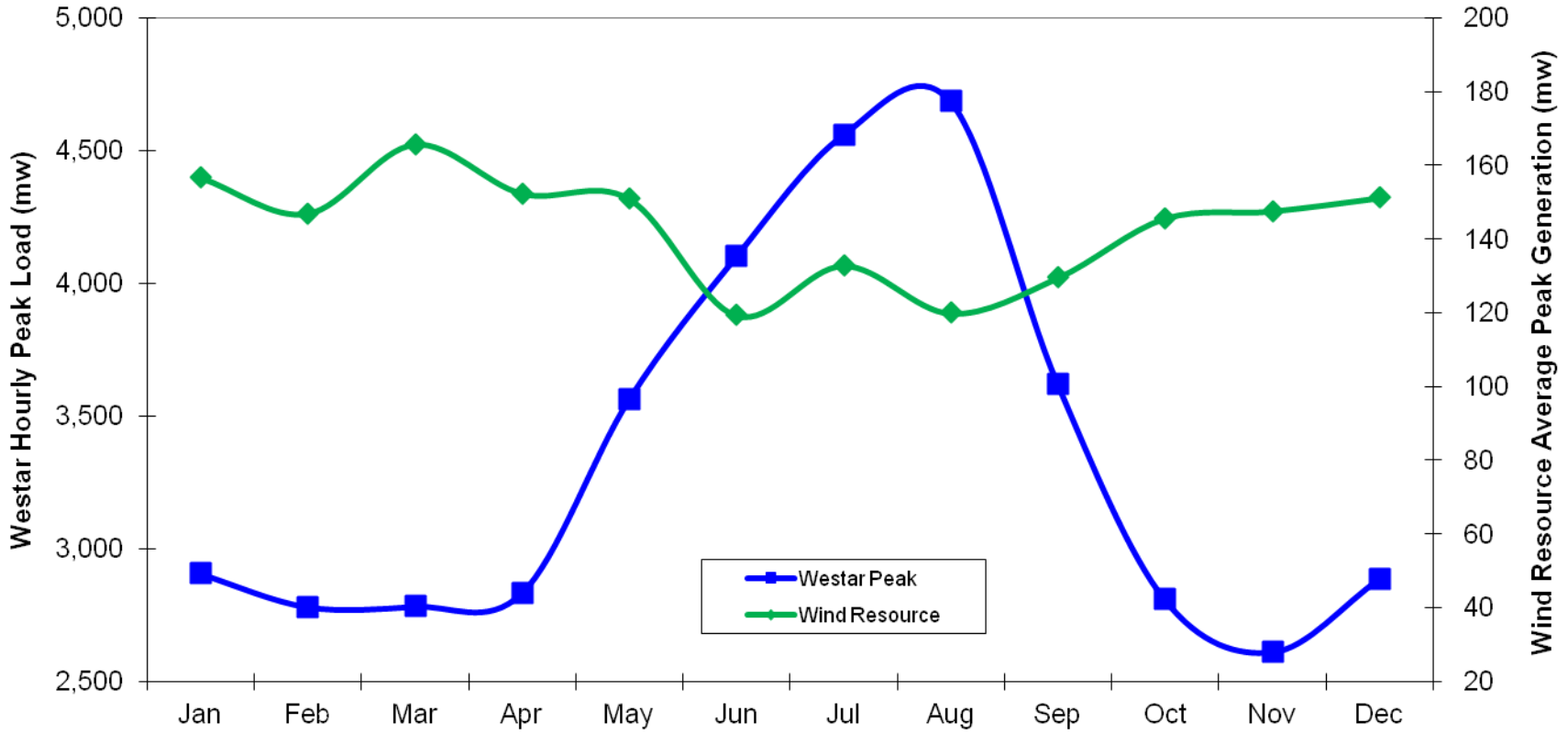
\$6.50/MWH





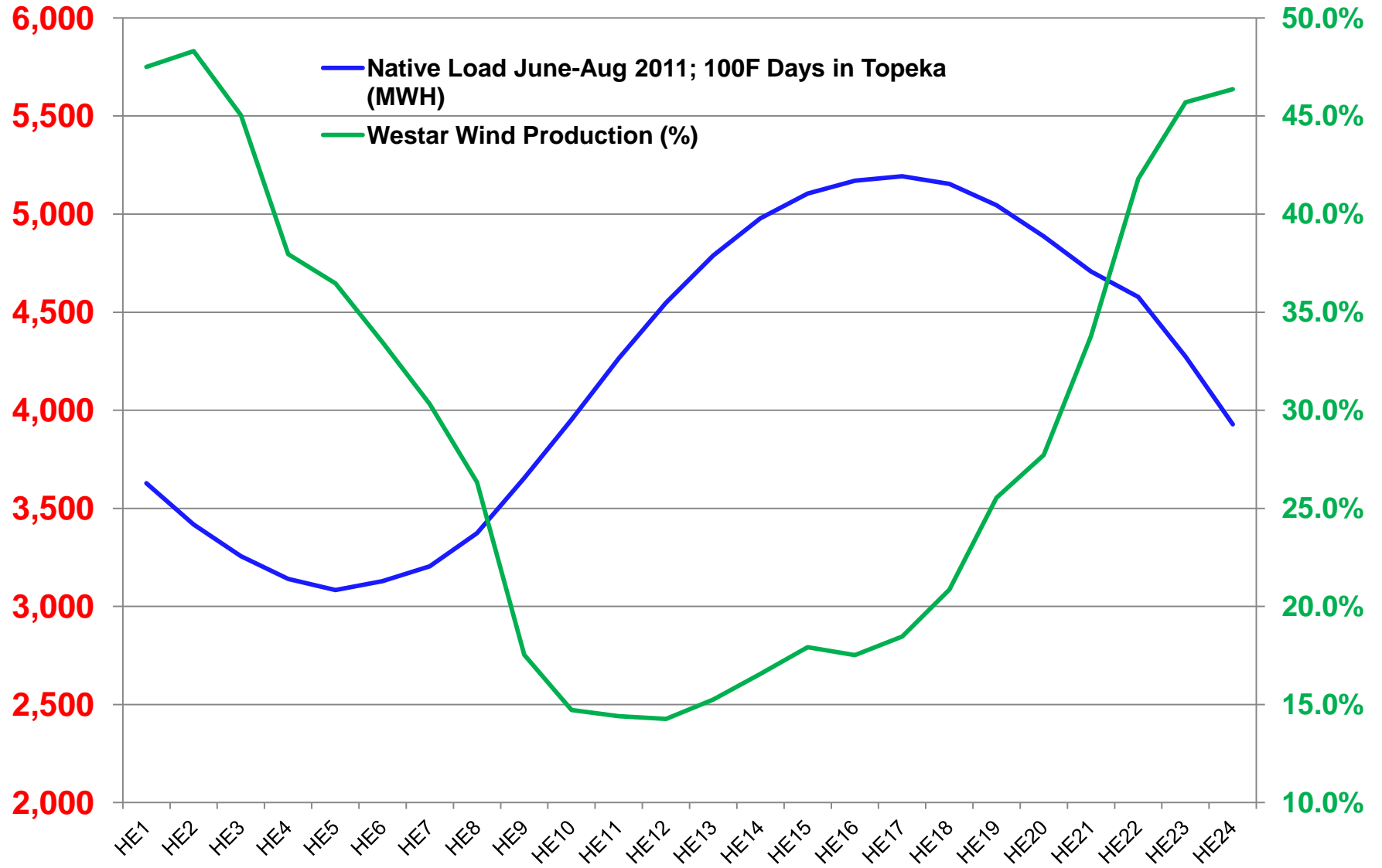
# \* Monthly Wind Energy Profile \*

Westar Control Area Load vs. Expected Peak Generation from 200-MW Wind Resource



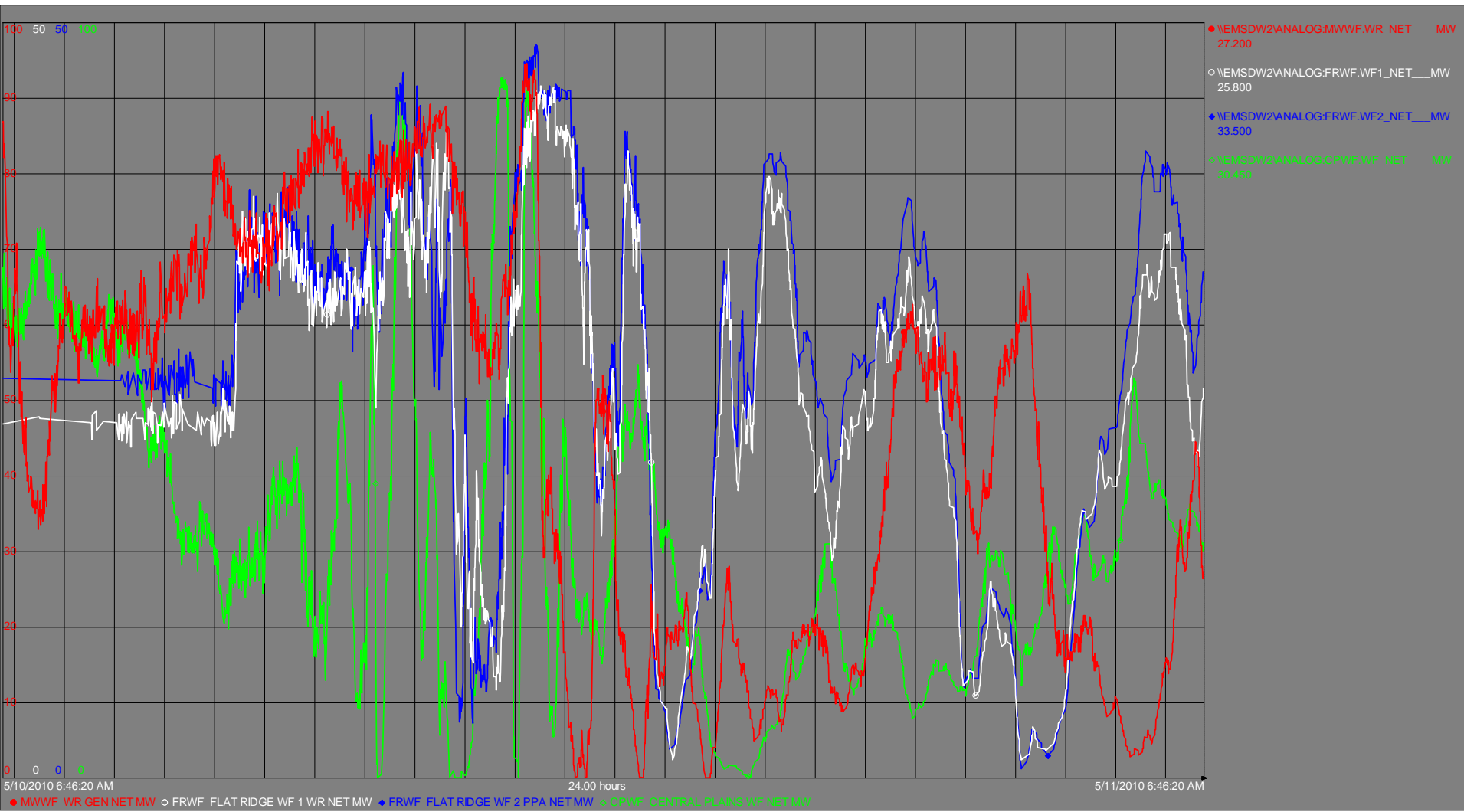


# \* Westar Load - Wind Energy Profile \*





# \* Westar Wind – Variability/Regulation \*

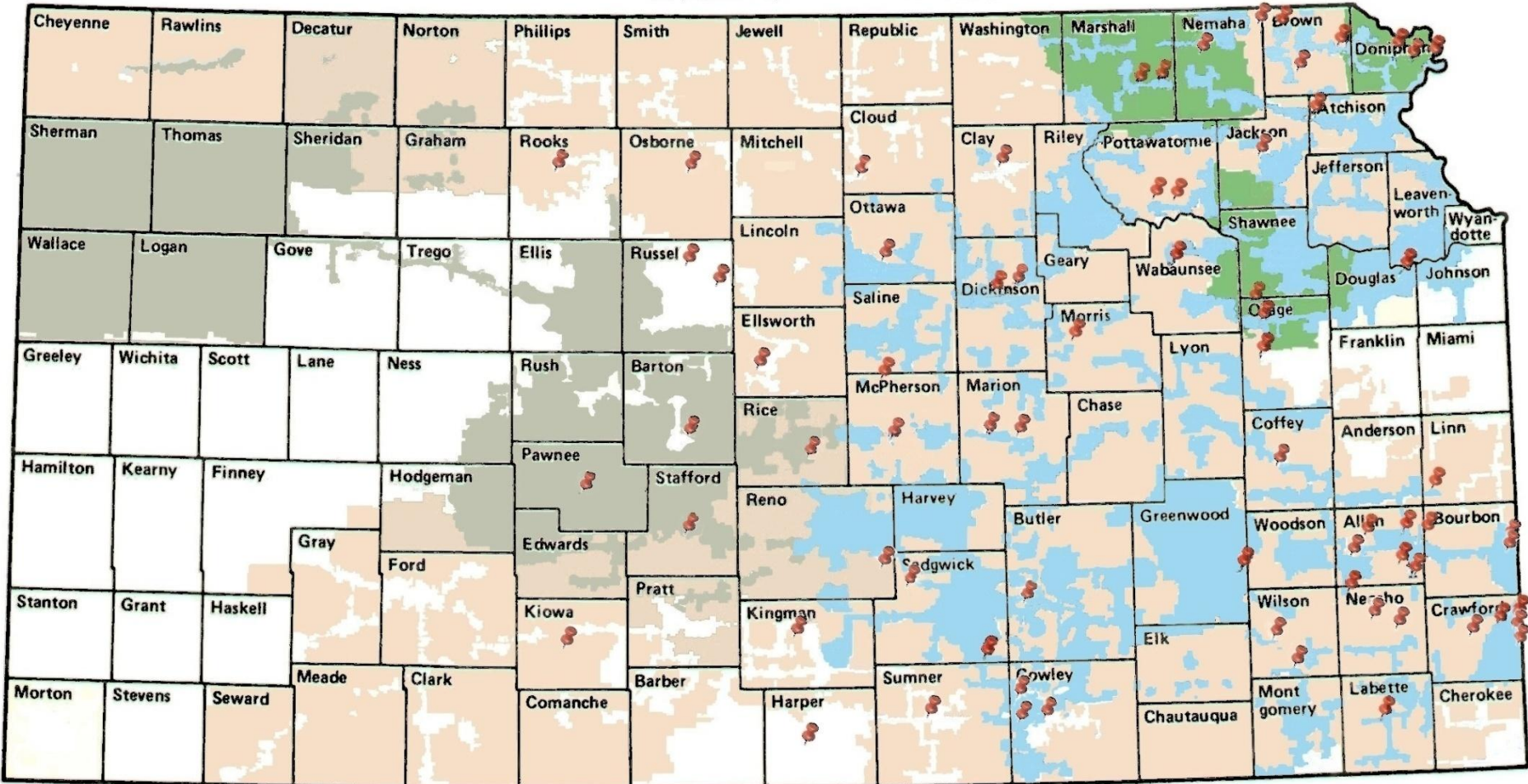




# Serving our Customers

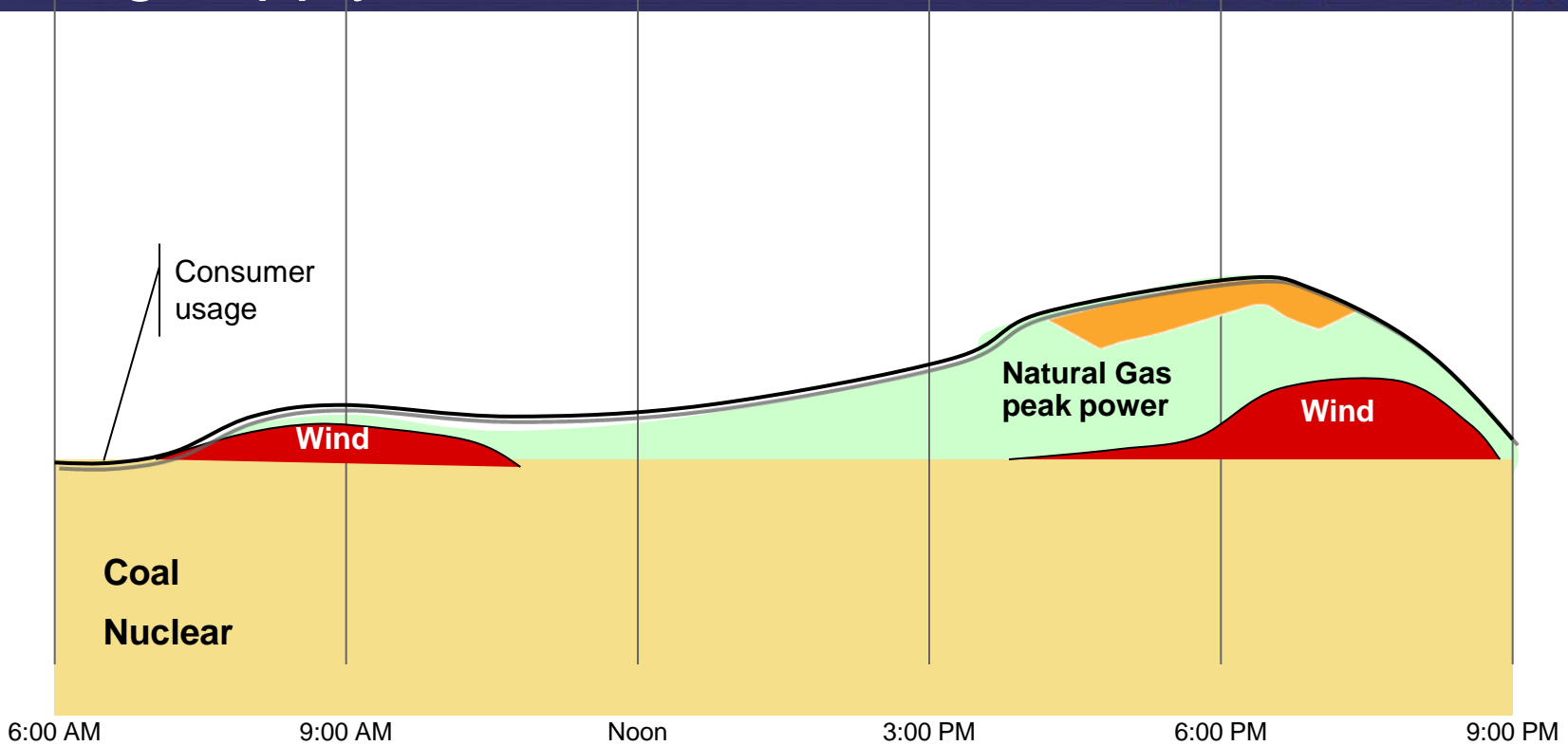


# Customers served by Westar





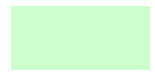
# Matching supply with demand



**Coal/nuclear -- low cost, steady, predictable**



**Wind -- variable, unpredictable**

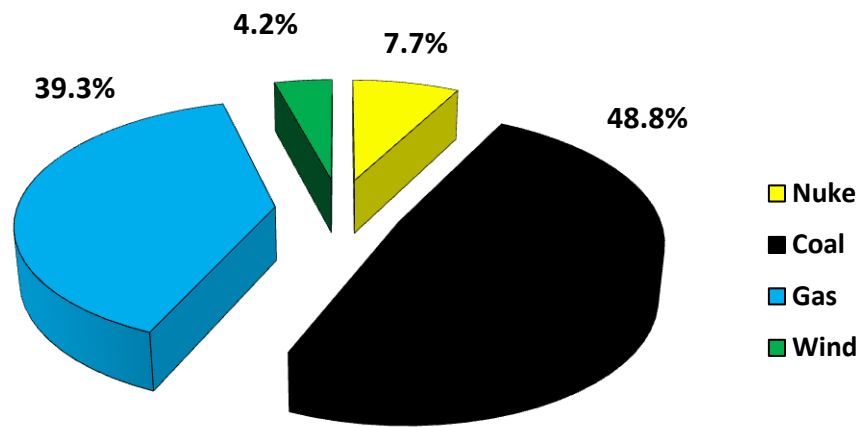


**Natural Gas-fired peak power -- higher cost, very flexible**

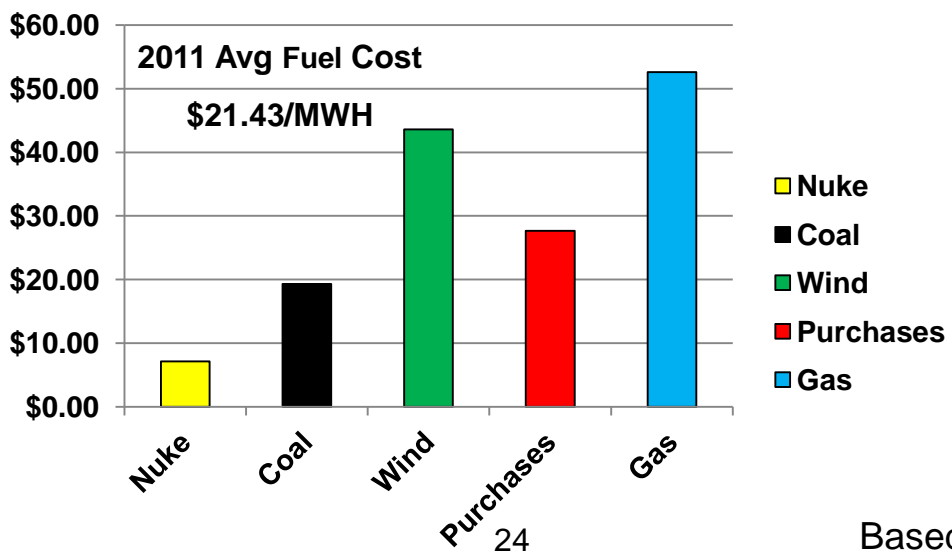
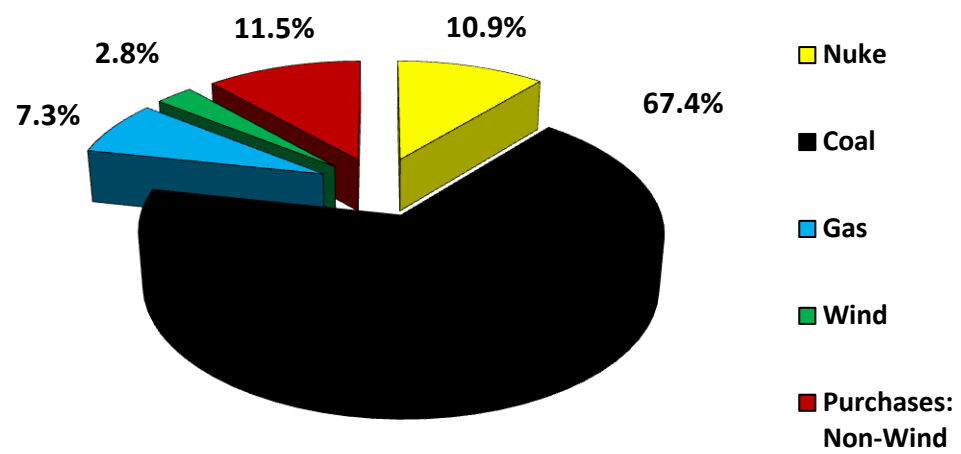


# Plant Capacity and System Optimization

Installed Nameplate Capacity



As Optimized



Based on 2011 total production





# New Generation



# Cost of New Generation

	Coal	IGCC	CT	CCCT	Nuclear
Capital \$/kW	\$2,235	\$3,565	\$665	\$1,000	\$6,066
Capacity Factor	85%	85%	5 -15%	25-60%	90%
<b>Fuel cost mmBTU</b>	<b>\$1.905</b>	<b>\$1.905</b>	<b>\$2.50</b>	<b>\$2.50</b>	
Fuel Cost \$/MWH	\$16.76	\$22.09	\$25.75	\$16.85	\$7.90
Busbar ¢/kWh	7.34	10.624	16.950	6.799	12.109
<b>Fuel cost mmBTU</b>			<b>\$7.50</b>	<b>\$7.50</b>	
Fuel Cost \$/MWH			\$77.25	\$50.55	
Busbar ¢/kWh	7.34	10.624	22.10	10.169	12.109
<b>Fuel cost mmBTU</b>			<b>\$15.00</b>	<b>\$15.00</b>	
Fuel Cost \$/MWH			\$154.50	\$101.10	
Busbar ¢/kWh	7.34	10.624	29.825	15.224	12.109



# Questions?

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