

REINHOLD ENVIRONMENTAL Ltd.



2012 NO_x-Combustion Round Table & Expo Presentation

February 13-14, 2012, in Columbus, OH / Hosted by AEP

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2012 NOx Combustion/PCUG Conference

Feb 13-14, 2012

POWER GENERATION

Compliance and Cost issues as rules
emerge, change and are challenged

Mark McCullough

Exec Vice President

Generation

American Electric Power

66%
Coal/Lignite

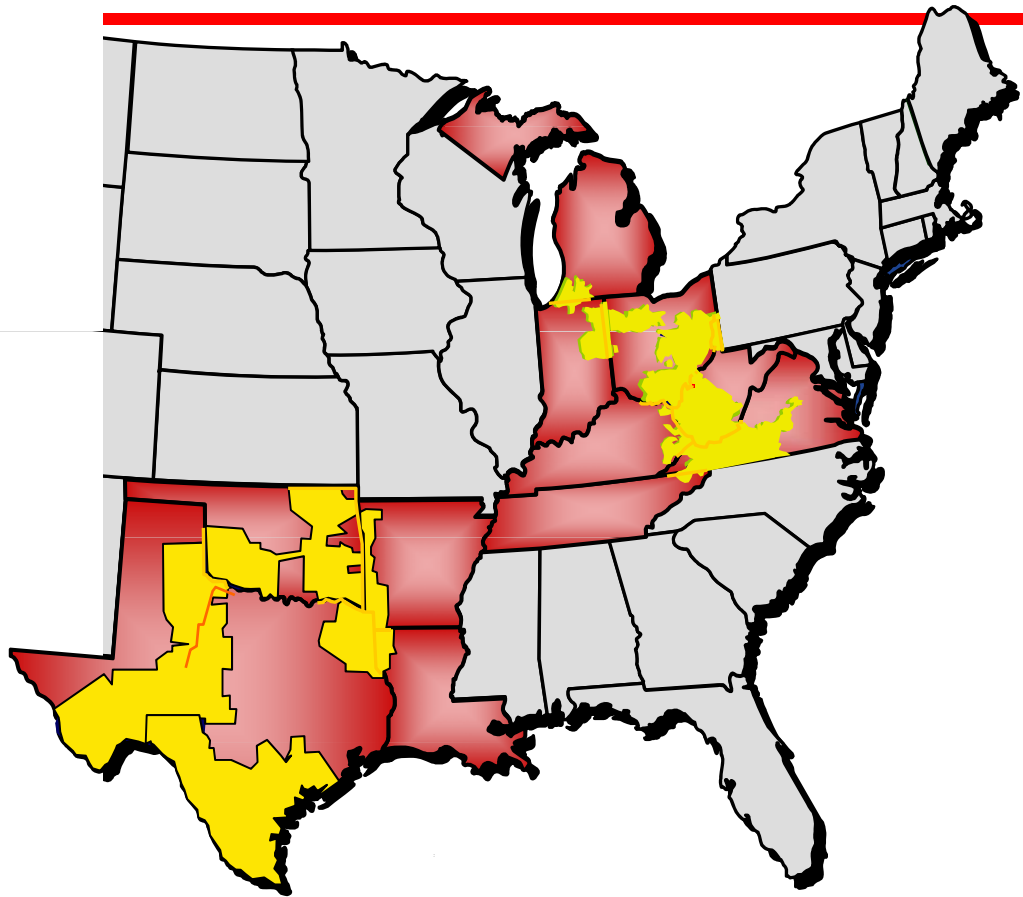
22%
Nat.gas/oil

6%
Nuclear

6%
Wind/Hydro

5.2 million
customers in 11 states

38,000+ MW
generating capacity



Domestic
Generation
38,000+ MW **2nd**

Transmission
39,000+ mi **1st**

Distribution
213,000+ mi **1st**



AEP Generation Capacity

East

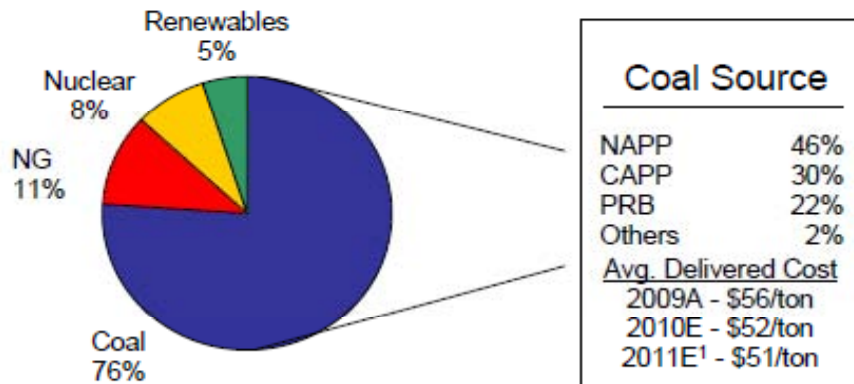
West

27,253 MW

AEP Ohio, APCo, I&M, AEG, KPCo, Wind, Solar, Hydro

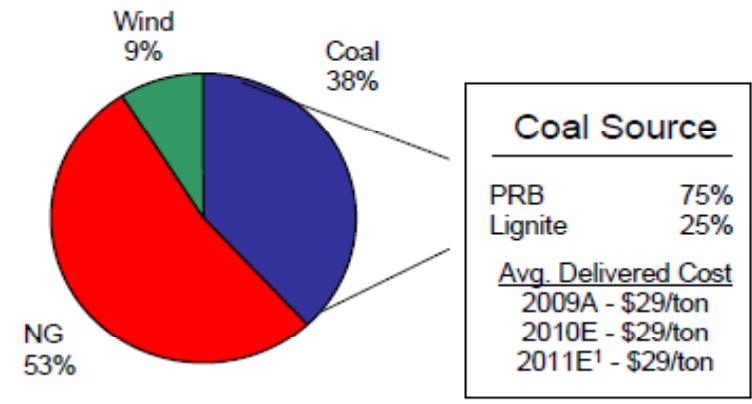
11,677 MW

PSO, SWEPCO, TNC, Wind



Coal Source	
NAPP	46%
CAPP	30%
PRB	22%
Others	2%
Avg. Delivered Cost	
2009A	-\$56/ton
2010E	-\$52/ton
2011E ¹	-\$51/ton

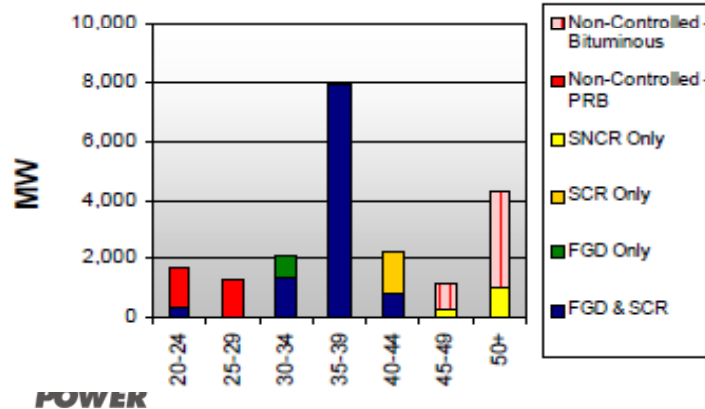
¹ Represents cost of committed position (91%)



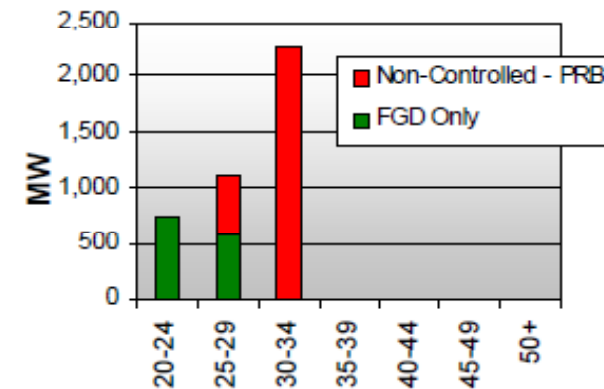
Coal Source	
PRB	75%
Lignite	25%
Avg. Delivered Cost	
2009A	-\$29/ton
2010E	-\$29/ton
2011E ¹	-\$29/ton

¹ Represents cost of committed position (90%)

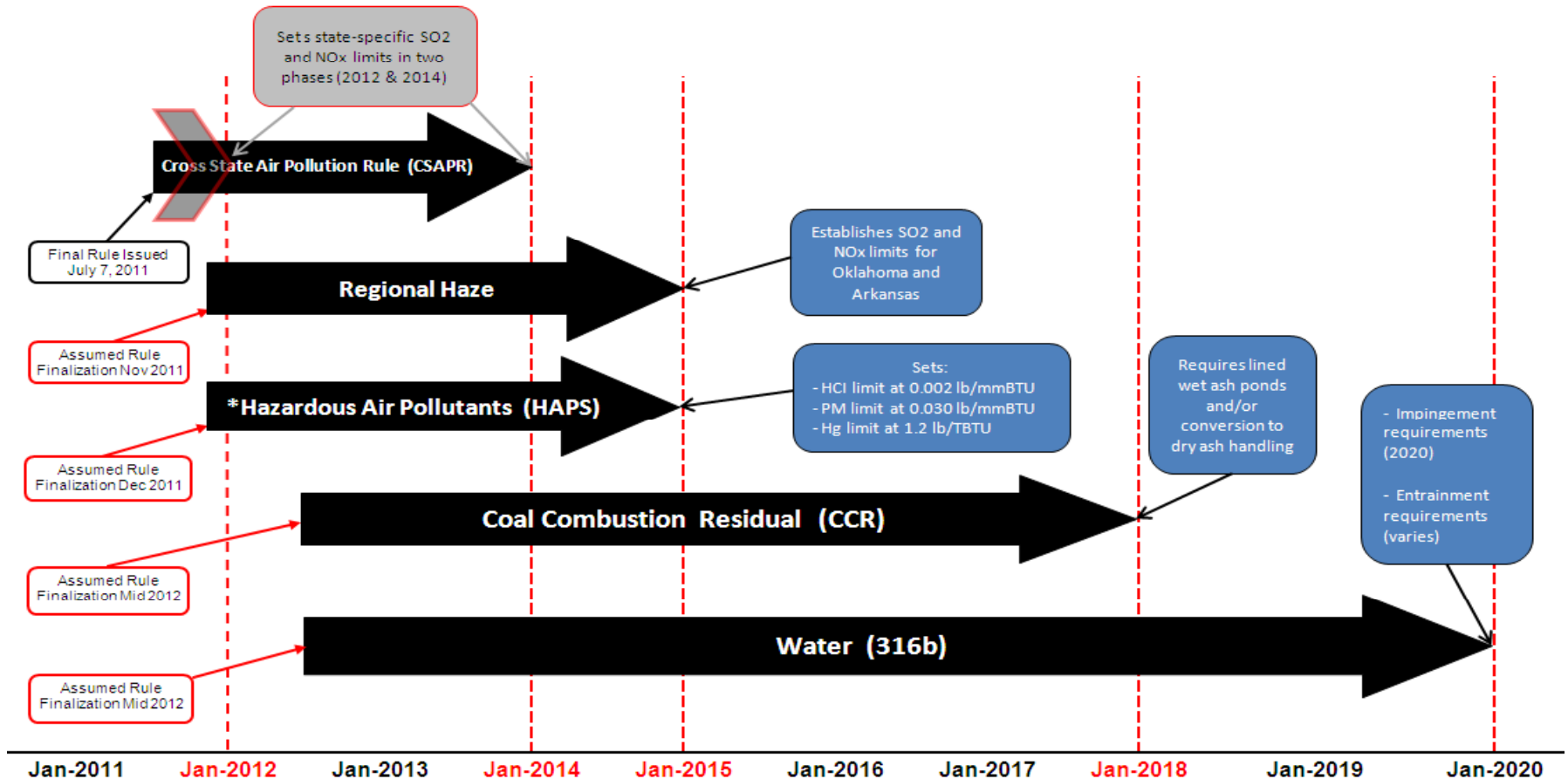
Coal Unit Age & Installed Controls



Coal Unit Age & Installed Controls



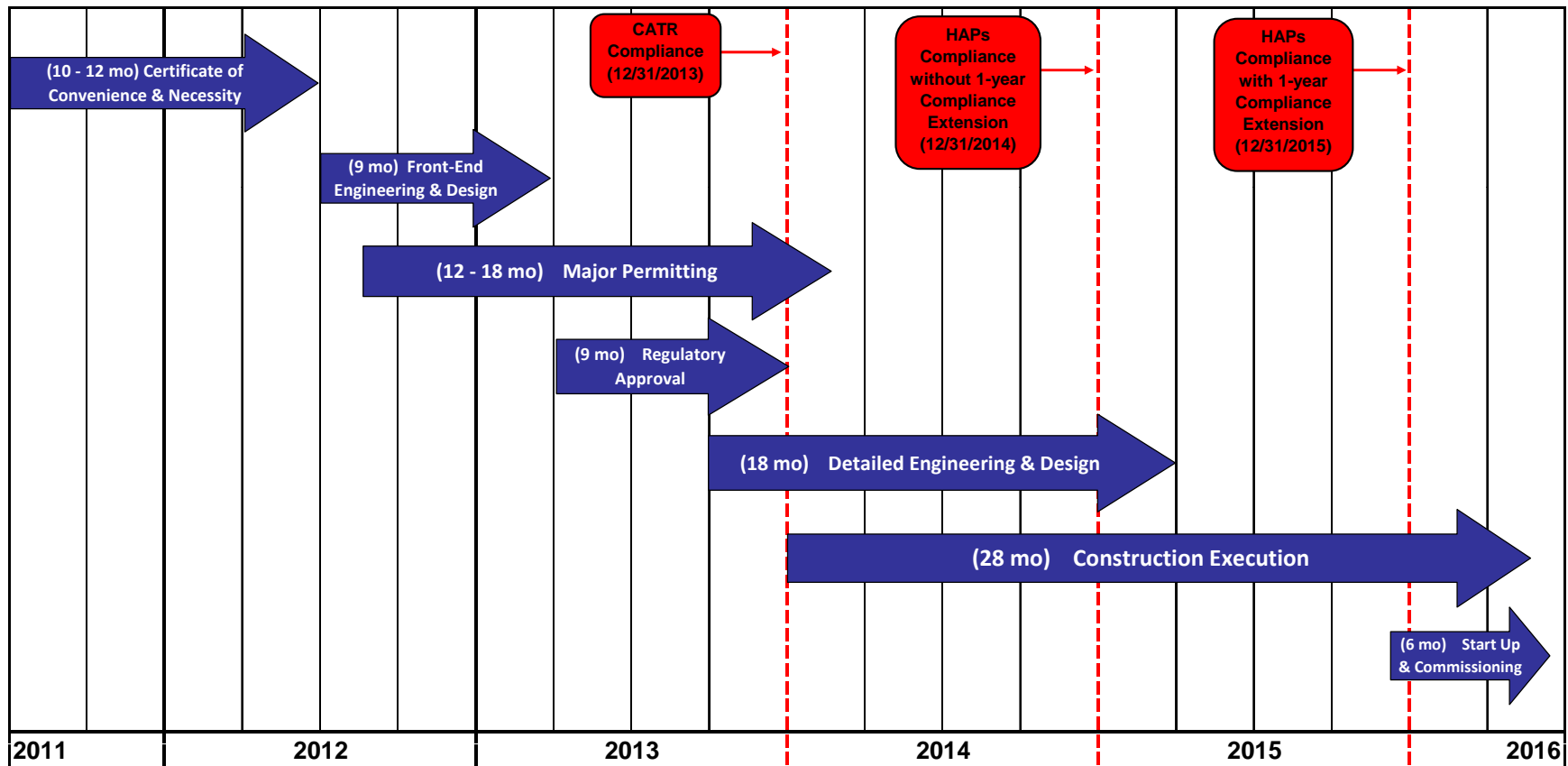
Environmental Regulations and Compliance Deadlines



* Units that will be retrofit are eligible for a one year compliance extension from the EPA

Compliance Within Time Frames is Not Feasible

Typical FGD System Construction Timeline.

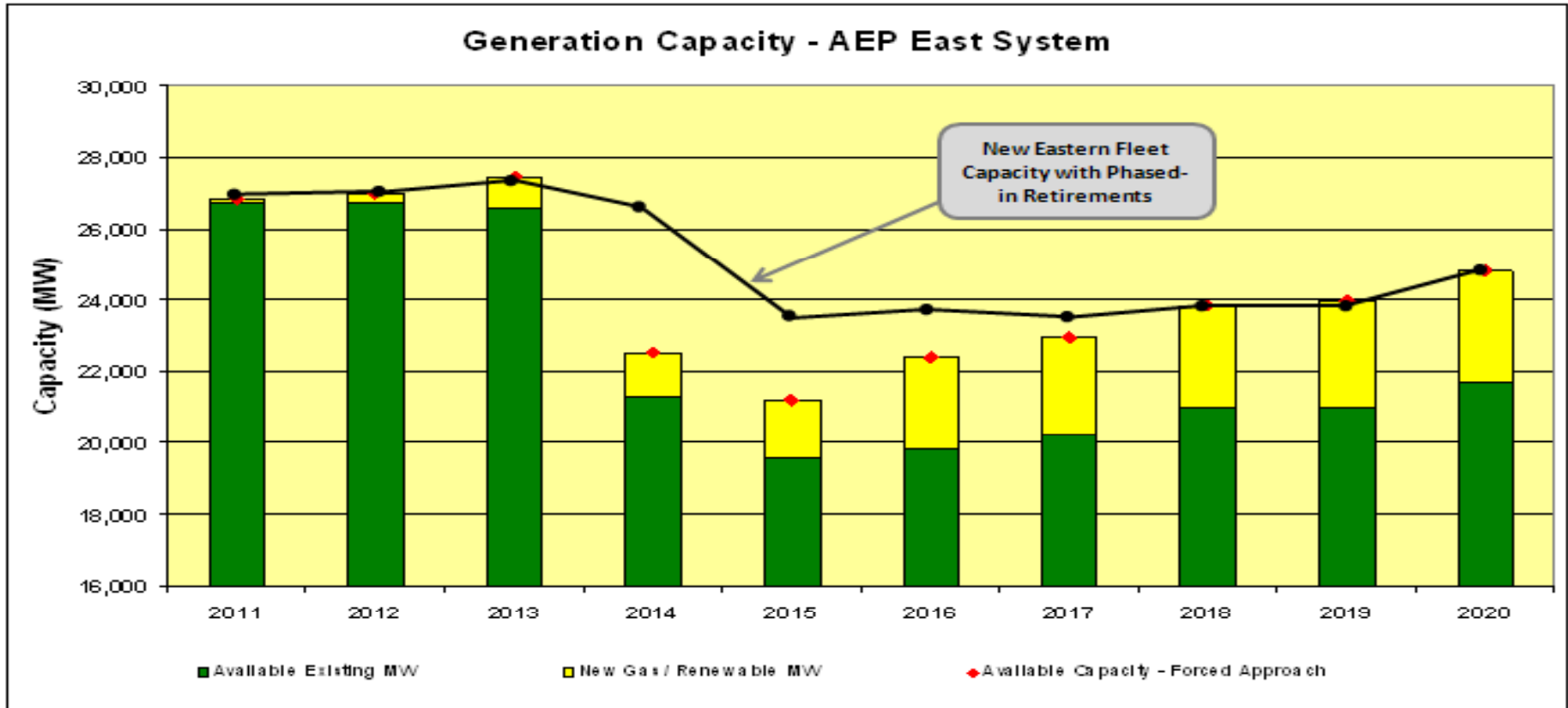


Environmental Retrofit and Unit Modification Schedule

	Unit/s	State	MWn	Tech	2012	2013	2014	2015	2016	2017	2018	2019	2020
1				DSI									
2				ACI									
3				ACI									
4				NG Refuel									
5				ACI, DSI, ESP									
6				NG Refuel									
7				NG Refuel									
8				DFGD, SCR, LF									
9				DFGD, LF									
10				ESP, FGD Upgrd									
11				ESP, FGD Upgrd									

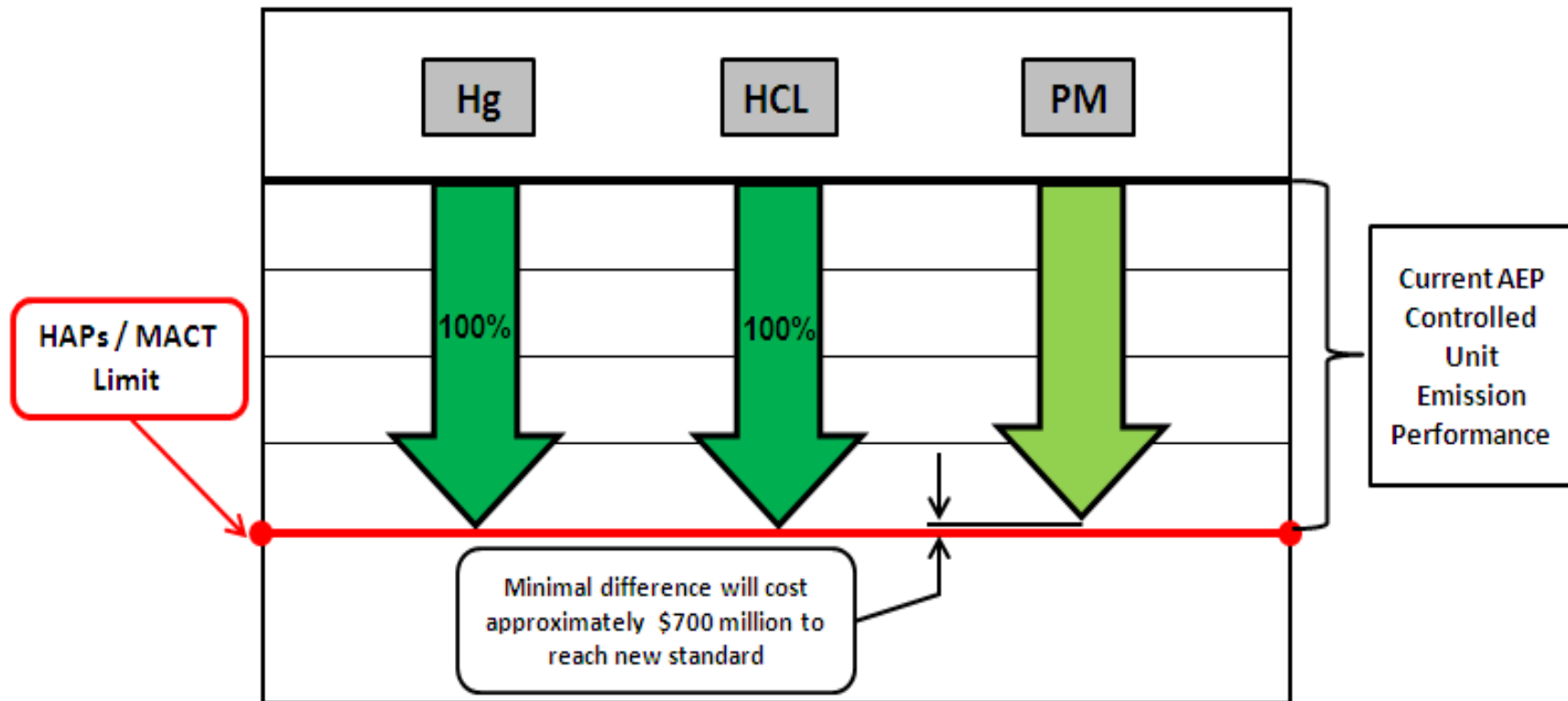
“The Challenge”

Potential Impact of Rules on AEP East Capacity



▲ The incremental lost capacity from the Forced Approach includes 3,415 MW of System Restoration capability, 4,415 MW of Voltage/Reactive Load Support and 4,720 MW of Load Following and Frequency Response capability

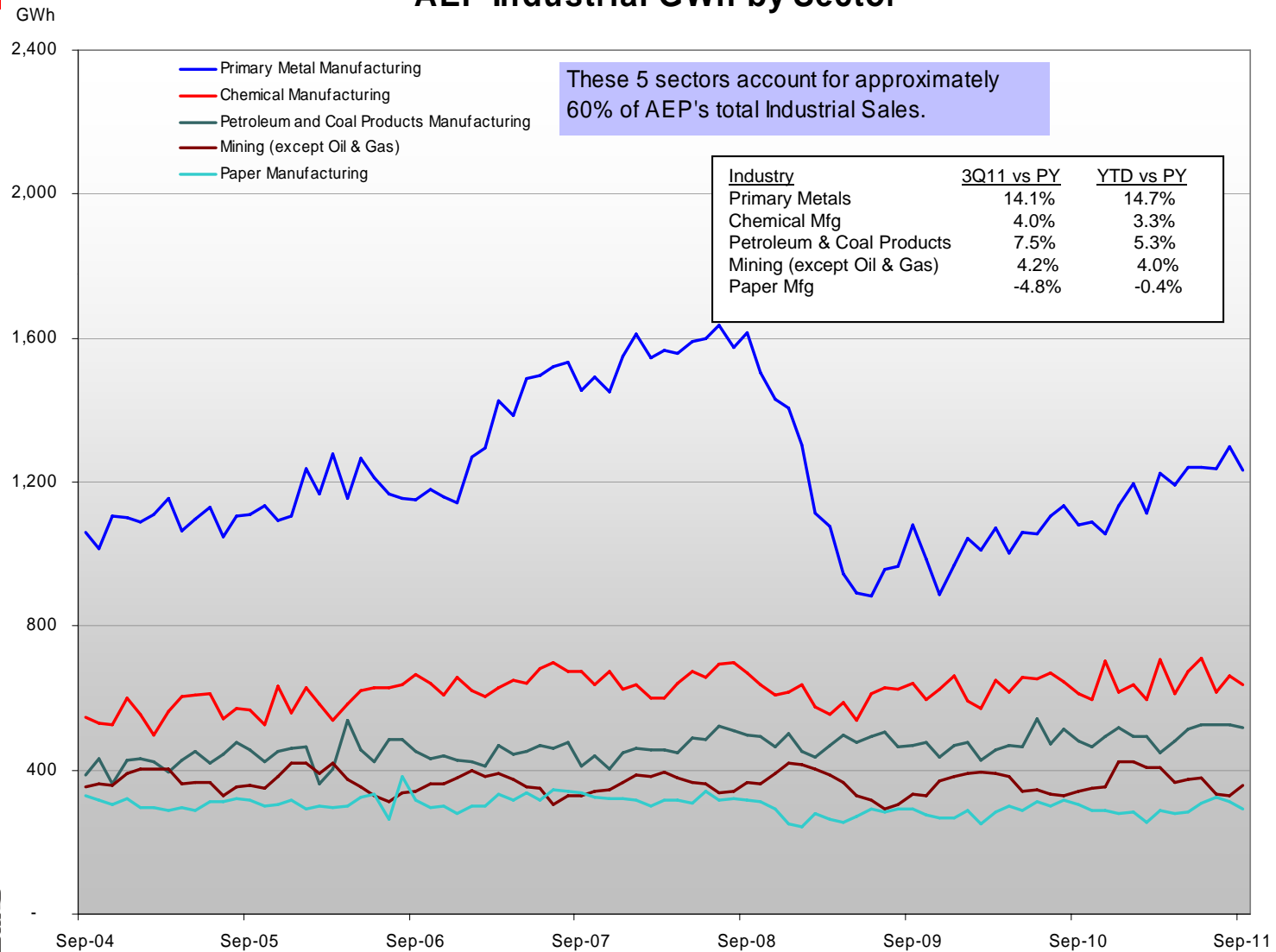
Controlled Units Compliance Issue



AEP's best nine controlled units (9,000 MW), currently meet 100% of Hg and HCL emissions limits in the HAPs proposed rule. Equipment upgrades required to reach the PM limit will cost approximately \$700 MM million with only a fractional improvement. Our plan places these type of upgrades at the end of the project schedule due to this reality.

Industrial Sales Volumes

AEP Industrial GWh by Sector



West Virginia Cost Drivers

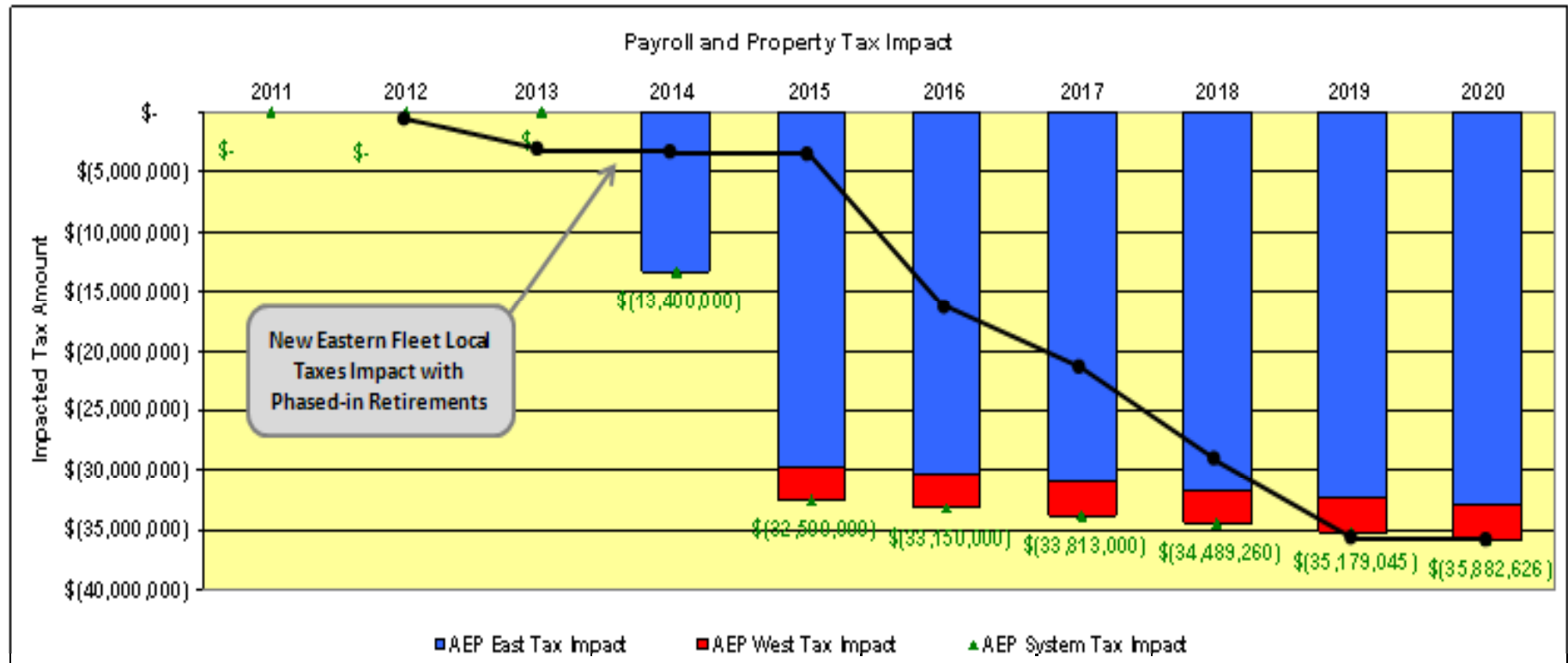
What's In My Monthly Bill?

Example: 1,000 Kwh of use



“The Challenge”

Potential Impact on Payroll and Property Tax Revenues

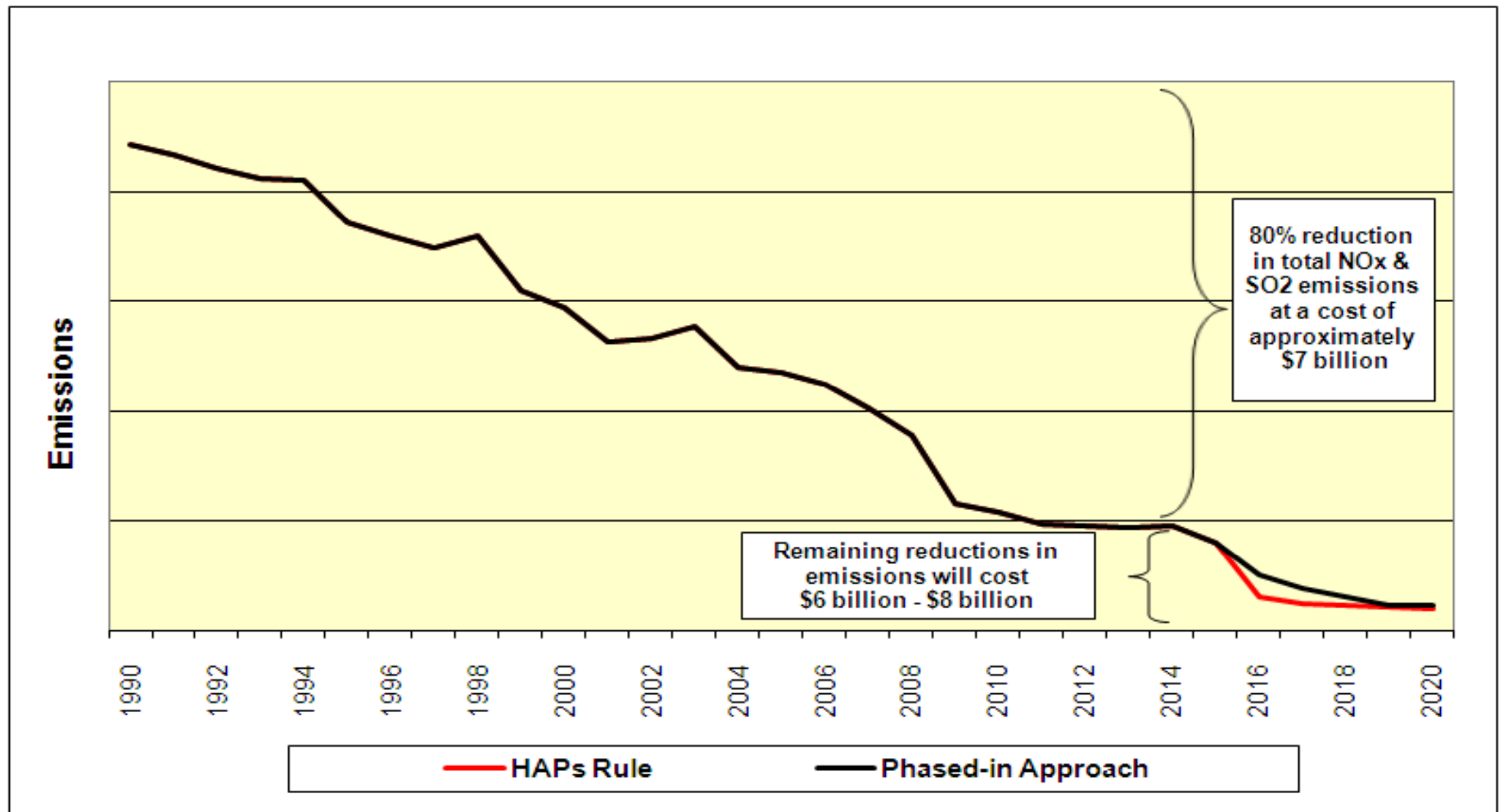


“The Challenge”

OH

AEP Plant Emissions

Benefit HAPS vs. Phased Approach



APPENDIX

AEP Ohio

Retirements			
Unit(s)	MW	Lost jobs	Date
Conesville 3	165	20	Dec. 31, 2012
Kammer 1 – 3*	630	60	Dec. 31, 2014
Muskingum River 1 - 4	840	128	Dec. 31, 2014
Picway	100	9	Dec. 31, 2014
Sporn 2, 4*	300	60	Dec. 31, 2014
Sporn 5*	450		Requested
<i>Total</i>	<i>2,035</i>	<i>277</i>	

^Assumes regulatory cost recovery for environmental investments including refuel are non-bypassable surcharge as proposed

*Units are located in West Virginia

Retrofit-Refuel-Upgrade^		
Units	Type	Notes
Conesville 5, 6	SCR, DSI	
Gavin 1, 2	FGD upgrade	Curtailment
Muskingum River 5	Refuel to natural gas	Capacity reduced
Zimmer	FGD upgrade	

Other Impacts	
Customer rates	7% - 12%
Lost taxes	\$9.1 – 12.5 million
Payroll	\$ 480,000
Property	\$4.3 million
West Virginia B&O	\$4.4 - \$7.8 million
Lost wages	\$10.9 million

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Appalachian Power

Retirements			
Unit(s)	MW	Lost jobs	Date
Clinch River 3	235	43	Dec. 31, 2014
Glen Lyn 5, 6	335	44	Dec. 31, 2014
Kanawha River 1, 2	400	62	Dec. 31, 2014
Sporn 1, 3	300	60	Dec. 31, 2014
<i>Total</i>	<i>1,270</i>	<i>209</i>	

Premature retirement of AEP Ohio-owned units at Sporn and Kammer plants will have economic impacts in West Virginia.

Retrofit-Refuel-Upgrade		
Unit(s)	Type	Notes
Clinch River 1, 2	Refuel with natural gas	Capacity reduced

Other Impacts	
Customer rates Virginia West Virginia	10% - 15% 10% - 15%
Lost taxes Virginia West Virginia Plus B&O	\$18 - \$22.5 million \$2.9 million \$12.89 million \$2.3M - \$4.5M
Lost wages Virginia West Virginia	\$23.0 million \$ 6.1 million \$16.9 million

Indiana Michigan

Retirements			
Unit(s)	MW	Lost jobs	Date
Tanners Creek 1 - 3	495	65	Dec. 31, 2014

Retrofit-Refuel-Upgrade		
Unit(s)	Type	New jobs
Rockport 1	FGD, SCR	40
Rockport 2	FGD, SCR	40
Tanners Creek 4	DSI and ACI	

Other Impacts	
Customer rates	
Indiana	25% - 30%
Michigan	25% - 30%
Taxes (Indiana)	\$1.2 million (net reduction)
Payroll	\$ 46,500 (increase)
Property	\$1.2 million (reduction)
Wages (Indiana)	\$1.0 million (increase)

Kentucky Power

Retirements			
Unit(s)	MW	Lost jobs	Date
Big Sandy 2	800	86	Dec. 31, 2014
Big Sandy 1	278		Dec. 31, 2014
<i>Total</i>	<i>1,078</i>		

*A portion of KPC rate impact is from the company's allocation from Rockport.

New Generation		
Unit(s)	MW	Date
Big Sandy 1	Repower as 640 MW natural gas	Dec. 31, 2015

Other Impacts	
Customer rates	30% - 35%*
Lost taxes	\$805,000
Property	\$461,000
Payroll	\$344,000
Lost wages	\$6.0 million

Public Service Oklahoma

Retrofit-Refuel-Upgrade			
Unit(s)	Type	Notes	New jobs
Northeastern 3, 4	FGD, ACI, Baghouse	Units will be idled 1/1/16 until retrofits are complete	60
Oklahoma	FGD upgrade, ACI		

Other Impacts	
Customer rates	10% - 15%
Tax increases	\$7.4 million
Property	\$7.2 million
Payroll	\$203,000
Wage increases	\$4.2 million

SWEPCO

Retirements			
Unit	MW	Lost jobs	Date
Welsh 2	528	44	Dec. 31, 2014

Other Impacts	
Customer rates	
Arkansas	19% – 23%
Louisiana	16% - 20%
Texas	18% - 22%
Arkansas	
Payroll increase	\$2.1 million
Tax increase	\$1.4 million
Texas	
Payroll decrease	\$3.1 million
Tax decrease	\$1.4 million

Retrofit-Refuel-Upgrade		
Unit(s)	Type	New jobs
Dolet Hills*	ACI, Baghouse	
Flint Creek	FGD, ACI, Baghouse	30
Pirkey	ACI, Baghouse	
Welsh 1, 3	ACI, DSI, Baghouse	

New Generation		
Unit	MW	Date
J W Turk Jr	440	2012

*AEP owned MW only

Overall Impacts For AEP

To meet compliance deadlines for new environmental regulations, AEP expects it will need to invest \$6 billion to \$8 billion to:

- Retire nearly 6,000 MW of existing coal-fired generation by Dec. 31, 2014
- Refuel, retrofit with new or upgrade existing environmental controls on another 11,000 MW
- Temporarily (1 – 4 years) idle / curtail 1,500 MW – 7,700 MW
- Build approximately 1,700 MW of new generation

This will create:

- Abrupt rate increases ranging from 10% to 35%
- Significant reliability concerns, particularly in the 2014 – 2016 time frame
- The need to install additional equipment to address impacts on the transmission system due to the reduction in generating capacity
- Other locally significant economic impacts