Demand Response

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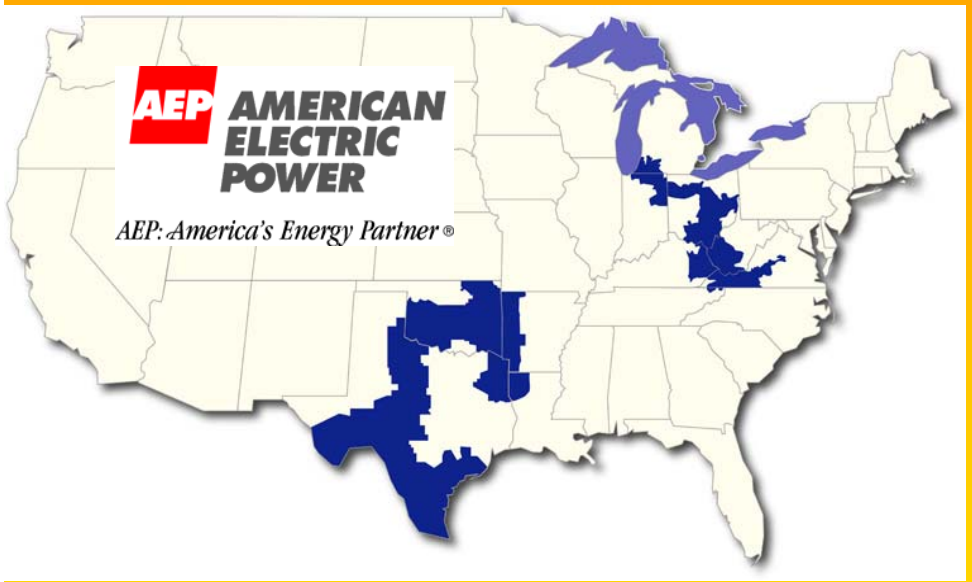
AEP: An Introduction

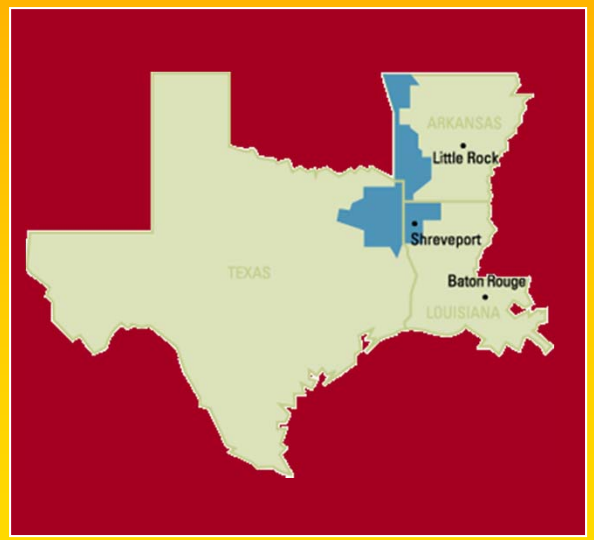


- Largest U.S. electricity generator and coal user
- A leading consumer of natural gas
- Major wind generator
- 225,000+ miles of T&D
- 5 million customers in 11 states

AEP's Generation Portfolio					
	Coal	**Gas**	**Nuclear**	**Hydro**	**Wind**
	70%	20 %	7%	2%	1%

SWEPCO's role in AEP

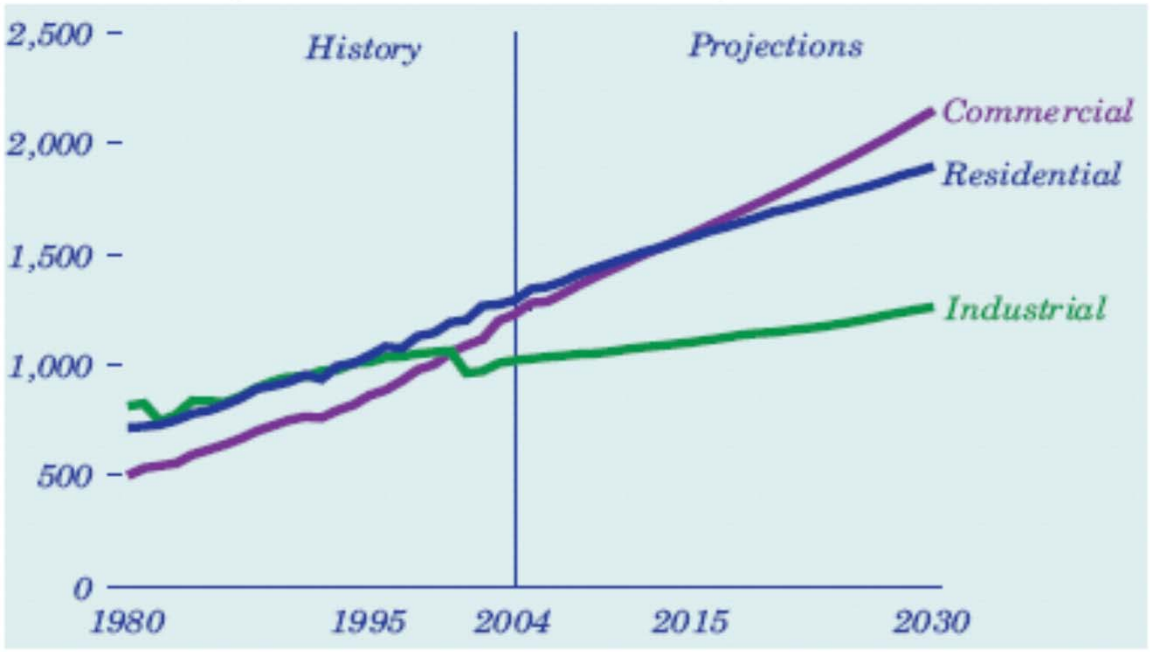
	SWEPCO	AEP
Employees	1,440	18,600
Customers	439,000	5 million+
Generation	4,487 MW	36,000 MW
Distribution/ Transmission miles	22,913	239,883



SWEPCO's Generation Portfolio					
Lignite	Coal	Gas	Nuclear	Hydro	Wind
31%	56%	13%	0%	0%	0%

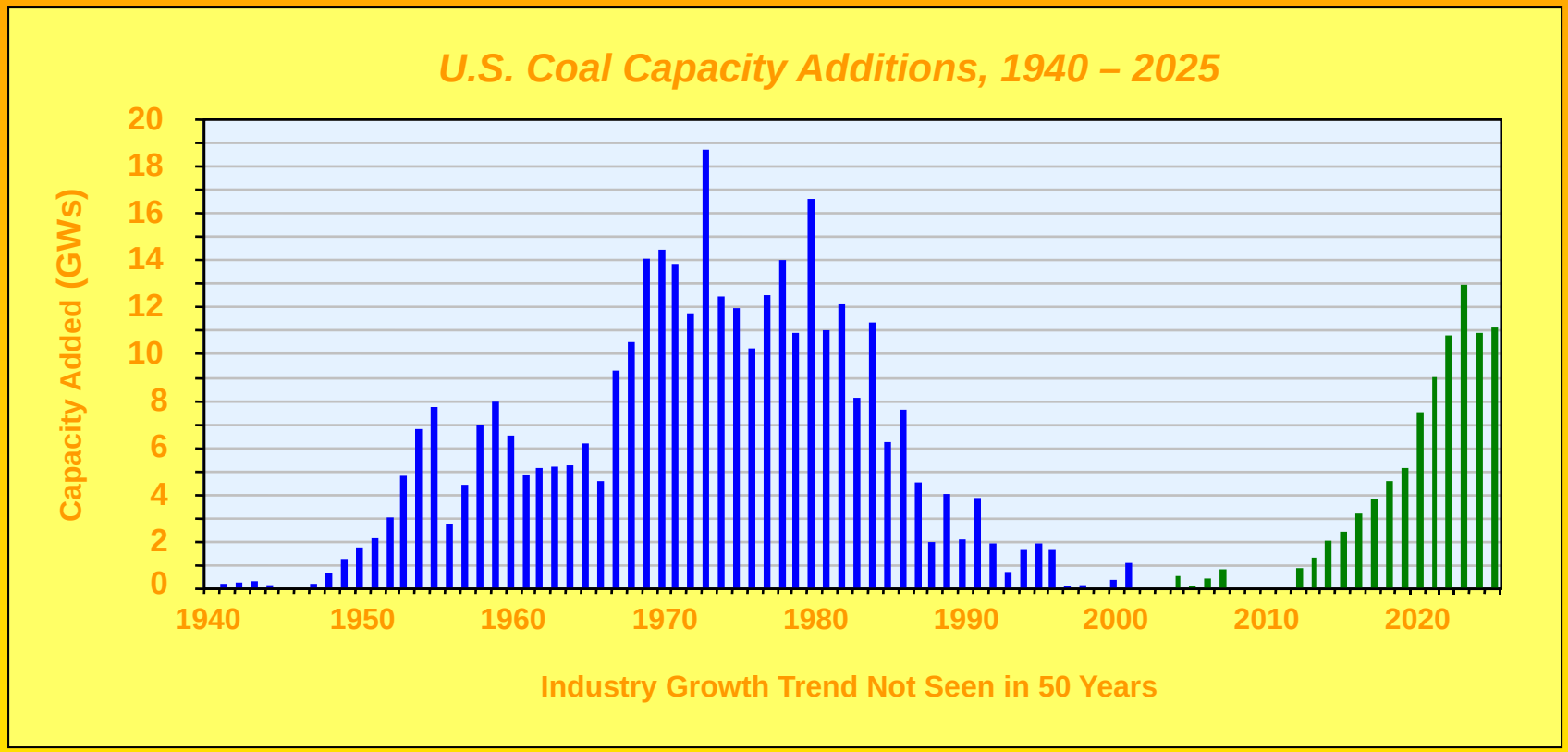
America's Future Energy Needs

Electricity sales by sector



Source: EIA, Annual Energy Outlook, 2006

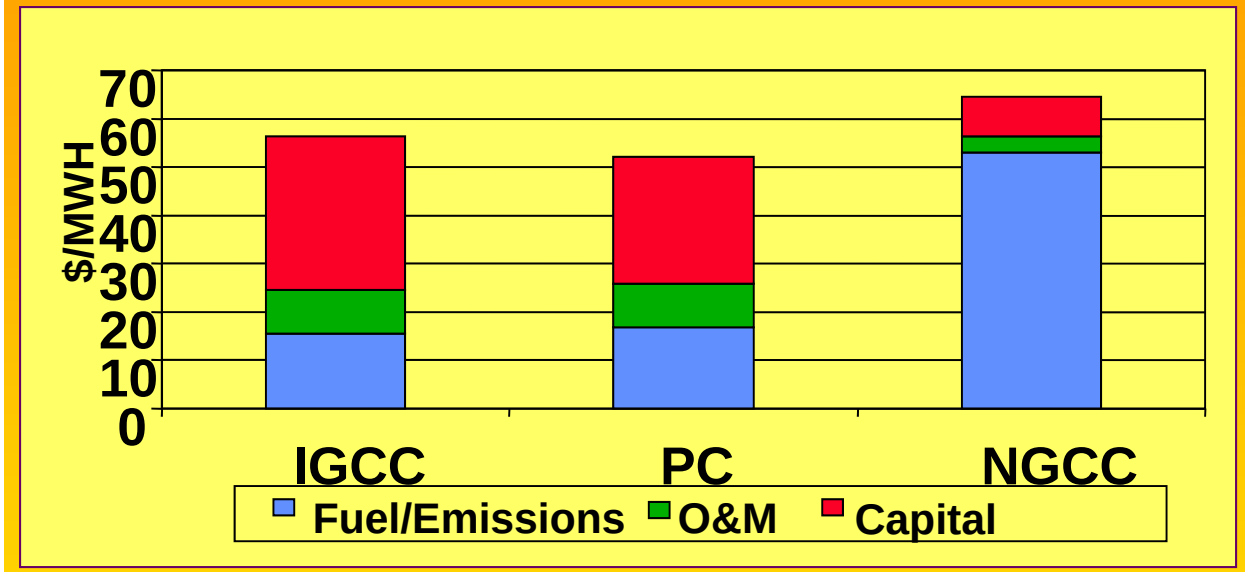
A Need for Infrastructure



Three-Pronged Approach Needed to Address Growth

- U.S. electric demand will continue to grow
- Existing plants are approaching their operating limits
- Infrastructure investment in needed to keep pace (Transmission and Generation)
- Solution should be three-pronged:
  - New generation
  - New transmission
  - Demand response

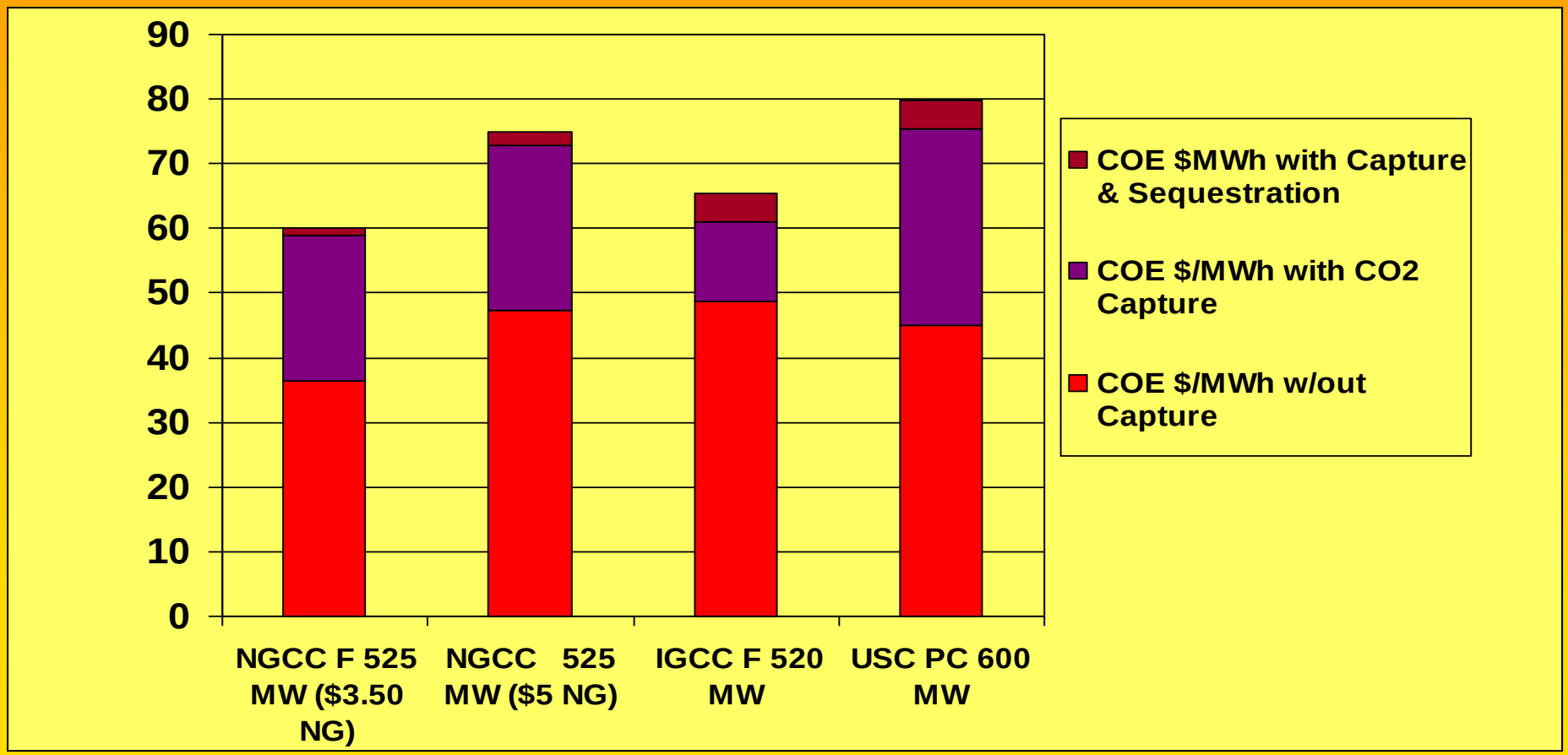
Prong 1: Generation



New Baseload Technical Parameters			
	IGCC	PC	NGCC
Total Plant Capital ($/KW)	$1550	$1290	$440
O&M ($/MWH)	$9.1	$8.9	$3.5
Heat Rate (BTU/KWH)	8,700	8,690	7,200

Source: EPRI

COE from New Fossil Fuel Power Plants, With & Without CO_2 Capture



Prong 2: Transmission

- Transmission grid was not designed as a bulk power transportation system
- Additional transmission development will:
  - Foster generator competition and reduce energy costs
  - Encourage siting of fuel-diverse, new technology and environmentally friendly generators
  - Provide a higher degree of reliability to foster enhanced national security

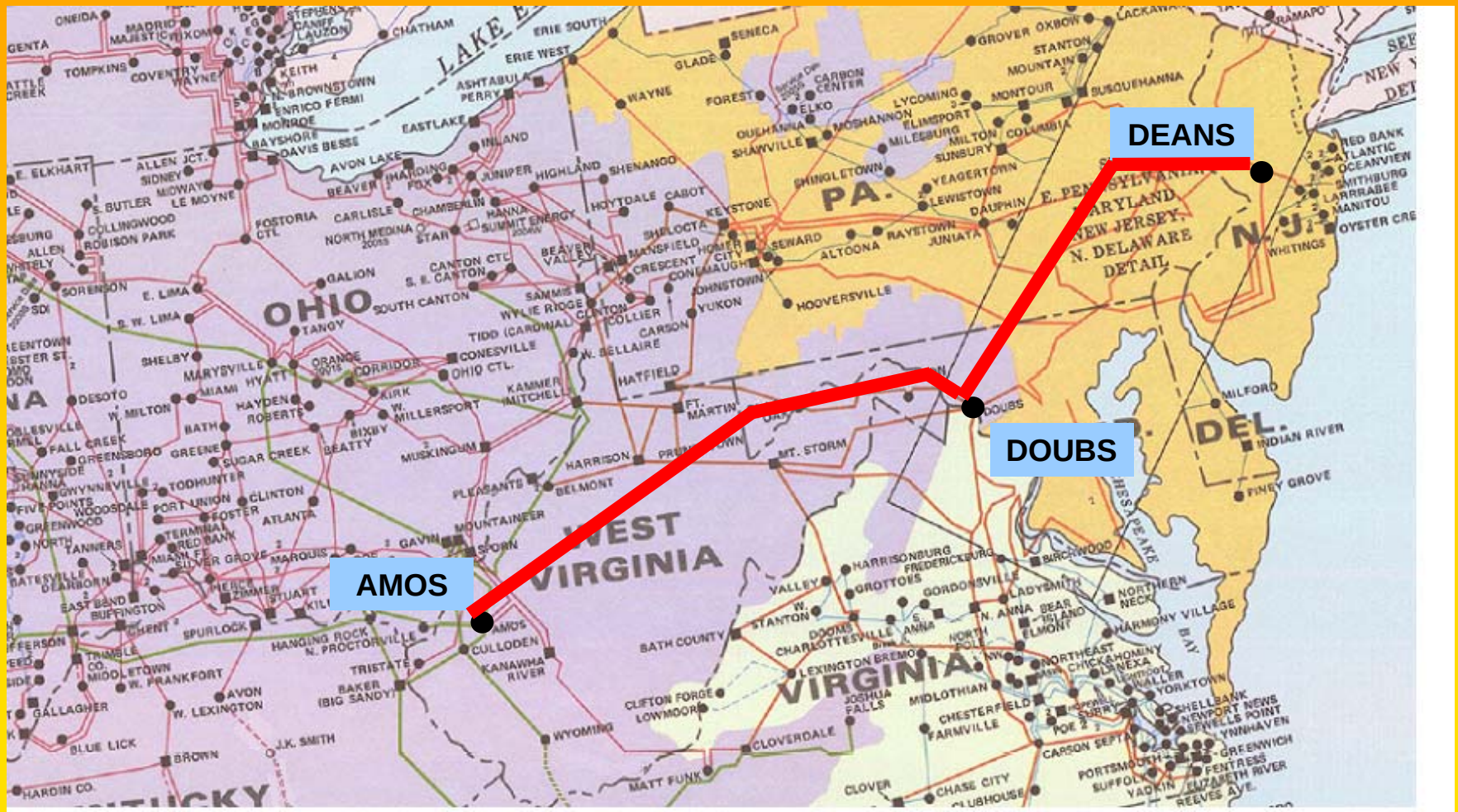
New Impetus in Transmission Development

- Energy Policy Act of 2005 paved the way
  - Reliability standards, investment incentives, siting process definition
- National Interest Electric Transmission Corridors
  - Intended to accelerate needed expansion
- I-765 project is first mover under EPAct provisions
- Additional opportunities across the US

What Is AEP's I-765?

- 550-mile 765-kV transmission line
- Stretches from Amos Station in West Virginia to Deans Station in New Jersey
- Current proposed route traverses West Virginia, Maryland, Pennsylvania and New Jersey
- Provides additional 5,000 MW of west-east transfer capacity in one of most congested parts of the grid

AEP's Proposed Line Route



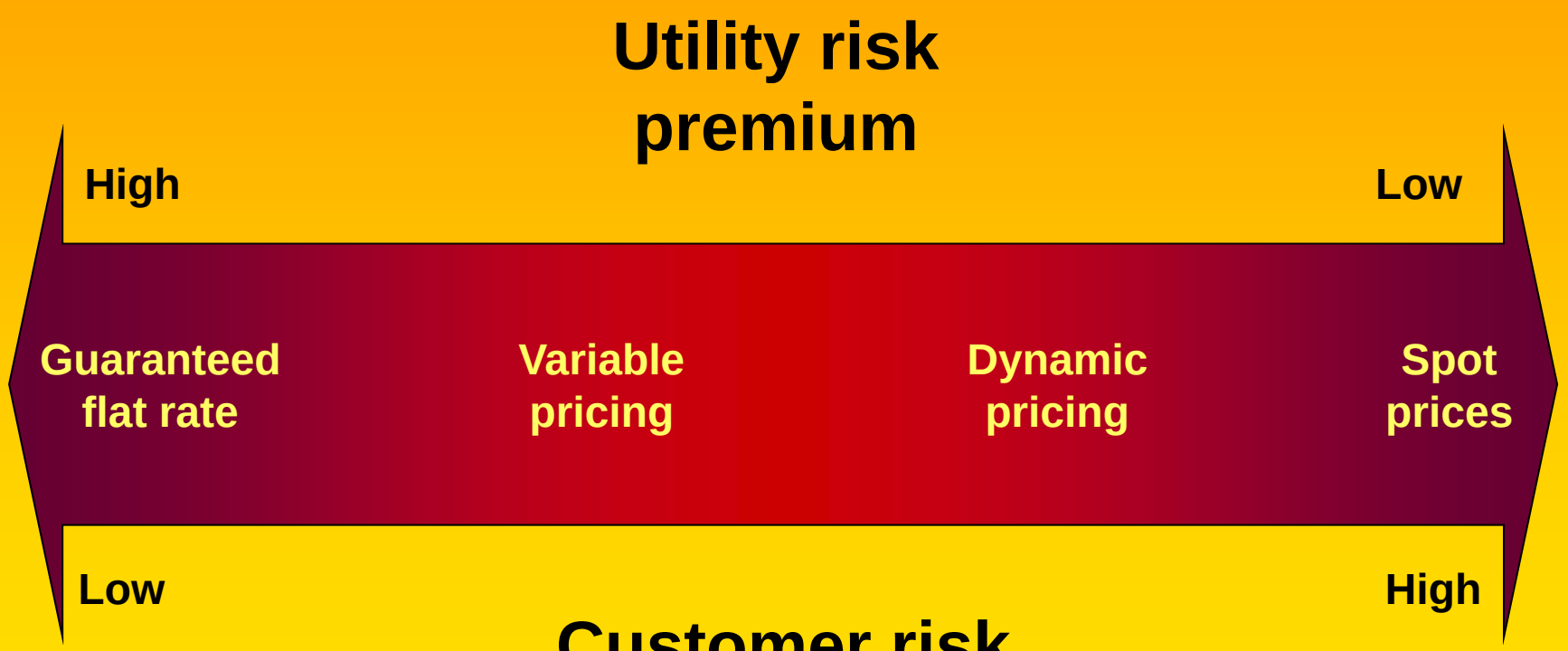
Prong 3: Demand Response

- Demand response programs are mechanisms for communicating prices and willingness to pay between wholesale and retail power markets, with the immediate objective of achieving load changes, particularly at times of high wholesale prices.
  - *Edison Electric Institute*

Demand Response: The Consumers' Impact

- Stability of the U.S. electric industry is a public good
- Industry controls and develops generation and transmission infrastructure
- Demand response is the means for consumer contribution to the effort

Pricing Options



C&I Programs

- Load management time-of-day/energy storage
- Optional time-of-day
- Recreational/athletic field lighting
- Off-peak excess/time-of-day billing demand
- Interruptible/emergency curtailable/price curtailable

Residential Programs

- Small use load management/limited usage
- Optional demand-metered
- Load management time-of-day/energy storage
- Optional time-of-day
- Storage/load management water heating

U.S. DRCC

- The United States Demand Response Coordinating Committee is a non-profit organization to increase the knowledge base in the U.S. on demand response and facilitate the exchange of information and expertise among demand response practitioners and policy makers.

U.S. DRCC

- Designated by the DOE to represent the U.S. in the Demand Response Project of the International Energy Agency (IEA)
- AEP is a founding member
- AEP's Billy Berny is one of 5 board members
- National Town Meeting and Symposium just announced – Berkeley, June 26-27 – will be co-sponsored by the DRCC and the California Demand Response Research Center

DRCC Activities

- The DRCC works with:
- Utilities
- ISOs
- Technology providers
- Legislators, and
- State and national regulatory agencies

DRCC Activities

- Activities include:
  - Identifying market barriers,
  - Valuation methodologies and
  - New forms of DR, particularly those DR initiatives that go beyond traditional tariff-based offerings, such as TOU or interruptible rates
- The DRCC also explores enabling technologies to provide clearer pathways for DR development and implementation

DR Across the Country

- Federal survey underway to assess demand response programs and capabilities
- **Arkansas:** open docket on energy efficiency plans and programs. The order does not rule out DR, but is otherwise-focused.
- **Connecticut:** has issued a draft decision on a distributed resource portfolio standard.

DR Across the Country

- **Delaware:** Delmarva Power is looking at a phase-in of newly uncapped rates after recent bidding process revealed potential for a 59% rate increase for residentials.
- **Idaho:** Idaho Power recently filed a report on completion of first phase of AMR project. Benefits were shown.
- **Illinois:** state commission has initiated DR rulemaking. Recently approved a reverse auction.

DR Across the Country

- **Kentucky:** PSC opened a proceeding to consider time-based metering, demand response and interconnection service.
- **Michigan:** MPSC Report on Energy Efficiency and Capacity Need Forum (both January ’06) set out 5-year plan for capacity expansion, including DR
- **Montana:** eyeing DR and smart metering
- **Virginia:** Open metering and demand response proceeding.

Louisiana Regulatory Activity

- LPSC finalized net metering rules in 2005, and SWEPCO developed net metering tariff
  - Net metering must be available for residential/commercial customers with a generating capacity of no more than 25/100 kW respectively
  - Removes a barrier to DR and encouraging renewables
- LPSC opened DR docket this month

Louisiana's DR Docket

- Price-based mechanisms:
  - Time-of-use: different unit prices during different blocks of time
  - Real-time pricing: price may fluctuate hourly
  - Critical peak pricing: hybrid of TOU and RTP, critical peak pricing kicks in with dramatic price signals when system reliability is compromised by load

Louisiana's DR Docket

- Incentive based mechanisms:
  - Direct load control
  - Interruptible/curtailable service
  - Demand bidding/buyback systems
  - Emergency demand response programs
  - Capacity market programs
  - Ancillary services market programs

AEP's Take on Demand Response

- Began DR programs 50 years ago
- Cost-effective load response is beneficial for certain customers and provides benefits to all
- Only economical programs should be pursued
- DR should not result in cost-shift to other customers
- Utilities must receive cost-recovery

The Roots of AEP's Position

- AEP has worked with state commissions to implement interruptible load programs that have attracted nearly 1,000 MW
- DR rate options in all 11 states
- Interest by some commercial, industrial customers in advanced metering technologies

Cost Recovery

- DSM programs should provide for program costs, lost revenues and incentives
- DSM programs should not require subsidization from non-participants

Challenges and Barriers

- People don’t like high prices
- Significant price volatility is politically unacceptable
- Regulation can limit innovative pricing strategies that provide pricing risks under the premise of protecting customers from volatile prices
- Technology

Useful Links

- EEI DR program inventory:
  - http://www.eei.org/industry_issues/retail_services _and-delivery/wise_energy_use/programs_and_incentives/progs.pdf
- FERC survey proceeding:
  - AD06-2-000
- EPAct 2005:
  - Public Law 109-58
- Louisiana DR docket:
  - R-29213