

*Cogentrix*

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# **Consideration of Coal, other Fuels, and Technology in Developing and Operating a U.S. Generation Portfolio**

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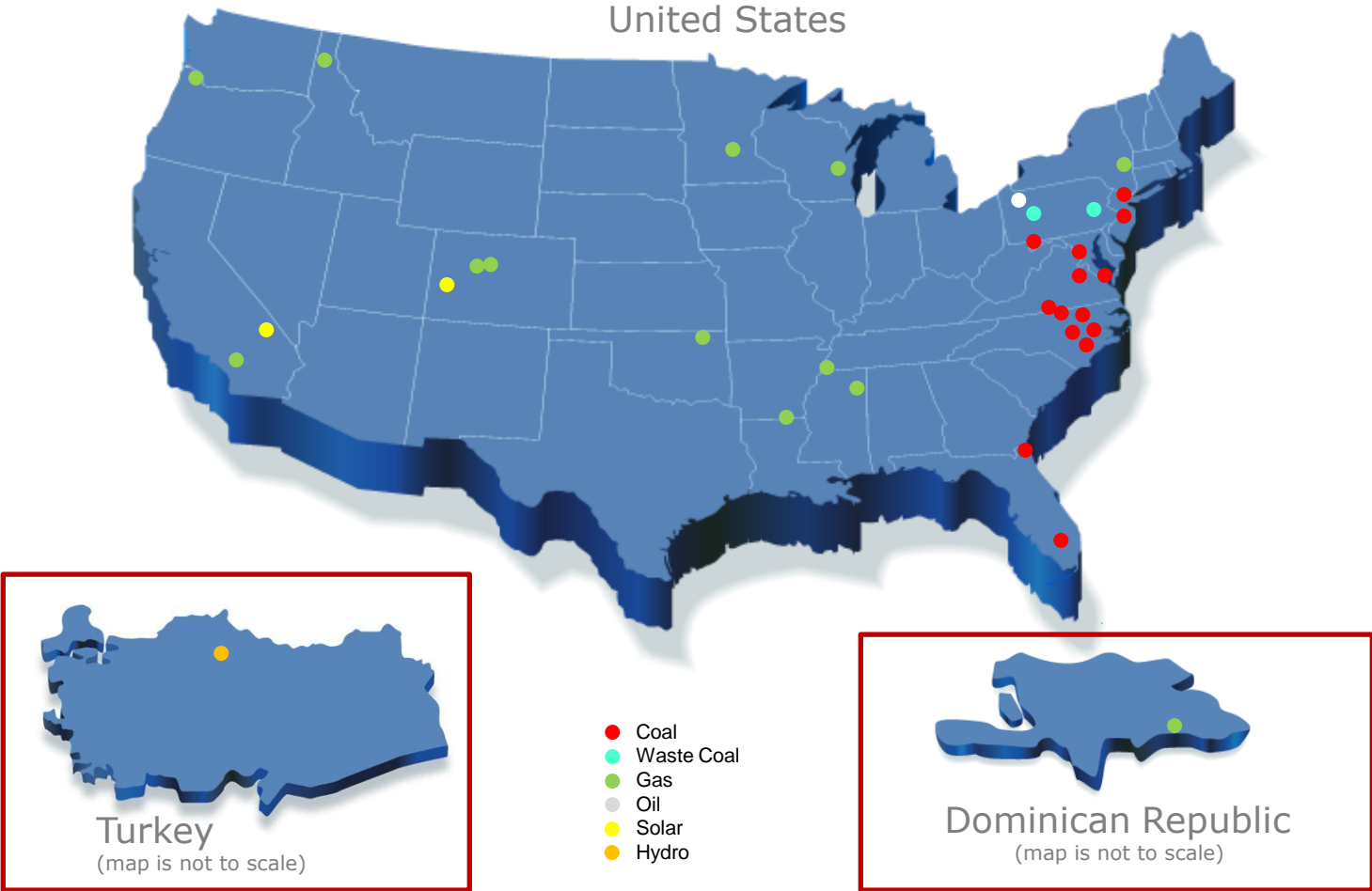
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# Who is Cogentrix?

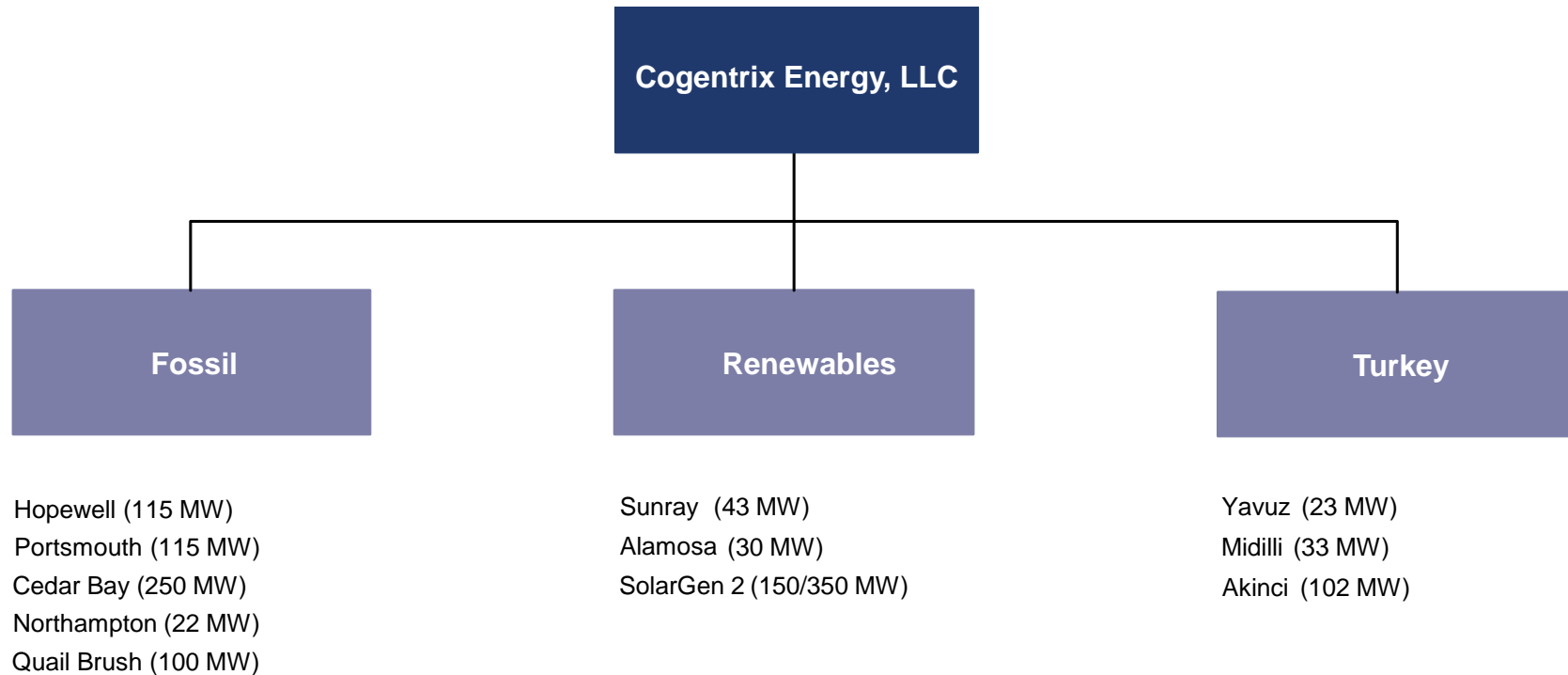
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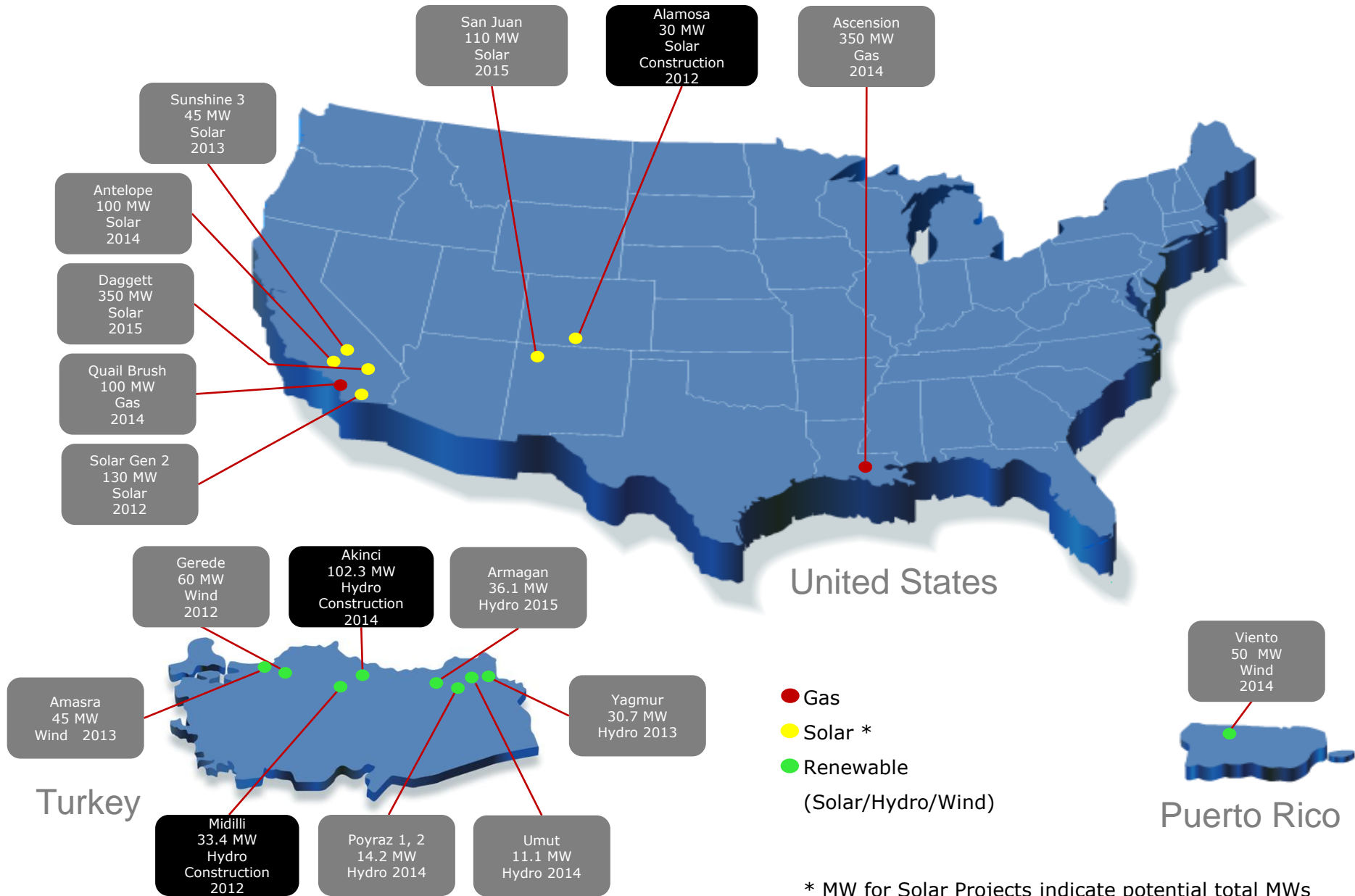
- Independent power producer founded in 1983
- Since 1985, Cogentrix has developed and constructed 18 power plants – accounting for just over 5,000 MW of capacity
- Nine of the plants constructed were coal fired plants
- During the same period, Cogentrix acquired an additional 2,000 MW of independent generating plants, and nine of those plants were coal fired or waste coal fired
- Acquired by Goldman Sachs in 2003

# Cogentrix Historical Development and Construction



# Cogentrix Lines of Business





United States

Turkey

Puerto Rico

\* MW for Solar Projects indicate potential total MWs

# The Cogentrix Project Finance Structure and the Challenges We Face

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- Customer objectives
- Reserve margins and operating environment
- Regulation
- Availability of financing

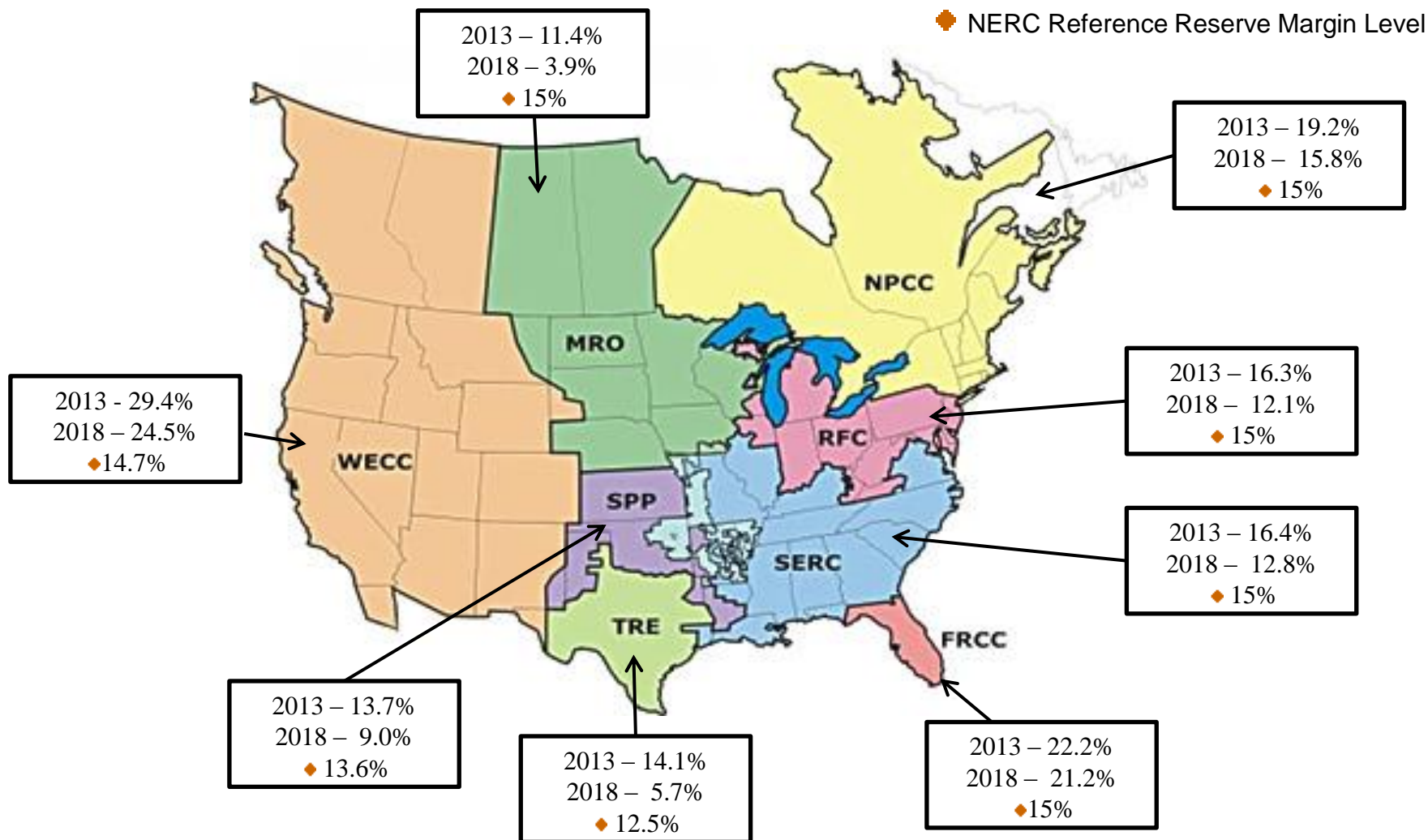
# Customer Objectives

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- Investor owned utilities, municipals and coops – build v. buy
- Regulatory restrictions
  - Long term v. short term
  - Return objectives
- Accounting and reporting
  - GAAP issues
  - Sarbanes Oxley

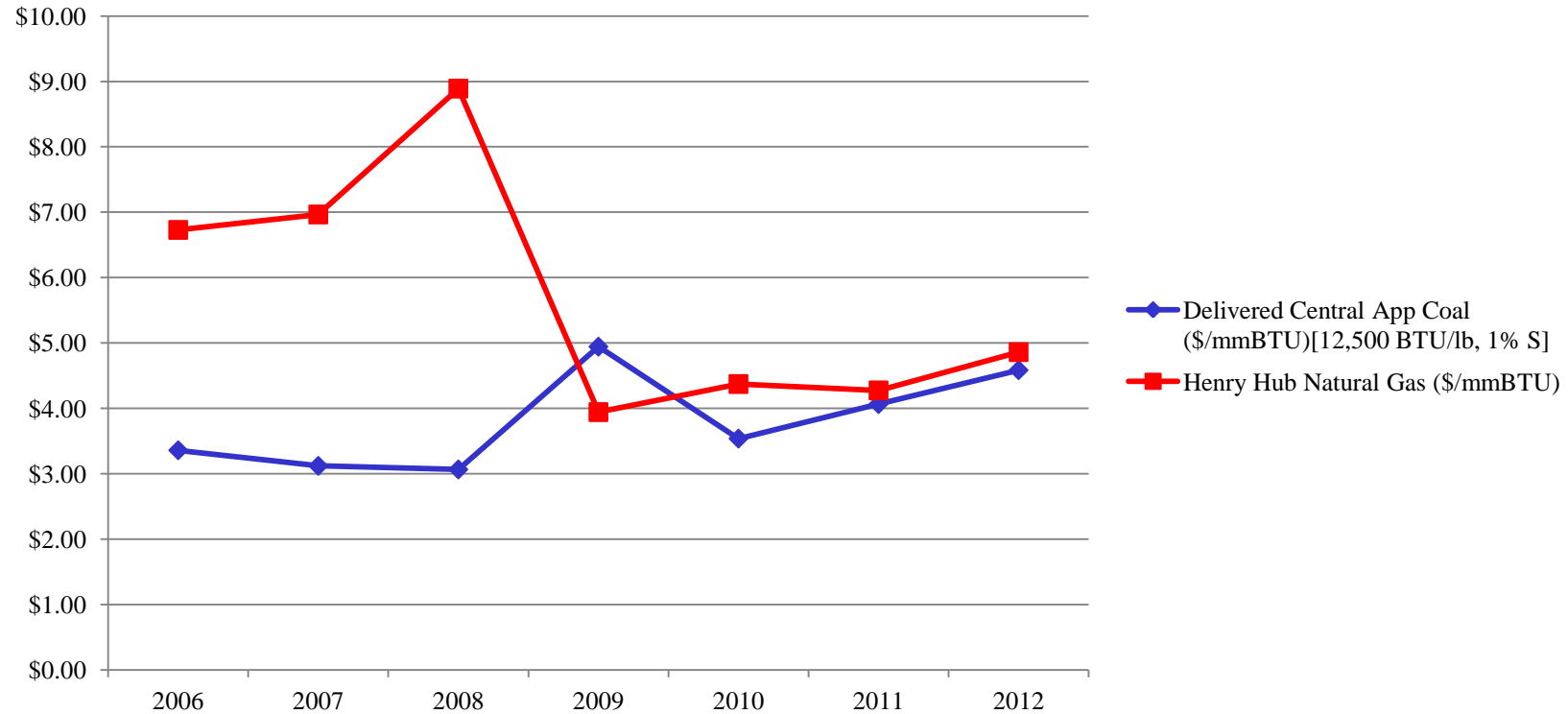


# Reserve Margins



Source – Energy Information Administration, NERC

# Reserve Margins and Operating Environment



# Reserve Margins and Operating Environment



- In PJM, for 2014/2015 base residual auction approximately 150,000 MW cleared for a 19.6% reserve margin, or just over 29,000 MW\*
- About 28% or 42,215 MW of the 2014/2015 capacity is coal fired\*
- Long run low natural gas prices may render a significant portion of PJM's coal fired capacity non-economic, resulting in a more rapid reduction in reserve margin than anticipated

# Reserve Margins and Operating Environment

- While load following is not new for coal fired units, frequent stops and re-starts are generally not consistent with large plant design
- Cycling of this nature results in even more expensive generation due to:
  - Maintenance problems due to thermal fatigue and corrosion
  - Decreased unit efficiency
  - Decreased performance for emissions control equipment
- Increased forced outages jeopardize power contracts and ultimately affect financing and profitability
- Available coal capacity is perhaps more rapidly reduced due to operational/economic factors than strictly regulation

# Reserve Margin and Operating Environment

Waterwall header cracking on a coal fired boiler



- Cross-State Air Pollution Rule (CSAPR)
  - Replaces Clean Air Interstate Rule (CAIR)
  - Covers 27 states in the U.S., including Texas and Kansas, effective for SO<sub>2</sub> in Jan. 2012 and NO<sub>x</sub> in May 2012
  - EPA can update based on revisions to National Ambient Air Quality Standards (NAAQS)
  - NAAQS due July 2011 but delayed, 84 ppb ozone is current level

- National Emissions Standards for Hazardous Air Pollutants (NESHAP)
  - Provides limits for mercury, particulate (a surrogate for other metals) and HCL (a surrogate for acid gas)
  - Based on Maximum Achievable Control Technology (MACT)
  - Compliance target : January 2015
- Clean Water Act cooling intake structures
- Coal combustion residuals

# Regulation

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- Greenhouse gas legislation
  - Potentially far reaching and more costly
  - Uncertainty is a major issue for owners
- Cost benefit analysis for compliance
  - Further impacts to reserve margins
  - Potential for coal switching



- Regulatory impacts
  - Customers and contracts
  - Performance and cost
- How much coal fired generation is retired as a result of regulation?
  - Approximately 91% of coal fired capacity ever constructed in the U.S. is still operable
  - Estimates from 10 GW to 150 GW
  - PJM estimates 18,000 MW in the RTO area \*

# Availability of Financing

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- Financing perspectives for development and acquisition of coal fired units
  - Regulatory cost pass through
    - Additional compliance costs/benefits
    - Command and control exposure
- Counter party risks perceived in coal fired power plants
  - Creditworthiness of customer
  - Ultimate ability to pass costs along to a base of consumers
- The obstacle of uncertainty

# What's the Future for Coal in the Generation Mix in the U.S.?



- Long term relationship between natural gas and coal pricing
  - Electricity demand – domestic
  - Coal supply – productivity
  - Coal demand – off shore
  - Gas demand/supply
- Electric rate regulation and cost recovery
  - Importance assigned to fuel diversity

# What's the Future for Coal in the Generation Mix in the U.S.?



- Regulation – carbon
  - Technology for storage
  - Impact of renewables
- Technology changes affecting emissions and efficiency
  - Challenges for financing new technology
  - Regulatory climate and technology risk

# Summarization

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- The driving fundamental is the price of burner tip gas versus delivered coal
- Existing plant technology and logistics will limit coal switching opportunities
- Near term poor economic conditions will mask a serious capacity shortage
- Investor owned utilities with a structural incentive to build generation may be best positioned to address a shortage
- Can developing technology overcome the fading of the “dark spread”?