

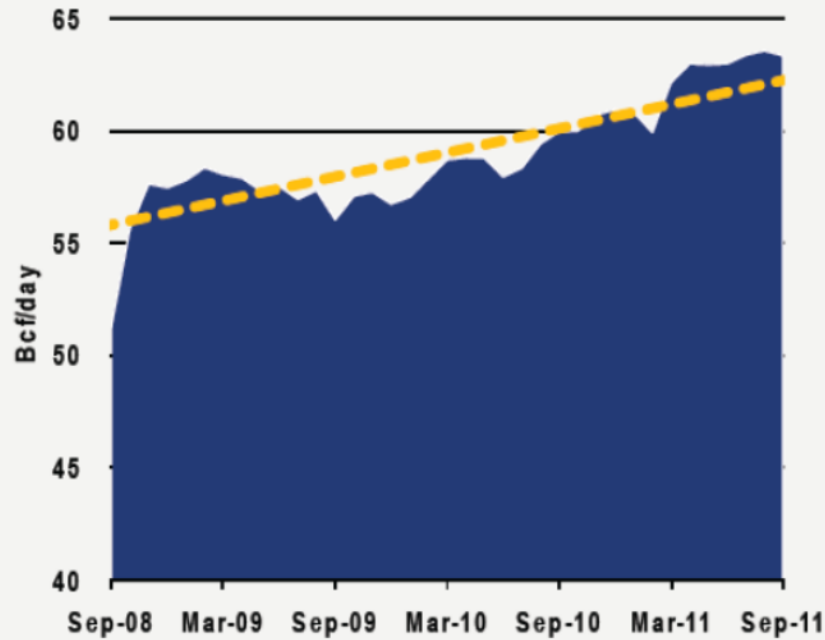


Converging Factors

Jerome Hinkle
VP, Policy and Research
American Clean Skies Foundation jhinkle@cleanskies.org

From a Bridge to a Destination: Gas fired Power After 2020
Hotel Monaco, Washington, DC
November 4, 2011

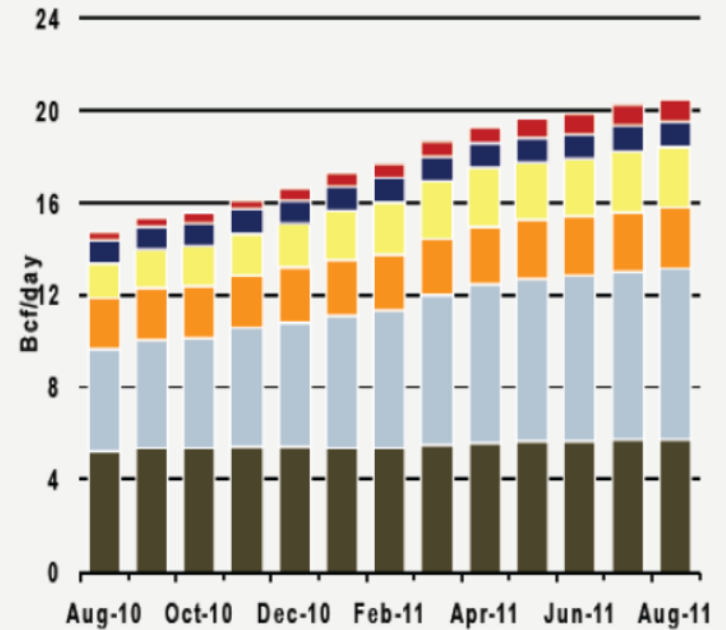
U.S. DRY GAS PRODUCTION



Sources: Navigant / EIA

U.S. dry production remains above 63 Bcf/d.

U.S. SHALE GAS PRODUCTION

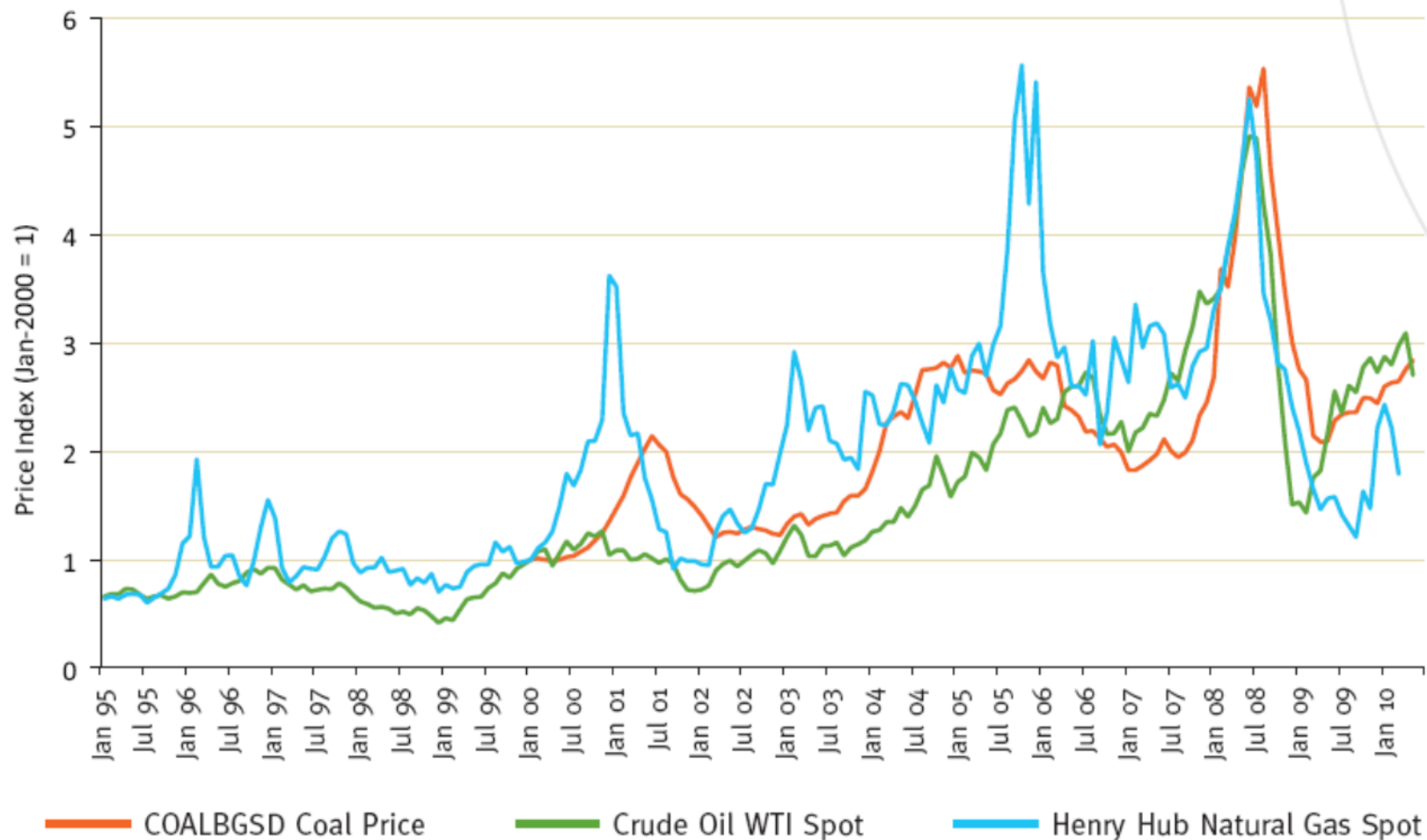


■ Eagleford ■ Woodford ■ Marcellus
■ Fayetteville ■ Haynesville ■ Barnett Shale

Sources: Navigant / LCI

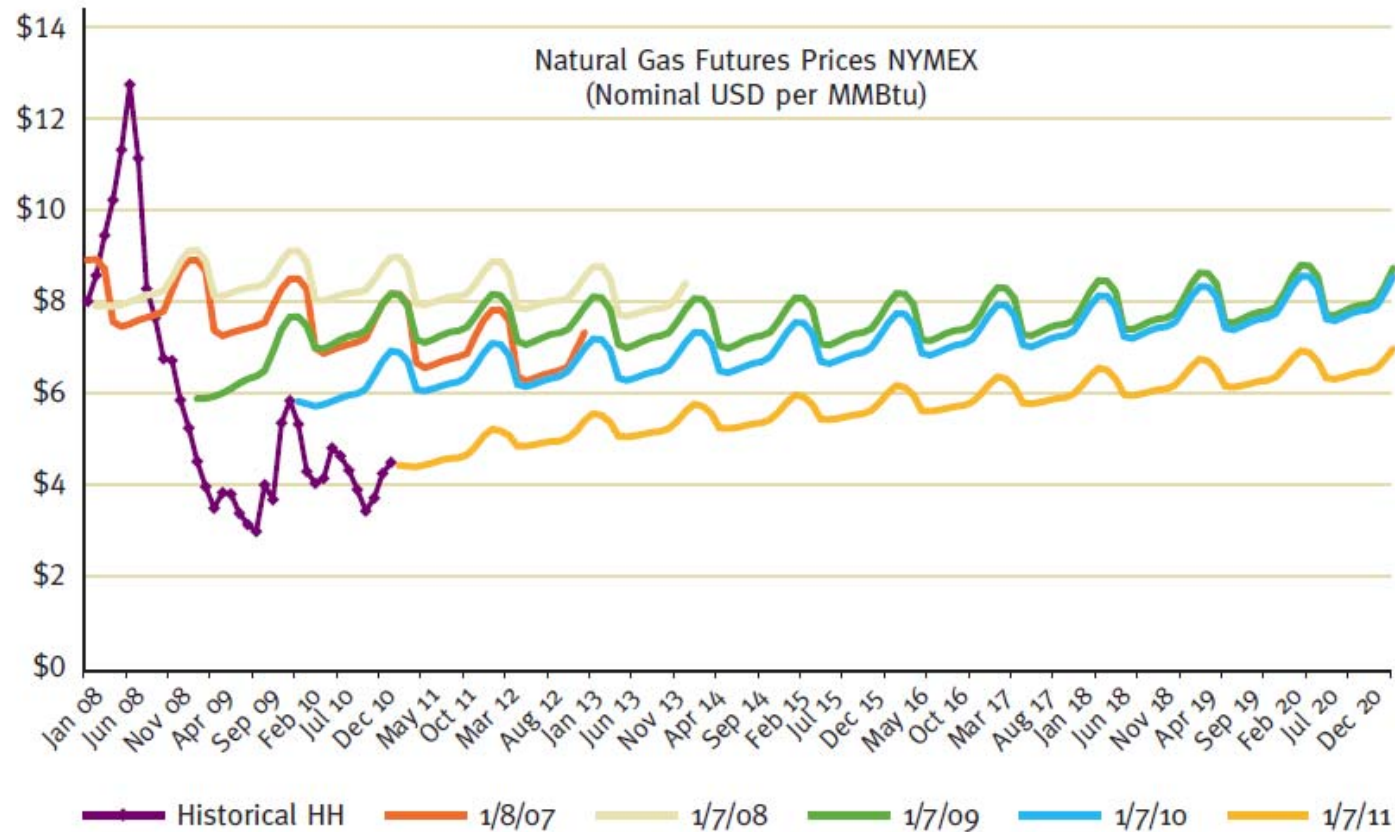
Total production from these six major shale plays continues to climb.

Figure 6. Indexed Fuel Prices - 1995 to 2010



Source: ICF International analysis of U.S. Energy Information Administration data.

Natural Gas Futures Prices 2008 to 2020

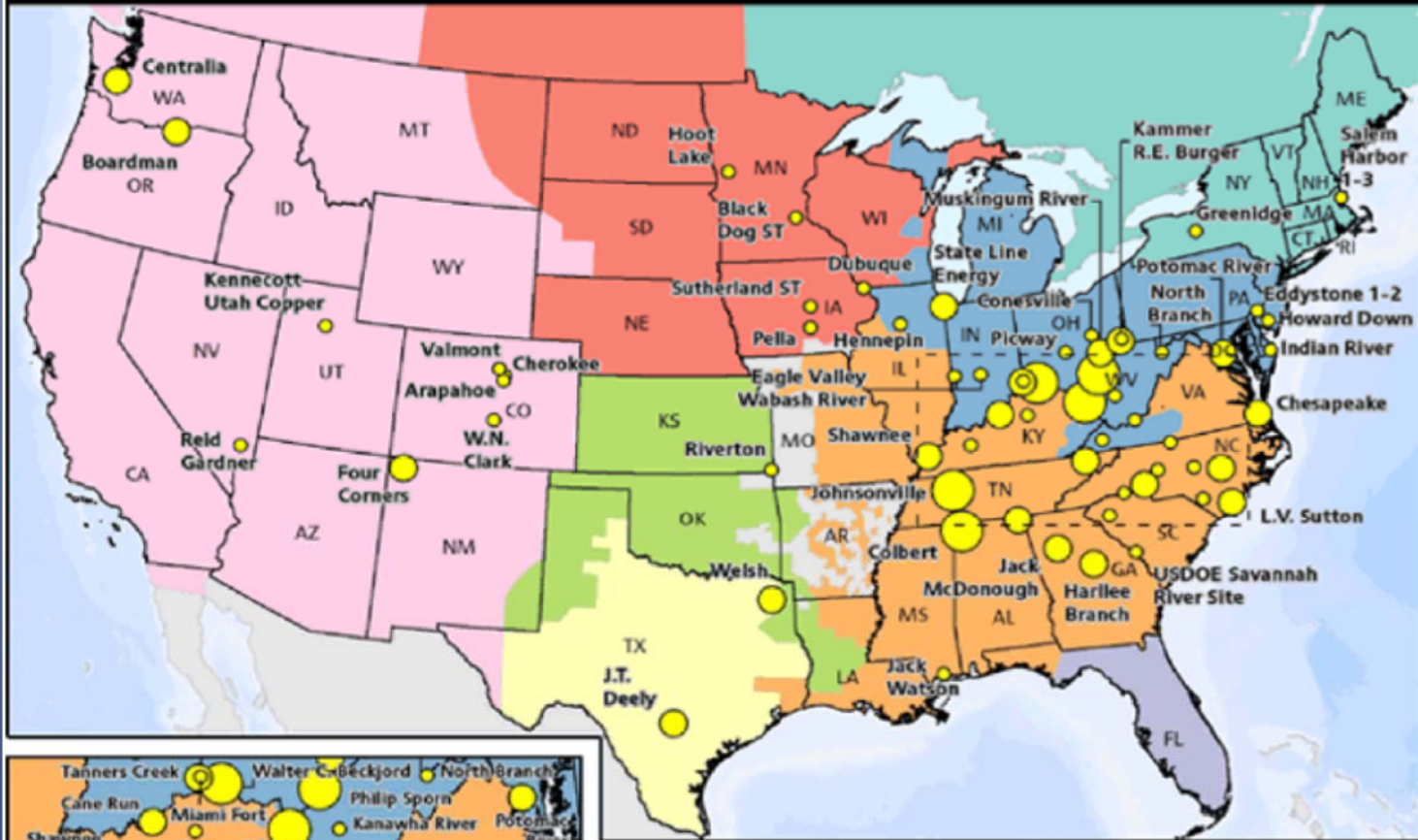


Note: Henry Hub (HH), Louisiana, is a major production area delivery point in the gas industry. The NYMEX Natural Gas Futures contract uses the Henry Hub price as the reference price.

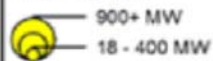
Source: New York Mercantile Exchange.

Source: Task Force on Ensuring Stable Natural Gas Markets (Bipartisan Policy Center and American Clean Skies Foundation), March 2011.

Announced coal plant capacity retirements 2011-2020



Capacity retiring in next 10 years



NERC region



As of Sept. 14, 2011
Source: SNL Energy
Map credit: Jesse Bellavance

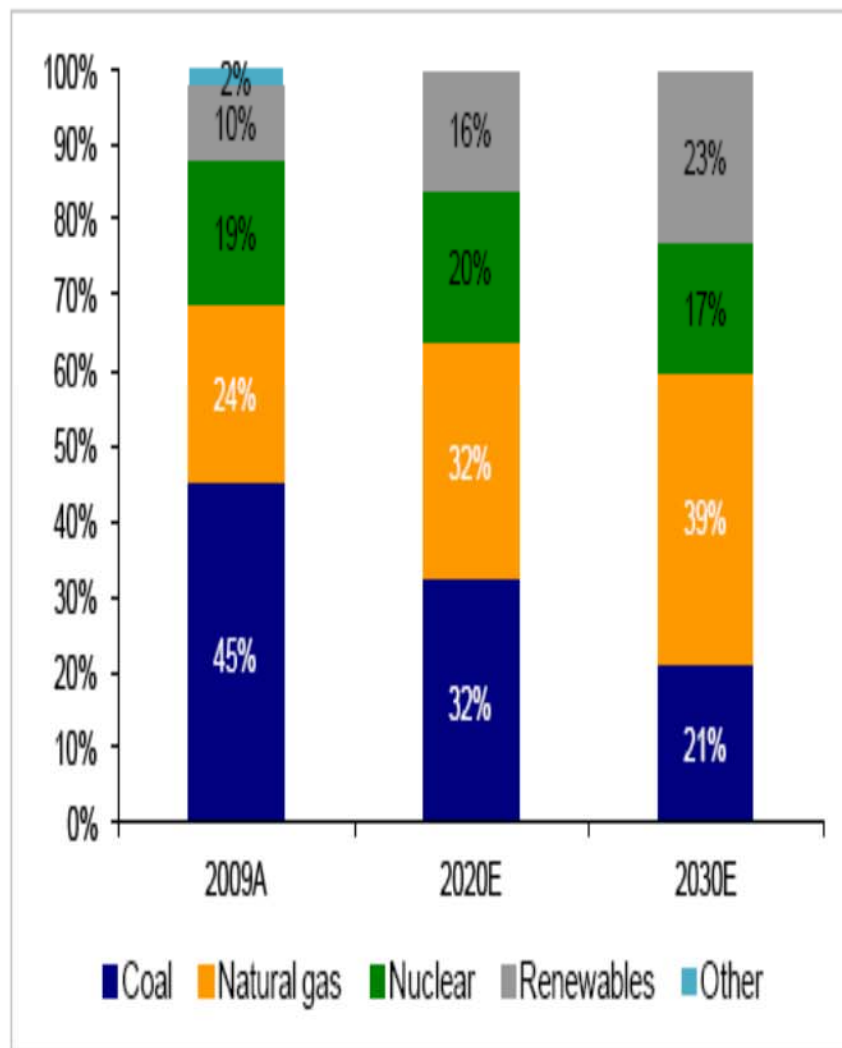


Coal Plant Retirements

- SNL, 2/11—16 GW announced
- SNL, 6/11—23 GW
- SNL, 9/11—26 GW
- Deutsche Bank Climate Change Advisors, 11/10—60 GW by 2020, + 92 GW 2020-2030
- Other studies estimate 35-101 GW 2010-2020

Exhibit 1: DBCCA vs. EIA Electricity Supply Mix Forecasts, 2020 and 2030 (% MWh)

DBCCA Forecast



EIA Forecast

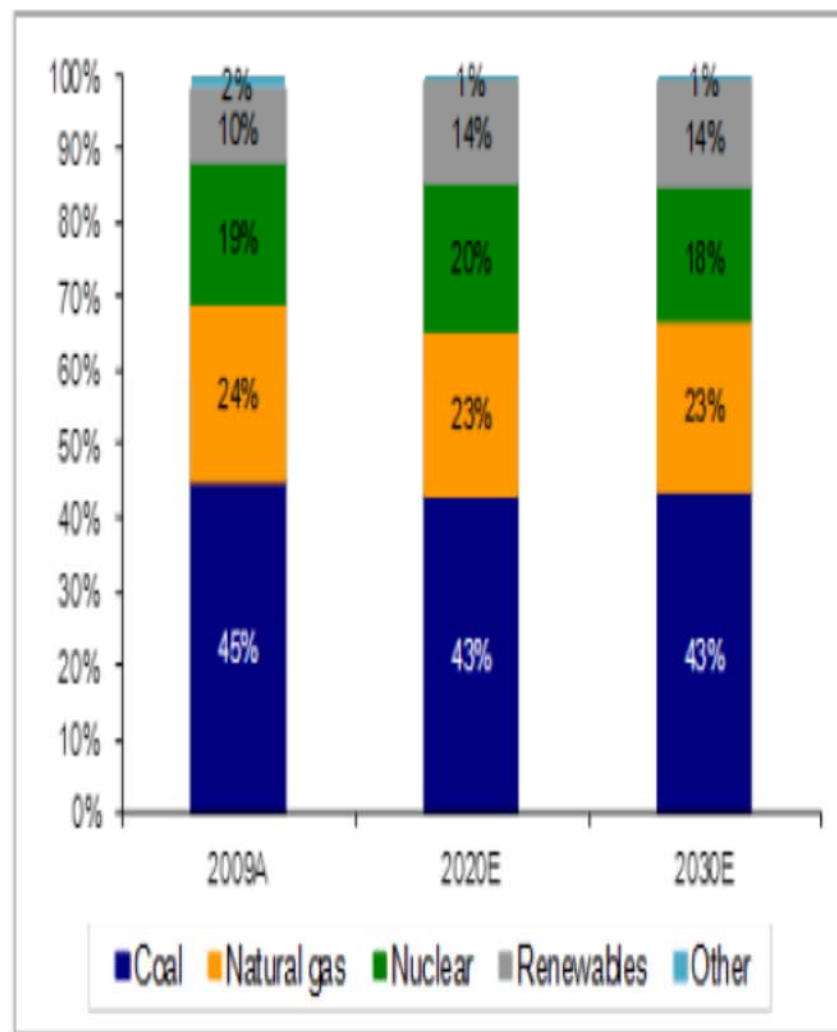
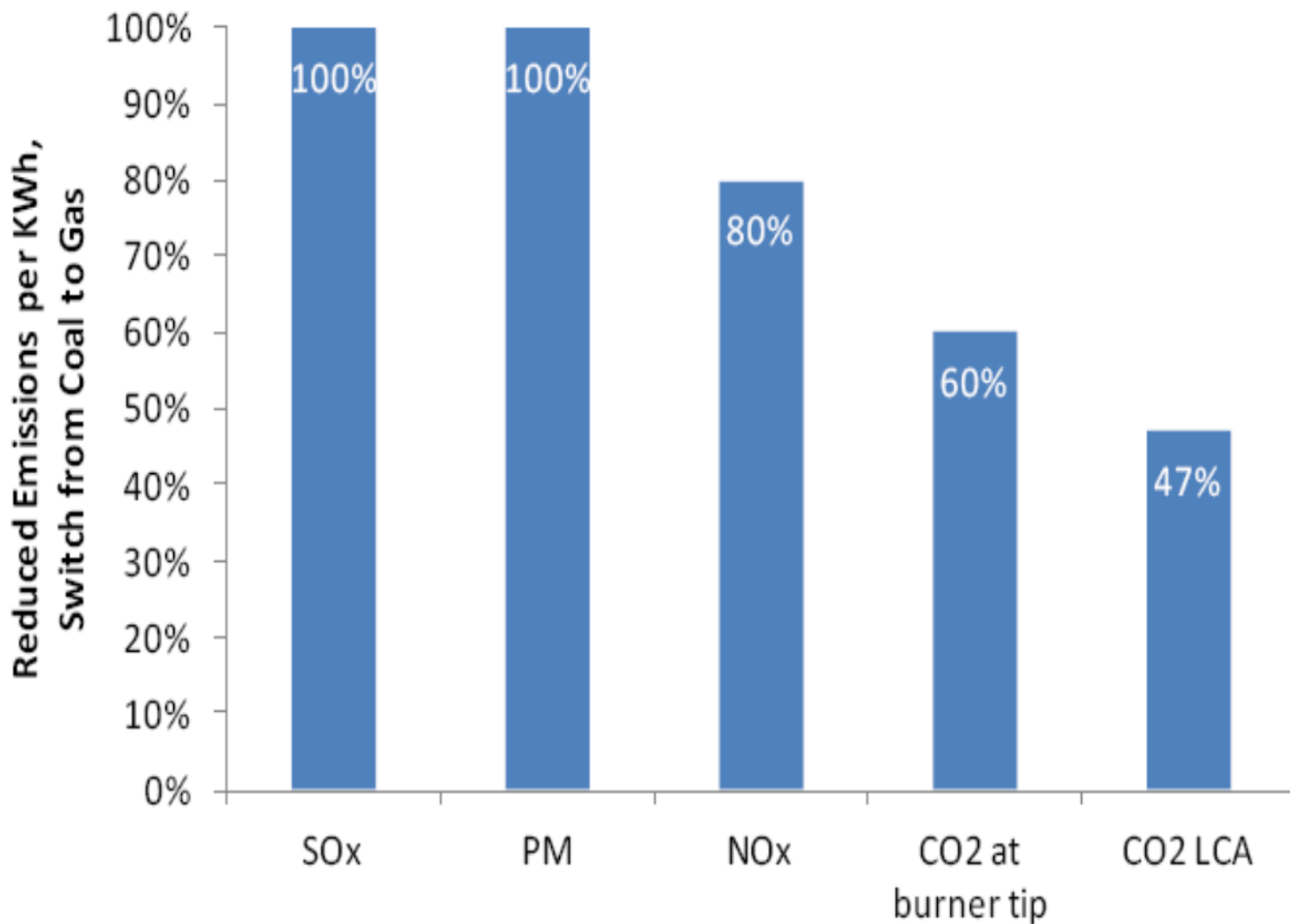


Exhibit 27: Coal-to-Gas Switch Reduces More than Just GHG Emissions (% reduction)



*PM refers to Particulate Matter

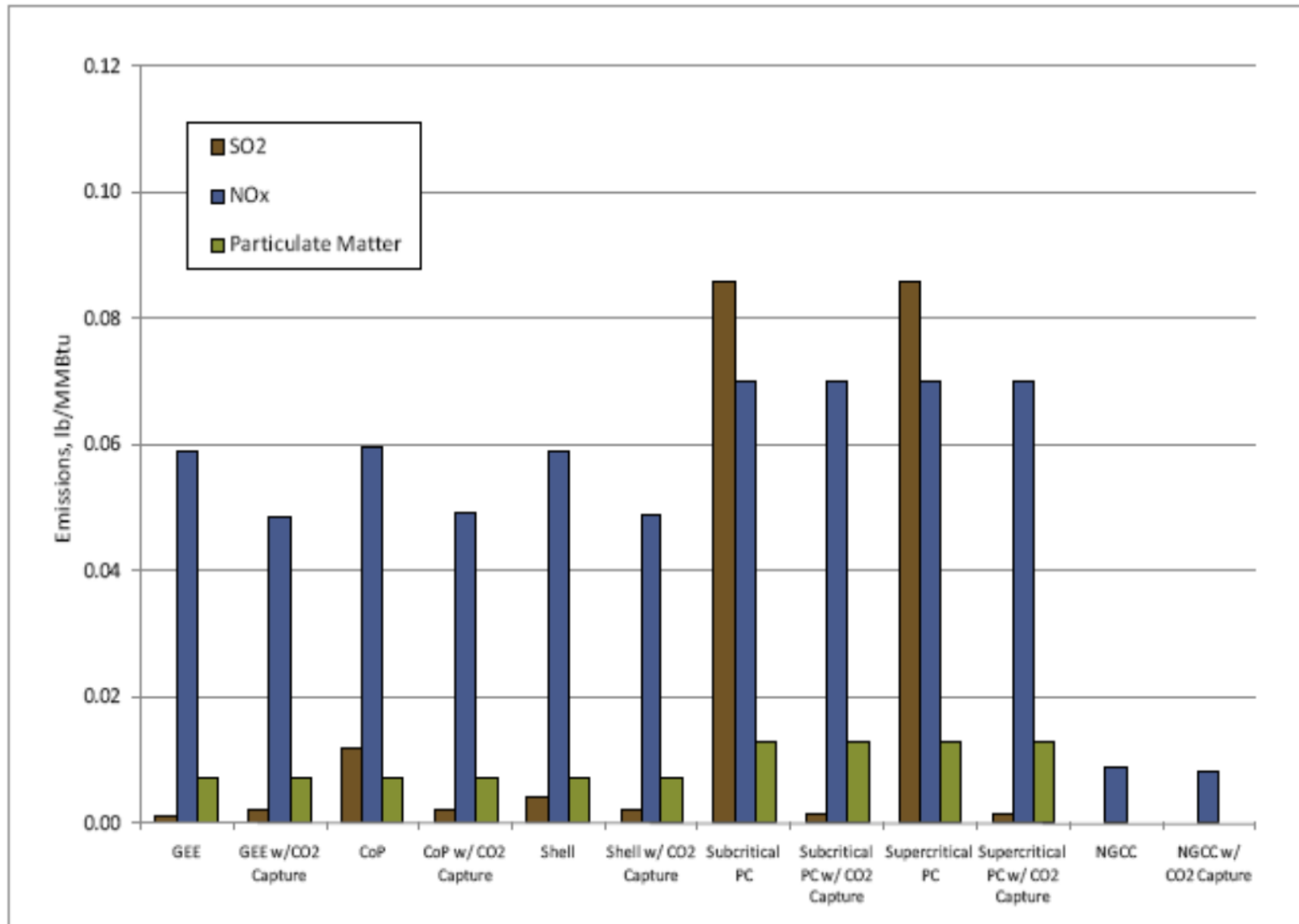
Source: EIA, DBCCA Analysis 2011

Gas Use 2009-35

AEO 2011

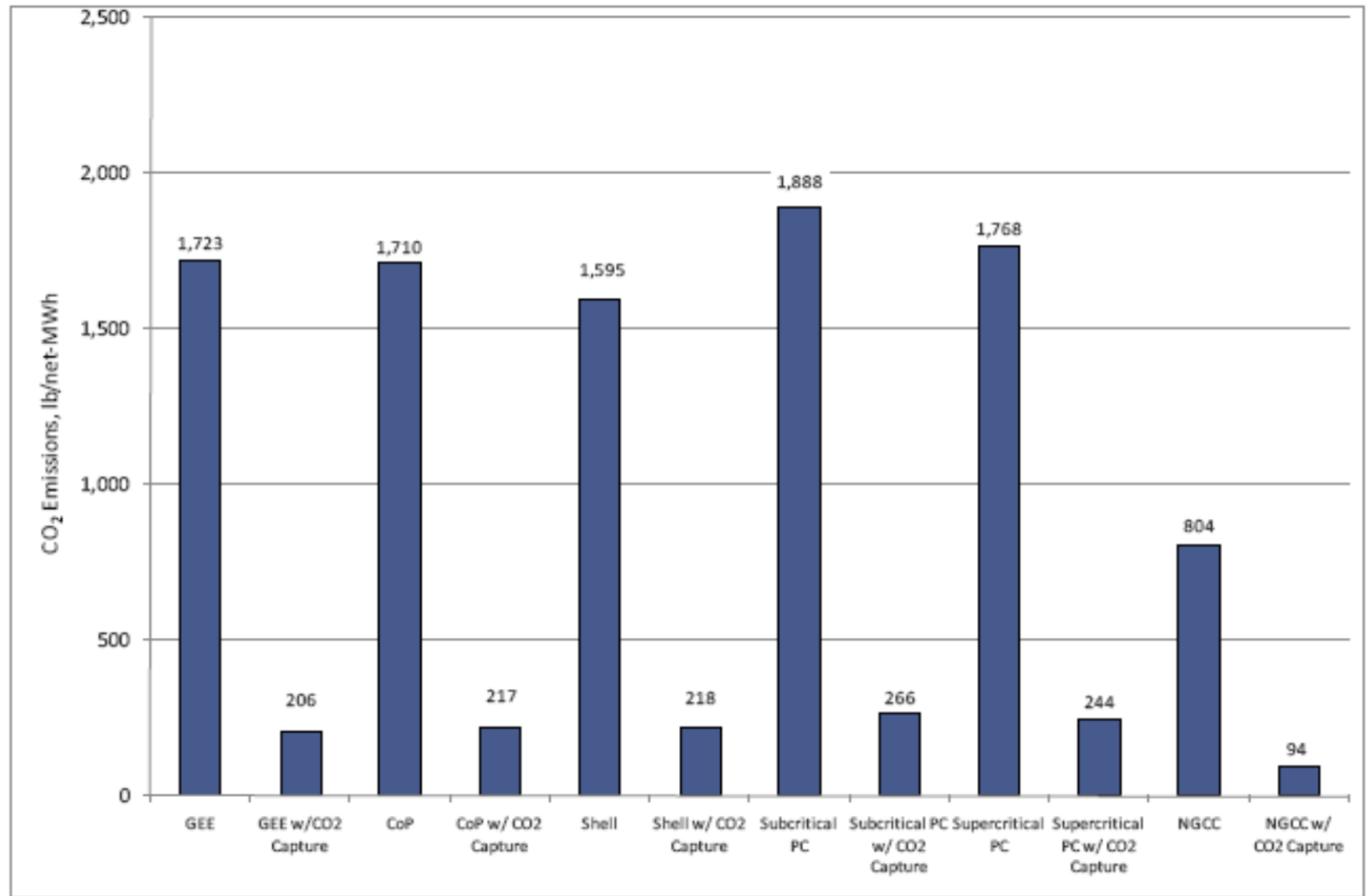
- Residential 20.9% - 18% (flat ~ 4.8 Tcf)
- Commercial 13.7% - 14.4% (3.8 Tcf)
- Industrial 27% - 30 % (8 Tcf)
- Electric power 30% (flat ~ 7.9Tcf)
- Transportation 0.1% - .6%

Exhibit ES-15 SO₂, NO_x, and Particulate Emission Rates



Source: *Cost and Performance Baseline for Fossil Energy Plants, Volume 1: Bituminous Coal and Natural Gas to Electricity*. Revision 2, November 2010. National Energy Technology Laboratory.

Exhibit ES-17 CO₂ Emissions Normalized By Net Output



ACSF Review

- Market, profitability and regulatory forces encouraging older coal plant retirements
- Integration of VERs with modern gas plants as renewables become cheaper and clean electricity more valuable
- Clean Air Act compliance
- Little DOE strategic planning on RD&D and deployment on CCS for gas—coal projects useful
- MIT, NPC, Secy. Chu see need
- DBCCA see 500,000 net new jobs from their 2030 grid mix

American Energy Innovation Council

- *Catalyzing American Ingenuity: The Role of Government in Energy Innovation* (Sept. 2011)
- Government must play an integral role in supporting energy innovation
- Energy technologies long-lived, capital intensive, slow ROI
- Energy markets not perfectly competitive, need help to anticipate future value of innovation
- DOE must work smarter; “1st of kind” technology commercialization engine with CEDA

FROM A BRIDGE TO A DESTINATION GAS FIRED POWER AFTER 2020



A CARBON CAPTURE AND STORAGE LEADERSHIP FORUM FOR NATURAL GAS POWER PLANTS

Opportunities to advance technology, RD&D and policy.

Friday, November 4, 2011
8:30 AM - 4:30 PM

Hotel Monaco
700 F Street NW,
Washington, DC 20004

To register and for more
information about the event and
sponsorship opportunities, please
contact Jerome Hinkle at
jhinkle@cleanskies.org, or visit
www.cleanskies.org/ccsforum

