

# **DOE Carbon Sequestration Program**

**Charles E. Schmidt**

**Carbon Sequestration Product Manager  
National Energy Technology Laboratory**

**David J. Beecy**

**Director, Office of Environmental Systems  
Fossil Energy**



---

## Conference Proceedings

- **Mail CD to all registered participants in one month**
- **Extra copies available upon request (free)**
- **All papers from oral and poster presentations included**
- **Opening plenary, industry panel, international plenary panel presentations, and luncheon speeches to be included**



---

## **Conference summary bullets (“nuggets”)**

- **There is very little awareness by the public at large, or the environmental community of the need to reduce carbon emissions.**
- **Performance-based tax credits are an important incentive for technology deployment**
- **More research is needed to investigate biogenic methane production.**
- **Innovative processes are being investigated & developed that can significantly reduce CO<sub>2</sub> capture costs.**



---

## Conference summary bullets (“nuggets”)

- R&D needs to be leveraged with industry partnerships, particularly pilot demos.
- Flue gas (12-13% CO<sub>2</sub>) is being used successfully in EOR in China.
- Initially, reducing the emissions of the other GHGs may be more cost-effective.
- Polygeneration offers to increase efficiency of power production from coal to ~60%.



---

## Conference summary bullets (“nuggets”)

- **Monitoring of carbon sequestration in soils and vegetation can add significant cost.**
- **Strategies to add power generation capacity with reduced carbon emissions very complex.**
- **Amine-based solvent systems with 55 to 85% lower energy penalty than MEA have been developed.**
- **83 MMT/Yr. carbon can be stored in US soils.**



---

## **Bullets (“nuggets”) from the audience**

- **No attribution.....**
- **No sales pitches or promotional comments.....**
- **No editorial comments.....**



---

# **DOE Carbon Sequestration Program**

## **“Glimpse into the future”**

- **Expand Advanced Conversion and Utilization research area**
  - **Develop better approaches to engage research institutions and universities**
  - **Involve industry as “mentors, advisors, etc.”**
  - **Focus on biological and chemical processes to utilize or convert GHGs, and advanced energy conversion systems**



---

# **DOE Carbon Sequestration Program**

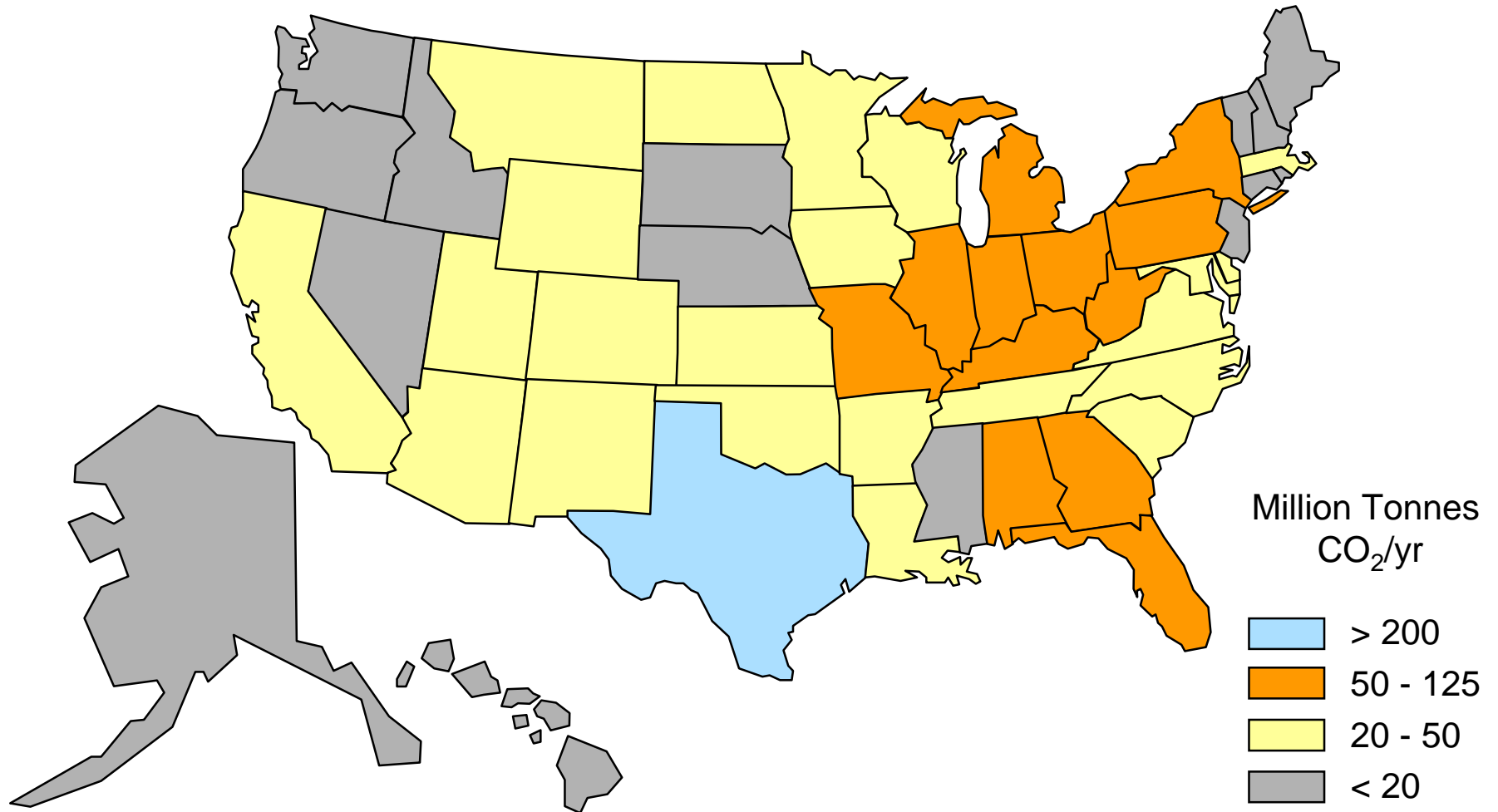
## **“Glimpse into the future”**

- **Regional sequestration validation and verification capabilities**
  - **Test and verify regionally-specific sequestration approaches**
  - **Establish partnerships with regional industries, universities, and research organizations**
  - **Provide test sites for new technologies and international collaboration and training**



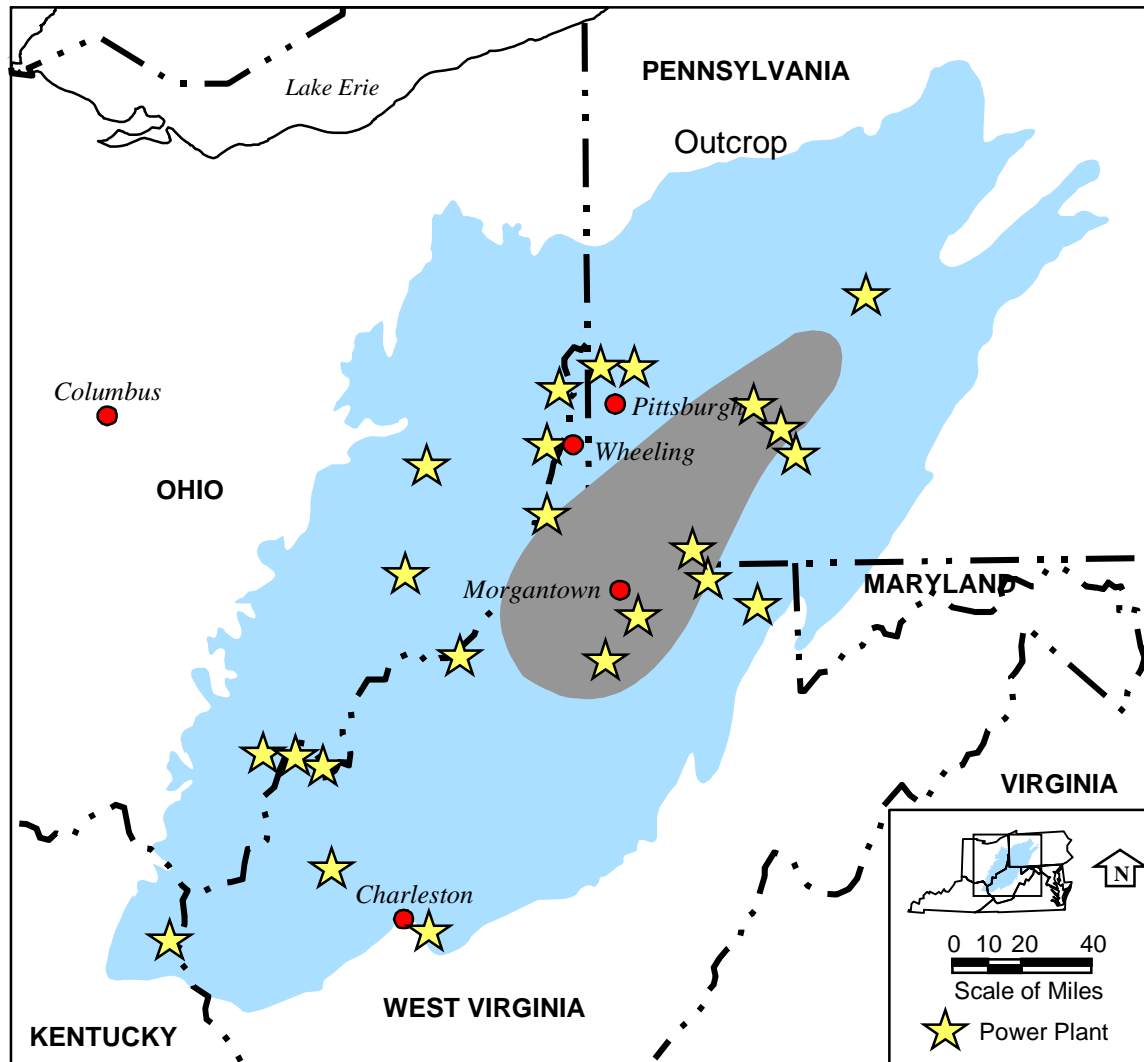


# CO<sub>2</sub> Emissions From Fossil-Fuel Fired Power Plants



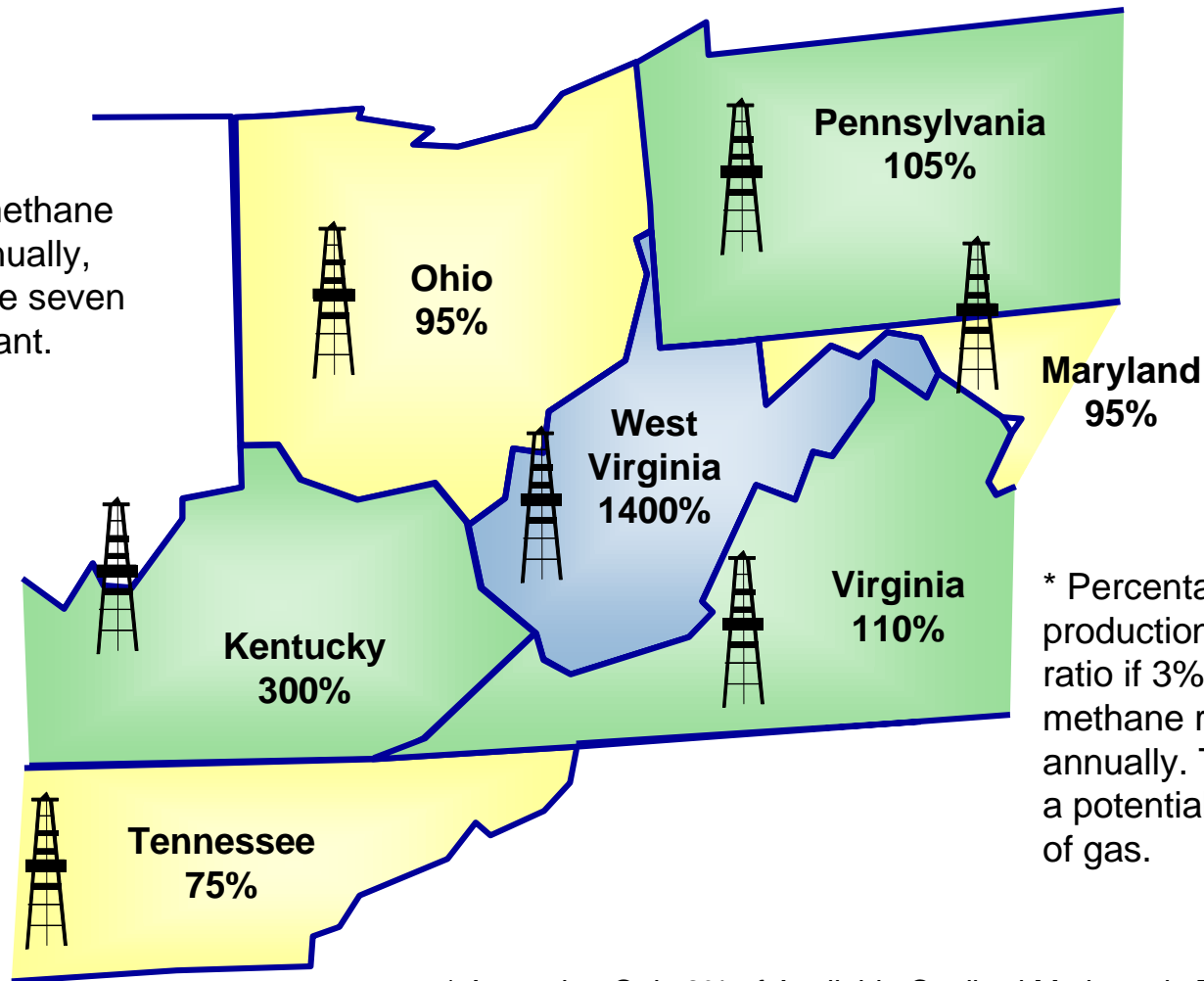
Source: Utility Data Institute

# Northern Appalachian Coal Basin



# Gas Self-Sufficiency is Possible in Appalachian Basin - Coalbed Methane Recovery Could Have Significant Impact -

\* If only 3% of methane is recovered annually, the impact for the seven states is significant.



\* Percentage represents production / consumption ratio if 3% of coalbed methane resources is used annually. This represents a potential 30-year supply of gas.

\* Assuming Only 3% of Available Coalbed Methane is Recovered Annually

