

# Session 2: “Opportunities and Potential for Industrial CHP”

*Industrial Energy Efficiency & CHP Dialogue  
U.S. DOE Regional Meeting - Midwest  
June 21, 2012*

## Panel Moderator:

**John Cuttica:** Director Energy Resources Center – Univ. of Illinois @ Chicago

## Panelists:

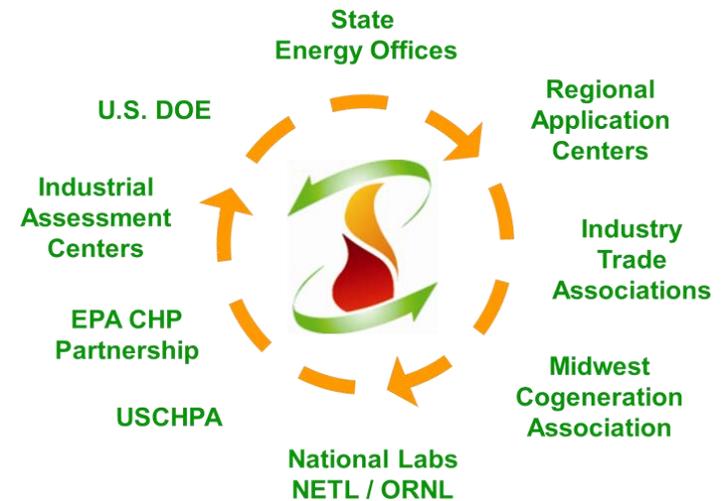
**Edward Mardiat:** Director of On-Site Energy & Power Project Development,  
Burns & McDonnell

**Kevin Bright:** Managing Director, Non-Residential Products & Strategy,  
Duke Energy

**Steve Caminati:** Director, Advanced Energy Economy Ohio

# U.S. DOE Midwest Clean Energy Application Center

- **Mission:** Promote and assist in transforming the market for combined heat and power, waste heat recovery, and district energy technologies and concepts throughout the 12 State Midwest Region
- **Regional Strategy (Focus):** Provide an outreach and technology deployment program to end users, policy, utility, & industry stakeholders aimed at:
  - **Education and Outreach**
  - **Market Assessments**
  - **Technical Assistance (project support)**



# Evolving Midwest CHP Landscape

- Focus on specific markets (*healthcare, colleges/universities, industrial manufacturers, ethanol plants*)
- Focus on NG fueled topping cycle CHP
- Main efforts were education and project support

2001 - 2004

2004 - 2009

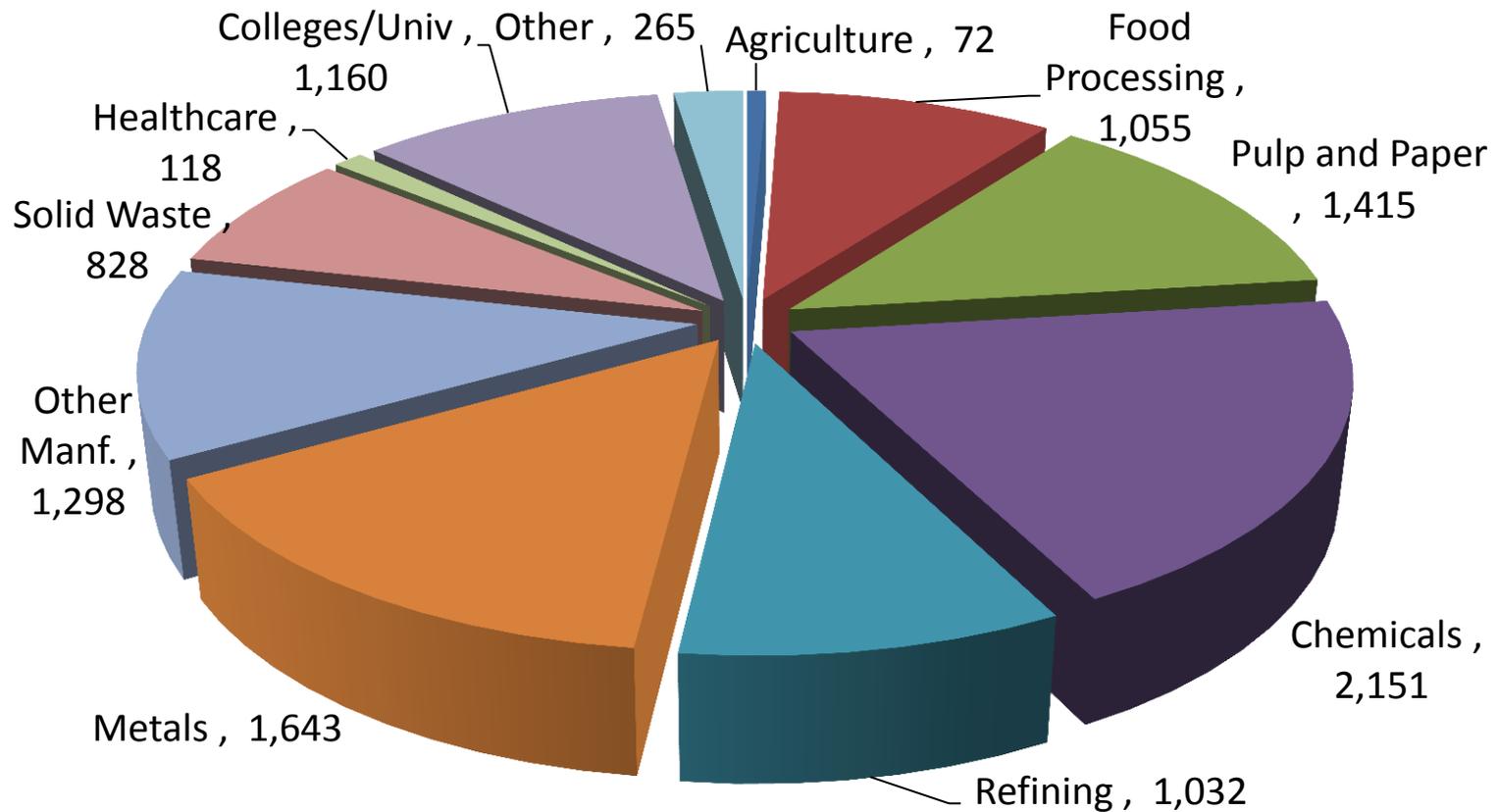
- Sharp increase in NG prices (*terrible spark spreads*)
- Focus shifted to opportunity fueled topping cycle CHP and WHR/bottoming cycle CHP
- Top priority - anaerobic digester applications (*livestock manure, food processing, wastewater treatment facilities*)
- Increase in policy related work (*interconnect standards, net metering,*)

- NG prices fall and long term price projections look good
- Upward pressure on electric prices (*pending EPA regs including Boiler MACT*)
- Industrial sector starts to rebound
- Result: Focus on anaerobic digester and WHR applications expanded to once again include natural gas topping cycle CHP applications (*emphasis on industrial market*)
- Policy efforts increase with State RPS/ EEPS, DOE Six State Effort, SEEAAction, Changes in State Administrations, Renewed State Interest in CHP/WHR

2010 - 2012



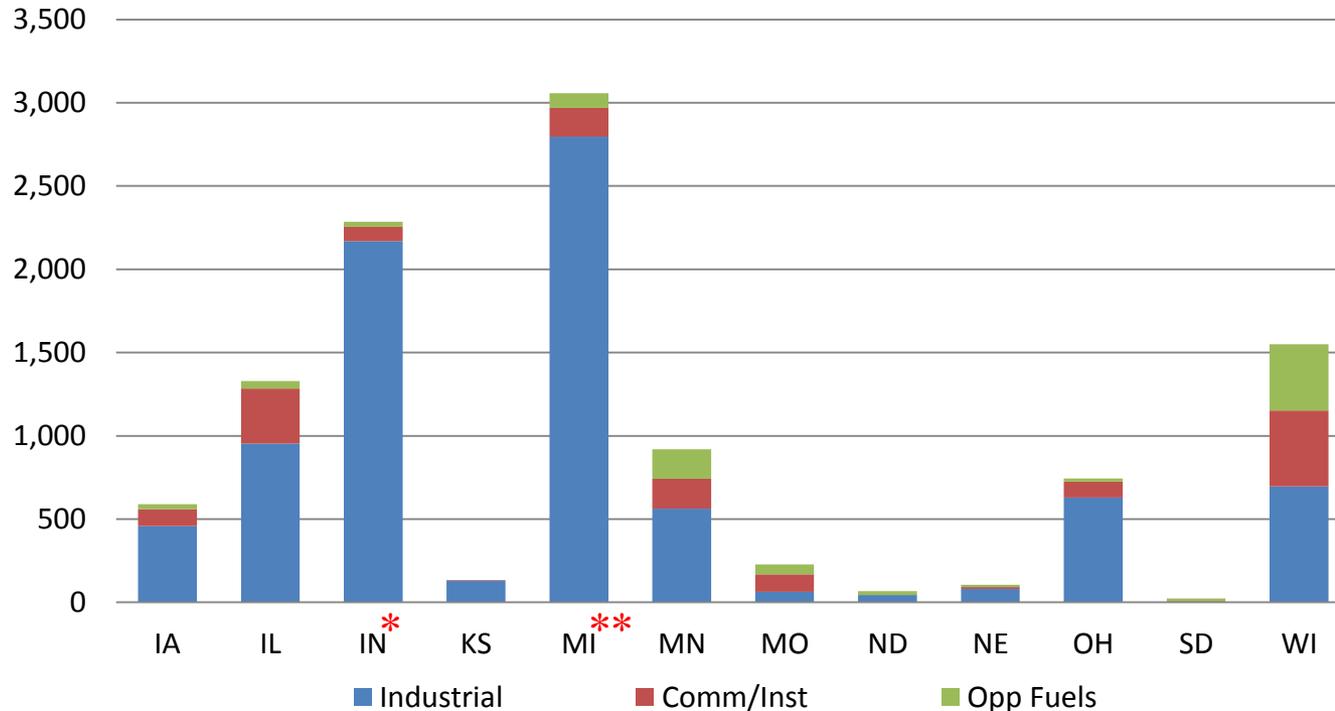
# Midwest Installed CHP Generation Capacity by Market Sector (11,000 MW)



# Midwest Installed CHP Capacity

Total: 11,000 MW

Industrial: 8,600 MW, Com/Inst: 1,500 MW, Organic Waste: 900 MW



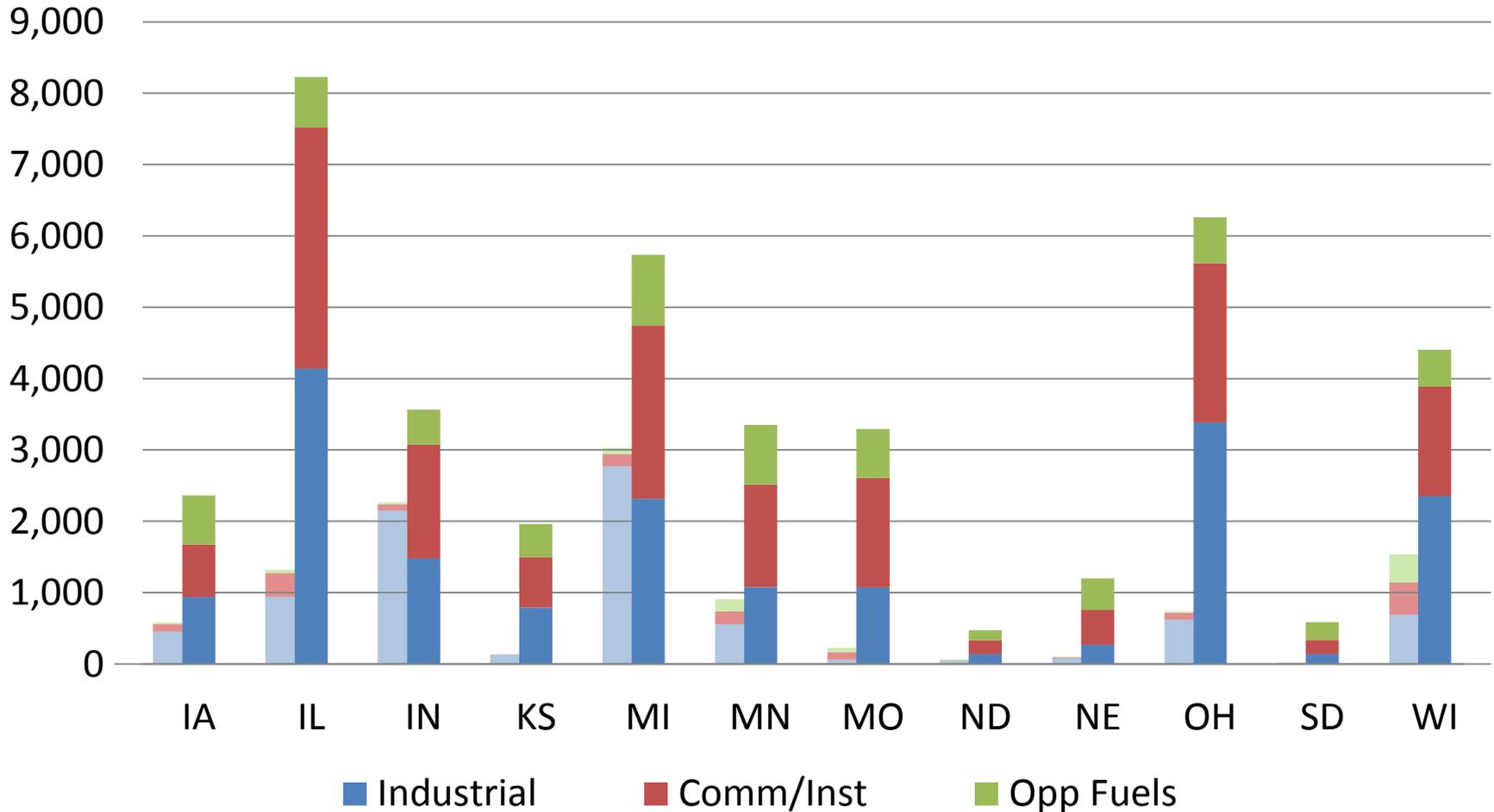
## Note large CHP installation in Indiana & Michigan

- \* 755 MW B/ST System installed 1970 @ Alcoa Smelting & Fabrication; 689 MW B/ST CHP System installed 1928 @ Whiting Refinery
- \*\* 1,370 MW CC NG-Fired System installed 1989 @ Dow Chemical Plant; 760 MW CC NG-Fired System installed 1999 @ Ford & Rouge Steel Co.



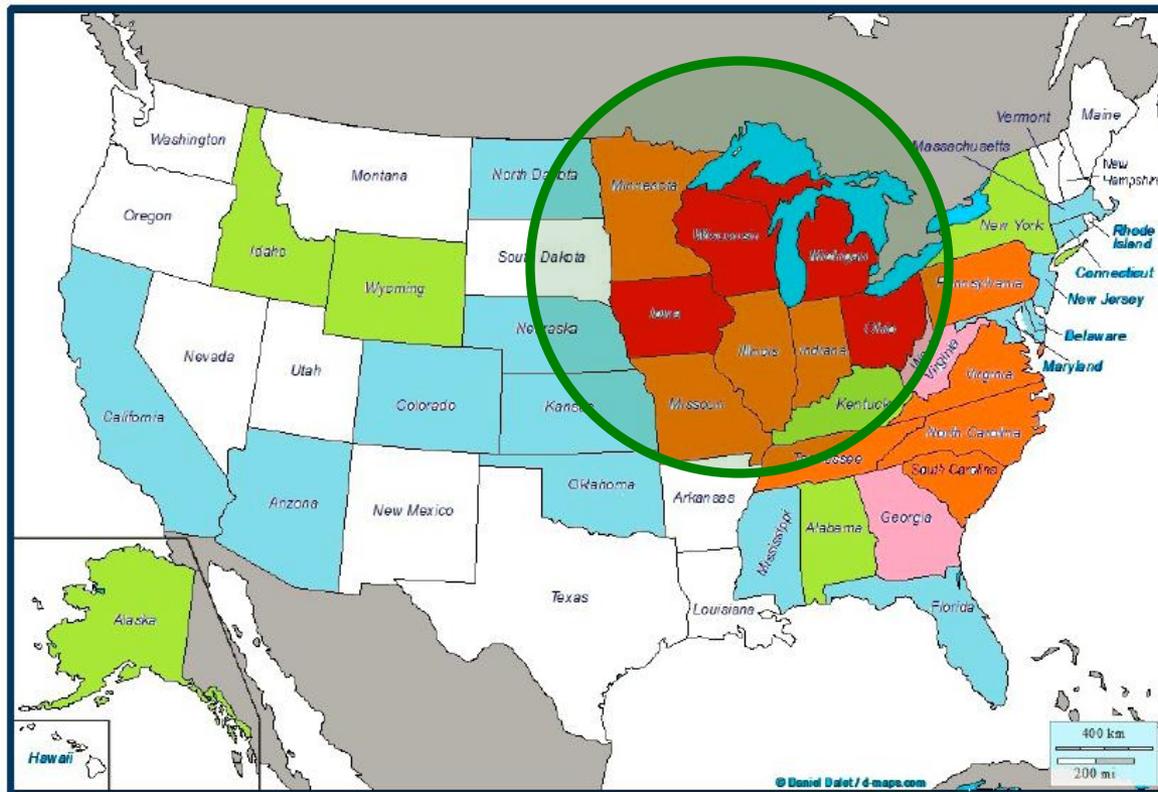
# Installed vs. Technical Potential

(11,000 MW)                      (41,400 MW)



# CHP Potential in Boiler MACT Affected Facilities

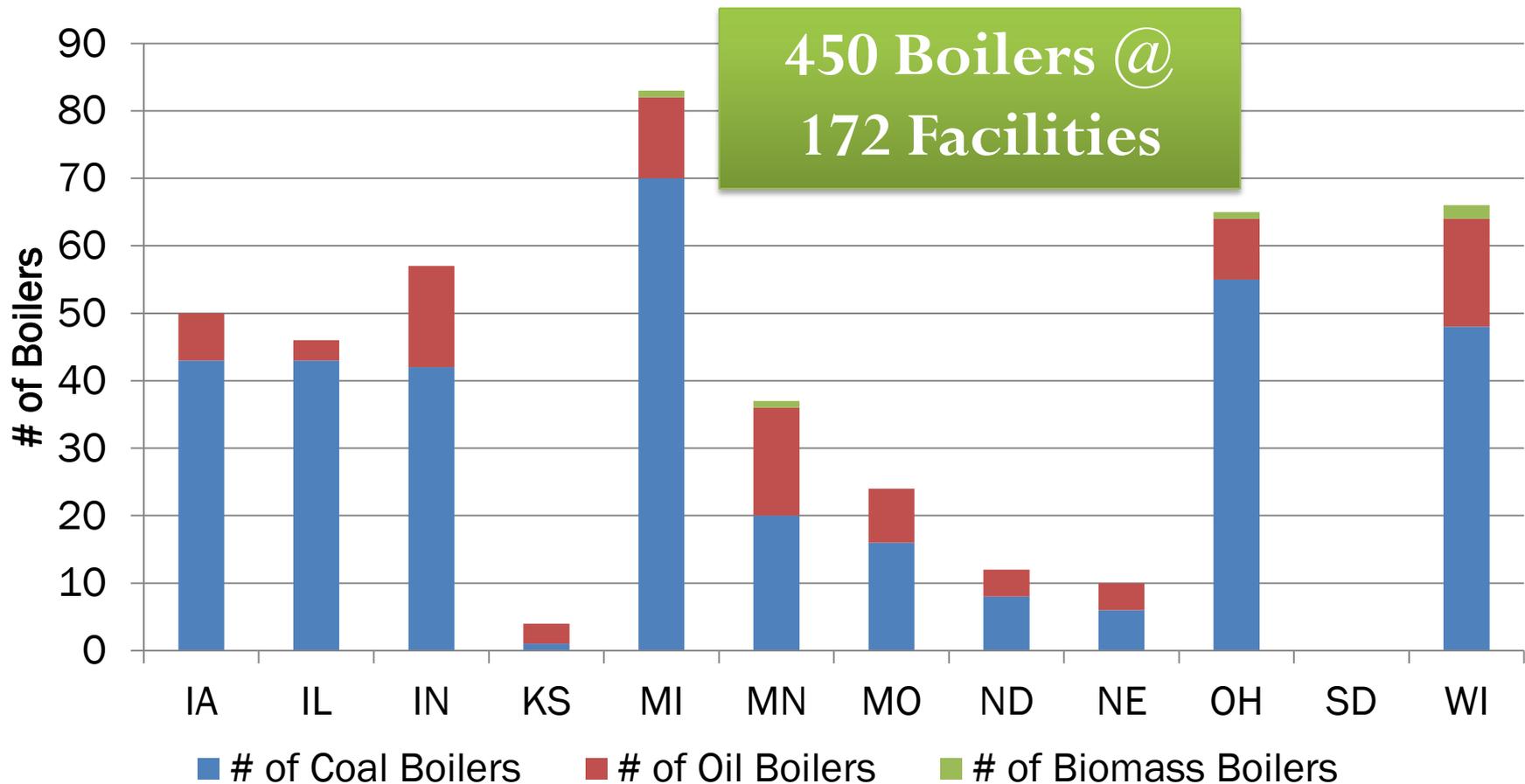
- Highest concentration of affected facilities in Midwest



Boilers, by state



# Boiler MACT Affected Boilers



# CHP Investment Considerations

- **Energy Costs** (electric, gas, standby rates, demand charges)
- **Value Proposition for the Customer** (reduce energy costs, increase reliability, emission compliancy, power quality – impact on bottom line)
- **Value Proposition for the Utility** (why should they be interested?)
- **State Policies have a Large Impact** (interconnect standards, permitting, portfolio standards, financing, rate structures)
- **Developers follow the path of least resistance**



# Today's Panelists

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**Kevin Bright: Managing Director, Non-Residential Products & Strategy, Duke Energy**

**Steve Caminati: Director, Advanced Energy Economy Ohio**

