

# IF CCS is the path forward to insure the continued use of coal then --

- What needs to be done?
- How long will it take?
- How much will it cost?
- How will it be paid for?

# What needs to be done?

- Develop, demonstrate & deploy CCS technology
  - What is CCS technology?
    - CO<sub>2</sub> capture
    - CO<sub>2</sub> transportation
    - CO<sub>2</sub> injection & long-term storage
    - CO<sub>2</sub> monitoring & verification
- Increase the efficiency of coal-based power plants
  - The greater the efficiency in converting coal to useful energy the less CO<sub>2</sub> emitted
    - Each 1% increase in efficiency = ~2.5% decrease in CO<sub>2</sub>
    - Increased efficiency = more energy/unit of coal

# What is CCS technology?

- CO<sub>2</sub> capture & compression (purification)
  - Pre-combustion (gasification of coal, e.g. IGCC)
    - » Capture CO<sub>2</sub> before coal-derived gas is used
  - Post-combustion (advanced scrubbers on efficient PCs)
    - » Capture CO<sub>2</sub> in flue gas after combustion
  - Oxycombustion (combust coal with oxygen not air)
    - » Capture CO<sub>2</sub> in concentrated stream after combustion
  - Other? (e.g. partial capture & cost-effective retrofits)
- CO<sub>2</sub> transportation
- CO<sub>2</sub> injection & long-term storage
- CO<sub>2</sub> monitoring & verification