• Fuel combusted in air to generate steam that drives turbines to produce electricity
• Flue gas generated consisting principally of CO₂, N₂, and H₂O
• Capture process separates CO₂ from N₂
• Currently available technology – aqueous amine solvent – demonstrated at large scale
• Solvent regeneration requires steam from power cycle, reducing power output
• Capital costs for capture systems are substantial

• Fuel gasified with O₂ to produce syngas (mostly H₂ and CO)
• Shift reaction converts CO to CO₂ and produces more H₂
• Capture process separates CO₂ from H₂
• H₂ combusted to produce power in combined cycle unit
• Currently available capture technology – physical solvents – require substantial heating and cooling, reducing efficiency
• Challenging process integration