Office of Coal Development Programs

• Coal Research and Development Program (ICCI)
• Coal Competitiveness Program
• Coal Demonstration Program
• Coal Revival Program
• Coal Education Program
Funded R&D Projects

- ICCI Funding
- Total Funding

$ million

2001-02 2002-03 2003-04
Currently Active Program Areas

- Advanced Coal Mining Technologies.
- Coal Preparation and Coal Production Business Practices.
- Coal Combustion and Gasification Systems.
  - Coal Combustion
  - Flue Gas Cleaning
  - Coal Gasification
- Coal Residuals Management.
- Coal Bed Methane.
- Carbon Dioxide Sequestration.
Advanced Coal-Mining Technologies

- **Respirable Dust Control – Chugh, SIUC**
  - Coal wetability and surfactant efficiency tests
  - Lab and field tests of two filter scrubber

- **Reduction of Mining Costs – Chugh, SIUC**
  - Developed mine simulation package
  - Industrial engineering studies on a new battery-powered shuttle car
  - Plans for a battery-powered surge car
  - Reducing Out-of-seam Dilution (OSD) through modeling and training

- **Productivity Training Program – Kroeger, SIUC**
  - Industrial engineering and sensitivity analysis
  - Mine specific training at 7 mines

- **Aeromagnetic/Seismic Surveys – Silverman, Peabody**
  - Dike detection technologies
Coal Preparation and Coal Production Business Practices

- **New Fine Coal Cleaning Circuit – Khan, ISGS**
  - Motorless-Rotorless flotation cells
  - ISGS washer to replace skimmer paddles
  - Intelligent filter press

- **Fine Coal Processing Equipment – Mohanty, SIUC**
  - Pansep screening technology
  - G cell processing technology
  - Steel belt filter dewatering technology

- **Optimize Cleaning Systems – Mahajan/Chugh, SIUC**
  - Applying genetic algorithms
  - Developing and applying enhanced coal quality simulation

- **Dry Separation Technology – Villines, S Coal**
  - Testing FGX dry separation technology on Illinois coal
Coal Combustion/Gasification

- **Oxygen Combustion** – Marin, Air-Liquide
  - NOx, SOx and flue gas reductions
  - Enhanced CO2 capture

- **HyMelt Gasification Process** – Renner, EnviRes
  - Site selection in East St. Louis
  - Large-scale experimental testing in Sweden

- **Zero Emission Gasification** – Lau, GTI
  - Thermodynamic simulation
  - Experimental studies in a High Pressure Thermogravimetric Analyzer (HPTGA) unit

- **Sulfur Sorbents** – Slimane, GTI
  - Optimize sorbent composition
  - Study sorbent regenerability

- **SCR Catalysts for Mercury Control** – Srivastava, US EPA
  - Effects of chlorine and sulfur on mercury speciation
  - PRB versus Illinois coal comparison
Coal Residuals Management

- **Fired Bricks with Fly Ash** – M. Chou, ISGS
  - Test runs on display at Museum of Science and Industry in Chicago
  - Commercialization efforts ongoing

- **Autoclaved Aerated Concrete (AAC) with Fly Ash** – J. Chou, ISGS
  - Developing building codes that include AAC
  - Production test runs at a commercial plant

- **Ceramic Tiles with Fly Ash** – Mishulovich, CTL
  - Optimizing mix composition
  - Demonstration runs with commercial type equipment

- **Wall Board with FGD material** – Malhotra, SIUC
  - Developing light-weight, paperless wall board
  - Testing wall board properties

- **High-Carbon Fly Ash & Coal Prep Waste in Cement Manufacturing** – Bhatty, CTL
  - Large-scale commercial demonstrations

- **Underground Placement of CCB’s** – Chugh, SIUC
Coal Bed Methane CO$_2$ Sequestration

- **Viability of CBM Production in Illinois** – Harpalani, SIUC
  - Analyze gas flow properties and sorption isotherms of Illinois coal
  - Analyze volumetric strain due to CBM production and CO$_2$ sequestration

- **Geological Carbon Sequestration Properties** – Finley, ISGS
  - Test hole drilling and studies
  - Enhanced CBM, oil and gas recovery

- **Ventilation Air Methane** – Harpalani, SIUC
  - Mine ventilation surveys
  - VAM oxidization equipment