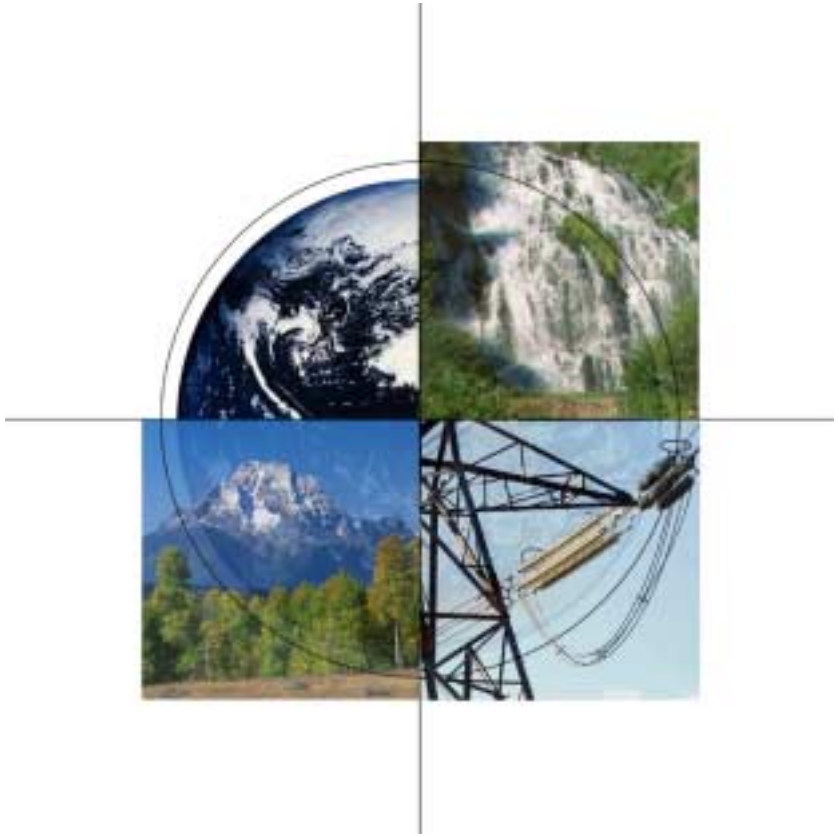
DOE/NETL's Phase II Plans for Full-Scale Mercury Removal Technology Field-Testing



Air Quality III

September 12, 2002

Arlington, Va

Scott Renninger,
Project Manager for Mercury Control Technology
Enviromental Projects Division

Presentation Outline

- Hg Program goals & objectives
- Focus on Future Hg control R&D
- Q&As

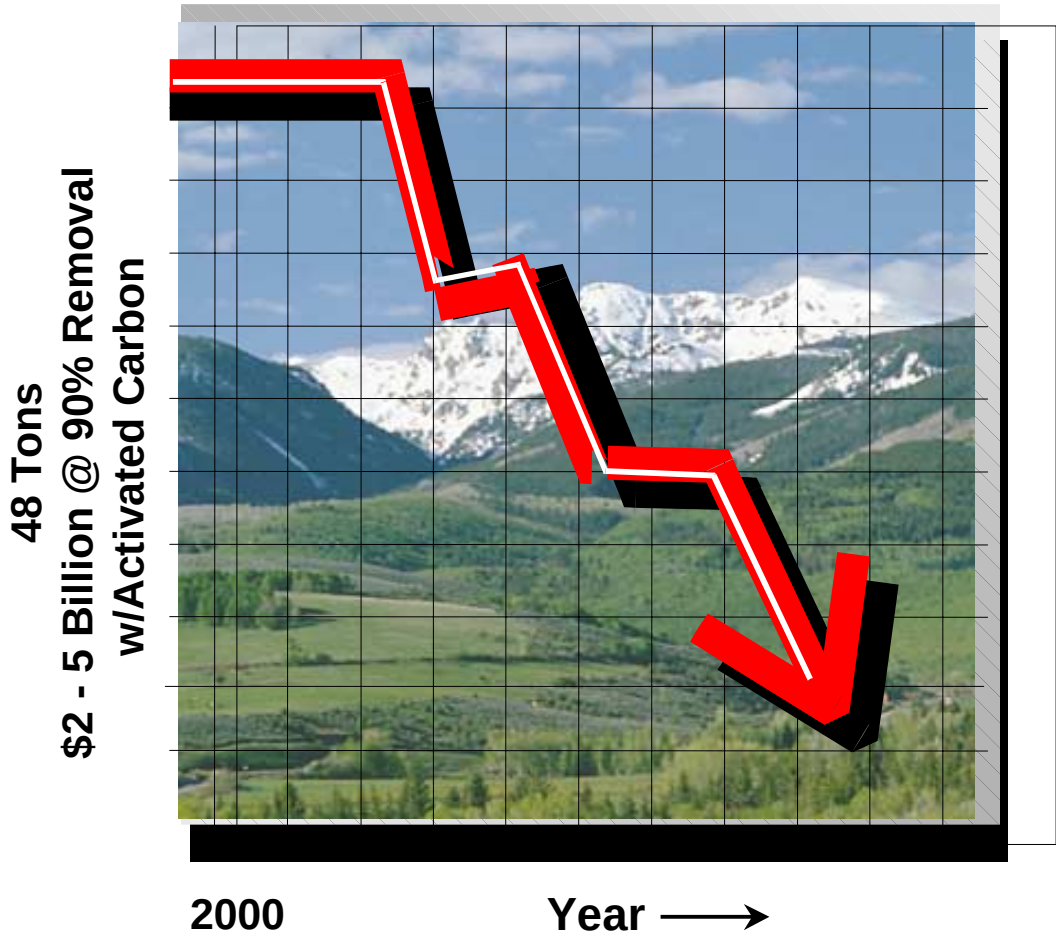
President Bush's Clear Skies Initiative

Annual U.S. Power Plant Emissions

	Current	Mid-Term 2008-2010	2018
SO_2	11 million tons	4.5 million tons	3 million tons
NOx	5 million tons	2.1 million tons	1.7 million tons
Mercury	48 tons	26 tons	15 tons

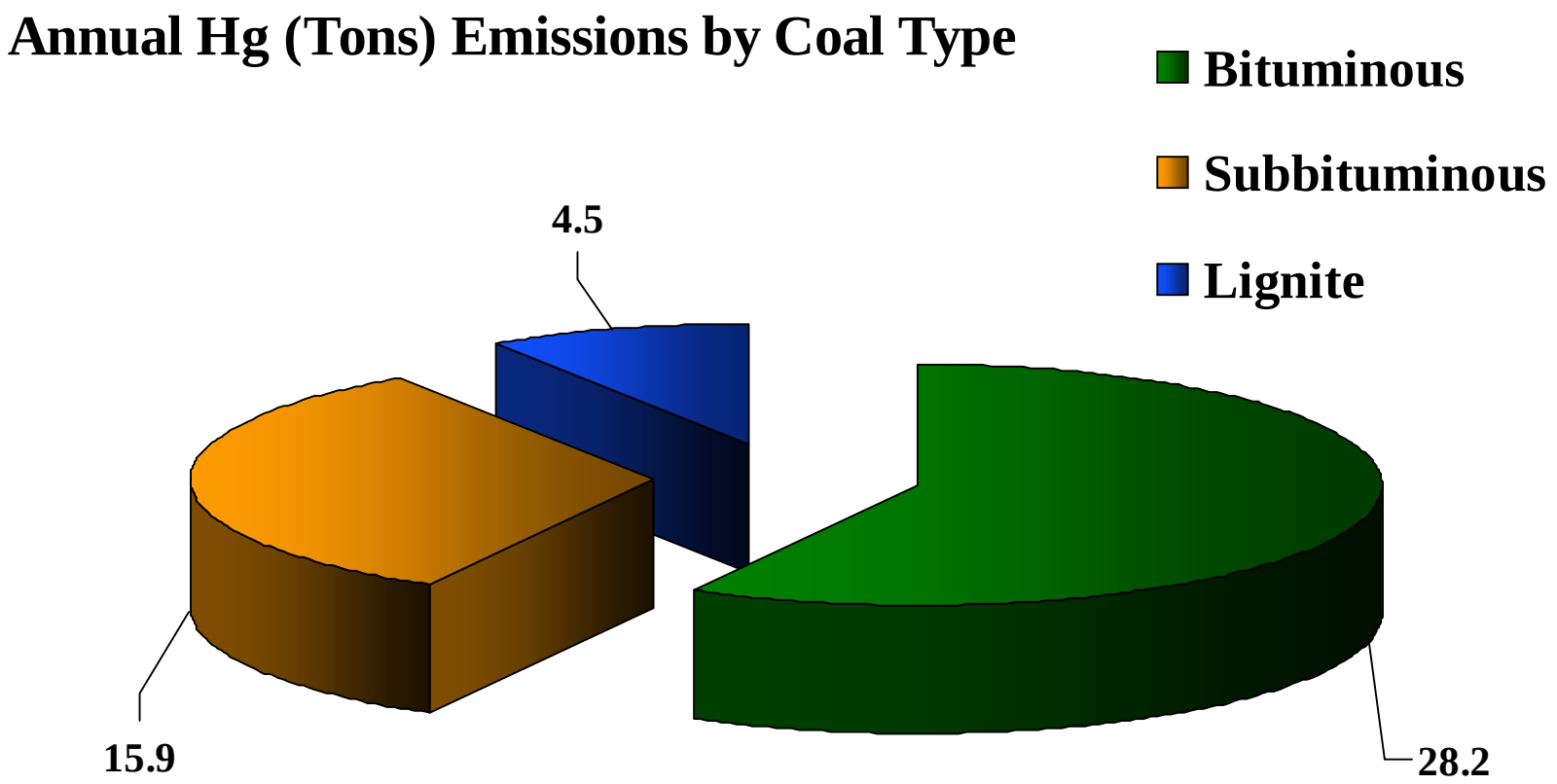
Mercury Control

- **Developing technologies ready for commercial demonstration:**
  - By 2005, reduce emissions 50-70%
  - By 2010, reduce emissions by 90%
  - Cost 25-50% less than current estimates



Baseline costs: $30,000 - $70,000 per lb. Hg removed

Hg Emissions by Coal Type

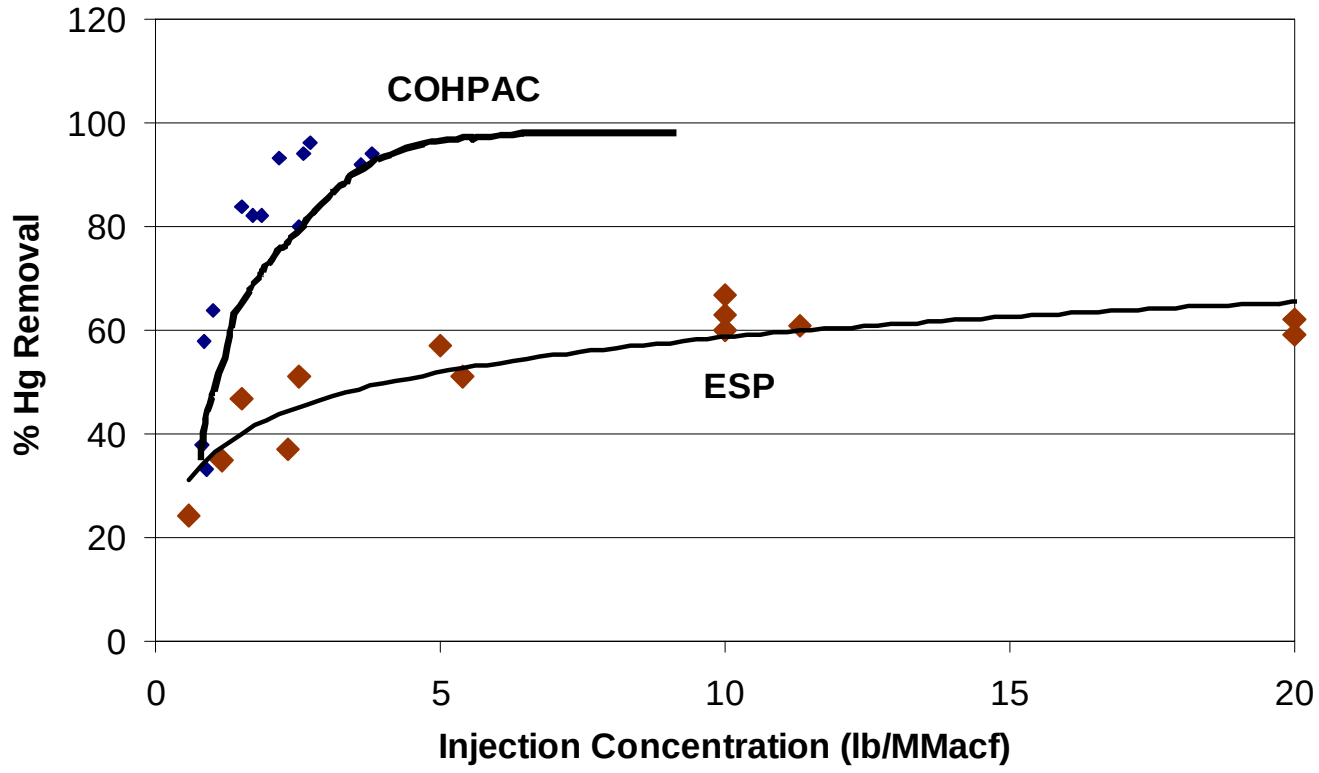


Total Hg Emissions: 48.6 tons/year

Hg Field Test Schedule

Technology/Utility-Plant	*Testing Date*
ADA-ES – Sorbent Injection	
Alabama Power - Gaston	March-April, 2001
WEPCO - Pleasant Prairie	September-November, 2001
PG&E – Brayton Point	June-August, 2002
PG&E – Salem Harbor	September-October, 2002
McDermott-B&W – Enhanced Scrubbing	
Michigan South Central Power- Endicott	May-June, 2001
Cinergy -- Zimmer	October-December, 2001

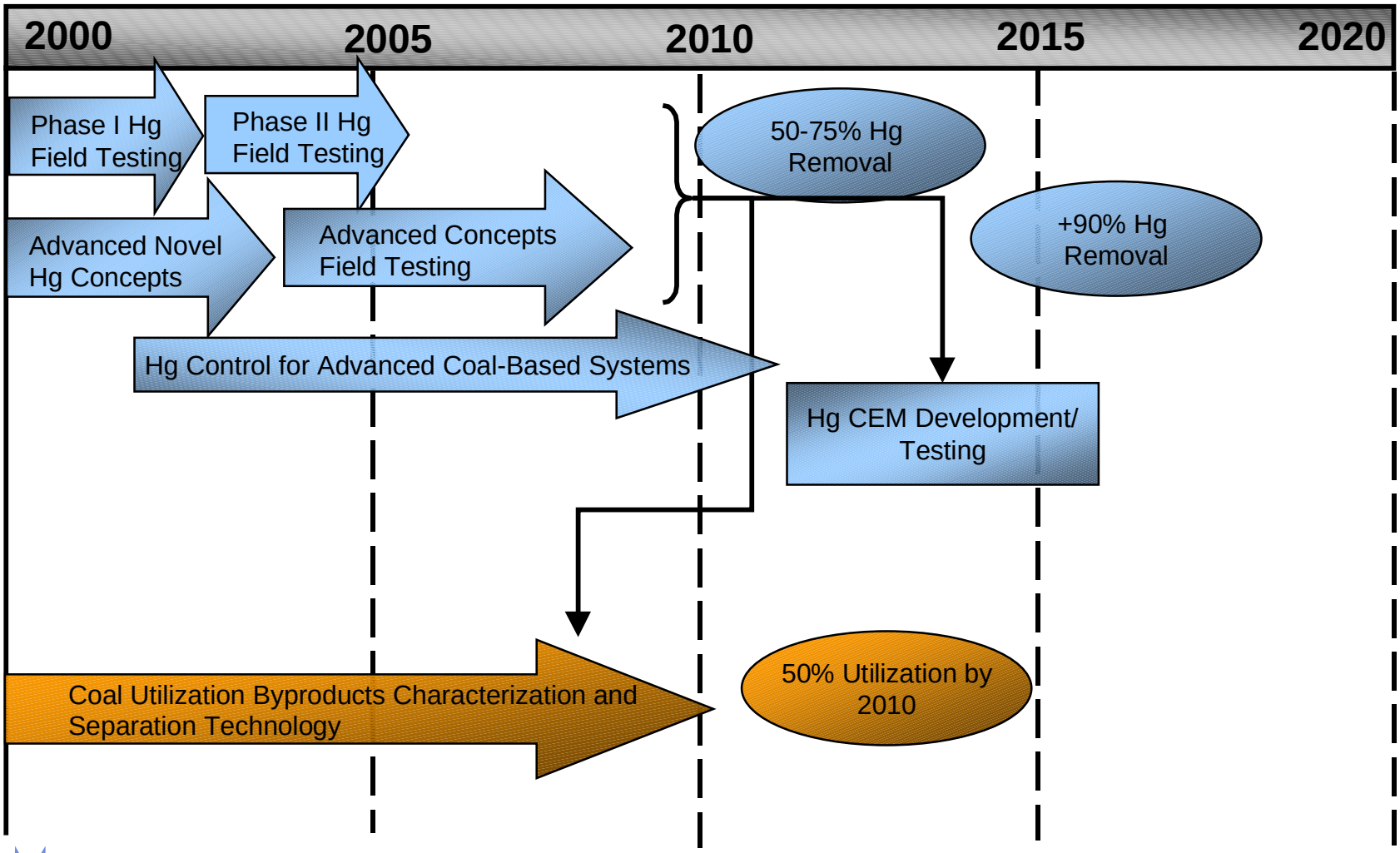
Mercury Removal Trends from NETL Tests for ESP and COHPAC



Mercury Control
Many R&D Challenges Remain

- **Balance-of-plant impacts**
- **Byproduct use and disposal**
- **Continuous emission monitors**
- **Capture effectiveness with low rank coals**
- **ICR data uncertainty**

IEP Technology Roadmap



Future Plans

- **Issue a competitive solicitation in early FY03 to conduct a second phase of Hg control technology field testing**

- **Seeking stakeholder input to craft scope of solicitation regarding:**
  - Coal types to be evaluated
  - Plant size and configuration, including downstream control equipment
  - Length of testing
  - Application of Hg CEMs
  - Other issues

Solicitation Structure

Estimated release date: December 2002

Proposals Due:

- **Close Date 1: March 2003**
- **Close Date 2: July 2003**

Cost-sharing

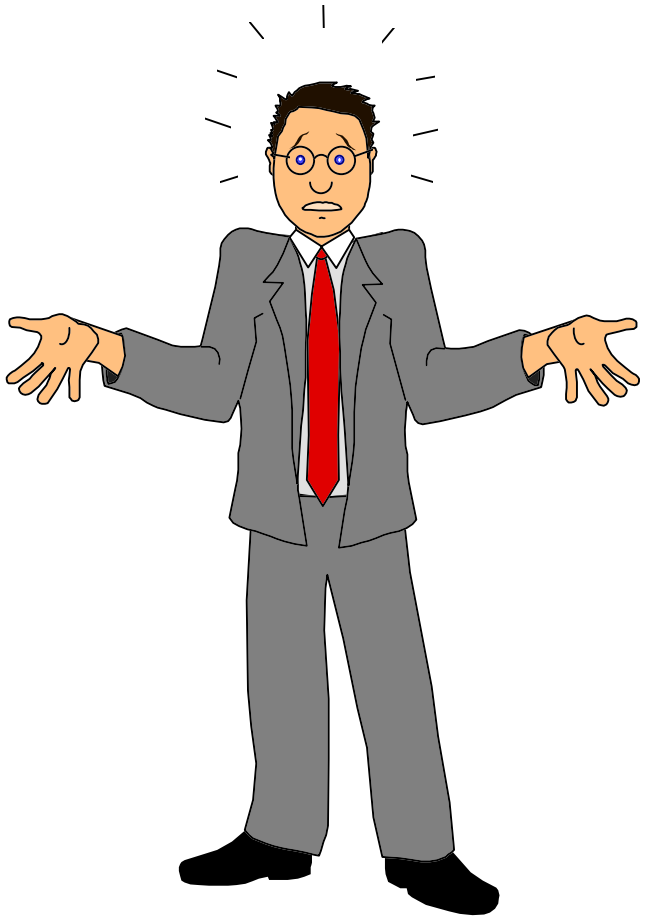
- **2/3 DOE**
- **1/3 Proposing Team**

Prefer multi-site proposals (3-5) with integrated project team

Phase 1 Specifications

- Mercury removal at incremental levels
  - ESP's-70-90
  - FF- 70-90
  - FGD- 90%
- Applicability of control technology to multiple power plant configurations and fuels
- Accurate capital and operational costs
- Plant size between 50-150 MWe
- 3 weeks of parametric testing to establish control level
  - 10-14 day performance testing

Key Unresolved Issues



Coal-fired Utility Plant Manager

- **MACT or Clear Skies ?**
- **Trading?**
- **State vs. Federal limits**
- **Mercury Capture in By-Products/Regulatory status?**

Phase II Test Goals/Specifications

- **3-6 months of testing at plant conditions**
  - Load variability
  - Equipment maintenance
  - Hg mass balance
    - Collection of cubs for future evaluation
    - Hourly CEM measurements
      - Possible CEM head to head comparison
    - Biweekly/monthly OH to compare vs CEMs

    Possible Removal Goals (supporting MACT subcharacterization

    75-90% removal W/bituminous

    60-80% removal w/PRB

    50-70% removal w/lignite

Topic Areas

Hg control via

- **Sorbent/ac injection in existing utility apcds**
- **Oxidation/control upstream/across FGD units**
- **Integrated approach**
- **Novel Processes***
  - Previous flue-gas testing

*Technology criteria will ask for justification of current developmental status

Preliminary Information from June 04 Industry/EPA/EPRI/DOE meeting

•	ESPc (Small)	ESPc Med	FF	SD/FF	TOXECON	ESPc/ FGD	ESP/SCR FGD
East Bit Hi S	YY	?	X	X	Y but N/A	Y	X
East Bit Low S	YY	?	X	X	Y (long-term)	Y	X
Sub Bit	X	YY	Y #	Y*	Y but N/A	Y ##	
ND Lig	X	?	X	Y*	Y but NA	Y	N/A
TX Lig	X	X	X	Y*	Y	Y ##	
W Bit	X	X	Y #	?	Y but N/A	Included in Sub Bit	Included in Sub Bit

Collaboration is Key to Success!

Jim Kilgroe (EPA), Scott Renninger (DOE), and George Offen (EPRI) discussing strategy

- **NETL works closely with industry, EPA, and other stakeholders in planning and implementing its environmental control technology research program**

Scott Renninger (DOE), Larry Monroe (Southern Company) and George Offen (EPRI) at the May 13, 2002 Mercury Working Group Meeting at EPA's RTP facility

For More Information...

- Visit our website at:

www.netl.doe.gov/coalpower/environment