

U.S. DOE Sequestration Program

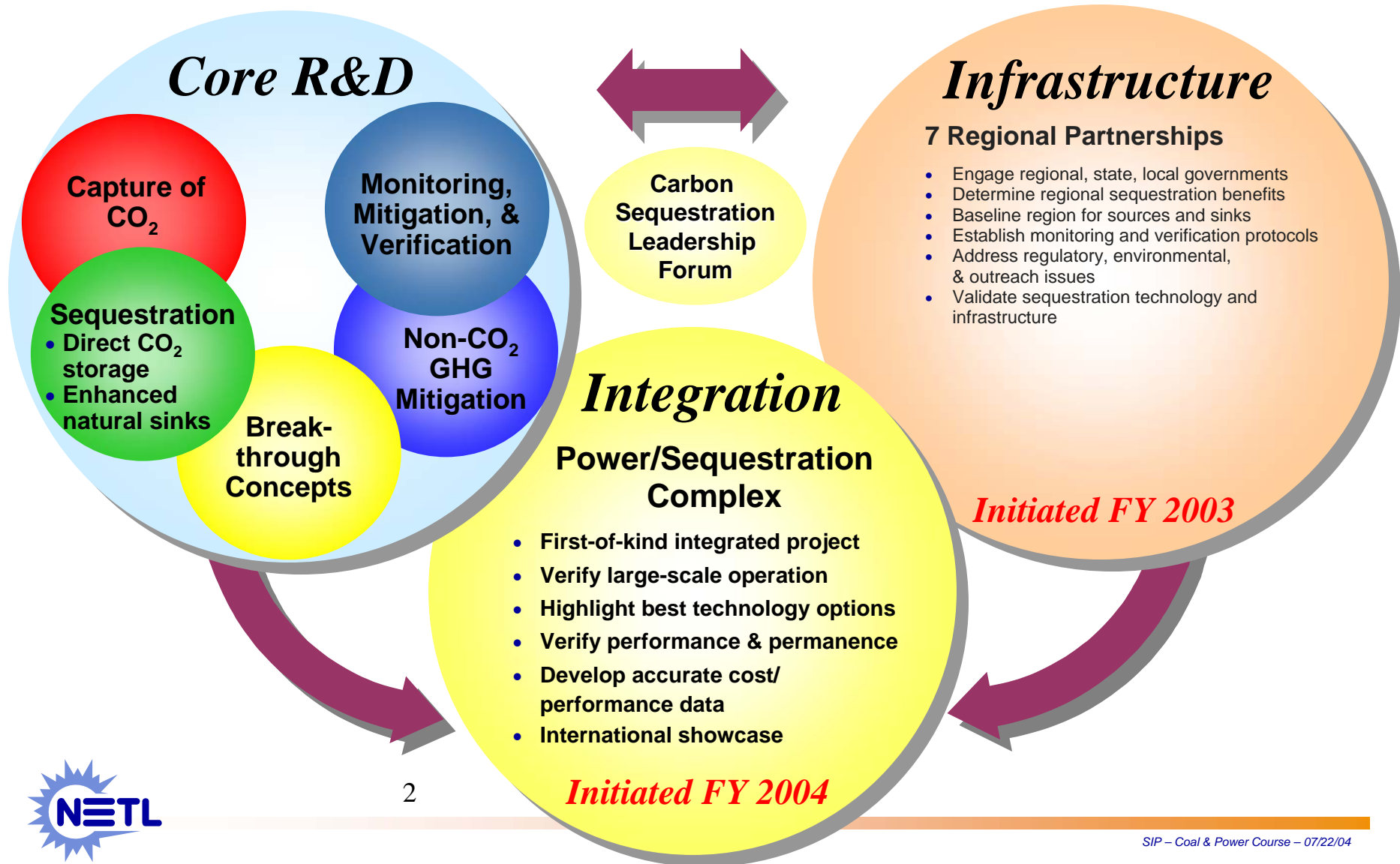


CSLF Meeting

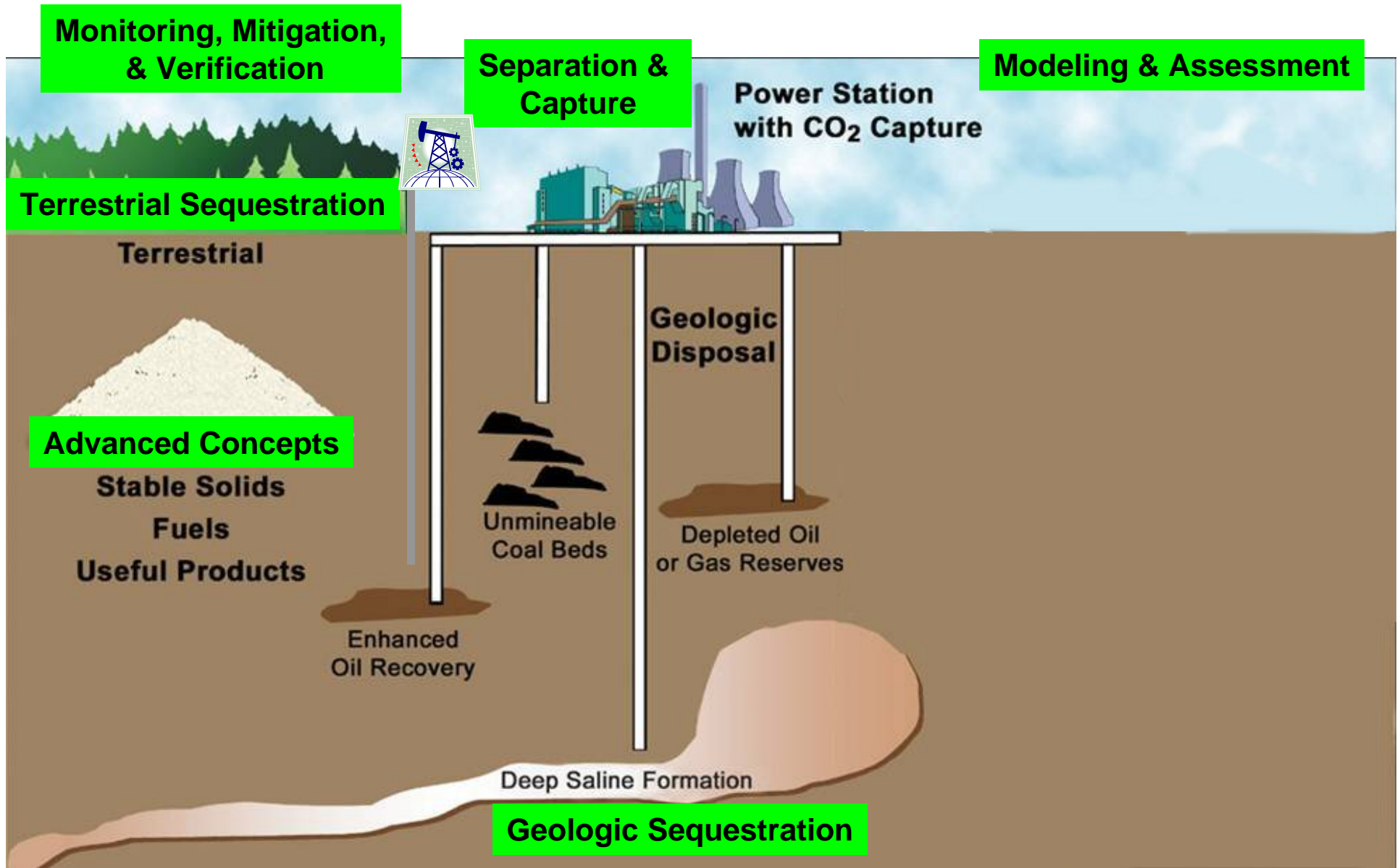
September 2005



Carbon Sequestration Program Structure

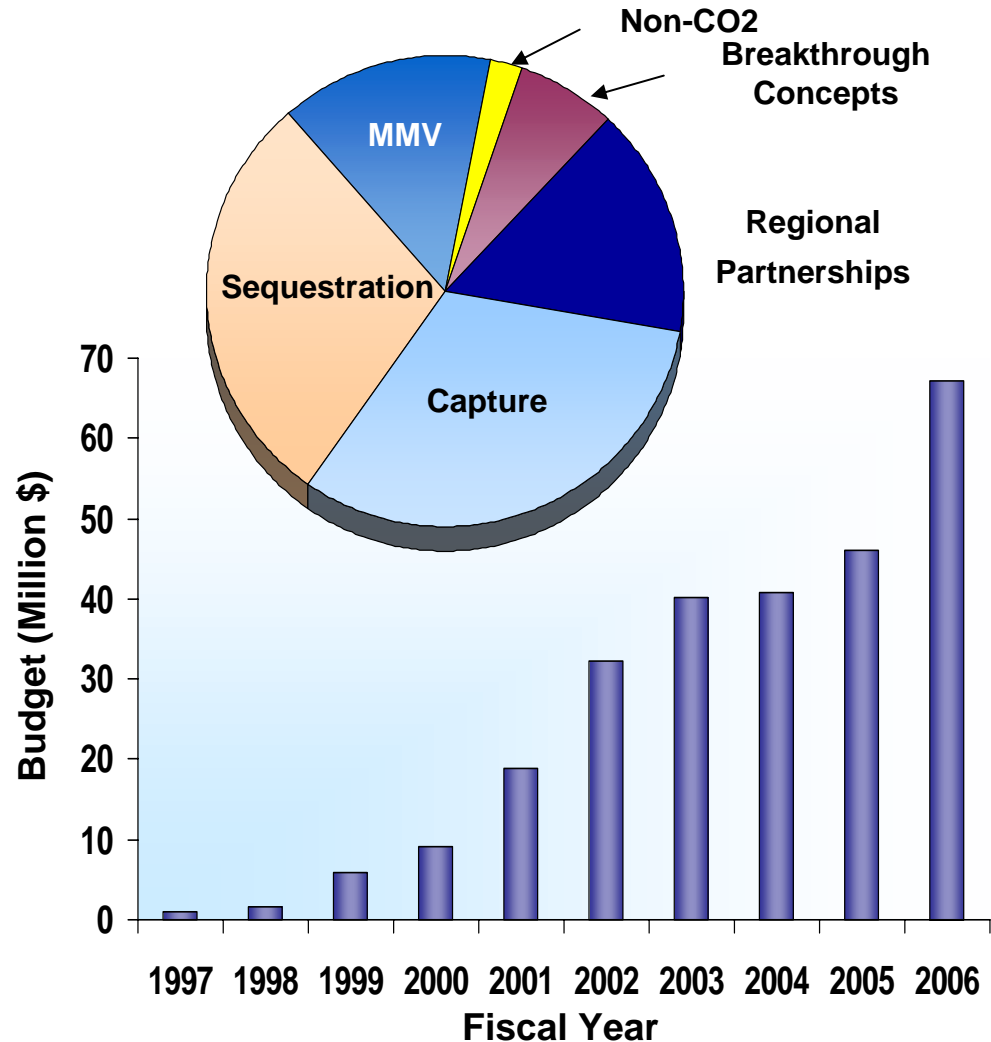


Key Research Areas



Sequestration: A Dynamic Program Portfolio Overview – FY2005

- **Diverse research portfolio**
 - ~ 60 R&D Projects
 - IEA & CCP consortia
- **Strong industry support**
 - ~ 36% cost share
- **Federal Investment to Date ~ \$200 Mil**
- **Administration Priority**
 - ~ 50% increase in 2006 budget request
 - House \$50 MM
 - Senate \$74.2MM



Separation & Capture R&D

Technology Goals

- 2007 have two technologies < 20% increase in Cost of Energy
- 2012 developed two technologies < 10% increase Cost of Energy

Issue

- Demonstrated technology is costly
- Scale-up (Lab scale to Commercial Plant)

Pathways

- Pre-combustion capture
- Post-combustion capture
- Oxygen-fired combustion
 - Chemical looping
- Optimized engineering



Sequestration/Storage R&D

Technology Goals

- 2012 – predict CO₂ storage capacity with +/- 30% accuracy
- Develop best practice reservoir management strategies that maximize CO₂ trapping

Issues

- Health, safety, and environmental risks
- Uncertain regulatory framework
- Site selection

Pathways

- Field experiments / demos
- Protocols for identifying amenable storage sites
- Capacity evaluation studies

Underlying science



Monitoring, Mitigation & Verification

Technology Goals

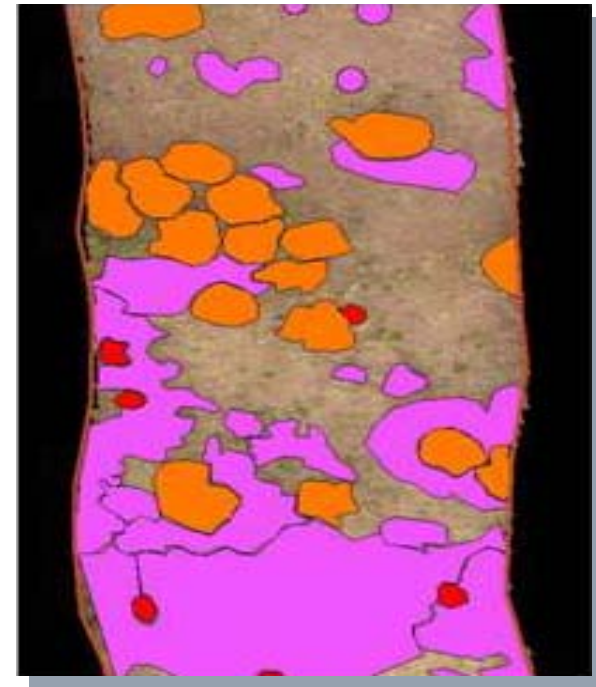
- 2012 – ability to verify 95% of stored CO₂ for credits (1605b)
- CO₂ material balance to >99%

Issue

- Proving CO₂ fate

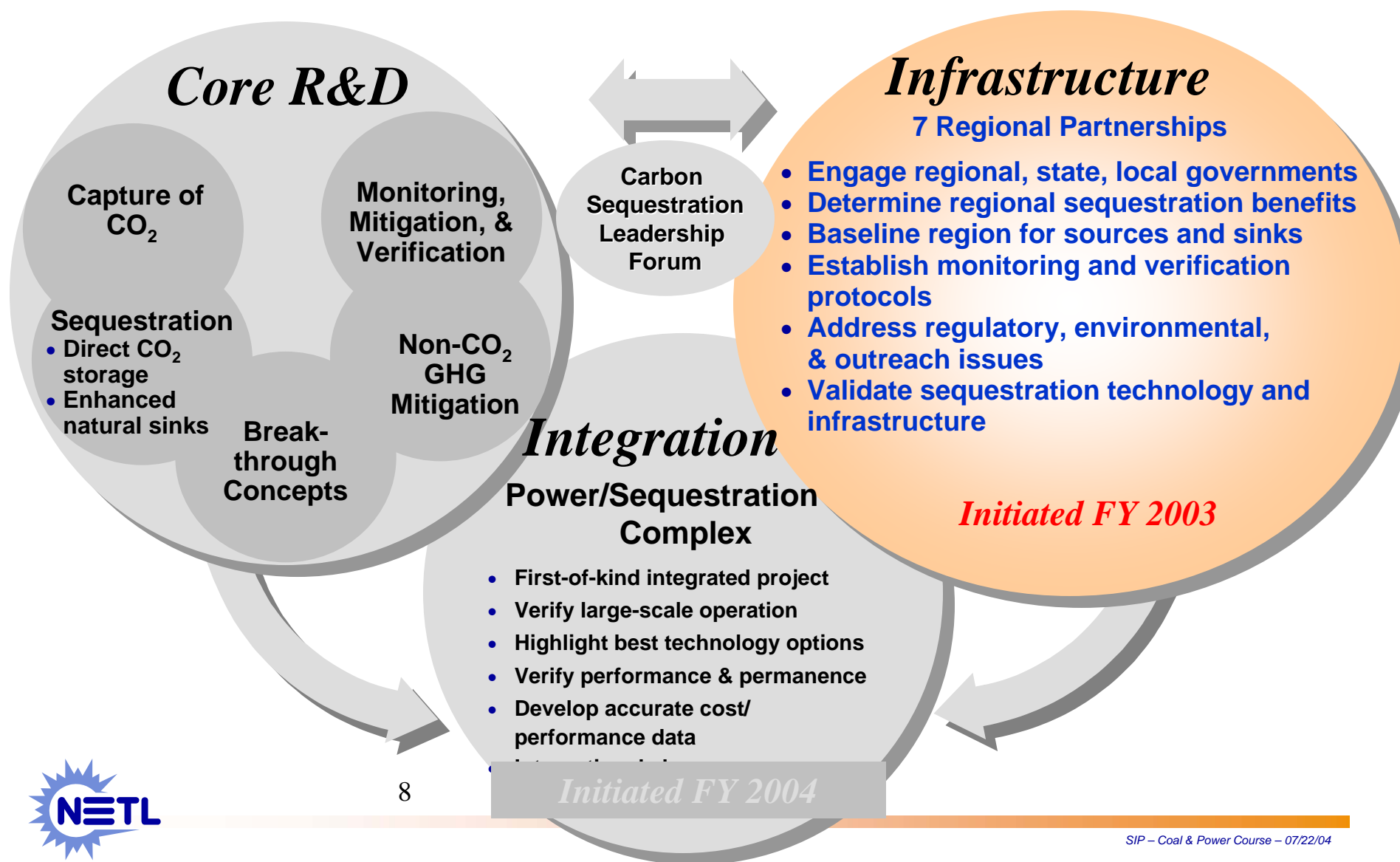
Pathways

- Surface and subsurface CO₂ leak detection and mitigation tools
- Atmospheric detection systems
- CO₂ fate and transport studies
- Protocols for accounting and permanence



*Digital Aerial Imagery
to Estimate Carbon
Stocks in Above-
Ground Vegetation*

Carbon Sequestration Program Structure



Regional Carbon Sequestration Partnerships

Developing Infrastructure for Wide Scale Deployment

- Seven (7) Regional Partnerships
 - Big Sky Regional Carbon Sequestration Partnership
 - West Coast Regional Carbon Sequestration Partnership
 - Midwest Regional Carbon Sequestration Partnership (MRCSP)
 - Southeast Regional Carbon Sequestration Partnership (SECARB)
 - Southwest Regional Partnership on Carbon Sequestration
 - Illinois Basin Regional Partnership
 - Plains CO2 Reduction Partnership
- Validating sequestration technology & infrastructure
 - Phase 1 - design
 - Phase 2 - testing

Announcement of Phase II Selections

By moving carbon sequestration technology from the laboratory to the field...we are another step closer to significantly reducing greenhouse gas emissions while maintaining the important role coal plays in America's energy mix.

Samuel W. Bodman
Secretary of Energy
June 9, 2005



Regional Carbon Sequestration Partnerships

Field Validation Tests

