

ITC

WYOMING
INTEGRATED
TEST CENTER

Next Generation Technology for Today's Energy

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Wyoming Infrastructure Authority

Develop the pieces.

Message, Basic Research, Scale-up, Commercialize

- University of Wyoming School of Energy Resources
- Carbon Management Institute
- Enhanced Oil Recovery Institute
- Wyoming Integrated Test Center
- Wyoming Corridor Initiatives
- ENDOW
- Carbon XPRIZE



School of
Energy Resources
UNIVERSITY OF WYOMING



Enhanced Oil
Recovery Institute
UNIVERSITY OF WYOMING



Carbon Management
Institute

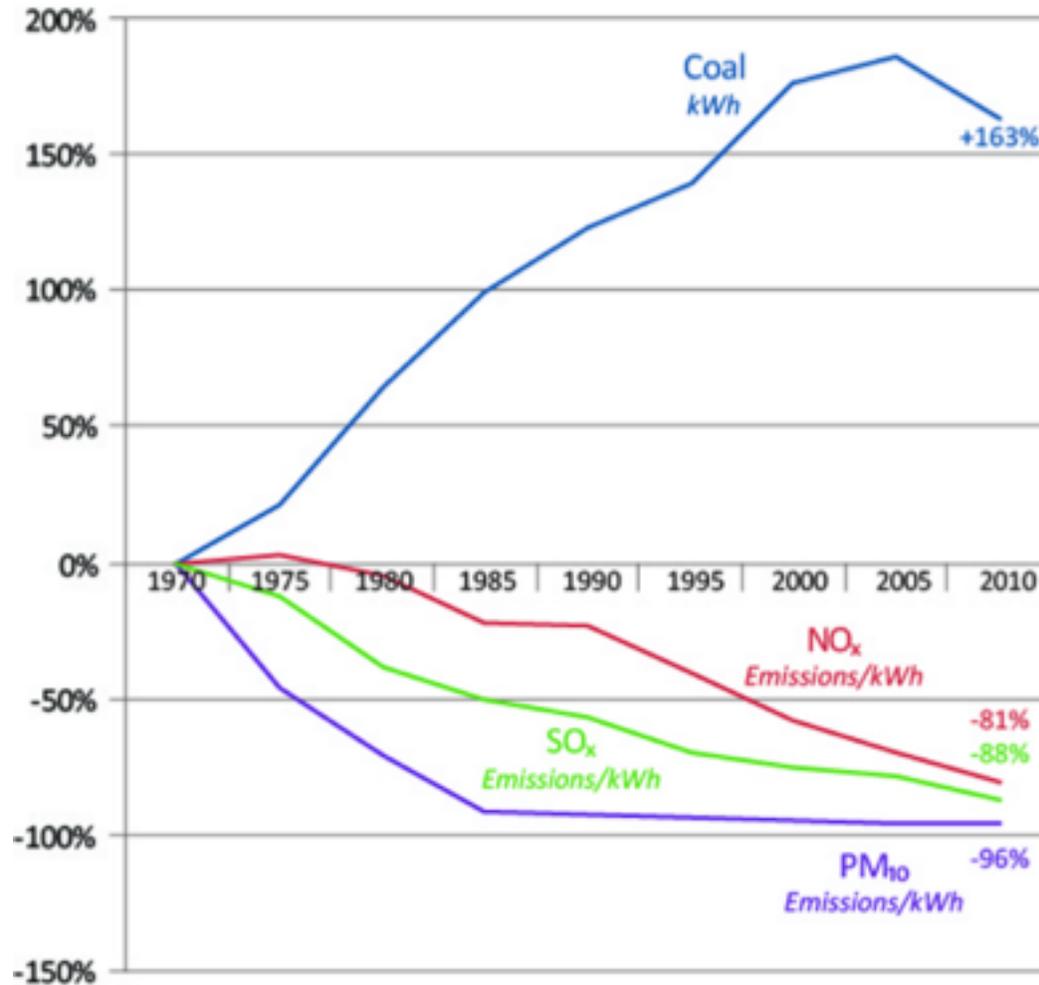
Carbon Management

How do we get there?

- Need to shift thinking from being a political problem to an engineering issue
- Turn carbon into an economically viable commodity
 - EOR
 - Carbon fiber
 - ???
- Industry is resilient and has a track record
 - Acid rain? Not any more!
 - Baghouses, scrubbers, electrostatic precipitators
- Just need reasonable time frames and adequate resources
 - Don't buy into the catchphrases - 30x30, 50x50, etc.

Commercialization of new technologies to ensure the long-term viability of Wyoming's natural resources.

Technology works...



Technology works...



The ITC

- One of the world's largest post-combustion demonstration scale test facilities
- 20+ MW of coal derived flue gas from the Dry Fork Power Station
- Simple design minimizes costs, provides flexibility & quick turnaround times
- Designed for maximum flexibility and scalability for testing

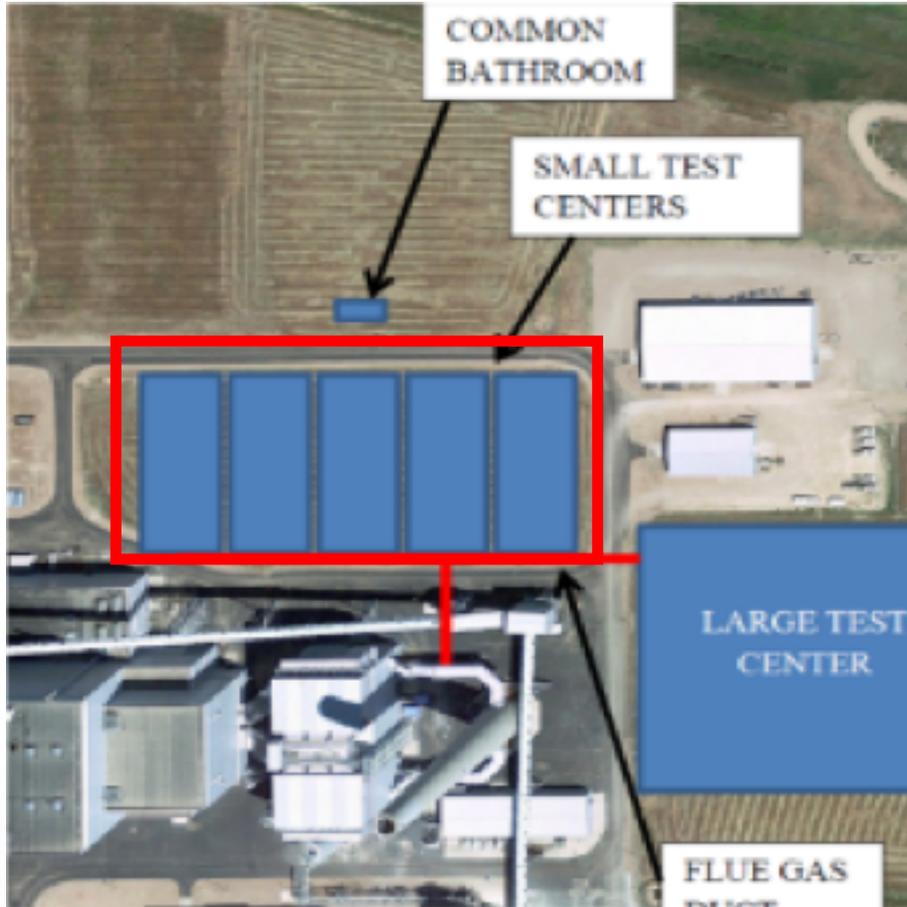


Who is invested in the ITC?

- State of Wyoming - \$15 million
- Basin Electric – Host at Dry Fork Station
- Tri-State G&T - \$5 million
- National Rural Electric Cooperatives Association - \$1 million
- Wyoming Infrastructure Authority – Managing Entity
- Black Hills Corp. and Rocky Mountain Power providing technical expertise and in-kind contributions
- XPRIZE Foundation – First tenant



Site of XPRIZE competition - Small Test Bays



XPRIZE is a temporary tenant of the ITC and at the completion of the competition, the space will be available to new testers.

Small Test Bay



XPRIZE competition



Breathe (Bangalore, India) – Led by Dr. Sebastian Peter, the team is producing methanol, a common fuel and petrochemical feedstock, using a novel catalyst.



Carbon Capture Machine (Aberdeen, Scotland) – Led by Dr. Mohammed Imbabi, the team is producing solid carbonates with applications to building materials.



C4X (Suzhou, China) – Led by Dr. Wayne Song and Dr. Yuehui Li, the team is producing chemicals and bio-composite foamed plastics.



CarbonCure (Dartmouth, Canada) – Led by Jennifer Wagner, the team is producing stronger, greener concrete.



Carbon Upcycling UCLA (Los Angeles, CA, USA) – Led by Dr. Gaurav Sant, the team is producing building materials that absorb CO₂ during the production process to replace concrete.

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Large Test Bay



Large Test Bay



JCOAL – KHI Test



- July 2016 – State of Wyoming - JCOAL (Japan Coal Energy Center) MOU
- April 2017 – WY delegation meetings in Japan
- Sept. 2017 – JCOAL/UWSER conference in Gillette
- March 2018 – WY delegation meetings in Japan
- April 2018 – Announcement of JCOAL-KHI (Kawasaki Heavy Industries) test at ITC – dry sorbent, fixed bed technology
- May 2018 – Japan Ministry of Environment, JCOAL and KHI trip to Gillette

Partnership Development

- University of Wyoming School of Energy Resources
- International Carbon Capture Test Center Network
- American Jobs Project
- Center for Carbon Removal – Carbon Recycling Labs
- National Carbon Capture Center



Financing and pathway to commercialization is critical!

Dedication – May 16, 2018



Next Steps

- Additional Tenants
- Partnership opportunities with CarbonSafe, EORI, others
- Promote ITC to potential tenants
- Finalize operations and business plans
- Provide technical assistance to tenants
- Explore alternative financing mechanisms
 - Accounting
 - Investment products



Stay in Touch!

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