Quick overview of expanded CCUS program work with China

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Outline

- Benefit to Program
- Project Goals and Objectives
- Summary & Accomplishments

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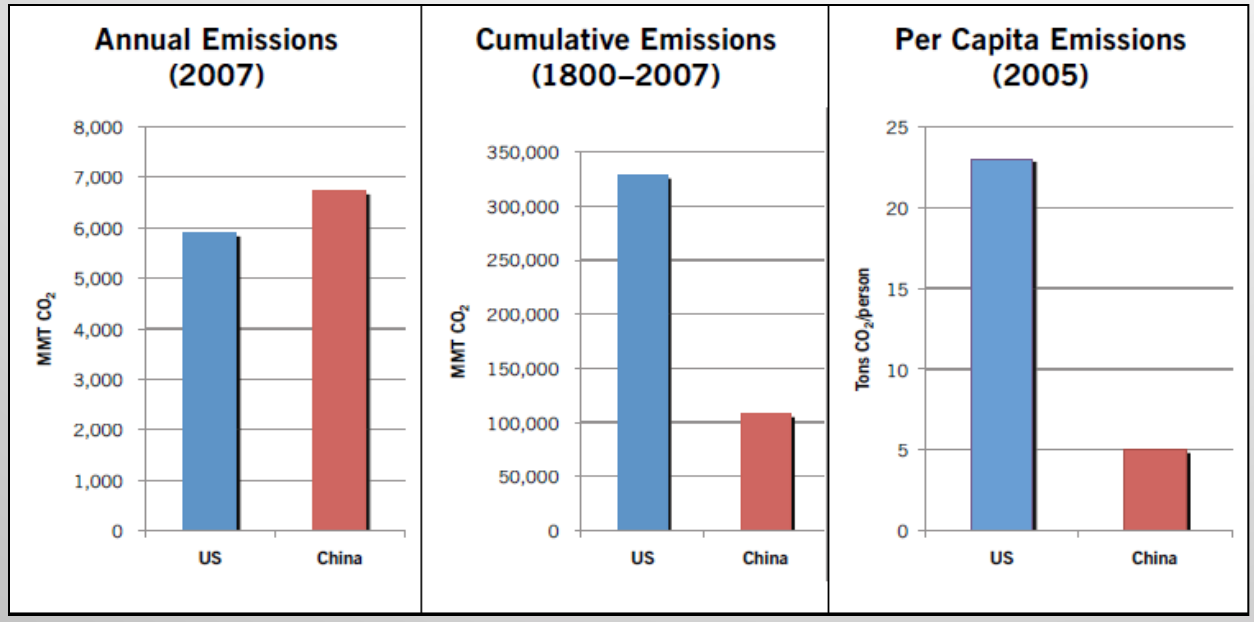
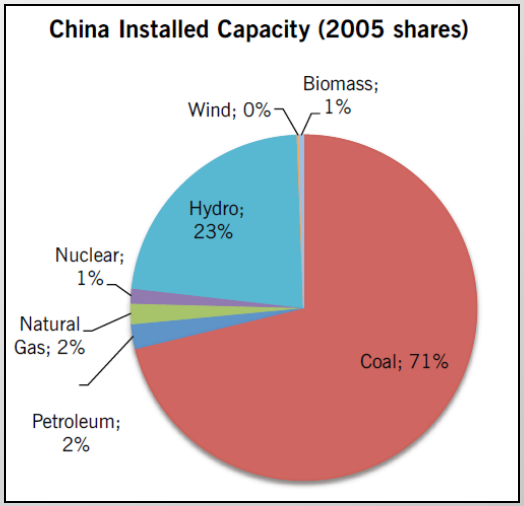
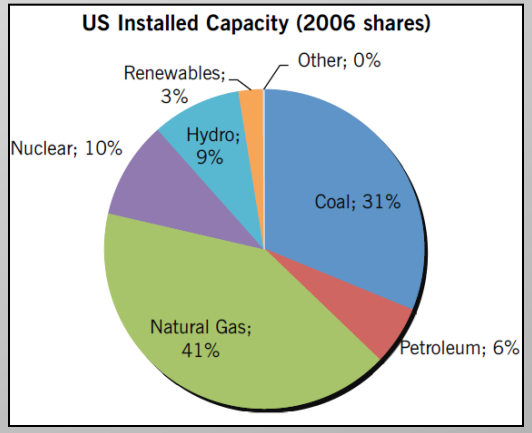
The US and China share both obligation and opportunity, in particular in clean energy







"..both countries will need not only bold leadership and a new set of national policies, but also a path-breaking cooperative agenda that can be sustained over the long run."

Chu and Thornton, 2009

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Benefit to the Program

- Opportunity to expand partners, pilots, and commercial projects undertaking CCUS
- Access to new results and data that could benefit US program
- Opportunities to create additional commercial partnerships with US companies that create jobs and business
- Low total cost

Important – all work cannot conflict with or duplicate efforts under the CERC, Annex II, or other DOE-FE sponsored programs

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Project Goals and Objectives

1. Identify and reach out to potential new Chinese partners for applied CCUS research
2. Engage with these entities through visits to their sites and hosting in the US
3. Attend key conferences to present DOE-sponsored CCUS R&D results to key constituencies
4. Support US companies as appropriate to engage with Chinese entities to build partnership and commercial opportunities

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Summary and Accomplishments

1. World Bank/CPI engagements
2. 3rd Annual CCUS conference and Prize Capital
3. Wanxiang/GreatPoint engagement support
4. Shanghai clean cities conference
5. Hosting visits to the US:
   - Huaneng
   - Shenhua
   - China Univ. Mining Tech.

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World Bank/CPI engagement

The goal: to create a new major Chinese CCUS player

- Preferred outcome: GE-based IGCC plants
- CPI: 4th largest power company in China
- World Bank grant to CPI: $2M for capacity building
- Asked LLNL to lead expert team
    - Howard Herzog, MIT: Capture
    - S. Julio Friedmann, LLNL: Storage and utilization
    - Ming Sung, CATF: Integration and Chinese business practice

Work began in late 2011

First Summit: August 15-16 in Chongqing

- Capture contractor: (Rodney Allam)
- Storage contractor: Battelle (Neeraj Gupta)

Second Summit: In the US, date TBD

Final report: Sept. 2013

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3rd Annual Global CCUS Conf. and Prize Capital

The goal: create a US-based utilization pilot test center

- Preferred outcome: Chinese co-sponsor to US center
- Prize Capital: Driving effort in US
- Tri-State: Denver based power coop offering site for pilot
- Asked LLNL to connect to potential Chinese partners and sponsors

3rd Annual Global CCUS Conf. (Beijing): LLNL co-chair

Key US and Chinese Participants

- US: DOE-FE (Jim Wood); Summit Power; B&W; NCCC; GE; Schlumberger; Calera; C12
- China: Huaneng; Sinopec; Shenhua; Yanchang Petr.

Prize Capitol Cosponsored Conf. – gained access

Visits with key targets continue until Sept. 15th 2012.

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Visits: A key platform for engagement

The goal: stimulate and engage new DOE CCUS partners

•Preferred outcome: US involvement in new or expanded Chinese projects or programs.
• Leverages LLNL's extensive contacts with Chinese clean fossil leaders

Huaneng Group Intl. and Clean Energy Research Institute

- GreenGen operational this year, with capture testing center
- Investigating CO2-EOR and GCS options

Shenhua Group

- New FE partnership initiative through HQ
- Helped organize and host high-level visit to US.

China Univ. of Mining Technology

- Potential key partners in capacity building for storage and EOR

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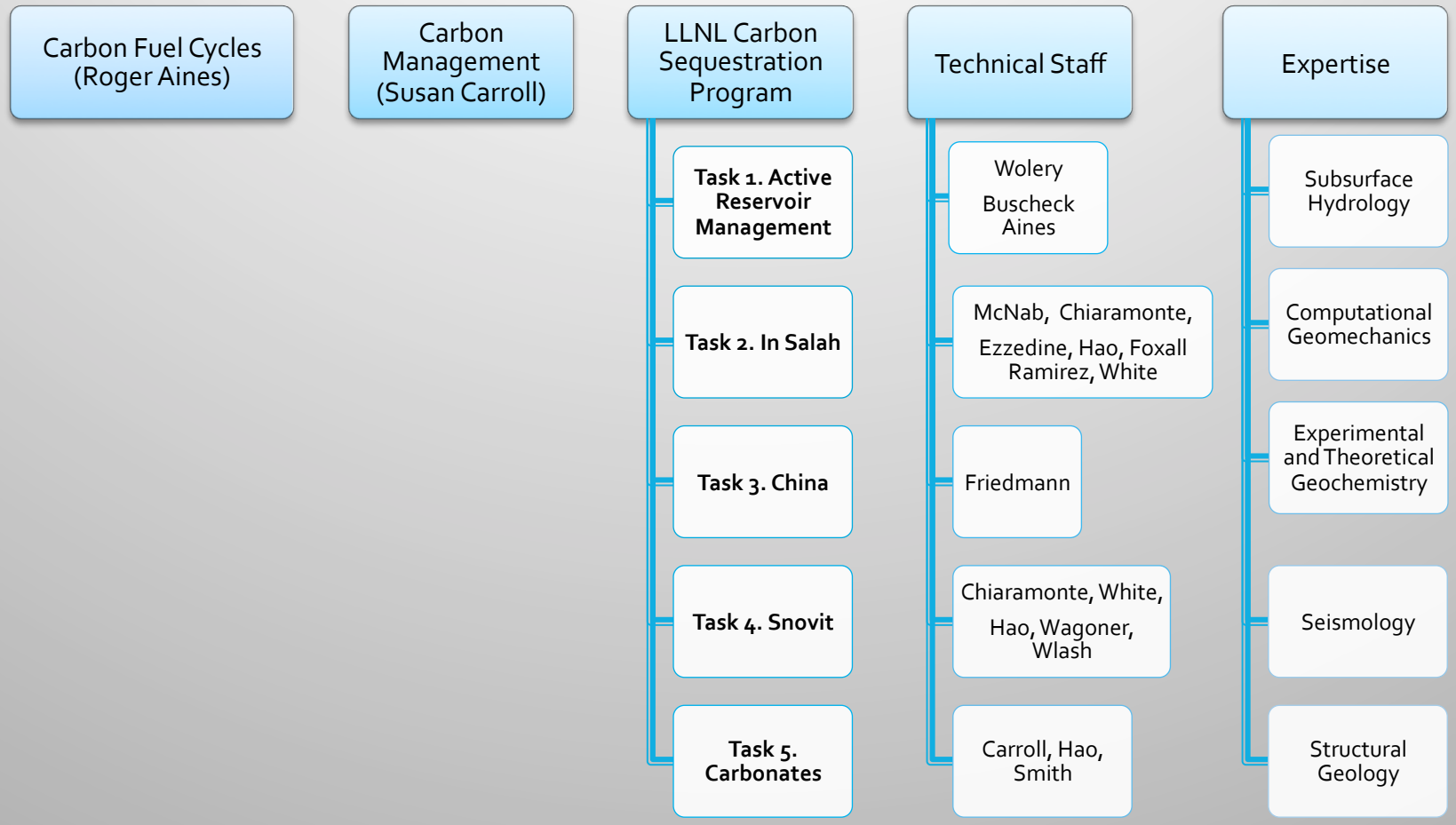
Appendix

Organization Chart