High-Temperature Teaching & Test Reactor (HT^{3}R)

Project Objectives

Presentation to NRC

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Rockville, MD

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Introduction

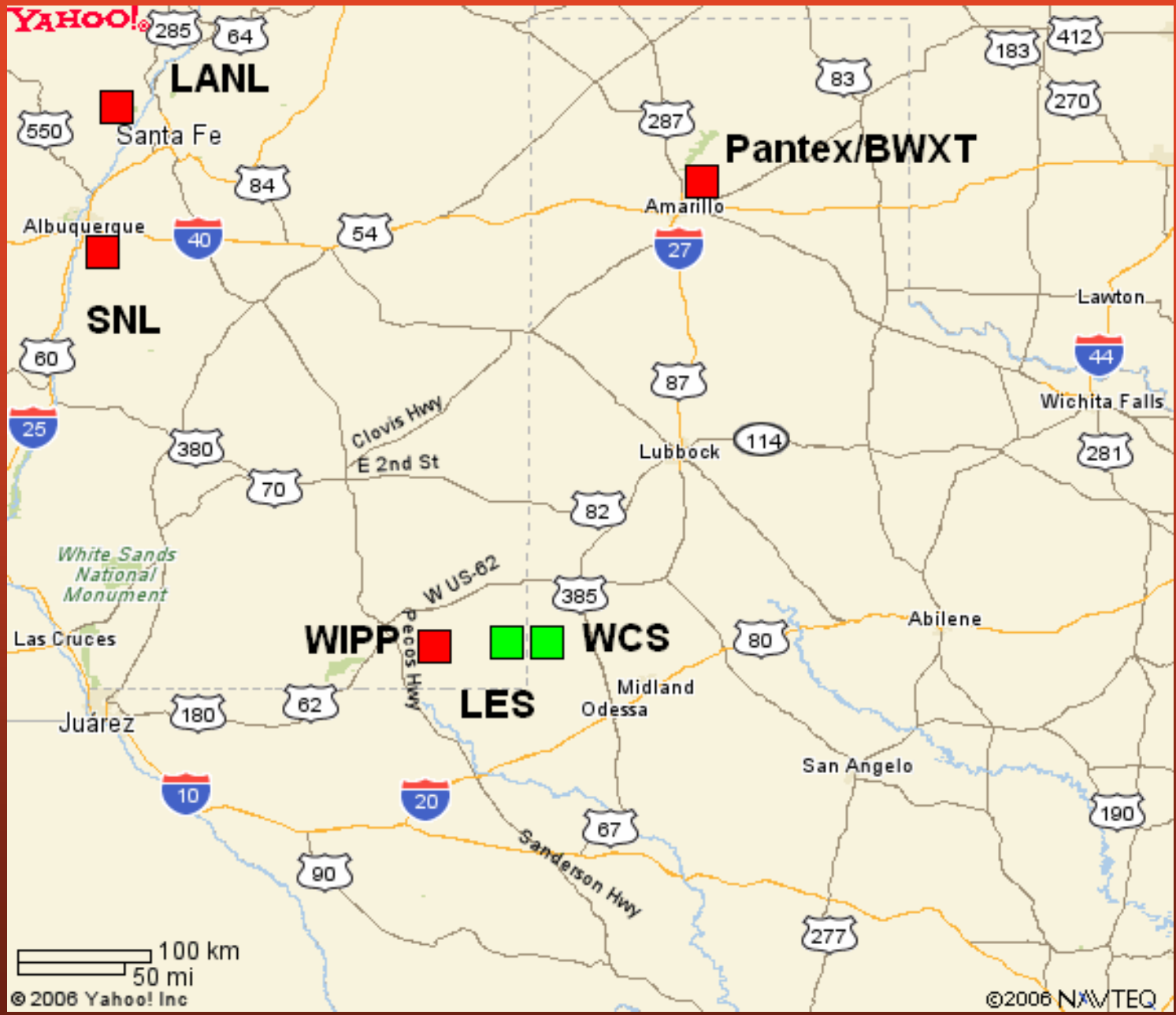
The University, People & Region

University of Texas of the Permian Basin

- Component of the University of Texas System
  - 9 Academic Campuses
  - 6 Medical Campuses
  - ~$8+ Billion Annual Operating Budget
  - ~180,000 Students
- 3600 Students (>14%/yr Growth 3 yrs)
- Hispanic Serving Institution

University of Texas of the Permian Basin

- At least 300 miles from Most Everywhere Else
- ~250,000 people within 30 miles of Campus
- Largest Oil & Gas Producing Region in US
- Largest Petrochemical Complex in the World ***not*** on a Body of Water.
- Regional Commercial Nuclear Industry Development


YAHOO!
LANL
Santa Fe
Pantex/BWXT
Amarillo
Albuquerque
SNL
Lawton
Wichita Falls
Clovis Hwy
E 2nd St
Lubbock
White Sands National Monument
W US-62
WIPP
WCS
LES
Las Cruces
Juárez
Pecos Hwy
Midland
Odessa
Abilene
San Angelo
Sanderson Hwy
100 km
50 mi
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Project Objective

High-Temperature Teaching & Test Reactor (HT^3R)

Develop Teaching and Research Capabilities to Address Urgent Energy & Environmental Issues Facing US and World

Urgent US Energy Problems

- The World's Petroleum Reserves are Decreasing. Peak U.S. Production: 1973
  - US Imports ~65% Today
  - US Projected Imports >85% by 2020
- By 2045 - >46% of current US electricity generating capacity must be replaced
  - 20% nuclear
  - >26% non-nuclear (Coal, Nat. Gas, etc.)

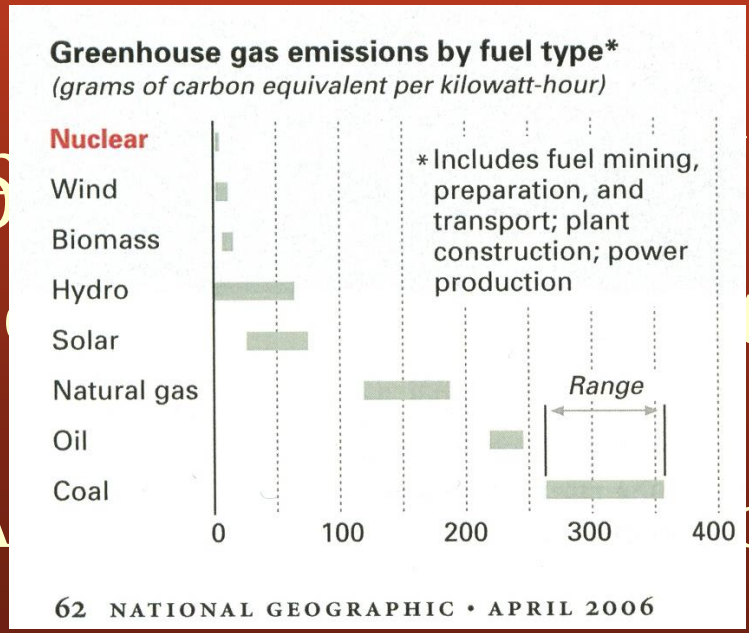
Transportation – Imported Oil

Fixed – Electricity Generation

Urgent US Environmental Problems

- Decreased Air Quality
  Air Quality
- Greenhouse Effect (Carbon Footprint)

- Increased
  Water Sup
  Aquifer D
- Aquifer P
  Industry
- Lack of A



Real Solutions are Complex!

- Allow Developing and Undeveloped Nations to Rise to our Standard of Living
- Protect the Environment
- Utilize Existing Infrastructures
- Multifaceted (Fixed, Mobile & Resource)
- “Deployment Transition” Plan
- Deployable Within 20 to 30 Years

UTPB's Project Objective

Supports the Development of the ***US Gen IV High-Temperature Gas Reactor Program***

- **HTR-I^{3}R** – Re-Created Educational Infrastructure; Support Timely Development of the NGNP; Develop Energy/Environmental Technologies
- **NGNP** – Provide a Technology Demonstration for Utility & Energy Companies
- ***Timely Commercialization*** – Address Critical US Environmental & Energy Problems that Have Become Security Problems!

Develop Teaching and Research Capabilities to Address Urgent Energy & Environmental Issues Facing US and World

US Needs High-Temperature Gas Reactor Program

- Develop New Mobile Energy Sources
  - Synthetic Hydrocarbons for Transition from Petroleum to Hydrogen Economy
  - Hydrogen for Future
- Replace the Projected 46% of Electrical Generating Capacity with High-Efficiency "Green" Nuclear Methods
- Provide Economic Water Desalinization
- Aim for Long-term future use of Hydrocarbons as a Base Chemical only