

# Texas' Efforts to Increase Nuclear Workforce in the 2- and 4-yr degree programs

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(input from Dr. J. Poston Sr.)

# *Nuclear Power in the US*

## *Human Resources Needs*

- ▶ Anticipated growth in electricity demand
- ▶ Continued/growing *key role* for nuclear power
- ▶ Challenges of anticipated retirements
- ▶ New plants being planned
- ▶ Require *significant numbers* of well-prepared new technical staff
- ▶ This has created need for *new approaches*
- ▶ Texas will need 50–70 GW<sub>e</sub> new capacity

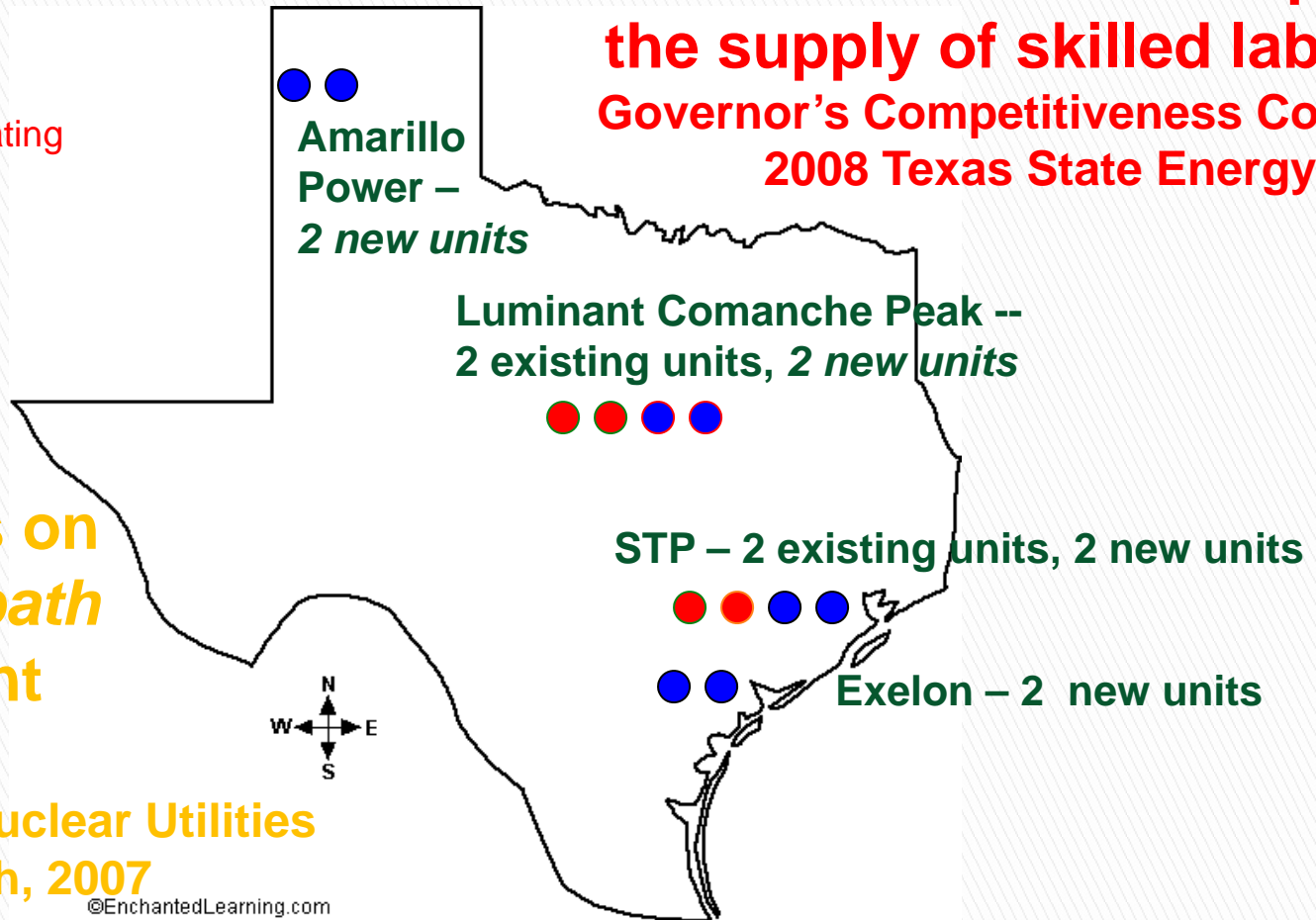


# Nuclear Power Plants in Texas

**Four plants in operation**  
**Eight new plants planned**

**“Based on the analysis, occupations in Nuclear and Renewables...far outpace the supply of skilled labor.”**  
**Governor’s Competitiveness Council**  
**2008 Texas State Energy Plan**

- Operating
- New



**“The new workforce is on the critical path to initial plant operation.”**

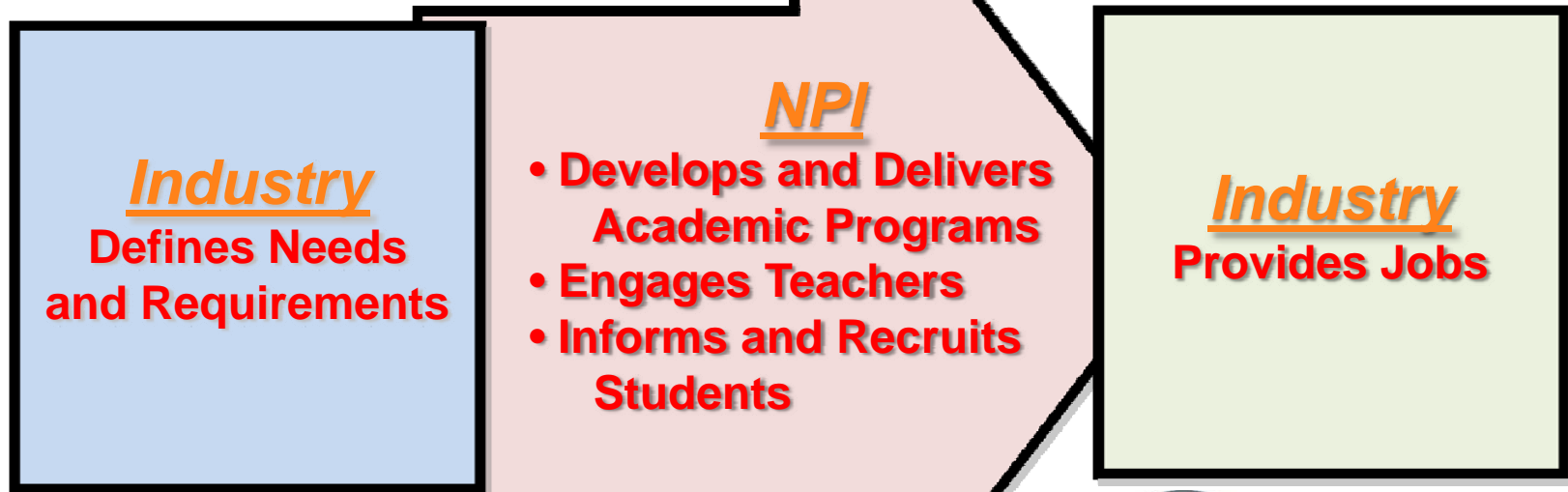
**The Texas Nuclear Utilities**  
**March, 2007**

# Nuclear Power Institute

- ▶ Several years ago the nuclear industry approached TAMU about developing a nuclear power technician curriculum
- ▶ Nuclear Power Institute (NPI) was created to answer the call
- ▶ NPI is a unique statewide partnership led by the Texas Engineering Experiment Station and headquartered at Texas A&M University
  - 4 yr universities
  - 2 yr community and technical colleges
  - High schools
  - Nuclear industry



# *Close Ties Between NPI and Industry*



# *A Plan and Roadmap for the Entire Plant Workforce*

Texas Nuclear Workforce Development Initiative  
April 23, 2007

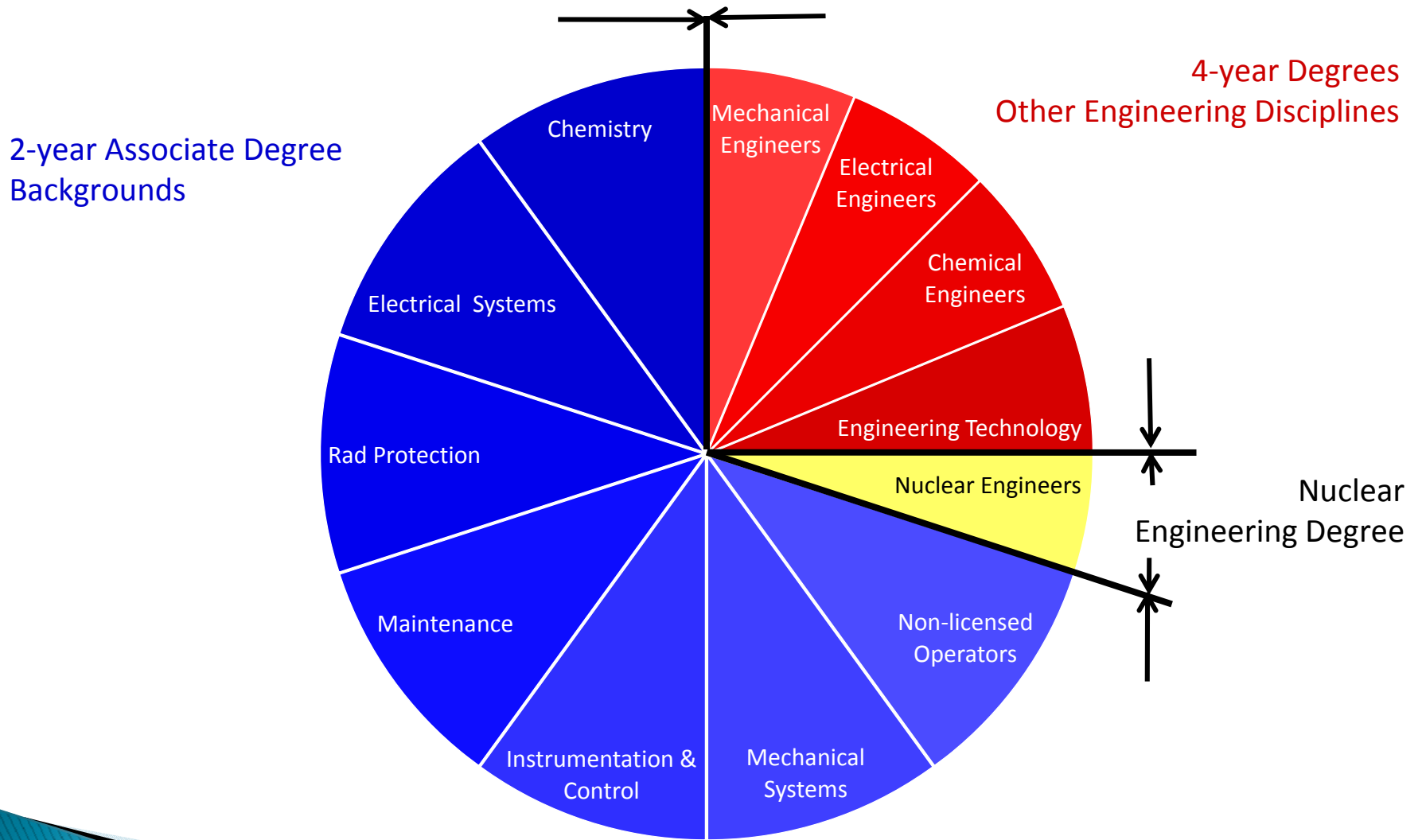
## I. Overview

Several studies indicate that there will be significant increases in demand for skilled utility workers and that supply of these workers will not keep pace with this anticipated growth. With the potential for new nuclear power plants in Texas, coupled with aging workforces at our existing nuclear power plants, extraordinary actions will be necessary to provide the qualified workforce requirements for this decade and next. This [anticipated shortage](#) of skilled utility workers is a key challenge for the Texas energy industry...

*(“White Paper” authored by the Texas nuclear utilities, contained 11 specific targeted areas)*

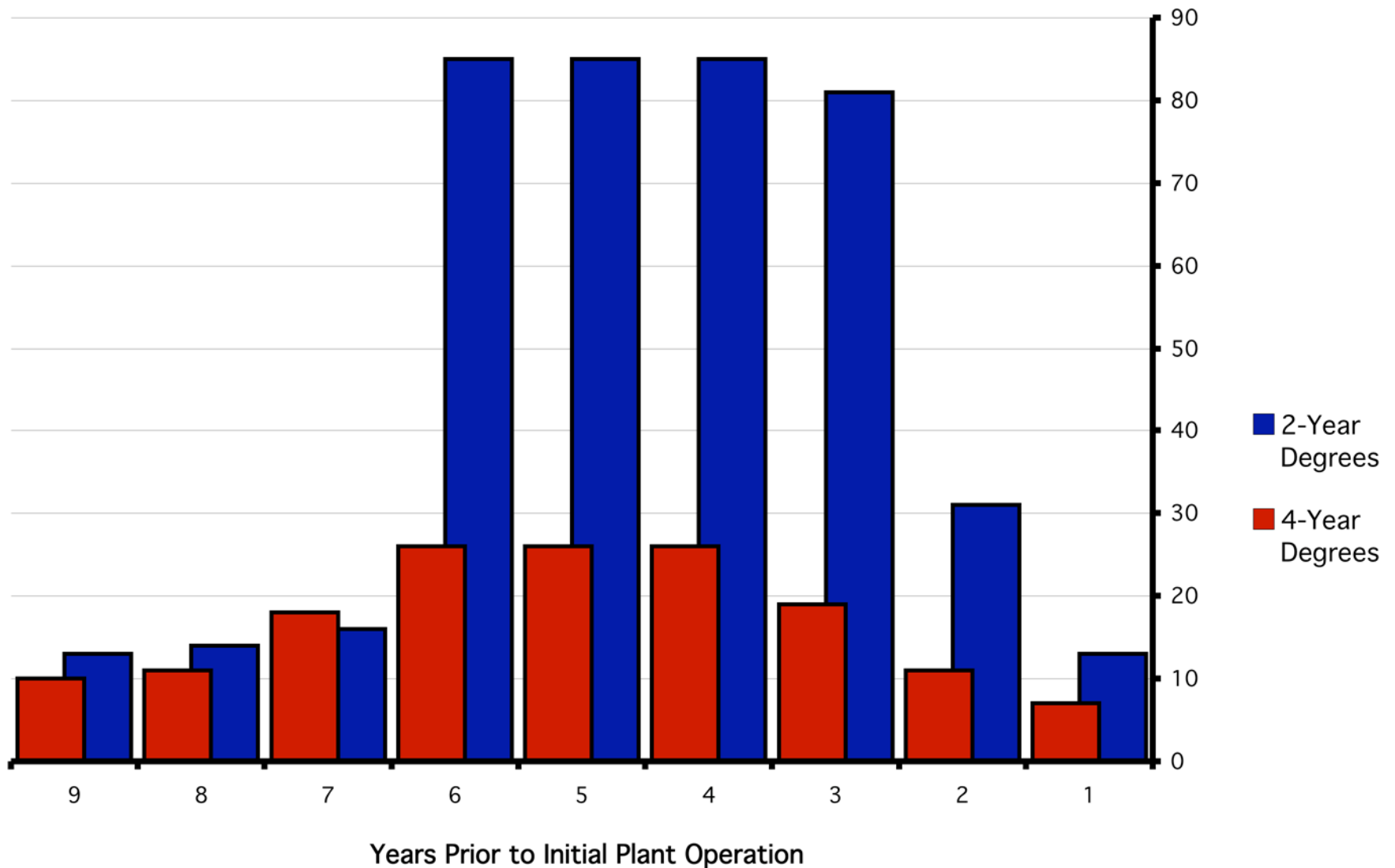
# Example Distribution of Disciplines for the Nuclear Workforce

## The "Other than Nuclear" Challenge

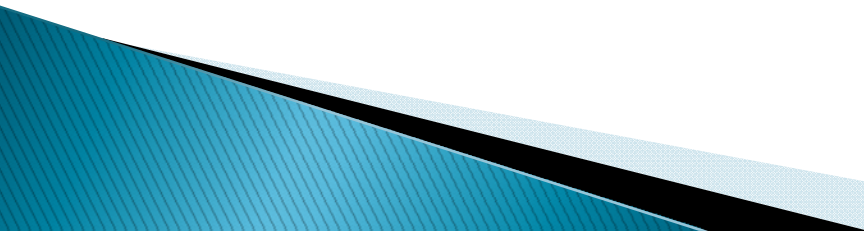




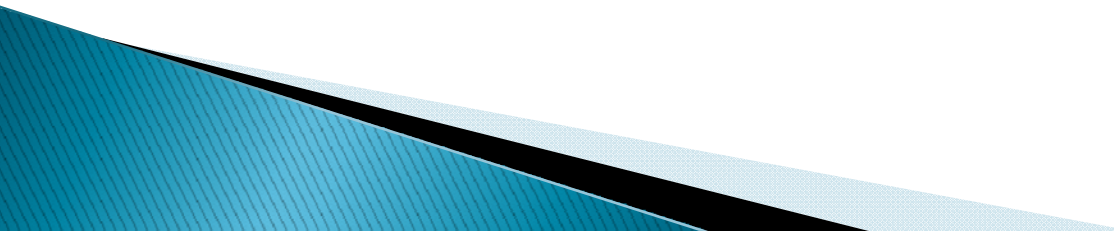
# Timing of Workforce Employment Before Plant Operation



# *Industry Desires*

- ▶ *Create programs* that satisfy the utility training requirements
  - ▶ *Inform* students of career opportunities
  - ▶ *Attract* them to the various academic options
  - ▶ *Graduate* students who can advance through training programs
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# *Industry Commitment*

- ▶ Partners in developing curricula
  - ▶ Educational Incentive Program—tuition and fees, books, stipend and summer internship
  - ▶ Participation in recruiting visits
  - ▶ Engagement with teachers
  - ▶ Provide mentoring of students
  - ▶ Informing the community and key leaders
- 

# *Nuclear Power Technology Program*

## *Wharton County Junior College*

- ▶ Curriculum developed with industry/NEI/INPO
- ▶ Approved 2-year degree
- ▶ Courses to meet utility needs
  - Math & Chem Fundamentals for Nuclear Power
  - Nuclear Fundamentals I & II
  - Nuclear Power Plant Org & Processes
  - Nuclear Power Plant Systems I & II
- ▶ Upgraded program, more math and science
- ▶ First cohort of interns through the STP “**Educational Incentive Program**”, 31 participated summer 2009, 30 offered positions



An Excellent  
**“Best Practice”!**

Recognized by the IAEA

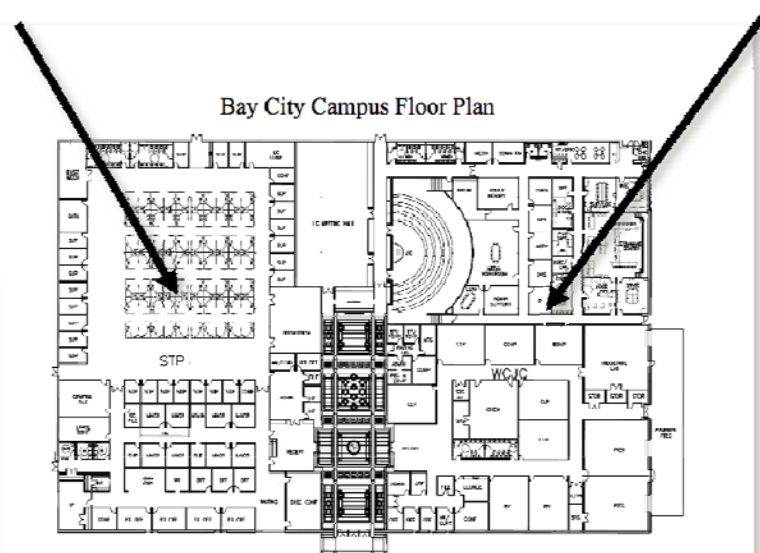
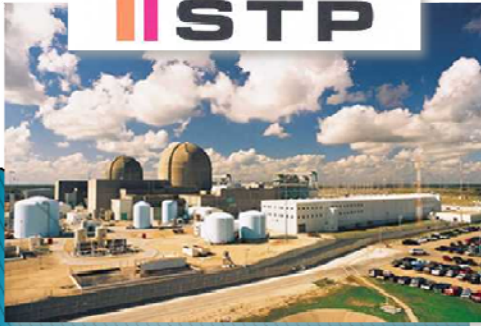
# Center for Energy Development Bay City, Texas



STP Units 3 & 4  
Engineering Staff

*...co-located with the...*

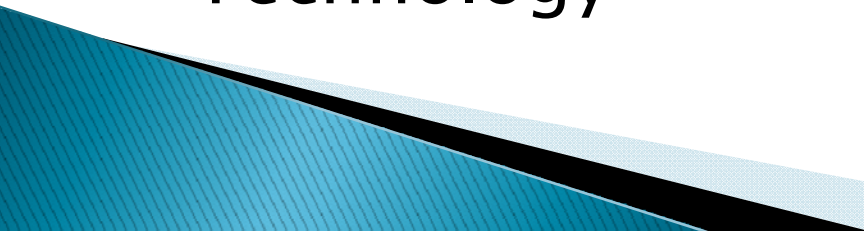
WCJC  
Nucl Power Tech Prgrm



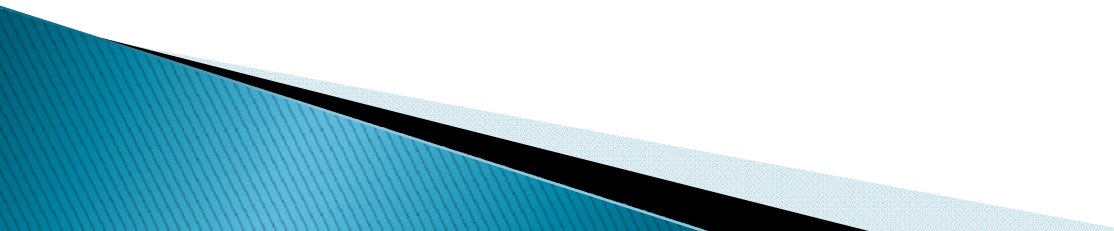
# Texas State Technical College



# Historical Notes

- ▶ **Texas State Technical Institute** (name was changed to Texas State Technical College in 1991) **was** established in 1965 shortly after the closure of James Connally Air Force Base in Waco, TX
  - ▶ In late 1969 had strong Nuclear Technology program
  - ▶ The program offered an Associate of Applied Science degree in Nuclear Technology
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# Happy Times

- ▶ The program flourished through the 1970s and early 1980s
  - ▶ In the mid-1980s, the numbers of students declined
  - ▶ But by 1987, twenty-five students were still enrolled in the program and new faculty had to be hired
- 



# Program History

- ▶ The program changed names
  - Nuclear Technology in the 80's
  - Radiation Protection
  - Health Physics
- ▶ In the late 1990s, TSTC administration decided that all safety should be consolidated
- ▶ Department of Environmental Health & Safety (EHS) contained:
  - The Health Physics degree
  - Safety Compliance
  - Environmental Compliance

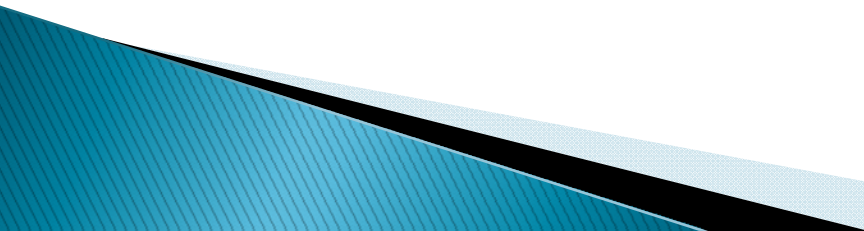
# Sad Times

- ▶ In the late 1990s the numbers of students in EHS Specialization declined
- ▶ Faculty reduced to one person
- ▶ Eventually, the Health Physics Specialization was closed.
  - A trend that has happened to many Nuclear engineering and tech programs across the country
- ▶ The only option at that time was the Advanced Technical Certificate –Health Physics

# New Partnerships

- ▶ Texas Workforce Commission Grant
- ▶ Granted to Nuclear Power Institute
  - Based at TAMU
  - Led by TEES
- ▶ Money distributed to several schools
  - Texas State Technical College
  - Brazosport College
  - Victoria College
  - Wharton Junior College

# *Building a Vibrant, Robust Partnership with Key Participants*

- ▶ *A comprehensive, integrated approach*
  - ▶ *Working with industry* to build the needed new programs
  - ▶ Bringing together the *2-yr and 4-yr institutions*
  - ▶ Informing and involving *civic and elected leaders*
  - ▶ Developing effective *outreach and recruiting* program with teachers and students
  - ▶ Responding to this *key workforce challenge*
  - ▶ Exploring opportunities for partnerships *across the country and internationally*
- 

# New Opportunities



- ▶ NRC scholarships
- ▶ Power plant scholarships
- ▶ Expansion of the internship program
- ▶ Establishment of a COOP program in radiation safety
  - We have sent two students to the last two outages
  - Two more are going this semester
  - Safety internships

# New Classes

- ▶ Reviewing of all Radiation safety classes
  - Updated with new information from the last time the classes were taught
- ▶ Class content is being modeled after INPO document (uniform curriculum)
  - GAP analysis was done and new info added to classes
- ▶ “Introduction to Nuclear Power” Online class

# New Program

- ▶ New Radiation Protection Technician Degree Program (old nuclear technology degree program) was approved by the coordinating board
- ▶ New classes being taught
- ▶ Even though the schools enrollment is up about 20% from a year ago
  - EHS is up more than 50%
- ▶ Students coming from other departments wanting in on the “nuclear thing”

# EHS

- ▶ Students will get practical experience with internship program
- ▶ After graduating from the program students will be ready for either working at
  - Existing plant (replace retirees)
  - Construction and operations of new ones
  - DOE projects
  - Any other nuclear application (hospitals, etc)



# *Exceptional Career Opportunities for Students*

- ▶ Strong background allows graduates to move directly into utility training programs
- ▶ Careers are:
  - Attractive, high tech
  - High paying (starting salaries \$55,000 to \$65,000 per year),
  - Long lasting (50 years+), and good stability
  - Good opportunities for advancement
  - *Close to home and family*
  - *In an industry identified as key to the future of Texas*

# Other Departments

- ▶ Several departments are participating in the nuclear revival
  - Environmental Health & Safety
  - Electrical Power & Control Technology
  - Instrumentation/Computerized Control & Robotics
  - Industrial Systems & Engineering Technology
  - Welding Technology



# Increased Enrollment

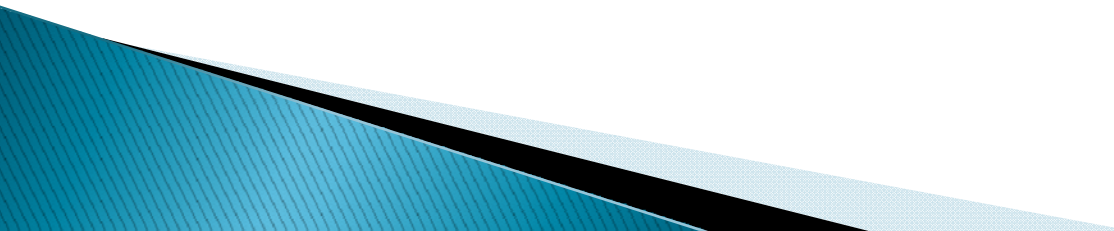
- ▶ Increased in enrollment for technical colleges across the US
  - Unemployment is up
    - people want to retool themselves
  - Increases in need of technician level personnel
    - Not only in Texas but nationwide
  - Lower tuition cost
  - Good for working people



# Caution

- ▶ We keep telling students that they need to enter this field and work will be waiting for them
- ▶ BUT it they are graduating from now–2 years from now
  - Looking for these 1000s of jobs
- ▶ They may find themselves looking for some work to tie them over until the “good one” comes

# Uncertainties

- ▶ Shortage of techs during outages
    - DoE has taken a lot of techs
  - ▶ Not many companies are hiring house techs
    - Using temp help at outages
  - ▶ Too much politics
  - ▶ Unsure of building schedules
  - ▶ Unsure of hiring schedules
  - ▶ NRC approval of new designs and licenses
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# Thank You

- ▶ Any Questions?

