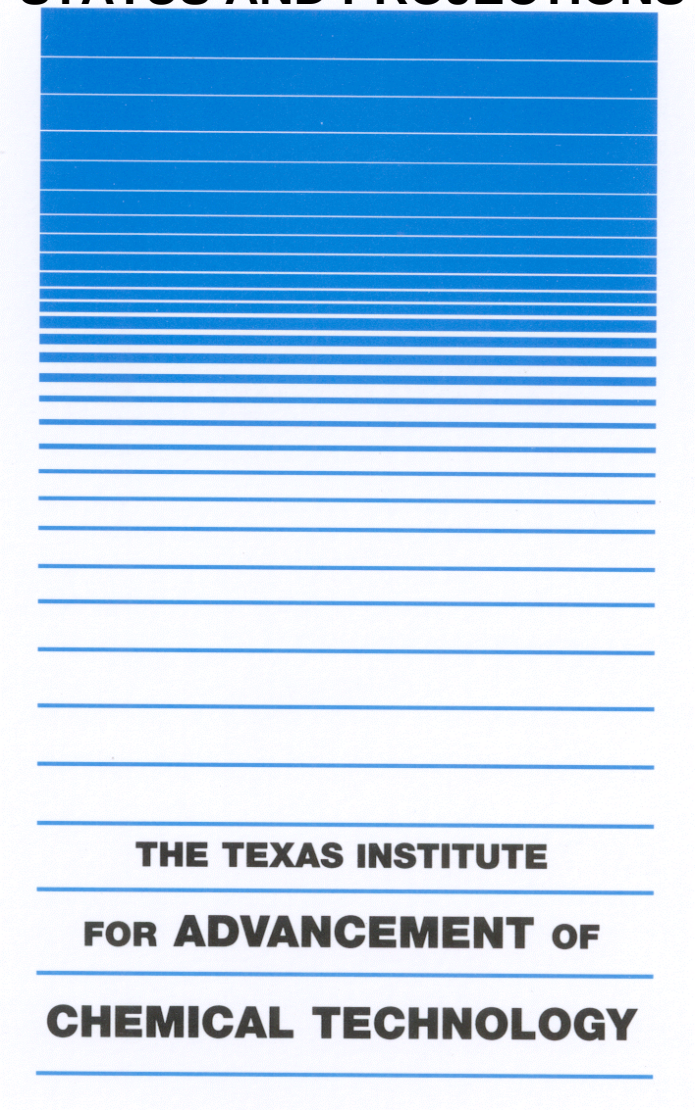
PROCEEDINGS

ANNUAL MEETING OF TIACT

WHERE ARE WE?

- STATUS AND PROJECTIONS



Houston Airport Marriott at George Bush Intercontinental
April 29, 2005

INTRODUCTION

Charles D. Holland
President, Texas Institute for Advancement of Chemical Technology
Professor Emeritus of Chemical Engineering, Texas A&M University

Charles D. Holland received a B.S. Degree from North Carolina State University in 1943, and an M.S. in 1949 and a Ph.D. in 1953 from Texas A&M University, all in Chemical Engineering. He served on a destroyer in the Pacific Theater during World Wart II. He began his career in education as an Instructor in Chemical Engineering at Texas A&M in 1952 and moved through the ranks. He was named Professor and Head of the Department of Chemical Engineering in 1964 and served in that capacity until his retirement in 1987. Dr. Holland formed the Texas Institute for Advancement of Chemical Technology (TIACT) in 1986 and serves as President. He continued to teach (50% time) in Chemical Engineering at Texas A&M as a Professor Emeritus until Spring 2003. He has written 7 textbooks and over 100 technical papers. He was named "Fellow" of the American Institute of Chemists in 1975, the American Institute of Chemical Engineers in 1977, and "Council of Fellows" of Texas and Academic Authors. He was awarded the inaugural "Engineering Program Lifetime Achievement Award" by the College of Engineering, Texas A&M University in 2000. In 2004, the "Career Academic Achievement Award" was presented to him by the South Texas Section of the American Institute of Chemical Engineers for his lifetime contributions in modeling distillation processes.

As President of the Texas Institute for Advancement of Chemical Technology (TIACT), Dr. Holland has made over 570 presentations to the general public and technical groups on the more than 20 studies carried out by TIACT. These studies were on topics that impacted both the public and industry.

ABSTRACT

Just as a ship's navigator obtains navigational positions to determine the course and speed changes necessary to reach his (or her) destination on time, energy providers must likewise reevaluate each major energy source to determine - ***WHERE ARE WE? – STATUS AND PROJECTIONS*** - in order to satisfy our present and future energy needs.

Before examining the status of each major energy source in detail, an overall picture of our energy situation is needed, and it can be presented graphically by use of the slide on page 1. As is evident from this slide, 52% of our electricity is generated by use of coal, 20.3% by nuclear energy, and 18.1% by natural gas. In 2001, over 95% of all new electric generating capacity used natural gas, and the Energy Information Administration (EIA) projects that just under 90% of electric generation will be by natural gas in the near future. The sharp increase in demand in 2001 with a limited supply caused an increase in the price to natural gas, which made it difficult for the chemical industry to operate at a profit because natural gas is used both as a fuel and as a major feedstock.

Since around 2001, TIACT has been encouraging a movement from natural gas to nuclear energy in the generation of electricity. Nuclear energy has the capacity to replace natural gas in the generation of electricity just as it replaced petroleum in the generation of electricity in the 1960s and 1970s.

Since nuclear energy cannot completely replace natural gas in the chemical industry, it will be necessary to supplement the declining domestic production of natural gas with LNG (liquified natural gas), as described in the following papers by Marvin Ivey and Keith Meyer.

When we first began the study ***– Construction of a New Nuclear Plant on the Texas Gulf Coast–*** there was said to be a large excess of electrical capacity on the grid. Sam Jones, who is Chief Executive Officer of ERCOT (Electric Reliability Council of Texas), projected that for the worst case scenario, there would be no reserve electrical capacity on the grid by 2010 as described in his presentation.

No discussion on energy is complete without reviewing the status of coal, which was done by Janet Gellici of the *American Coal Council*. Coal is the unique energy source that could supply all of our future energy needs and render us independent of foreign sources of oil and gas. Although oil can made from coal as was done by the Germans during World War II, it is not profitable at the present crude prices.

Because of pending legislation, Tom Miller was unable to make his presentation. However, his slides on : ***"One Year Later: Is the U.S. Any Closer to Building a New Nuclear Power Plant?"***are included.

John Redding's presentation: ***"A New Nuclear Plant in Texas –Has the Time Come to Begin the Process?"–*** is based on the study: ***"Construction of a New Nuclear Plant on the Texas Gulf Coast."*** This publication is on the TIACT website: **http://cheweb.tamu.edu/tiact** . John Redding discusses the use of this study in moving forward to the formation of a consortium for the construction of the new nuclear power plant.

Although all of the technical aspects of the construction of a nuclear plant could be carried out perfectly, the project could fail because of the lack of support of the communities in the neighborhood of the plant. Enthusiastic support for a new nuclear plant at the STP facility exists in the surrounding neighborhoods. The citizens of Bay City area strongly support the construction of a new nuclear power plant at the STP nuclear power plant location. Their support was described by Richard Knapik (Mayor of Bay City, Texas), who gave the Luncheon Address entitled: ***"PIMBY (PLEASE IN MY BACKYARD)".***

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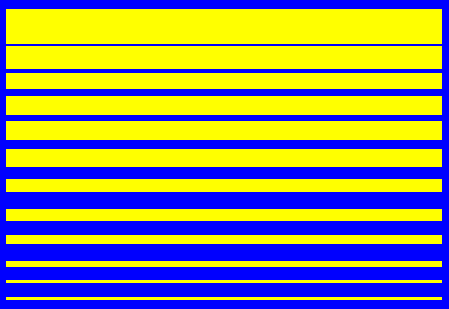
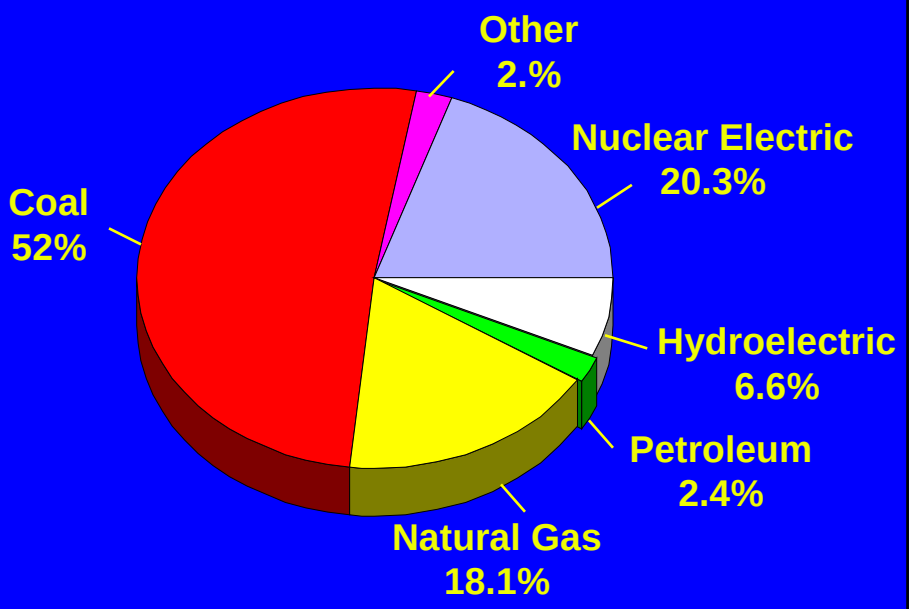


The Texas Institute for Advancement of Chemical Technology

Fuels used to generate electricity



BACKGROUND ISSUES

- The Texas Institute for Advancement of Chemical Technology – History and Mission
- Impact of Natural Gas Situation on Chemical Industry
- Move from Natural Gas to Nuclear in the Generation of Electricity