

TEXAS BUSINESS REVIEW

Bureau of Business Research • College and Graduate School of Business •
The University of Texas at Austin
APRIL 1998

Texas as a Net Energy Importer: Does it Matter?

Milton L. Holloway
President, Resource Economics, Inc.
Austin, TX

By some calculations, Texas became a net energy importer in 1991. In that year, the BTU (or heat) value of Texas consumption of petroleum products, natural gas, propane, and renewable energy (wood, wind, and solar) exceeded the BTU value of production of these materials for the first time since oil became the fuel of choice early in this century. This marked a historic moment in some sense because of the state's traditional role as the leading oil and gas exporter to the rest of the nation. But just how important was this event?

From Supplier to Consumer

A steady downward trend in Texas energy production began in the early 70s (fig.1). At the same time, energy consumption increased almost as steadily. Energy production (measured in BTUs) that was roughly twice consumption in 1974 came to equal consumption in 1991, thus eliminating positive net exports in BTU terms.

The trend to increasingly higher net imports is no doubt irreversible. However, if net energy exports are calculated using the market, rather than BTU, value of energy products, rather than BTU calculations, the closing export gap since the 1970s is not so obvious. Expressed in nominal dollar terms, the gap almost stopped closing around 1987 and has remained relatively stable since that time.¹

A better measure of the importance of the state's transition to net importer is value added. After all, the economic value of energy to the Texas economy is, at least in the short run, the contribution to the state's net income stream.

Energy Sector Value Added

Essentially, value added measures an activity's income contribution to the economy. This number may differ significantly from a BTU or gross economic value measure. The contribution of an energy sector to the economy is the value of production minus the value of purchases of raw materials used to produce the market product.² Or, alternatively, it is the sum of wages paid to labor, interest, depreciation, profits paid to management, returns on investment paid to owners, and taxes paid to governments.

The value added from a broad definition of the energy was dominated by oil and gas production in the 1970s and especially in the 1981-1986 period (fig. 2). The energy value-added share contributed by oil and gas production declined to about one-half the total by 1994. The effect of the world oil price spike to \$37 (1981 dollars) per barrel is clearly visible during the 1981-1986 period. The petrochemical sectors are important in this value-added calculation because these products represent a high-end product stream made from oil and gas, though they are usually ignored in a BTU balance calculation. In economic terms, however, these products contribute significantly to the Texas economy and often exhibit countercyclical market patterns when compared to crude oil, petroleum products, and natural gas.

Perhaps the most remarkable finding is that a 50+ percent decline in the production of Texas oil and gas,

accompanied by a return to inflation-adjusted, pre-1972 wellhead prices, has resulted in only a 21 percent decline in value added by the oil and gas production sector. Such an achievement has occurred because of greatly improved efficiencies in the discovery and recovery of oil and gas from Texas reserves—a testimonial to the power of competitive markets to improve efficiency. Such efficiencies include improvements from 3D seismic mapping of oil- and gas-bearing formations, slant-hole drilling, CO2 miscible flooding, and other high-tech methods. Application of these technologies has greatly reduced the cost of finding and recovering oil.

The decline in value added from oil and gas production (about \$8 billion in 1992\$) over the 1977-1994 period was replaced in large part by an increase in value added by high-end products, principally chemicals. The 1994 dollar contribution of energy sectors to state GSP approximated the 1977 contribution prior to the energy crisis and the associated run-up in oil prices.

Summary

Clearly, Texas has entered a new era. The dominant energy source is now foreign imports of crude oil and refinery products, and high-tech industries and services have replaced the base industries of energy and agriculture as the economic drivers. The BTU-based net export numbers do mark a significant change in the state's national role as the principal energy exporter to the nation, but neither these calculations nor the gross dollar value of imports provide the best indicators of the importance of this historic transition.

A better measure is the value added to the Texas economy by the energy sectors. Expressed in constant purchasing value dollars, value added measurement shows that the state energy sectors contribute about the same dollars to the Texas income stream as was the case in 1977 before the energy crisis. The relative contribution of the energy sectors is clearly declining, however, as high-tech and service sectors replace energy and agriculture as the major forces within the Texas economy. The relative contribution of the energy sectors declined from 22 percent of GSP in 1977 to 15 percent in 1994. Only the remarkable decline in the cost of finding and recovering oil and gas in Texas has prevented a more rapid decline of relative importance.

Notes

1. Zarnikau, Jay, "Has Texas Become a Net Importer of Energy Resources?" Texas Business Review, June 1997.
2. If one subtracts depreciation and indirect business taxes from this difference (for the national economy), the result is national income.

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