

Has Texas Become a Net Importer of Energy Resources?

by Jay Zarnikau

Director of Strategic Planning and Pricing

Planergy, Inc.

Austin Texas

Claims that Texas has become a net importer of energy resources have stunned many Texans. For many years, Texas led the nation in electricity generation and in the production of many petroleum refinery products, crude oil, and natural gas. (In fact, the state oil industry and its regulatory body, the Texas Railroad Commission, once wielded sufficient market power to control world oil prices.) In the mid-1980s, Texas ranked third among all states in the production of uranium oxide, used in the production of nuclear fuel.

However, Texas also feeds an enormous appetite for energy resources. Ranking first in natural gas, electricity, and petroleum consumption in recent years, the state also lists third in coal consumption.¹ While the demand for energy resources has continued to increase, the production of some key energy resources has failed to keep pace. Crude oil production has declined more than 50 percent from its 1972 peak. Concurrently, natural gas extraction has declined by more than 40 percent. Surface mining of uranium oxide ceased in 1986. Further, a number of new power plants were constructed outside of the state's borders in the 1980s, in part to serve electricity demand within the state, thus making Texas a net importer of electricity.

This growing dependence upon outside energy resources has prompted calls for national oil import taxes, subsidies for renewable energy projects within the state, new energy efficiency initiatives, reductions in state severance taxes on oil and natural gas, expanded R&D spending on enhanced oil recovery, and taxes on coal imported from the Rocky Mountain states. Yet the question of whether Texas has indeed become a net importer of energy resources is difficult to address. Energy resources can be grouped and compared either by their economic value or by their heating potential. Very different conclusions can be drawn depending upon the measure employed.

Methods of Comparison

There are two common approaches to aggregating different energy resources. The first approach groups different energy resources by their heating potential, expressed in British thermal units (Btu) or barrels of oil equivalent. The second approach examines the economic value of different energy resources and uses market prices or Divisia indices² to add up or compare different energy resources.³

The latter is generally the preferred approach, particularly in policy or economic studies. A comparison of energy resources according to their heating potential neglects the differences in their economic values. The market price of a Btu of electricity is ten times that of a Btu of crude oil, reflecting the fact that electricity has much higher economic value. Thus, an export of electricity is ten times more valuable than the export of the same "Btu quantity" of crude oil. Consequently, attention must be focused on the economic value of Texas's imports and exports of energy resources-not just the heating potential of those resources.

Texas Energy Trade in Terms of Heating Potential

Figure 1 depicts the state's total production and consumption of energy resources, aggregated by their heating value.⁴ According to this measure, Texas became a net importer of total energy resources around 1991. Key imports include coal and crude oil. Net imports of electricity have also become important with the construction of new power plants outside the state that were designed, in part, to meet electricity needs within the state. These projects include the Palo Verde Nuclear Project in Arizona; the Four Corners coal-fired project in New Mexico (partly owned by El Paso Electric Company); the River Bend Nuclear Project and a number of coal plants in Louisiana (constructed by Gulf States Utilities Company, serving Southeast Texas); and the Dolet Hills project in Louisiana (constructed by Southwestern Electric Power Company, serving Northeast Texas).

The Dollar Value of Energy Resources Traded

When the dollar value of energy resource imports and exports is examined, a far different picture emerges. The value of energy resources leaving the state exceeds the value of energy resources entering Texas by more than a three-to-one margin. The value of energy resource imports has been increasing, due largely to crude oil and electricity imports. Yet the value of exports has rebounded since 1986, as noted in figure 2.

The Texas petroleum refinery industry is largely responsible for maintaining the state's positive trade balance in energy resources. Much of the low-value crude oil imported into Texas is transformed into high-value refinery products, such as motor gasoline, aviation gasoline, distillate fuel, and jet fuel. Texas is a net exporter of such products. Figure 3 shows the composition of the state's imports and exports of energy resources in 1993.

Summary

The answer to the question of whether Texas is now a net importer of energy resources depends upon how different types of energy resources are grouped. If we aggregate energy resources by their heating value, Texas has indeed become a net importer. But if we look at the economic value of energy resources entering and leaving the state, Texas remains a net exporter by a considerable margin.

However, either scheme produces clear evidence of the state's increasing reliance upon outside sources of energy resources. Meanwhile, Texas possesses an immense, and largely untapped, potential for renewable energy resources and energy efficiency. Under the right market conditions and policies, these resources could power the Texas economy in the 21st century.

Notes

1. U.S. Department of Energy, Energy Information Administration, State Energy Data Report 1992, DOE/EIA-0214(92), p. 13.
2. Divisia indices provide a measure of changes in the value of an aggregate over time. Component energy resources are weighted according to their economic value.
3. See J. Zarnikau, S. Guermouche, and P. Schmidt, "Can different energy resources be added or compared?" *Energy-The International Journal*, Vol.21, No. 6, 1996, pp. 483-91.
4. The figures in this article were developed using consumption data for fossil fuels and refinery

products, obtained from the U.S. Department of Energy (DOE). The Texas Railroad Commission provided production data for fossil fuels and uranium oxide. Original estimates of electricity trade were developed by the author, based on information filed at the Public Utility Commission and other sources. DOE estimates of state-level electricity production and trade ignore all cogenerated power produced by non-utilities (which amounts to roughly 10 percent of the electricity sold by electric utilities in Texas in recent years) and were therefore not used. To determine the value of imports and exports, final retail prices were used.

Go to: [Top](#) | [TBR Home Page](#) | [BBR Home Page](#) | [UT GSB Home Page](#)

26 September 1997

Comments to: sallyf@mail.utexas.edu