

Is the Tie between Electricity Demand and Economic Growth BROKEN?

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As shown in the graph below, growth in US demand for electricity has, for years, followed growth in US real Gross Domestic Product very closely, at least until 1996 or 1997. However, data from the Energy Information Administration (EIA) indicate that electricity demand began lagging GDP growth in 1996 or 1997 and has continued to deviate since then. This raises some critical questions for the electric industry. Specifically:

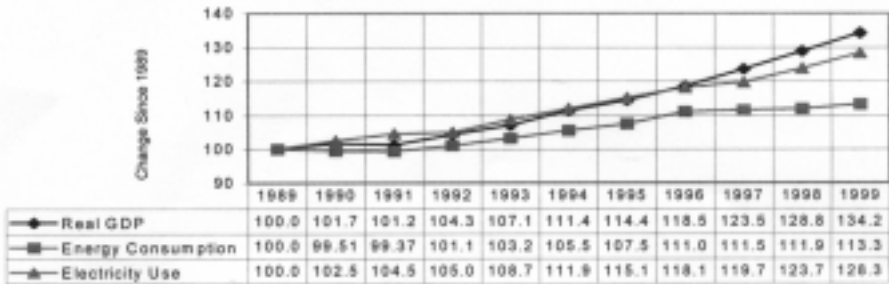
- Is the US economy now on a path of significantly lower electricity intensity?
- Is something going on in the GDP or electric use data for recent years that is giving an incorrect picture of the relationship between the two key factors?

GRAPH COMPARING GDP, ENERGY CONSUMPTION AND ELECTRICITY USE—1989-99

The real GDP data for the graph are from the Bureau of Economic Analysis (BEA) chain-weighted 1996\$ series. Except for part of the 1999 data, the electricity consumption data are from EIA's Monthly Energy Review, Table 7.5. This table shows electric utility retail sales plus nonutility power producers' "direct use" and "sales to end users" (in-

cluding my estimate for 1999 for the last two items), which should add up to total US electricity consumption. The third (lower) line in the graph, showing overall US energy consumption, is from EIA’s Monthly Energy Review, Table 1.4. The data have been converted to index numbers with 1989 equal to 100.

Comparison of Changes Since 1989 in US Real GDP, Energy Consumption & Electricity Use



APPARENT CHANGE IN LONG-STANDING ELECTRICITY-ECONOMIC GROWTH TRENDS

Through 1995 or 1996, at least, the graph supports the long-held view that:

- Electricity consumption and real GDP growth have been closely linked and that small year-to-year variations are largely explained by weather (temperature) variations and/or sharp changes in GDP growth (e.g., 1991 recession).
- Overall energy consumption has lagged well behind real GDP growth due to steadily increasing energy efficiency in various sectors of the economy—driven at times by energy prices, technological advances (e.g., computerization, telecommunications, materials) and the trend towards a less energy intensive US industrial mix.

However, the deviations between the GDP and electricity use lines after 1996 raises two questions:

1. Has the long-standing relationship between growth in real GDP and electricity use been broken? Perhaps the relationship has been broken because the US has moved increasingly into an information and electronic-driven economy that is less electricity-intensive than the economy that we have known for the past few decades.
2. Alternatively, is it possible that the ongoing restructuring of the electricity industry caused EIA to lose track of some electricity use? For example, a number of generating plants have been built at or near the location of industrial facilities, such as oil refineries, primarily to provide electricity for the industrial facility.

Could EIA data be missing some electricity use in such arrangements? Recognizing the changes that are occurring in the electric industry, missing some electricity data would be understandable.

Nevertheless, it appears that a significant new trend may be underway.

ABOUT THE AUTHOR

Glenn R. Schleede is president of Energy Market and Policy Analysis, Inc. (EWA), a consulting practice providing analysis, advice, and assistance to organizations in industry and government on energy and related environmental and economic matters.

Prior to forming EMPA in 1992, Schleede was vice president of New England Electric System (NEES) and president of its fuels subsidiary, New England Energy Incorporated, with responsibilities including procurement and transportation of fuels for NEES facilities, NEEI's oil and gas exploration and coal shipping venture, and NEES economic planning and budgeting functions (1982-1992).

Previously, Schleede was executive associate director of the U.S. Office of Management and Budget (1981), senior vice president of the National Coal Association in Washington (1977-1981) and associate director (Energy and Science) of the White House Domestic Council (1973-1977). He also held career service positions in the U.S. Office of Management and Budget and the U.S. Atomic Energy Commission.