

# Residential Propane Price Analysis 2007

Economics and Statistics Administration  
U.S. Department of Commerce

## SUMMARY

Pursuant to the requirements of the Propane Education and Research Act of 1996 (PERA),<sup>1</sup> the Department of Commerce prepared this analysis of changes in propane prices relative to other energy sources. The report presents the relevant price data and concludes that propane prices have not exceeded the threshold established by PERA.

## BACKGROUND

The Propane Education and Research Council (PERC) was established under PERA to enhance consumer and employee safety and training, to provide for research and development of clean and efficient propane utilization equipment, and to inform and educate the public about safety and other issues associated with the use of propane.

Section 9(a) of PERA requires the Secretary of Commerce to prepare an annual analysis of changes in propane prices relative to other energy sources, using only data from the Energy Information Administration (EIA) of the Department of Energy and other public sources. This analysis is to be made available to PERC, the Secretary of Energy and the public. In particular, the propane price analysis must compare indexed changes in the price of consumer grade propane to a composite of indexed changes in the price of residential electricity, residential natural gas, and refiner price to end users of No. 2 fuel oil on an annual national average basis. For purposes of indexing changes in consumer grade propane, residential electricity, residential natural gas, and end user No. 2 fuel oil prices, the Secretary of Commerce is required to use a 5-year rolling average price.

Section 9(b) of PERA requires PERC's activities to be restricted to R&D, training, and safety matters if in any year the 5-year rolling price index of consumer grade propane exceeds the 5-year rolling average price composite index of other specified energy sources in an amount greater than 10.1%.

## ANALYSIS

This report used annual energy prices from the EIA to compare residential consumer grade propane prices to the composite energy price for residential electricity, residential natural gas, and refiner price to end users of No. 2 fuel oil. While propane prices are higher for residential users than for other users,<sup>2</sup> prices for all propane users have risen rapidly in recent years (Figure 1). Energy prices for residential propane consumers

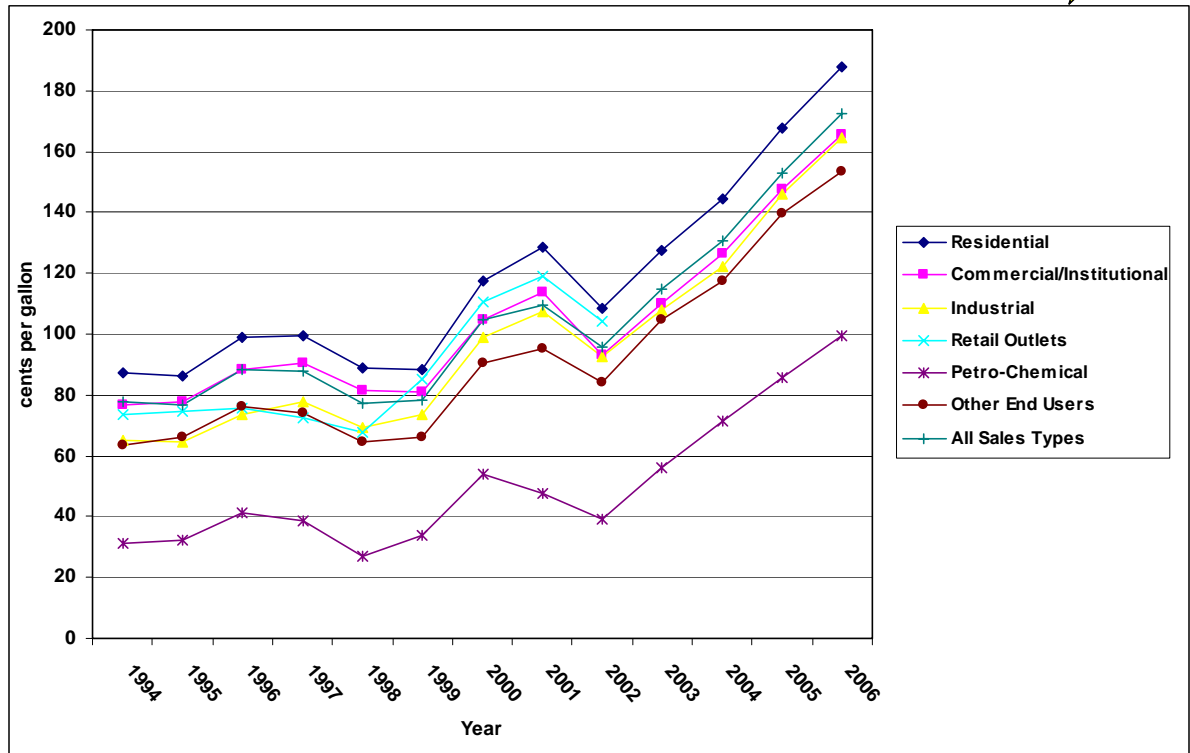
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<sup>1</sup> See Pub. L. No. 104-284, 110 Stat. 3370 (1996).

<sup>2</sup> Price data for propane sales to end-users include residential, commercial/institutional, industrial, retail outlets, petro-chemical and other end-users. The "other end users" category includes agricultural users and utilities. For more details on definitions for end-users of propane see [http://www.eia.doe.gov/pub/oil\\_gas/petroleum/survey\\_forms/eia782bip4.pdf](http://www.eia.doe.gov/pub/oil_gas/petroleum/survey_forms/eia782bip4.pdf), pp. 3-4.

increased an average of 14.7 percent per year from 2003 to 2006, a period of rapid growth in energy prices. This was slightly less than the percent rise in the average price for all propane consumers, which was 15.9 percent during the same time period. Since 1996 when PERC was established, the residential propane price has increased 89.4 percent, with a majority of the growth occurring between 2003 and 2006. Total price increases from 1996 to 2006 for all other uses of propane were substantially more than for residential propane, except the price increase for commercial/institutional users, which was 87.1 percent.<sup>3</sup> The total increase in propane prices for all sales types was 94.9 percent from 1996 to 2006.

**Figure 1. U.S. Consumer Grade Propane Prices by Sales Type, 1994 to 2006**

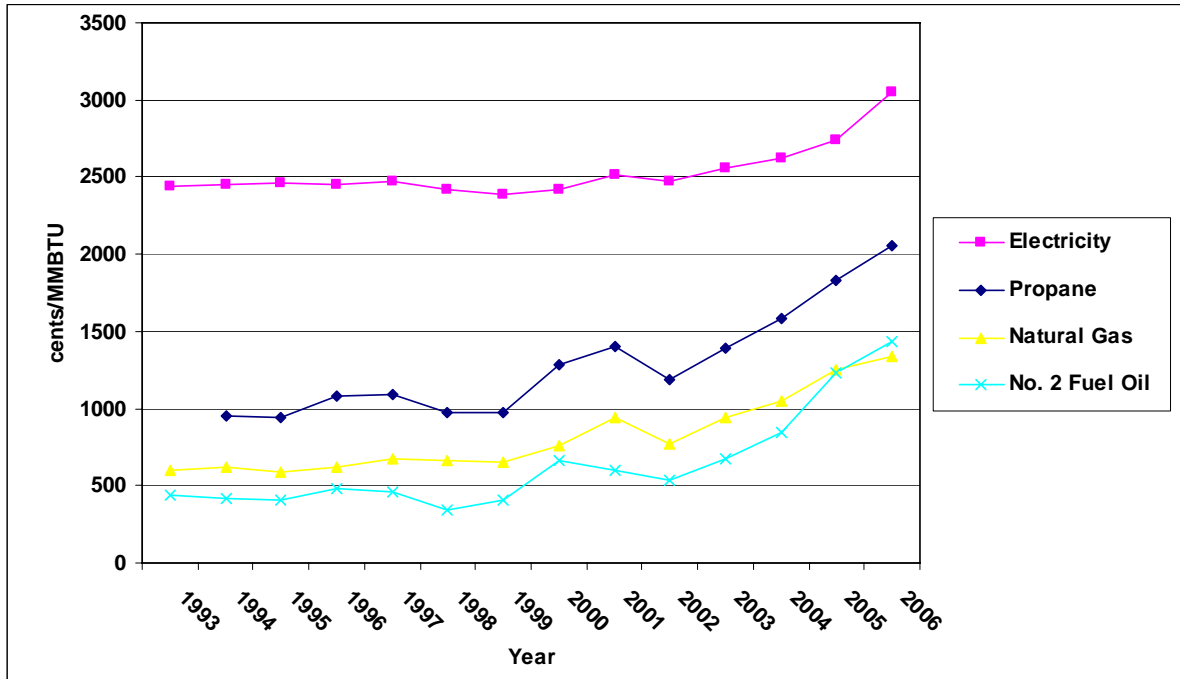


Source: Energy Information Administration, 2007.

Very similar to prices for residential propane, prices of energy sources that comprise the composite residential price index have also increased (Figure 2). While residential natural gas and refiner end-user No. 2 fuel oil prices have increased much more rapidly than residential propane prices since PERC came into existence, residential electricity prices have risen modestly. Residential electricity prices grew by 5.4 percent per year on average over the last four years and a total of 19.4 percent from 1996 to 2006. In contrast, residential natural gas and No. 2 fuel oil prices increased on average about 15.1 and 28.5 percent respectively between 2003 and 2006, and a total of 116.9 and 194.5 percent since 1996, respectively.

<sup>3</sup> This does not include propane price increases for retail outlets. This data series ended in 2002.

**Figure 2. Residential Consumer Grade Propane and Residential Electricity, Residential Natural Gas and No. 2 Fuel Oil Prices, 1993 to 2006**



Source: Energy Information Administration, 2007.

Table 1 presents the ratio of the 5-year rolling average residential propane price to the residential composite energy price index covering the years 1997 to 2006. As noted above, to calculate this we used EIA’s price data for residential electricity, residential natural gas, No. 2 fuel oil, and residential consumer grade propane.<sup>4</sup> Each energy source was then converted to MMBTUs, or million British Thermal Units. The composite energy price index for residential electricity, residential natural gas and No. 2 fuel oil was weighted by household expenditures on each energy source. Data to calculate the weights were from EIA’s 2001 Household Energy Use Survey. See Appendix 1 for more information on the energy price data, conversion rates, and composite energy price index weights used in this propane price analysis.

This propane price analysis concludes that the ratio of the 5-year rolling average price index of residential consumer grade propane relative to the composite index of other residential energy sources increased from 0.94 in 1997 to 1.09 in 2006.<sup>5</sup> These ratios

<sup>4</sup> PERA states that “the price of consumer grade propane” should be compared to a composite index of other energy prices, but it does not stipulate which consumer grade propane price to use, that is, residential, industrial, commercial/institutional, petrochemical or average consumer price. As most of the energy prices in the composite index were mandated to be residential prices, we used the residential price of consumer grade propane.

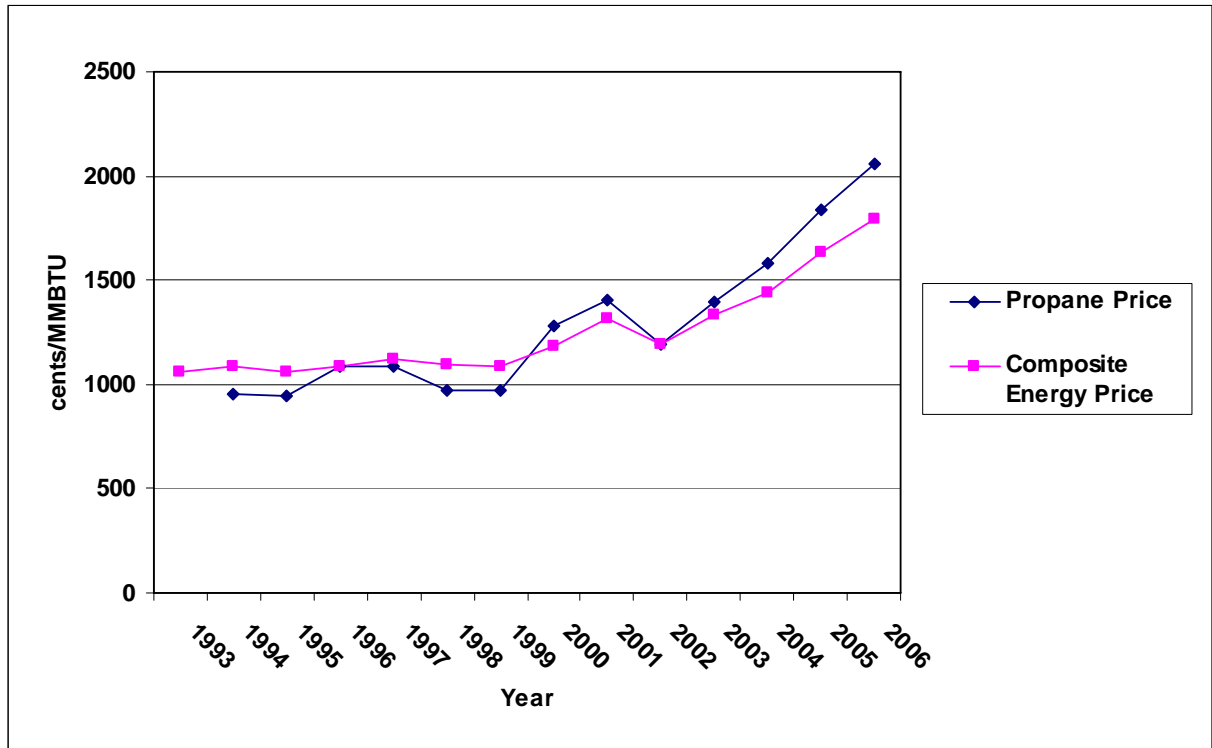
<sup>5</sup> PERA mandates the use of the “refiner price to end users of No. 2 fuel oil” in the calculation of the composite residential energy price index, as was done for the current analysis. However, if the composite index were calculated using the residential price of No. 2 distillate fuel oil instead, becoming more aligned with the other residential energy prices, the 5-year rolling average price index of residential consumer grade propane relative to the composite energy price index would range from 0.92 in 1997 to 1.07 in 2006. This is somewhat less than the ratio presented in the above analysis.

have remained consistently less than the threshold of 1.101 mandated under Section 9 of PERA. However, residential propane prices continue to rise at a greater rate than the residential composite energy price index, approaching the mandated threshold (Figure 3).

**Table 1. Ratio of Residential Propane Prices to Composite Index of Residential Electric, Natural Gas and Fuel Oil Prices**

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
<b>Propane price/ Composite price index</b>	0.94	0.93	0.93	0.97	0.99	0.99	1.02	1.06	1.07	1.09

**Figure 3. Residential Consumer Grade Propane Price and the Composite Electric, Natural Gas and No. 2 Fuel Oil Price, 1993 to 2006**



Source: Energy Information Administration, 2007.

Pursuant to DOC's reporting responsibility under Section 9, DOC will update this propane price analysis annually.

## **Appendix 1: Energy Information Administration Data Sources for Energy Prices and Composite Energy Price Weights**

Residential Electricity Prices: Table 5.3. Average Retail Price of Electricity to Ultimate Customers: Total by End-Use Sector, 1992 through June 2007 (cents per kilowatthour), Electric Power Monthly, [http://www.eia.doe.gov/cneaf/electricity/epm/table5\\_3.html](http://www.eia.doe.gov/cneaf/electricity/epm/table5_3.html). The conversion rate used was 3,412 BTUs per kilowatthour \* 1,000,000.

Residential Natural Gas Prices: Annual U.S. Natural Gas Residential Price (dollars per thousand cubic feet), Natural Gas Navigator, <http://tonto.eia.doe.gov/dnav/ng/hist/n3010us3a.htm>, accessed November 2007. The conversion rate was 1,026 BTUs per cubic foot \* 1,000.

Refiner Price to End Users of No. 2 Fuel Oil Prices: <http://tonto.eia.doe.gov/dnav/pet/hist/a213600002A.htm>, accessed November 2007. The conversion rate used was 5.285 BTUs per 42 gallons.

Residential Propane Prices: Table 14. U.S. Propane (Consumer Grade) Prices by Sales Type (cents per gallon excluding taxes), Petroleum Marketing Monthly, [http://tonto.eia.doe.gov/dnav/pet/pet\\_pri\\_prop\\_dcu\\_nus\\_a.htm](http://tonto.eia.doe.gov/dnav/pet/pet_pri_prop_dcu_nus_a.htm), accessed November 2007. The conversion rate was 3.836 BTUs per 42 gallons.

Household Energy Expenditure Weights: Expenditure weights were based on share of expenditures by households that either used electricity, natural gas, or fuel oil for space and water heating, from the 2001 Residential Energy Consumption Survey: Household Energy Consumption and Expenditures Tables. See Tables 1, 2 and 3 at [http://www.eia.doe.gov/emeu/recs/byfuels/2001/byfuels\\_2001.html](http://www.eia.doe.gov/emeu/recs/byfuels/2001/byfuels_2001.html). The expenditure shares for electricity, natural gas and fuel oil were calculated as 0.261, 0.645 and 0.094, respectively.