

# **Residential Propane Price Analysis 2005**

**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 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 prices of consumer grade propane to a composite of indexed changes in the price of residential electricity, residential natural gas, and the refiner price to end users of No. 2 distillate fuel oil on an annual national average basis.

Section 9(b) requires PERC's activities 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 Energy Information Administration (EIA) to compare residential consumer grade propane prices to the composite energy price for residential electricity, residential natural gas, and No. 2 distillate fuel oil. While propane prices are higher for residential users than for other users,<sup>2</sup> prices for all propane users

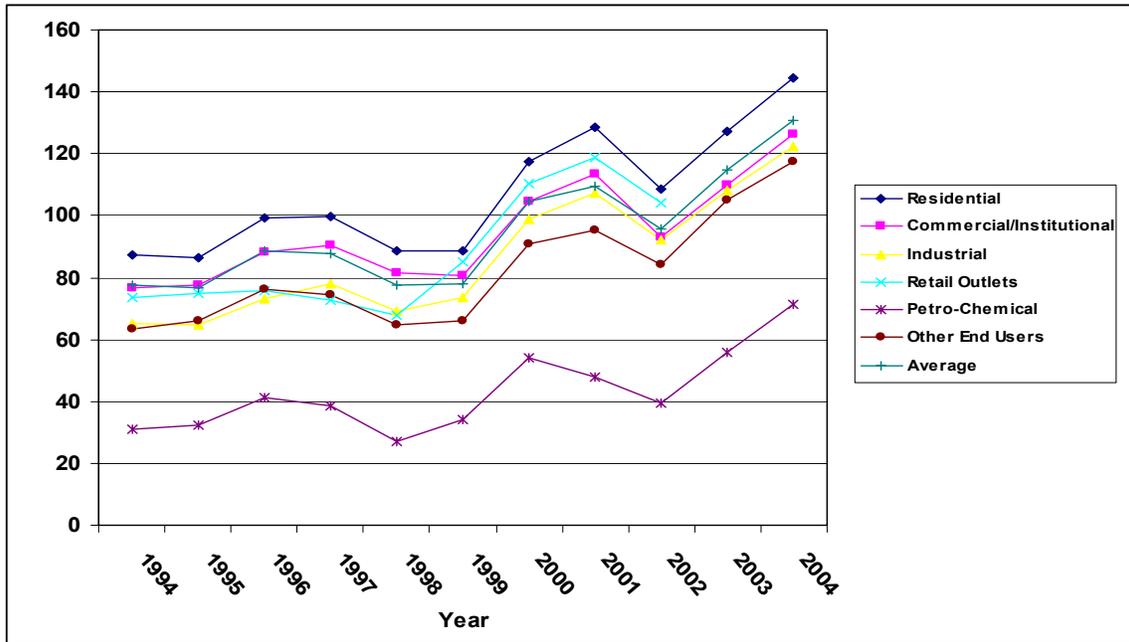
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<sup>1</sup> See Pub. L. 104-284.

<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 or 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.

have risen rapidly in recent years (Figure 1). Energy prices for residential propane consumers rose 17.3 and 13.3 percent in 2003 and 2004, respectively. This was slightly less than the percent increase in the average price for all propane consumers, which rose 20 percent in 2003 and 13.7 percent in 2004. Since 1996 when PERC was established, residential propane prices have increased 45.7 percent. Price increases during this time period for other uses of propane were more, except the price increase for commercial/institutional users, which was only 43 percent. The average increase in propane consumer prices during that time was 47.6 percent.

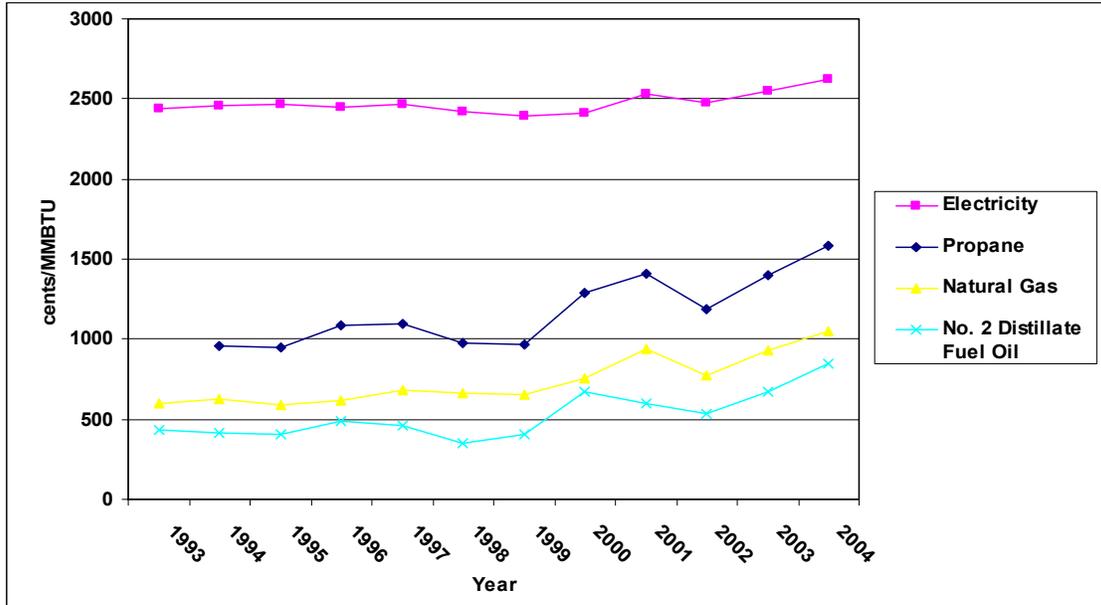
**Figure 1. U.S. Consumer Grade Propane Prices by Sales Type, 1994 to 2004**



Source: Energy Information Administration, 2005.

Very similar to residential propane, prices of energy sources that comprise the composite residential price index have also increased (Figure 2). While residential natural gas and No. 2 distillate fuel oil prices have increased more rapidly than residential propane prices since PERC came into existence, residential electricity prices have risen modestly. Residential electricity prices grew by only 2.8 percent on average over the last two years and 7 percent since 1996. In contrast, residential natural gas and No. 2 distillate fuel oil prices increased on average about 17 and 26 percent since 2002, and 69.4 and 73.7 since 1996, respectively.

**Figure 2. Residential Consumer Grade Propane and Residential Electricity, Residential Natural Gas and No. 2 Distillate Fuel Oil Prices, 1993 to 2004**



Source: Energy Information Administration, 2005.

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 2004.<sup>3,4</sup> As noted above, to calculate this we used EIA’s price data for residential electricity, residential natural gas, No. 2 distillate fuel oil, and residential consumer grade propane. Each energy source was then converted to MMBTUs, or million British Thermal Units. The composite energy price index for electricity, natural gas and No. 2 distillate 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

<sup>3</sup> In June 2003, the General Accountability Office (GAO) published an analysis of the consumer effects of propane markets entitled “Propane: Causes of Price Volatility, Potential Consumer Options, and Opportunities to Improve Consumer Information and Federal Oversight” (see <http://www.gao.gov/new.items/d03762.pdf>). In the report, there are references in footnote 9 and on pp. 47 and 48 to propane price analyses submitted by PERC to GAO that demonstrated that the 5-year rolling price of consumer grade propane did not exceed a composite energy price index between 1997 and 2002. GAO did not include PERC’s calculations in the report due to “uncertainty associated with the appropriate assumptions and calculations to be used in conducting the analysis that the Department of Commerce is required to complete.” GAO, however, did agree with PERC’s conclusion that “historically the statutory threshold appears not to have been exceeded.”

<sup>4</sup> PERC submitted a propane price analysis to the DOC in May 2005. Using data from the EIA, PERC found that in 2004 “the 5-year rolling average price of propane per MMBTU is 90.4 percent that of the 5-year rolling average per MMBTU of the combined energy sources.” This is low compared to our estimate of 106 percent. One reason is that PERC used an average price for U.S. consumer grade propane, whereas we used the price for residential consumers. Also, we weighted the composite price index by share of household expenditures for each energy source, whereas PERC applied equal weights.

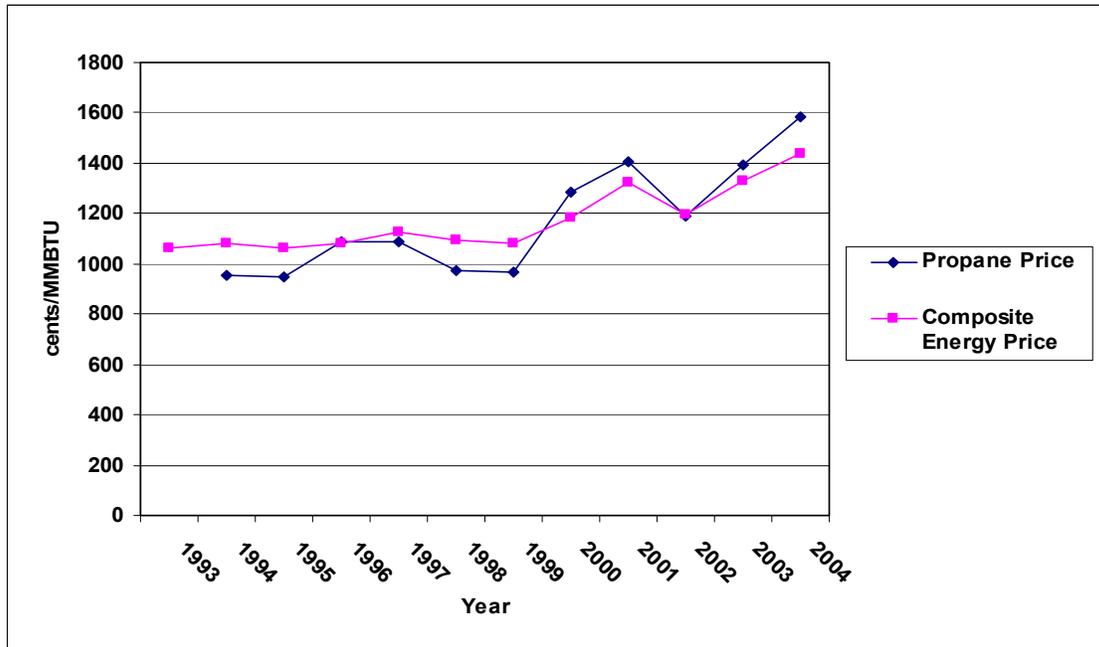
information on the energy price data, conversion rates, and composite energy price index weights used in this propane price analysis.

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 ranged from 0.94 in 1997 to 1.06 in 2004. These ratios have remained consistently less than the threshold of 1.101 mandated under Section 9 of PERA. However, residential propane prices have been rising steadily relative to the residential composite price index and are approaching the 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
Propane price/ Composite price index	0.94	0.93	0.93	0.97	0.99	0.99	1.02	1.06

**Figure 3. Residential Consumer Grade Propane and the Composite Electric, Natural Gas and No. 2 Distillate Fuel Oil Price, 1993 to 2004**



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, 1991 through March 2005 (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>, updated June 2005. The conversion rate was 1,026 BTUs per cubic foot \* 1,000.

No. 2 Distillate Fuel Oil Prices: Table 2. U.S. Refiner Prices of Petroleum Products to End Users (cents per gallon excluding taxes), Petroleum Marketing Monthly, [http://www.eia.doe.gov/pub/oil\\_gas/petroleum/data\\_publications/petroleum\\_marketing\\_monthly/current/pdf/pmmtab2.pdf](http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/petroleum_marketing_monthly/current/pdf/pmmtab2.pdf), June 2005. 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://www.eia.doe.gov/pub/oil\\_gas/petroleum/data\\_publications/petroleum\\_marketing\\_monthly/current/pdf/pmmtab14.pdf](http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/petroleum_marketing_monthly/current/pdf/pmmtab14.pdf), June 2005. 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 used either 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.