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Energy Information Administration

Winter Fuels Outlook: 2004-2005

Introduction

This report summarizes the likely winter (October 2004 through March 2005) demand, supply and prices for natural gas, heating oil, propane and electricity, with special emphasis on residential space-heating demand for the upcoming winter season. This outlook includes projections for base case (the latest degree-day forecasts from the National Oceanographic and Atmospheric Administration (NOAA)), severe (cold) and mild (warm) weather cases, and is based on the October 2004 Short-Term Energy Outlook.

In the near term, continued concerns about crude oil supplies, volatility in crude oil prices, and tightness in natural gas markets are expected to keep nominal crude oil and wellhead natural gas prices well above historical levels. Higher prices combined with a projected slightly colder-than-normal winter season (significantly colder than last year in some regions) mean that most households and businesses will be paying more for heating fuels—natural gas, heating oil, propane, and electricity—in the coming months.

Highlights

- ***Residential space-heating expenditures*** *are projected to increase for all fuel types this winter compared to yea-r ago levels.* ***Increases in heating fuel prices*** *are likely to generate higher expenditures even in regions where demand for fuel is expected to fall.* *Listed below are the projected base case winter-to-winter percentage changes for consumption, prices, and total expenditures by selected fuel types:*

	Consumption	Prices	Expenditures
Natural Gas (Midwest)	+3.7	+11.2	+15.3
Heating Oil (Northeast)	-0.3	+28.8	+28.4
Propane (Midwest)	+3.7	+17.3	+21.6

The variation in year-to-year changes by fuel type reflects (in part) differences in weather conditions. Last winter, the Midwest, the principal market for propane, experienced a milder-than-normal season, while the Northeast, the major heating oil market, was slightly colder than normal.

- ***Beginning-of-season (October 1, 2004) national and regional inventory levels for heating fuels are within or above normal ranges*** *and are similar to or above year-ago levels. The regional distributions of stocks appear to be well balanced. Statistics for the Lower-48 and key consuming-regions are shown below:*

Fuel	Region	Units	2003	2004	Normal Range
Natural Gas*	Lower 48	trillion cubic feet	2.843	3.065	2.494 – 3.042
	Eastern Cons.	*trillion cubic feet*	*1.682*	*1.763*	*1.599 – 1.776*
Distillate**	Lower 48	million barrels	131.3	126.4	120.1 – 141.4
	*Northeast****	*million barrels*	*42.6*	*39.7*	*37.7 – 41.2*
Propane	Lower 48	million barrels	62.5	68.8	57.7 – 69.7
	Midwest	*million barrels*	*21.1*	*24.6*	*22.2 – 28.2*

* Working Gas Storage ** Excludes Northeastern Heating Oil Reserve of 2 million barrels ***New England and Mid-Atlantic States
Normal Range: natural gas: 5-year minimum and maximum; heating oil/propane: 5-year average +/- one standard deviation.

- ***Current levels of heating fuel inventories appear to be adequate to insure against unanticipated demand changes in case of severe weather.*** *In the normal weather (base case) projections, end-of-season inventories are expected to remain above normal and above the levels of the previous winter, assuming no disruptions of refinery activity or imports. While demand surges would likely cause increased prices, particularly given the general tightness in global oil markets, any related price increases should be somewhat muted compared to what might be expected if inventories were substantially below normal.*

- ***A colder-than-projected winter would increase both consumption and prices****. If heating degree-days deviate from those in the base case projection by 10 percent, average household consumption, prices, and expenditures would deviate from the base case projections by the following percentages:*

	Consumption		Prices		Expenditures	
	Warm	Cold	Warm	Cold	Warm	Cold
Natural Gas	-10.0	+10.0	-5.2	+7.2	-14.7	+18.0
Heating Oil	-10.0	+10.0	-4.7	+5.5	-14.2	+16.1
Propane	-10.0	+10.0	-4.0	+4.8	-13.6	+15.2

Heating Bills

Heating-fuel expenditures per household are expected to rise this winter in all regions of the country, reflecting both higher fuel prices and, in some areas, colder weather than last year. Table WF1 below presents selected historical and expected weather (base case), average household demand, total expenditures, and price projections for natural gas in the U.S., heating oil in the Northeast, and propane in the Midwest. It should be noted that the costs of the three fuels are based on national averages presented in the *Short-Term Energy Outlook*. Thus, heating bill calculations reflect average changes in fuel bills rather than the actual expenditures incurred by individual consumers.

Table WF1: Selected Average Consumer Prices and Expenditures for Heating Fuels During the Winter

	Average 1998-2000	Actual 2001-2002	Actual 2002-2003	Actual 2003-2004	*Projections 2004-2005*	*% Change*
Natural Gas (Midwest)						
Consumption (mcf*)	88.8	81.3	94.9	*89.1*	*92.3*	*3.7*
Avg. Price ($/mcf)	7.61	7.41	8.40	9.77	*10.86*	*11.2*
Expenditures ($)	676	602	797	870	*1003*	*15.3*
Heating Oil (Northeast)						
Consumption (gallons)	673	577	743	700	698	*-0.3*
Avg. Price ($/gallon)	1.12	1.10	1.34	1.36	*1.75*	*28.8*
Expenditures ($)	754	637	995	953	*1223*	*28.4*
Propane (Midwest)						
Consumption (gallons)	877	803	940	*882*	*914*	*3.7*
Avg. Price ($/gallon)	1.10	1.11	1.20	1.30	*1.53*	*17.3*
Expenditures ($)	965	888	1124	1147	*1396*	*21.6*

Consumption based on typical per household use for regions noted. Prices are retail national averages.
*thousand cubic feet.

Year-to-year changes in total expenditures are sensitive to consumption and prices, both of which vary by season and by fuel. For example, per-household natural gas expenditures rose last winter more than 9 percent despite a weather-induced 7-percent decline in consumption. This winter, natural gas expenditures are projected to rise 15 percent due to a 4-percent increase in consumption and an 11-percent increase in prices. Last winter, heating oil expenditures for a typical household declined slightly as a 6-percent decline in consumption more than offset a 1.5-percent increase in prices. This winter, expenditures are projected to rise by 28 percent due to substantially higher prices. Last winter, propane expenditures rose slightly as an 8-percent price increase negated a 6-percent consumption decline. This winter, expenditures are projected to rise by about 22 percent in response to a 4-percent increase in consumption and a 17-percent increase in prices.

Table WF2. U.S. Winter Fuels Outlook: Base Case

	History 2003-2004			Base Case 2004-2005			Percent Change		
	Q4	Q1	Winter	Q4	Q1	Winter	Q4	Q1	Winter
Demand/Supply									
Distillate Fuel (mill. barrels per day)									
Total Demand	**3.94**	**4.25**	**4.09**	*4.08*	*4.31*	*4.20*	*3.7%*	*1.6%*	*2.6%*
Refinery Output	**3.80**	**3.54**	**3.67**	*3.94*	*3.70*	*3.82*	*3.7%*	*4.4%*	*4.0%*
Net Stock Withdrawal	**-0.06**	**0.36**	**0.15**	*-0.02*	*0.29*	*0.13*	*-61.5%*	*-19.0%*	*-10.8%*
Net Imports	**0.20**	**0.34**	**0.27**	*0.16*	*0.32*	*0.24*	*-15.7%*	*-6.4%*	*-9.8%*
Refinery Utilization (percent)	**93.0%**	**88.9%**	**91.0%**	*91.6%*	*89.7%*	*90.7%*			
Natural Gas (bill. cubic feet per day)									
Total Demand	**59.85**	**79.12**	**69.38**	*61.15*	*79.97*	*70.45*	*2.2%*	*1.1%*	*1.5%*
Production	**51.72**	**52.26**	**51.99**	*51.48*	*53.09*	*52.28*	*-0.5%*	*1.6%*	*0.6%*
Net Stock Withdrawal	**3.02**	**16.74**	**9.80**	*4.45*	*15.50*	9.91	*47.0%*	*-7.4%*	*1.1%*
Net Imports	**8.89**	**9.63**	**9.26**	*9.13*	*9.98*	*9.55*	*2.7%*	*3.6%*	*3.1%*
Propane (mill. barrels per day)									
Total Demand	**1.41**	**1.55**	**1.48**	*1.42*	*1.56*	*1.49*	*0.8%*	*0.7%*	*0.8%*
Net Stock Withdrawal	**0.14**	**0.24**	**0.19**	*0.16*	*0.26*	0.21	*10.3%*	*6.7%*	*8.0%*
Stocks (ending period)									
Distillate Fuel (MMB) - Beg. [a]	**131**	**137**	**131**	*126*	*128*	*126*	*-3.7%*	*-5.9%*	*-3.7%*
- End. [a]	**137**	**104**	**104**	*128*	*102*	*102*	*-5.9%*	*-1.8%*	*-1.8%*
Working Gas (BCF) - Beg. [b]	**2843**	**2565**	**2843**	*3065*	*2656*	3065	*7.8%*	*3.6%*	*7.8%*
- End. [b]	**2565**	**1058**	**1058**	*2656*	*1261*	*1261*	*3.6%*	*19.1%*	*19.1%*
Propane (MMB) - Beg. [a]	**62**	**50**	**62**	*69*	*54*	*69*	*10.1%*	*10.1%*	*10.1%*
- End. [a]	**50**	**28**	**28**	*54*	*31*	*31*	*10.1%*	*12.7%*	*12.7%*
Prices									
Imported Crude Oil (c/g) [c]	**66.2**	**74.1**	**70.1**	*100.2*	*96.2*	*98.3*	*51.3%*	*29.9%*	*40.2%*
Retail Heating Oil (c/g)	**128.8**	**142.2**	**135.8**	*174.3*	*175.9*	*175.1*	*35.3%*	*23.6%*	*29.0%*
Wellhead Gas ($/mcf)	**4.62**	**5.22**	**4.92**	*5.94*	*6.14*	*6.04*	*28.5%*	*17.6%*	*22.8%*
Resid. Gas ($/mcf)	**9.67**	**9.82**	**9.77**	*10.88*	*10.85*	*10.86*	*12.5%*	*10.5%*	*11.2%*
Resid. Propane (c/g)	**123.1**	**136.6**	**130.1**	*148.8*	*156.2*	*152.6*	*20.9%*	*14.3%*	*17.3%*
Market Indicators									
Manuf. Output (index, 1996=1.0)	**114.23**	**115.95**	**115.091**	*120.14*	*121.72*	*120.931*	*5.2%*	*5.0%*	*5.1%*
Northeast HDDs per day	**21.9**	**35.3**	**28.5**	*22.8*	*34.2*	28.4	*4.2%*	*-3.2%*	*-0.3%*
Gas-Weighted HDDs per day	**17.9**	**26.6**	**22.2**	*19.0*	*27.1*	23.0	*6.5%*	*1.7%*	*3.7%*

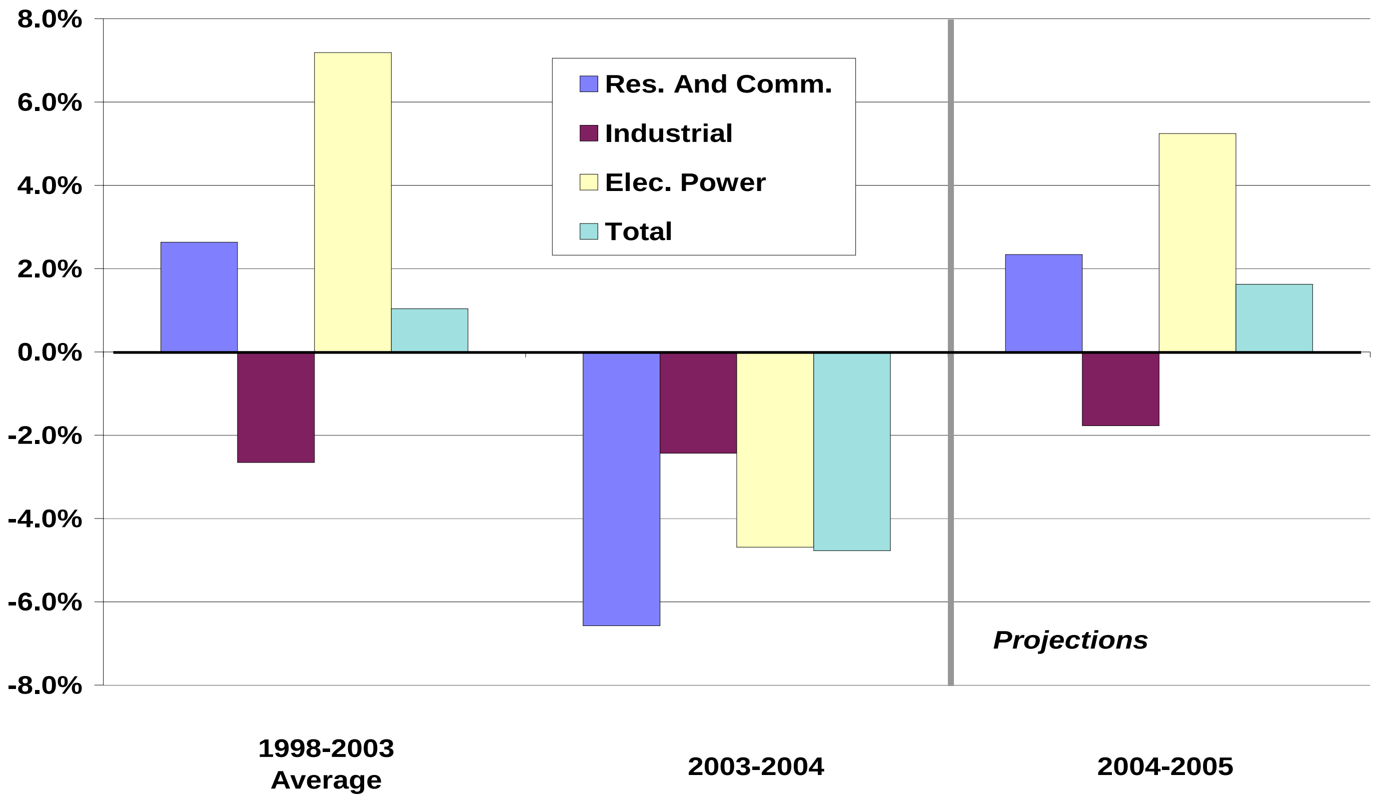
[a]mmb = million barrels.
[b]bcf = billion cubic feet.
[c]Refiner acquisition cost (RAC) of imported crude oil.
Notes: Minor discrepancies with other EIA published historical data are due to rounding. Historical data are printed in bold; forecasts are in italic. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System. Sources: Historical data: Energy Information Administration, Petroleum Supply Monthly, DOE/EIA-0109; Monthly Energy Review, DOE/EIA-0035. Macroeconomic projections are based on Global Insight Model of the US Economy, September 2004.

Natural Gas

Demand

In the bases case, total winter-season natural gas demand is expected to average 70.45 billion cubic feet (bcf) per day, up 1.5 percent from last winter's average of 69.38 bcf per day (Table WF2). This increase reflects greater heating degree-days in key regions with large concentrations of gas-heated homes and continued demand increases in the commercial and power-generation sectors. Not only is the typical residential and commercial customer expected to increase natural gas consumption during this heating season compared to last winter (Figure WF1), but the number of such customers is expected to increase as well.

Figure WF1. U.S. Winter Natural Gas Demand Changes (Change from Previous Season)



Supply

Domestic dry natural gas production during the upcoming winter is expected to average 52.28 bcf per day, an increase of 0.6 percent from last winter's average production of 51.99 bcf per day (Table WF2). This increase is somewhat less than would have been expected had Hurricane Ivan not disrupted Gulf of Mexico production (see box below). The lagged effects of continued high prices in 2004, which induced additional drilling activity, are expected to raise winter output above levels seen last winter despite the above-average levels of gas in storage available to meet winter demand.

Impact of Hurricane Ivan on U.S. Oil and Natural Gas Production and Prices

In the wake of Hurricane Ivan, the U.S. Minerals Management Service (MMS) reported that in the Federal Offshore Gulf of Mexico about 480,000 barrels per day of crude oil production remained shut-in as of October 4, 2004, along with 1,978 million cubic feet per day of natural gas production. MMS reports the cumulative total production lost to date at over 14.8 million barrels of crude oil and 66.1 billion cubic feet of natural gas. (These numbers do not include production lost due to destroyed platforms, or production from State waters.)

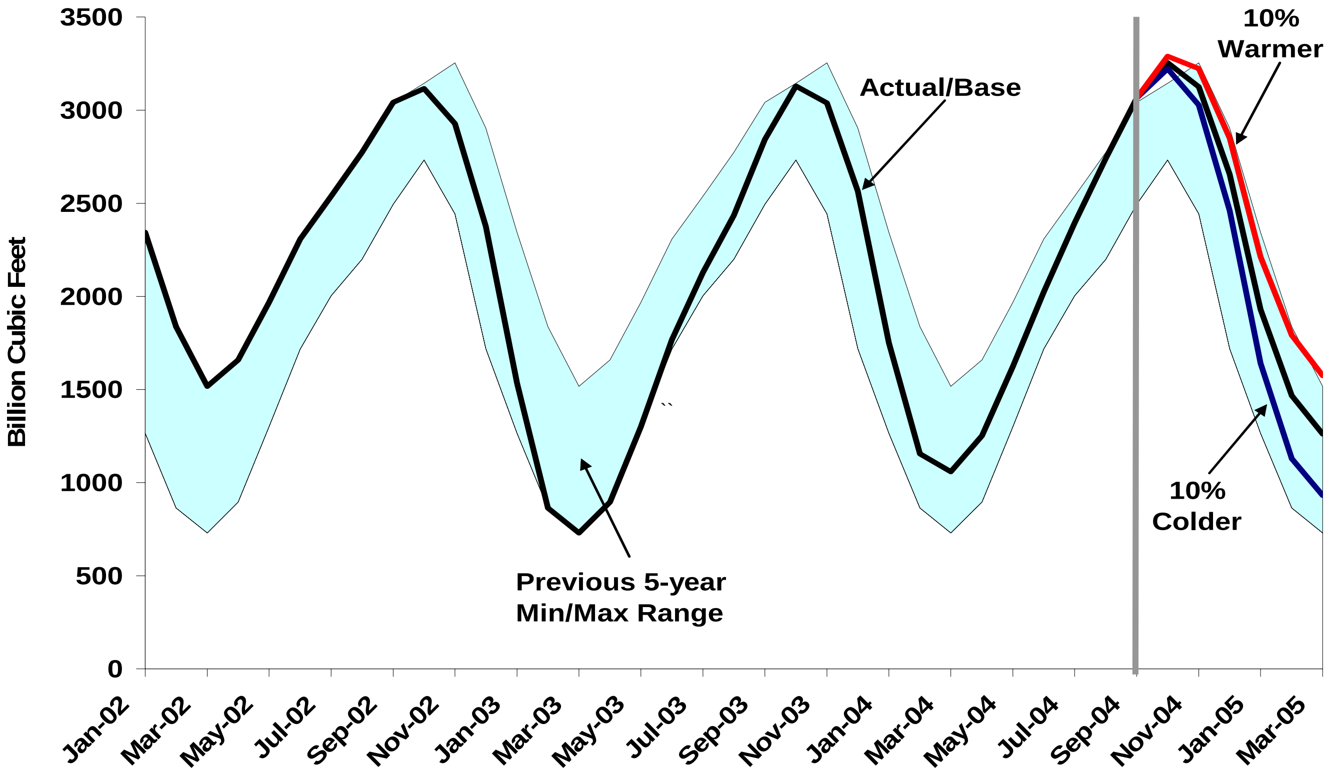
The U.S. is heavily dependent on the Gulf for oil and natural gas production. Losses for the month of September amounted to 3.3 percent of total U.S. natural gas production and 11 percent of total U.S. oil production. While the loss of U.S. crude oil production resulting from Hurricane Ivan is not likely to have a significant impact on world oil markets, it apparently has contributed to higher domestic spot and futures prices for natural gas.

Natural gas futures prices for November 2004 to March 2005 delivery contracts have increased more than $2 per million Btu (43 percent) since end-of-summer prices bottomed out at $4.72 on September 16. Production losses in the Gulf of Mexico due to Hurricane Ivan have tightened the natural gas market following a soft period associated with weak power-related demand in July and August. Higher crude oil (WTI) prices, which have risen about 14 percent over the same period, have also contributed to the natural gas price increase.

According to the MMS, the final tally of damage includes: seven platforms destroyed; 13 reported leaks of oil and gas pipelines; two spars and four mobile rigs heavily damaged. Industry officials estimate that resumption of normal operations could take between 45 and 90 days (Natural Gas Week, September 27, 2004).

As of October 1, 2004, working gas inventories were estimated at 3.065 trillion cubic feet (tcf), close to the upper bound of the normal range and 222 bcf above the year-ago level. Given continued net injections during October, working gas inventories by October 31 are expected to be at their highest since 1990. The April-to-September rate of stock additions was well above the average refill rate of the previous 5-years, (Figure WF2), brought about by weak summer demand (air conditioning-related) from cooler-than-average weather. Winter-season storage withdrawals are projected to average 9.91 bcf per day, slightly above last winter's average of 9.80 bcf per day (Figure WF1). As a result, end-of-season (March 31, 2005) working-gas inventories are projected to be 1.261 tcf, about 200 bcf above the March 31, 2004 level and about 530 bcf above the all-time low of 730 bcf at the end of the winter of 2003. Primary inventories are the principal source of natural gas in the event of unanticipated demand changes brought about by weather events, as happened last January in the Northeast. Should additional supplies be required this winter (i.e., if temperatures are on average much lower than in the base case) almost 3 bcf per day more could be withdrawn without pulling stocks below the previous minimum. Such a development would, however, have a significant price impact.

Figure WF2. Working Gas in Storage



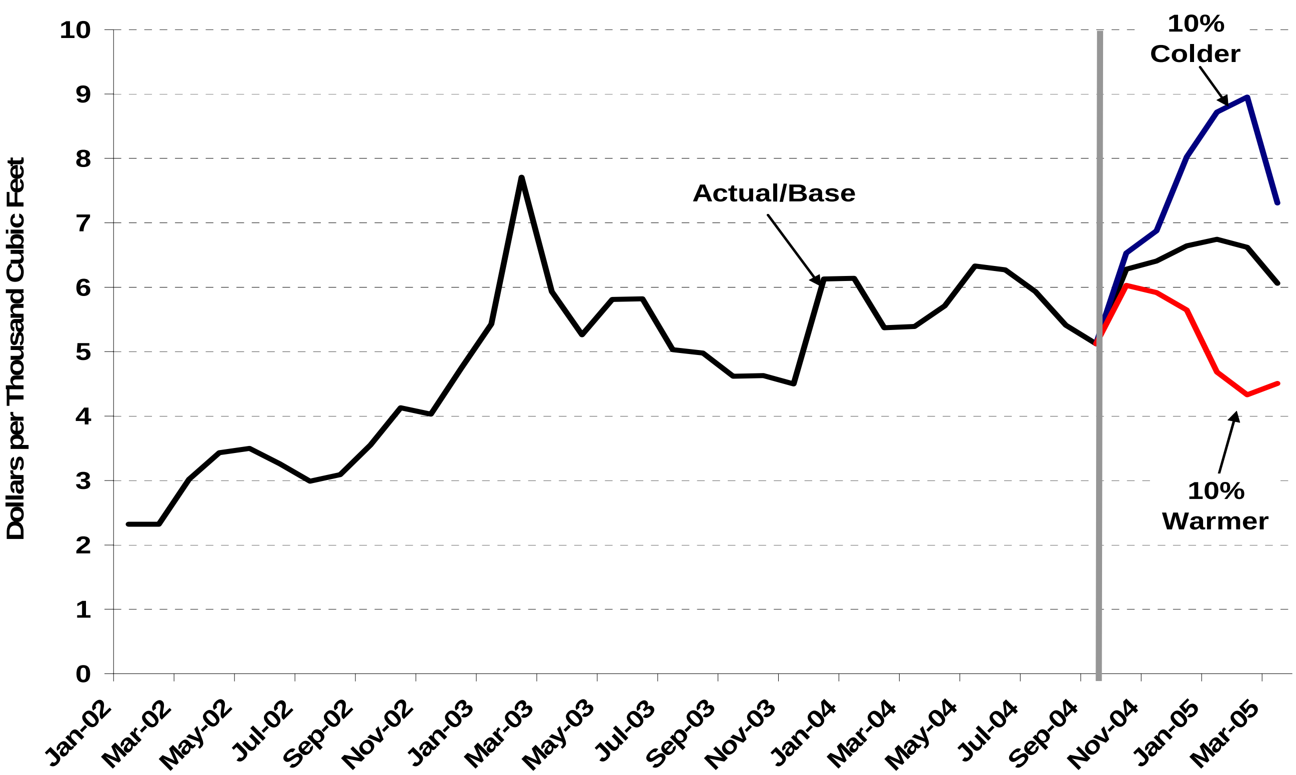
In the base case, net imports are projected to provide 9.55 bcf per day this winter, slightly more than last winter's average of 9.26 bcf per day. The bulk of net imports are shipped via pipeline from Canada. Last winter, imports from Canada declined by about 0.7 bcf per day from the previous winter but this decline was more than offset by increased liquefied natural gas (LNG) imports. Pipeline imports from Canada are expected to decline again this year by an amount that should be more than offset by higher LNG imports. Meanwhile, gradual increases in natural gas exports to Mexico are expected to continue.

Prices

High crude oil prices and strong economic growth put upward pressure on natural gas prices this year until mid-summer, when cooler-than-expected temperatures kept peak electricity demands down, reducing summer natural gas demand below expectations. Prices began easing in July before falling to a September average of about $5.00 per million Btu at the Henry Hub, a decline of about $1.30 (20 percent) from the June average (Figure WF3). The relatively weak demand and low prices relative to NYMEX futures prices for peak winter (December, January and February) delivery resulted in very strong storage injections from mid to late summer. The high level of gas in underground storage has dampened forward prices through the fall compared to earlier expectations. But average heating season prices, both at the wellhead and retail, are still expected to be substantially above those of last winter, particularly during the fourth quarter (Q4 2003 spot and average wellhead prices started out at comparatively low levels).

This winter season, given the projections of increased heating degree-days in regions with large percentages of gas-heated homes and continued high oil prices, the average base case natural gas wellhead price, which includes both spot and long-term purchases, is projected to average $6.04 per mcf, up nearly 23 percent from last winter's average of $4.92 per mcf (Table WF2). Production losses in the Gulf of Mexico have contributed to the size of the expected increase. Consequently, residential prices are projected to average $10.86 per mcf, up about 11 percent from the average $9.77 per mcf last winter. Because of the lagged effects of changes in wellhead prices on retail prices for both economic and regulatory reasons, year-to-year increases in average wellhead prices are not expected to be fully absorbed at the retail level during the heating season.

Figure WF3. Natural Gas Spot Price (Henry Hub)



Heating Oil

Demand

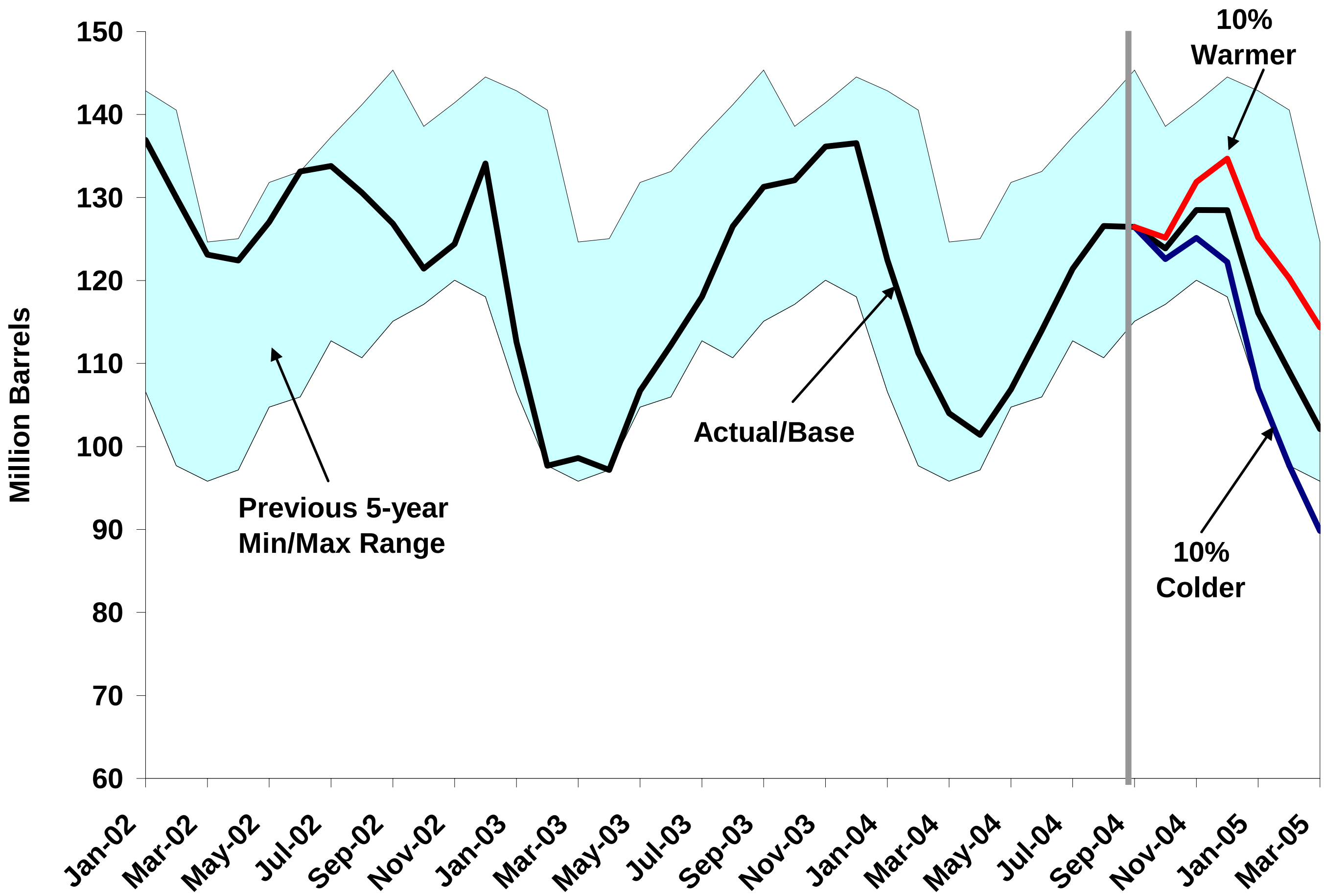
As Table WF1 shows, the average household's heating oil consumption last winter fell by about 6 percent (due to weather conditions being, on average, milder than in the winter of 2002-2003), while the average per-gallon price rose by 1.5 percent. As a result, the average heating oil consumer saw little change in total heating expenditures. This winter, tight global oil markets and elevated world and domestic oil prices are expected to raise heating oil prices and expenditures substantially. Per-household heating oil demand is projected to be slightly below last winter's demand, but average prices are projected to rise by about 29 percent. As a result, base-case heating oil bills are expected to rise 28 percent compared to last winter, the largest increase of all the fuels. For the distillate market as a whole, demand is projected to average 4.20 million barrels per day, up 2.6 percent from last winter's 4.09 million barrels per day.

Supply

Domestic refinery distillate output is projected to average 3.82 million barrels per day, up from last winter's average of 3.67 million barrels per day. The increase in refinery output derives from two factors: first, distillate yields are projected to average a record 24.7 percent, compared to 23.7 percent last winter; and, second, refinery capacity for this winter is expected to average 16.91 million barrels per day, up from to 16.82 million barrels per day last winter season. Refinery utilization is projected to average 90.7 percent, similar to the 91.0 percent average recorded last winter

In the event of an unanticipated short-term cold snap, incremental refinery production of more than 150,000-200,000 barrels per day can be realized, pushing total output to well over 4 million barrels per day on a short-term basis. However, the bulk of any incremental refinery output would have to be brought about by increases in utilization rates, which would result in additional--and possibly unwanted--production of winter-grade gasoline. Pressure for greater domestic production of distillate fuel oil in general, and heating oil in particular, is likely to result in increased imports into the Northeast. The implications of this for spot and retail prices will depend upon the ease with which extra supplies from abroad may arrive in the United States. Given the generally tight oil market conditions this winter, incremental imports will most likely come at a steep premium.

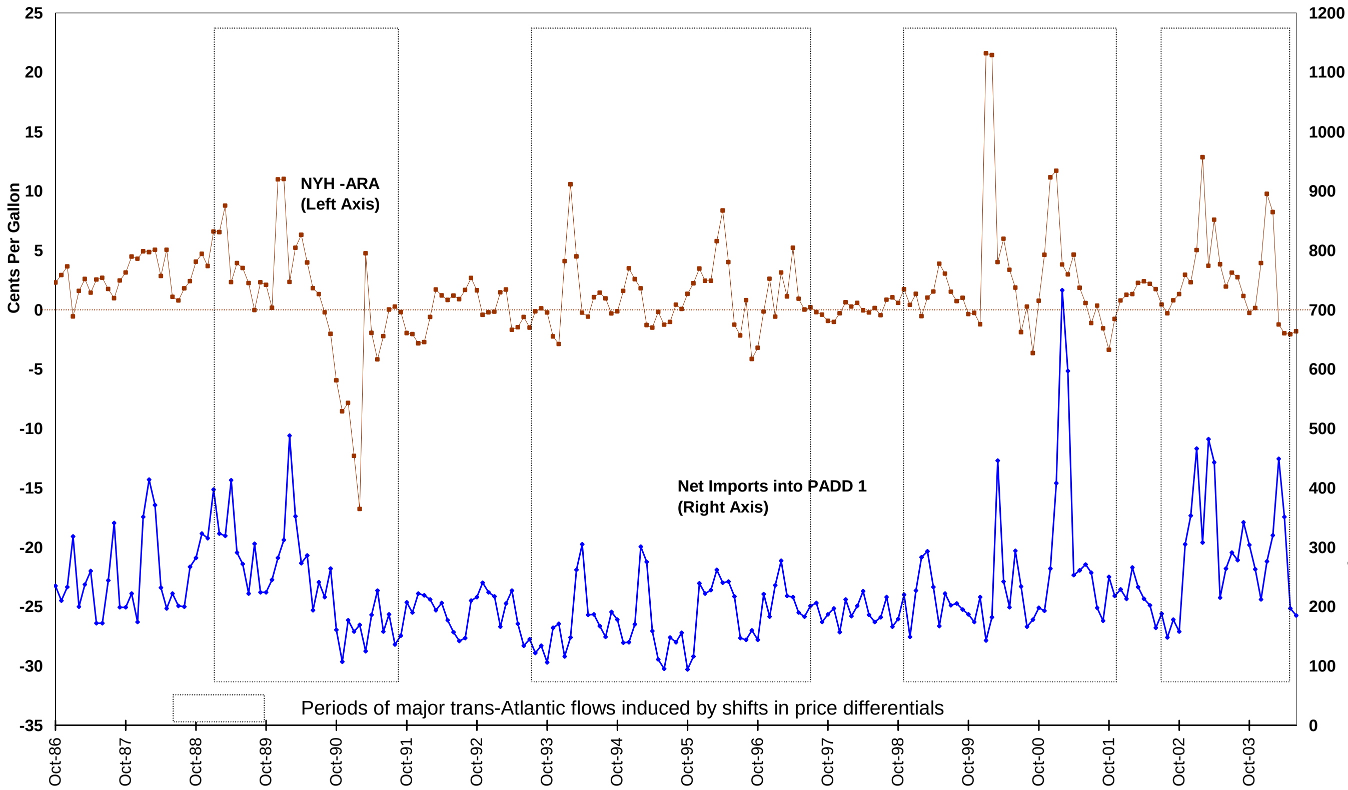
Figure WF4. U.S. Distillate Fuel Stocks



Beginning-of-season (end-of-September) inventories are currently estimated at 126.4 million barrels, slightly below the 131.3 million barrels last year, but within the normal range of 120.1–141.4 million barrels (Figure WF4). The story is similar for inventories in the Northeast (the main consuming region for heating oil), which stand at 39.7 million barrels, slightly less than the 42.6 million barrels at the beginning of last winter but within the normal range of 37.7–41.2 million barrels. Total end-of-season stocks are projected to be 102.1 million barrels, slightly lower than the 104.0 million barrels seen at the end of last winter. As a result, an average inventory draw rate of 135,000 barrels per day is expected, less than the 150,000 barrels per day drawn down last winter. Primary inventories should be able to provide an additional 95,000 barrels per day in the event of unusually cold weather or supply disruptions without dipping below 85 million barrels, the industry-defined lower operational inventory threshold for distillate fuel required to reliably maintain smooth operations. It should be noted that these figures exclude the 2 million barrels currently stored in the Regional Petroleum Reserve, located on the East Coast.

Compared to last winter, net imports are expected to play a slightly smaller role in meeting the winter distillate requirement. Often the swing supplier of heating oil, net imports are expected to average just 240,000 barrels per day, down from 269,000 barrels per day last winter. On a short-term basis, however, net imports have been as high as 722,000 barrels per day (January 2001). As Figure WF5 below shows, trans-Atlantic flows of heating oil are sensitive to price differentials that reflect differences in European and East Coast market conditions. Any unusual demand spikes resulting from supply disruptions or unanticipated weather episodes often results in substantial increases in trans-Atlantic flows.

Figure WF5. New York / W. Europe* Heating Oil Spot Price Differentials and Net Imports of Distillate into PADD 1



* W. Europe refers to Amsterdam-Rotterdam-Antwerp (ARA) market region.

Prices

This winter season, tight global oil markets and elevated world and domestic oil prices are expected to raise heating oil prices and expenditures considerably. Retail heating oil prices in the base case are projected to average $1.75 per gallon, up 39 cents from last winter's average. The cost of imported crude oil to U.S. refineries this winter is projected to average 98.3 cents per gallon (about $41 per barrel) compared to 70.1 cents per gallon last winter. Figure WF6 depicts the base-case price projection for West Texas Intermediate (WTI) crude oil along with a range expected under various winter weather scenarios. During the winter, WTI prices are expected to decline from their current levels but remain in the low $40's-per-barrel range. Very cold or mild weather conditions in the Northern Hemisphere would tend to move prices noticeably above or below the base case level, and weather differences between Western Europe and the East Coast would affect product flows through changes in price differentials.

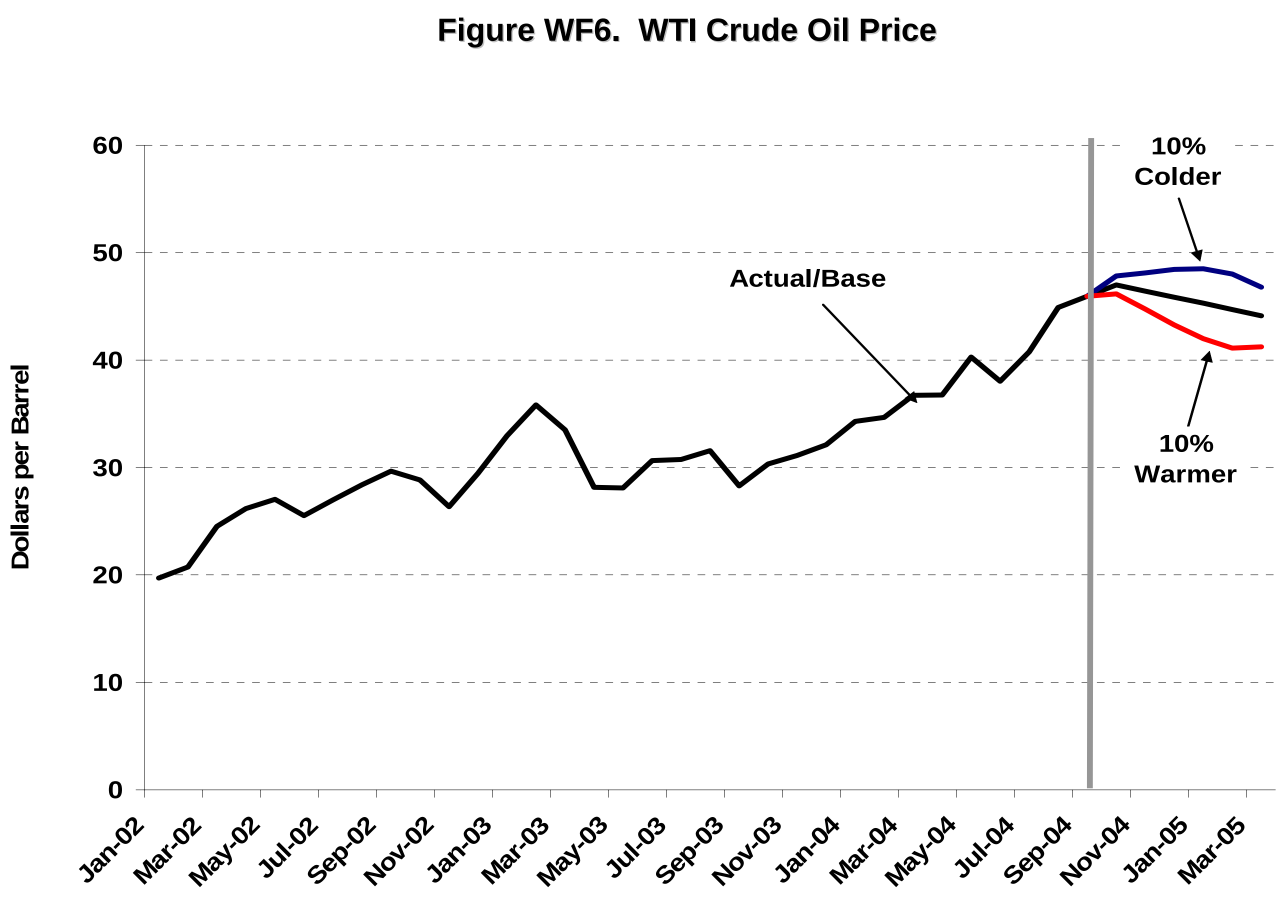
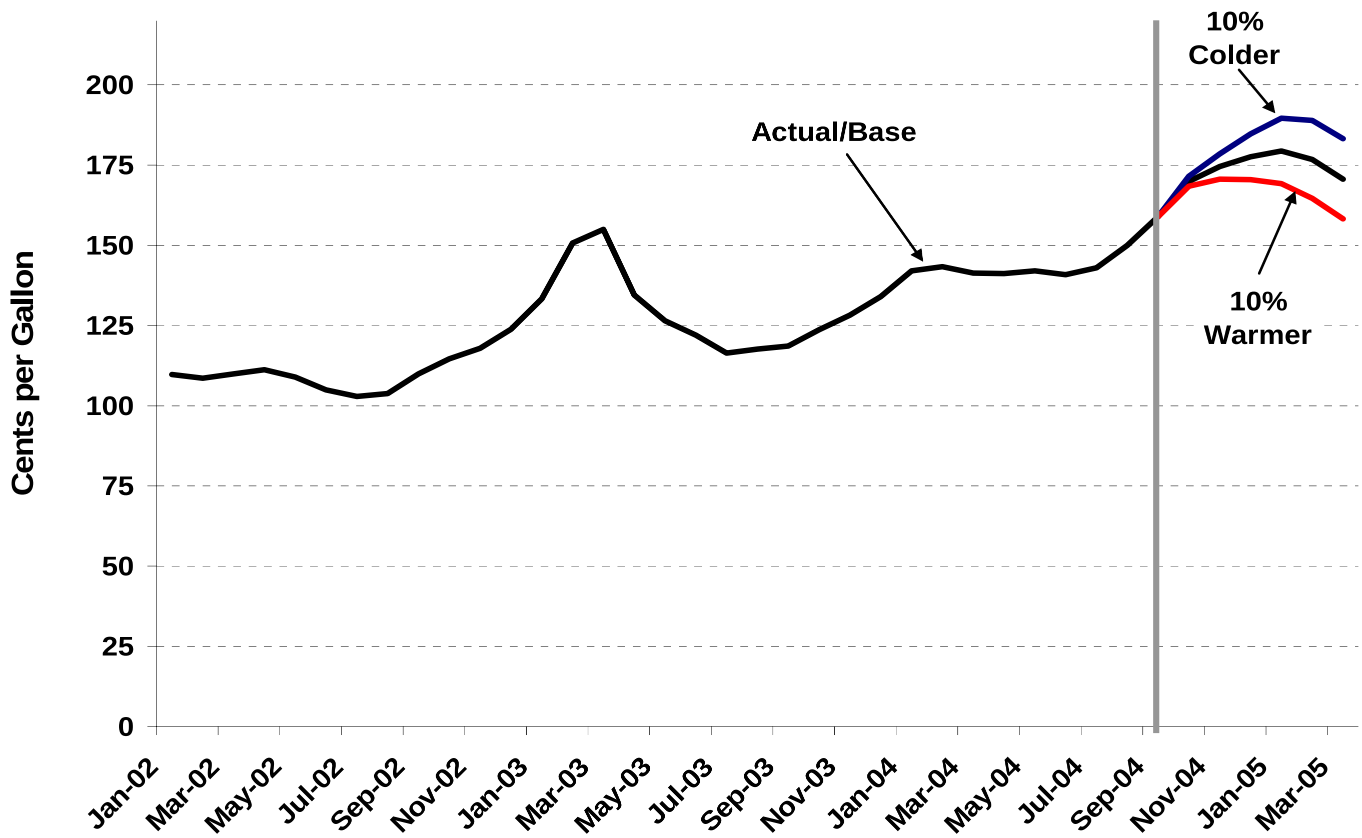


Figure WF7 summarizes the base case and +/-10-percent weather cases for projected residential heating oil prices. The base case incorporates the elevated crude oil costs and overall growth in distillate demand and output requirements. The price range reflects not only the direct impacts on prices from alternative weather patterns, but also the impacts on crude oil prices from higher (or lower) overall petroleum demand.

Despite the relative adequacy of distillate inventories this winter, heating oil prices would likely rise in response to an increase in demand stemming from much colder-than-normal weather. But quantifying price sensitivities of heating oil to such demand surges can be difficult. For example, the price reaction to the cold-weather scenario shown in Figure WF7 may be understated, particularly if the availability of imports is low (as would be the case if cold weather conditions occurred simultaneously in Europe, which is implicitly assumed for the cold-weather scenario). Thus, the high price case may be a conservative estimate of the impact of harsh weather on prices.

This discussion of distillate supplies assumes that the Northeast Heating Oil Reserve, which consists of a total of 2 million barrels of heating oil stored in terminals in New Jersey, Connecticut and Rhode Island, remain untapped. The Reserve is intended to provide an additional 20 days of heating oil to suppliers in the Northeast in case of very cold weather were commercial supply shortages to materialize. However, the hurdle that needs to be overcome to trigger release from the Reserve is high, making the likelihood of incremental supply from this source low except in extreme cases.

Figure WF7. Residential Heating Oil Price



Propane

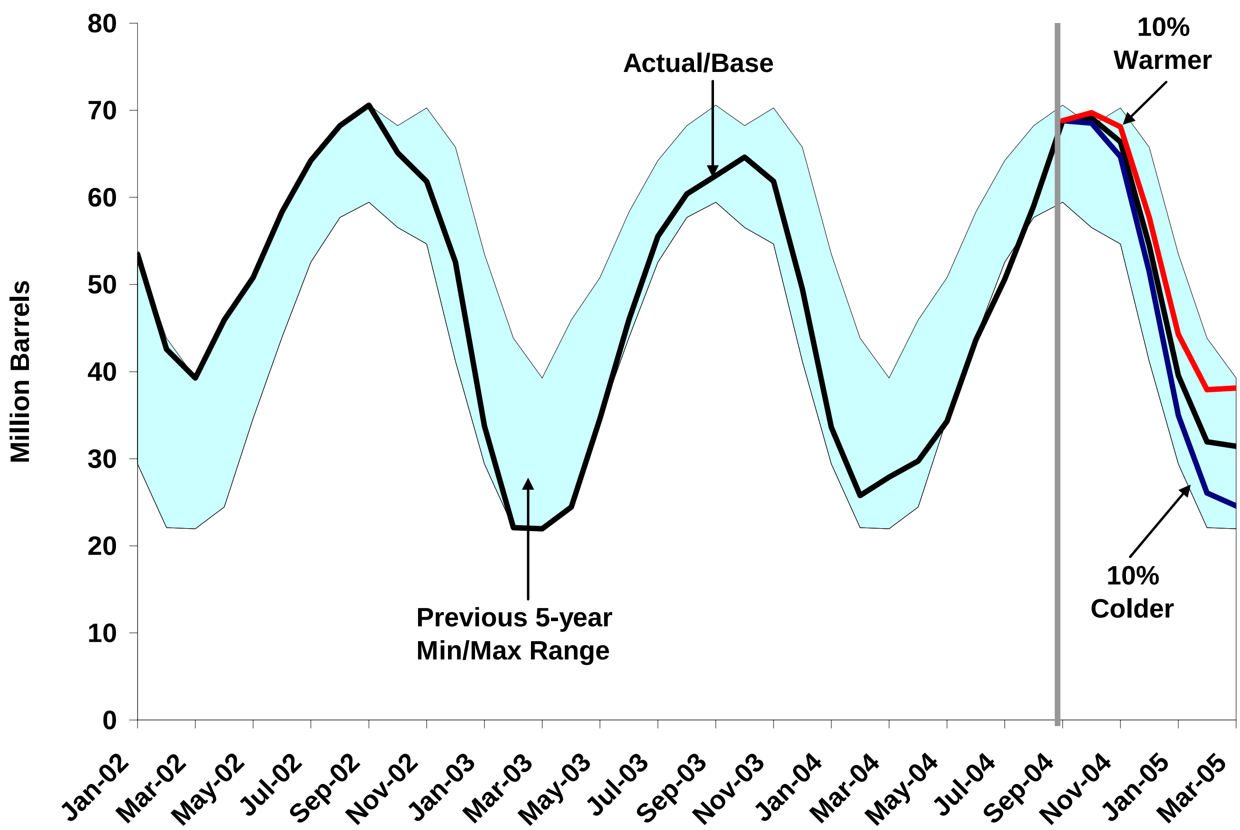
Demand

Despite last winter's comparatively mild weather, propane demand averaged a record 1.48 million barrels per day, 3.2 percent above the previous heating season. Strong petrochemical feedstock demand and a record corn crop were factors in the demand growth. This winter continued economic growth, an even larger corn crop, and projected colder-than-average weather are expected to account for much of the expected 1.0-percent demand growth. Table WF1 shows that winter consumption in an average household in the Midwest, the major market for residential propane, is projected to increase about 4 percent.

Supply

Demand for propane is met by domestic production (gas processing plants and refineries), as well as inventories and net imports. Domestic production accounts for up to 80 percent of supply. Last winter, high natural gas prices caused some natural gas plant operators to shut down their plants or reduce their propane yield. But gas plant operators were still able to increase production by 27,000 barrels per day through the first half of 2004. Continued growth in domestic production during the heating season is projected, assuming stable prices for natural gas and for crude oil.

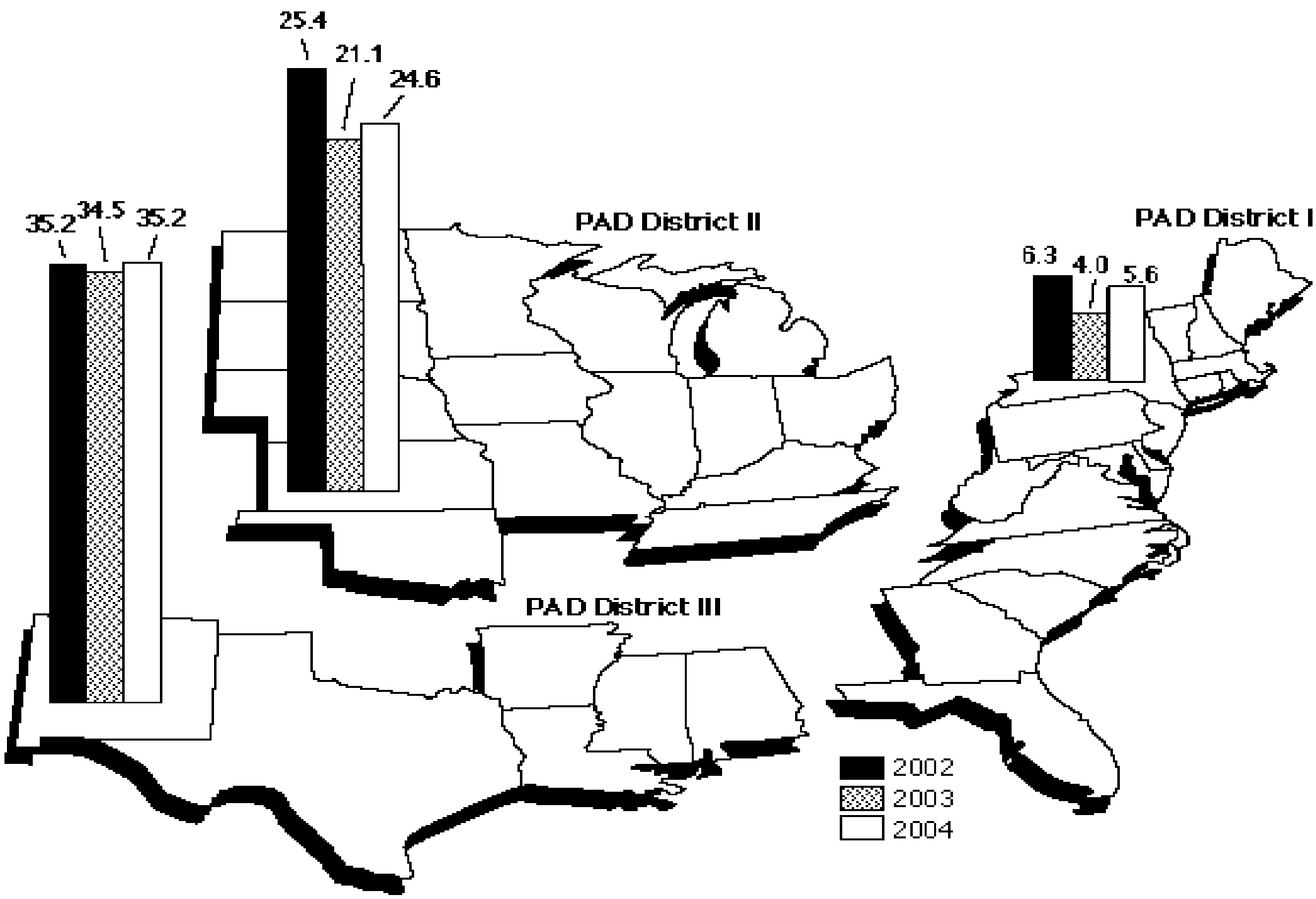
Figure WF8. U.S. Propane Stocks



Propane inventories began last winter at 62.5 million barrels (Figure WF8), the lowest level since 2000, and during the season declined by 34.6 million barrels. This was slightly less than the average draw rate due, in part, to the relatively mild weather. As a result, end-of-season inventories were 27.9 million barrels, well within the normal range. During this summer, stockholders added 40.9 million barrels, bringing beginning-of-season (October 1, 2004) stocks to 68.8 million barrels, well within the normal range and about 10 percent above year-ago levels. In the base case scenario, end-of-season (April 1, 2005) stocks are projected to be 31.4 million barrels, almost 4 million barrels above those of last winter.

Inventory gains during the summer showed the Gulf Coast region accounting for 21.1 million barrels, or 52 percent of the total. The Midwest region added 14.8 million barrels, or nearly 36 percent, during this same period. The East Coast, with limited storage capacity, added 2.3 million barrels, or about 6 percent, to total inventories and the Mountain and West Coast regions accounted for the remaining 6 percent. By the start of the 2004-2005 heating season, Gulf Coast inventories totaled 35.2 million barrels, slightly above inventories at the start of last winter. While that region is not a major space-heating market for propane, it continues to be a major supplier to the East Coast and Midwest. The Midwest, the largest propane importer, via Canada, began the heating season at 24.6 million barrels, a level within the average range but 3.5 million barrels above last year. But the record corn crop, with its high moisture content, could bring about a larger-than-projected inventory drawdown. With limited capacity, the East Coast maintains the smallest regional inventory level, relying on constant re-supply from the Gulf Coast and from imports. However, the East Coast began the heating season with 5.6 million barrels in storage, within the normal range. Regional beginning-of-season inventories are summarized in Figure WF9 below.

Figure WF9. U.S. Propane Stocks by PAD Districts

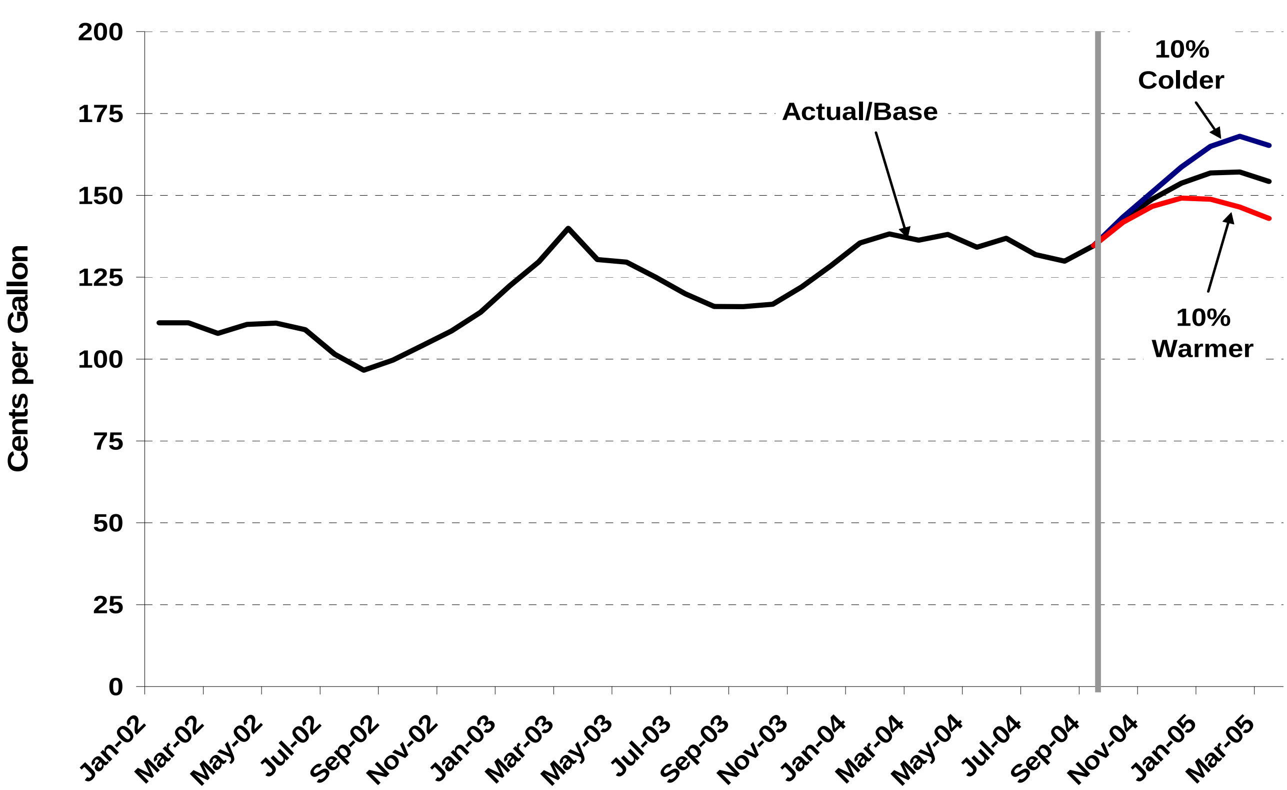


While small in volume, propane imports are critical when demand exceeds available supply from production and inventories. Through the first half of 2004, propane imports averaged 188,000 barrels per day, up more than 27 percent from the import level in the first half of 2003. Canada, which supplies the largest share of propane imports, accounted for about 62 percent of total imports during the first half of 2003 and 2004. Other imports, mostly waterborne, come from the North Sea, North Africa and the Middle East. While imports from traditional sources like Algeria, the second largest exporter of propane to the U.S., and Norway fell during the first half of the year, increased imports from other countries, such as Nigeria and Argentina, more than offset those declines. Imports from Canada and other sources are expected to maintain their strong year-over-year growth rates this winter season, assuming U.S. propane prices remain attractive to foreign suppliers.

Prices

Spot propane prices are primarily determined by crude oil and natural gas wellhead prices. Retail propane prices are influenced by heating oil and natural gas prices, alternative petrochemical feedstocks, and other factors such as weather. Concerns about crude oil supplies and continuing tightness of natural gas markets are expected to keep crude oil and wellhead natural gas prices elevated, resulting in residential propane prices for the upcoming winter season at an average of $1.53 per gallon compared to $1.30 per gallon last winter (Table WF1 above and FigureWF10).

Figure WF10. Residential Propane Prices: Base Case and Weather Cases

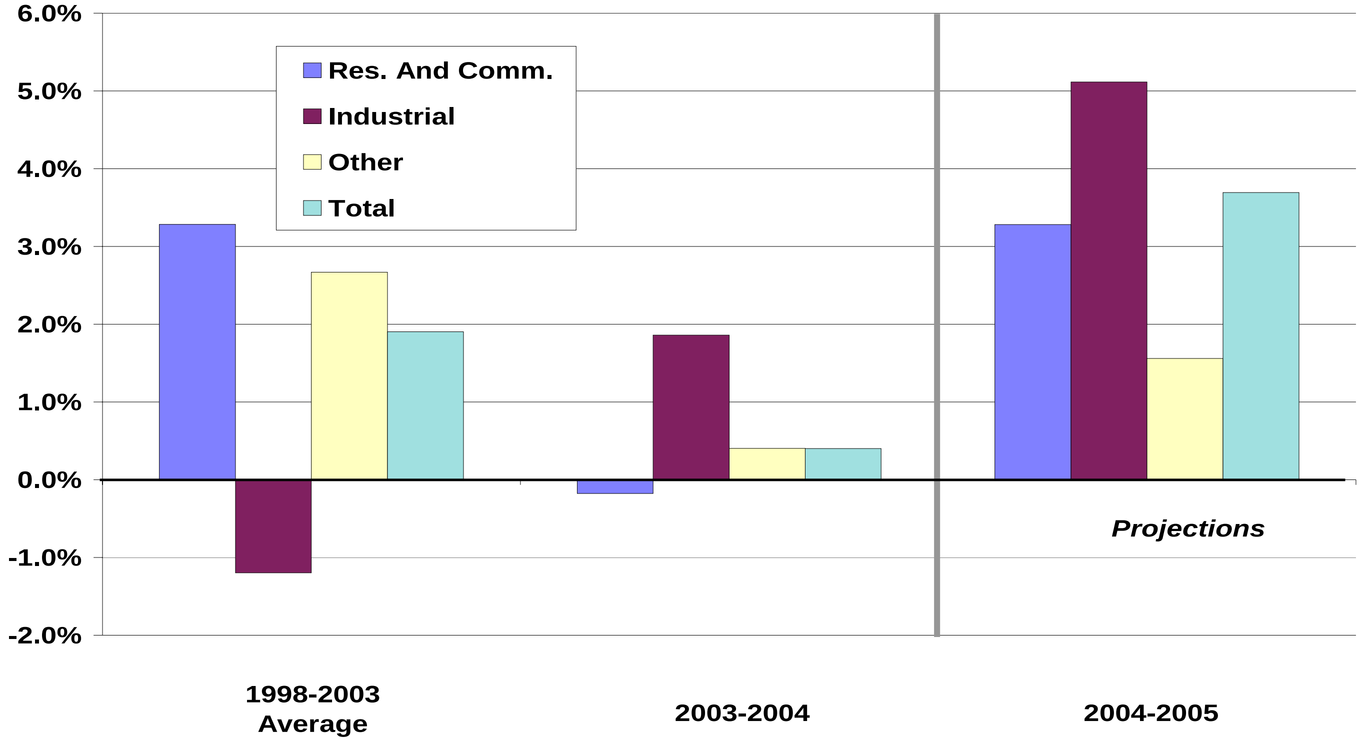


Electricity

Demand

Total and residential electricity demand for the winter are projected to increase in all sectors in response to continued economic growth and prospects of colder weather in regions where electricity is used heavily for heating. Growth in total electricity demand is projected to be 3.7 percent. Residential consumption is projected to increase 3.9 percent, commercial demand is expected to grow 2.6 percent, and industrial demand is expected to see growth of 5.2 percent. Figure WF11 summarizes historical and projected electricity demand patterns.

Figure WF11. U.S. Winter Electricity Demand Growth Patterns (Change from Previous Season)



Supply

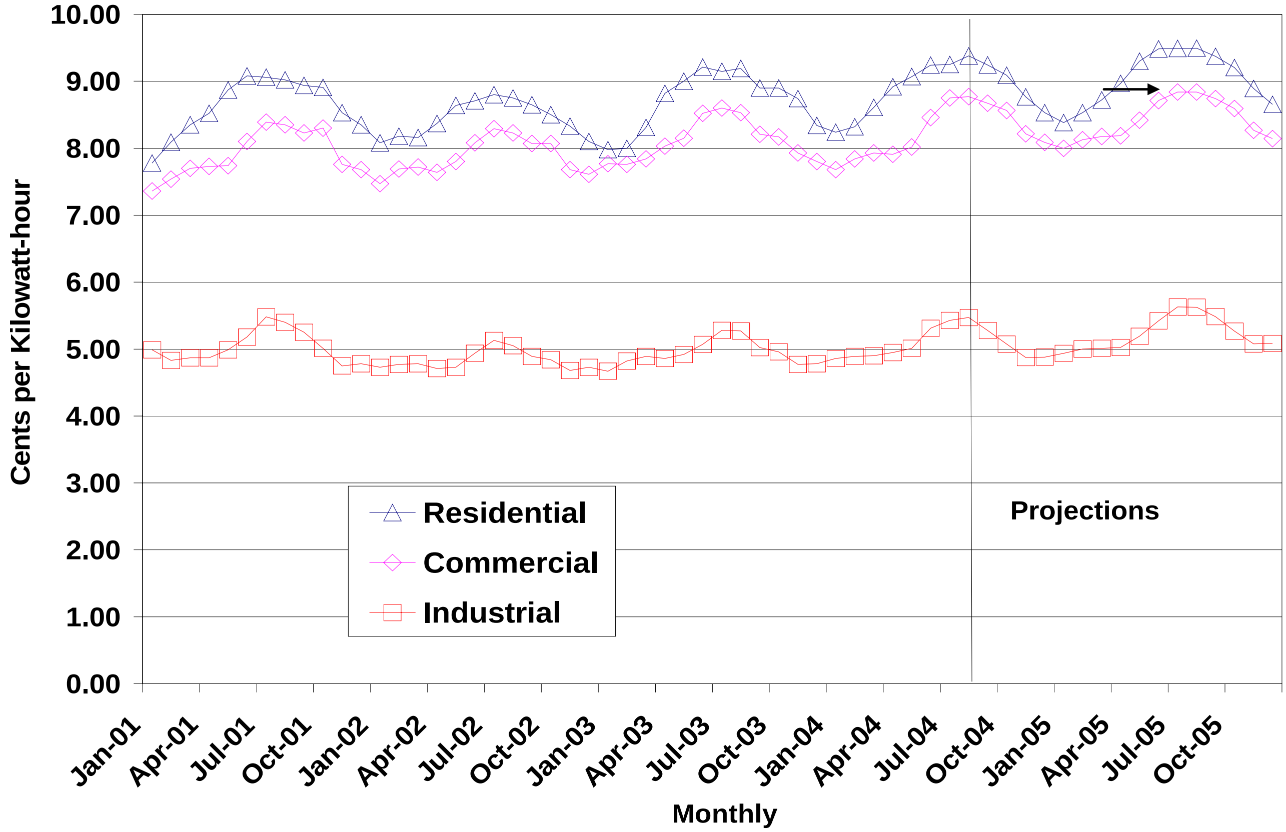
Coal-fired generation is expected to lose some share of the electricity market, growing about 2.6 percent from last winter to this coming winter. Nuclear-powered generation, which grew substantially in 2003 and 2004, is projected to grow marginally (1.1 per cent) this winter. Hydroelectric power is expected to be in greater supply this winter than during the previous winter. Natural gas-fired generation, having slumped during the third quarter due to high prices and cooler-than-average weather, is projected to grow by about 10 percent from last winter's level. Oil-fired generation is projected to decline by about 7 percent. Coal consumption in the electric power sector is expected to increase by 12.7 million short tons (mst) this winter. The electric power sector consumed 506.1 mst of coal last winter and this winter (Q4 2004 and Q1 2005) consumption is expected to increase to 518.8 mst.

Power sector coal stocks stood at 122.4 mst at the beginning of last winter (October 1, 2003), and at winter's end (March 31, 2004) stocks were at 113.3 mst. Currently, power sector coal stocks are estimated to be at a significantly lower level (about 108 mst as of October 1) than they were last year. A slight build in stocks is anticipated between now and the end of the heating season, with stocks reaching 112.3 mst by the end of March. Stock levels have either grown or remained flat in four of the previous six winters.

This winter, coal production is expected to increase by 32.1 mst from last winter's level. Coal production last winter was 545.1 mst and it is projected to be 577.2 mst this winter. The increased production will meet the increases in power sector coal demand and inventory requirements.

Although spot coal prices increased considerably over the last 12 months (a 60 percent increase at Big Sandy), the average price of coal to electric utilities, which includes long-term contracts as well as spot prices, has risen by only about 3 percent. Nevertheless, average coal prices to electric utilities this winter are expected to increase by about 3.2 percent compared to last winter. This is a fairly significant rate of growth compared to the previous 5-year average winter coal price increase of 1.6 percent.

Figure WF12. Monthly Delivered Electricity Prices by Sector



Prices

This winter, residential electricity prices are projected to average 8.65 cents per kilowatt hour (kWh), slightly above the average $8.50 per kWh seen last winter (Figure WF12). Retail (delivered) electricity prices are not very sensitive to demand surges or fuel price shocks that may occur in the winter. Increased costs of fuel and wholesale electricity would tend to be smoothed out in retail prices over a period of several months.

Alternative Weather Cases

Alternative cases depict demand and price scenarios in response to unusually warm or cold weather conditions during the winter season. These cases estimate the impacts of overall deviations of 10 percent from the projected base-case weather scenario, measured in terms of aggregate heating degree-days, on supply, demand, and prices, assuming base-case values for real GDP and other key macroeconomic indicators.

A winter that is 10 percent colder throughout the season is assumed to result in an additional 10 percent in heating-related demand across fuels. The assumption of unit elasticity for the heating component of fuel demand with respect to heating degree-days is consistent with other analyses of heating fuels demand.

In the 10 percent colder case, retail prices for the three primary fuels would be expected to rise, reflecting higher marginal costs associated with the incremental demand (Table WF3). Heating oil prices would average $1.84 per gallon, about 5 percent above the base-case. As a result, the average total expenditure for a heating oil household would rise 15 percent above the base case. Residential natural gas expenditures would rise by about 17 percent from the base case. Some of the increased cost of gas that would stem from colder weather would be rolled into future natural gas bills extending beyond the heating season. If the long-term effects on consumer expenditures are taken into account, average residential natural gas prices resulting from a severe winter would be even larger than those indicated in the Table. Changes in propane prices, which are related to changes in oil and natural gas prices, would result in residential propane prices averaging $1.59 per gallon, up about 4 percent from the base case. As a result, total per-household propane expenditures would rise 15 percent from base-case projections in the cold weather scenario.

Table WF3. Alternative Winter Weather Scenarios

	2003-2004	2004-2005			% Diff. from Base	
	Actual	Mild	Base	Severe	Mild	Severe
Natural Gas (Midwest)						
Consumption (mcf*)	89.1	83.1	92.3	101.6	-10.0	10.0
Avg. Price ($/mcf)	9.77	10.23	10.86	11.54	-5.8	6.3
Expenditures ($)	870	850	1003	1172	-15.2	16.9
Heating Oil (Northeast)						
Consumption (gallons)	700	628	697.8	768	-10.0	10.0
Avg. Price ($/gallon)	1.37	1.67	1.75	1.84	-4.9	4.9
Expenditures ($)	953	1047	1223	1412	-14.4	15.4
Propane (Midwest)						
Consumption (gallons)	882	823	914.4	1006	-10.0	10.0
Avg. Price ($/gallon)	1.30	1.46	1.53	1.59	-4.2	4.3
Expenditures ($)	1148	1203	1396	1601	-13.8	14.7

Alternative scenarios assume 10% more and 10% less heating degree-days than those of the base case.
Consumption based on typical per-household use for regions noted. Prices are retail national averages.
*thousand cubic feet.