



## Winter Fuels Outlook

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For the purposes of this outlook, EIA considers the winter season to run from October through March. The average household winter heating fuel expenditures discussed in this supplement are a broad guide to changes compared with recent winters. Fuel expenditures for individual households are highly dependent on the size and energy efficiency of individual homes and their heating equipment, along with thermostat settings, local weather conditions, and market size (see [Winter Fuels Outlook table](#)).

Temperatures this winter, based on the most recent forecast of heating degree days (from the National Oceanic and Atmospheric Administration (NOAA)), are expected to be much colder than last winter east of the Rocky Mountains, with the Northeast and Midwest 17% colder and the South 18% colder. Despite the expectation of colder temperatures compared with last winter, temperatures in the eastern United States are expected to be about 3% warmer than the average of the five winters preceding last winter, as temperatures last winter were much warmer than normal in those areas. In the West, temperatures are forecast to be about 2% warmer than last winter. However, recent winters provide a reminder that weather can be unpredictable. In addition to the base case, the Winter Fuels Outlook includes forecasts for scenarios where heating degree days in all regions may be 10% higher (colder) or 10% lower (warmer) than forecast.

**Natural Gas.** Nearly half of all U.S. households heat primarily with natural gas. EIA expects households heating primarily with natural gas to spend \$116 (22%) more this winter compared with last winter. However, forecast average expenditures of households heating with natural gas this winter will be comparable to those in the five winters prior to last winter.

The increase in forecast expenditures compared with last winter is driven by comparatively similar increases in price and consumption. Residential natural gas prices are forecast to average \$10.37 per thousand cubic feet (Mcf), 11% higher than last winter. Prices at this level would be the highest since the winter of 2010-11. Consumption is forecast to be 10% higher than last winter. The increase in consumption is based on a return to temperatures that are closer to normal following last winter's El Niño weather pattern that resulted in winter temperatures that were 15% warmer than the previous ten-year average nationally.

Although forecast residential natural gas prices are 11% higher than prices last winter, Henry Hub spot prices are expected to average \$3.16 per million British thermal units (MMBtu) (\$3.26/Mcf), which would be 53% higher than last winter. Higher natural gas prices reflect falling natural gas production during 2016 and increased use of natural gas for electricity generation. Changes in spot prices do not quickly translate into changes in delivered residential prices. The

rates utilities charge for delivered natural gas can be set by state utility commissions a year or more in advance and reflect the cost of natural gas purchased over many months. Also, residential prices include charges to cover utility operating costs and the cost to transport and distribute natural gas that are not directly linked to wellhead prices.

Under a 10% colder scenario, EIA projects natural gas-related heating expenditures to be 31% higher than last winter and 7% higher than the base case. In that scenario, consumption and prices are 19% and 10% higher than last winter, respectively. Under a 10% warmer scenario, EIA projects expenditures to be 12% higher than last winter.

EIA projects natural gas inventories will total 3,966 billion cubic feet (Bcf) at the end of October, which would be near a record high going into the heating season. Last winter's warm weather left natural gas inventories at record high levels in April, the beginning of the refill season. Injections for most weeks over the summer were lower than the five-year (2011-15) average rate. Under the base case winter forecast, EIA expects inventories to end the winter at 1,896 Bcf. In the event of a colder-than-forecast winter, high stock levels should help moderate price volatility.

Although pipeline transportation constraints have eased somewhat in recent years, they continue to pose a challenge to natural gas markets in the Northeast. Basis differentials (the difference between a natural gas price at a given location and the benchmark Henry Hub price) last winter in major gas demand centers in the Northeast were lower compared with the winter of 2014-15, as mild temperatures and some pipeline capacity additions in the Middle Atlantic region helped limit price spikes.

This year, additional capacity will be available to deliver natural gas from the Marcellus region in Pennsylvania to New England with the expected November 2016 start-up of the [Algonquin Incremental Market \(AIM\) Project](#). This expected incremental pipeline capacity has helped lower expected prices for natural gas delivered to Boston during the peak winter months by about \$1/MMBtu compared with expectations from a year ago. However, pipeline constraints still exist in the Northeast, particularly into the New England market, contributing to significant basis differentials between New England prices and Henry Hub futures prices. These constraints could contribute to day-to-day price volatility during periods of cold temperatures.

New England has two important marginal sources of natural gas supply for times of very high demand: liquefied natural gas (LNG) imports and pipeline imports from Canada. Although LNG imports have declined dramatically in the past several years, an LNG terminal near Boston continues to receive cargoes from Trinidad under long-term contracts. One of the terminal's customers is the adjacent Mystic Power Plant. LNG received at the Canaport LNG terminal in New Brunswick, Nova Scotia, also comes to New England via the Brunswick Pipeline.

**Heating Oil.** In the United States, households that rely primarily on heating oil for heating purposes are most prevalent in the Northeast region. EIA expects households heating primarily with heating oil to spend an average of \$378 (38%) more this winter than last winter, reflecting retail prices that are \$0.42/gal (20%) higher and consumption that is 15% higher. Despite the

higher forecast expenditures, expected average household heating expenditures this winter are about 32% lower than in the five winters prior to last winter.

In the 10%-colder-weather scenario, projected expenditures are \$556 higher than last winter, with prices that are \$0.50/gal (24%) higher than last winter and consumption that is 25% higher.

Reliance on heating oil is highest in the Northeast, where about 22% of households use oil for space heating, down from 27% five years ago as an increasing number of homes switch to using natural gas and electricity for space heating. Nationwide, 5% of households use heating oil.

Heating oil prices are expected to be higher than last winter because of crude oil prices which are forecast to be 24% higher than last winter. The Brent crude oil price, which is the crude oil price most significant in determining U.S. petroleum product prices, is forecast to average \$48/b this winter, which would be \$9/b (22 cents per gallon) higher than last winter. Brent crude oil prices are forecast to be higher than last year as a result of gradually tightening global oil supply balances. Despite being higher than last winter, crude oil prices are still forecast to remain below levels seen from 2010-14 as the global oil market continues to move towards balance. However, crude oil prices are highly uncertain, and any deviation in crude oil prices from forecast levels would cause a similar deviation in retail heating oil prices and consumer expenditures.

Distillate fuel supplies, which include heating oil, are also ample heading into the winter heating season for the second straight year. At the same time that consumption of distillate fuel is slowing, refinery output of distillate fuel has been relatively high. This combination of high refinery runs and lower demand has resulted high inventory levels in the northeast United States.

Relatively strong gasoline refining margins during the past two summers have encouraged high refinery runs both in the United States and abroad. This has led to the coproduction of distillate fuel with gasoline, despite lower margins for distillate fuel than were seen during much of the previous decade.

Slowing economic growth in emerging economies, which have been major drivers of distillate consumption in past years, has reduced global consumption growth for distillate fuel. In the United States, distillate inventory levels were high heading into last winter, and warmer-than-normal winter temperatures contributed to inventories remaining well above five-year average levels throughout last winter. In addition to weak space heating demand, overall distillate consumption has fallen in 2016 because of reduced oil and natural gas drilling (which uses diesel fuel in its operations), and because of declining coal production, which has reduced diesel use in rail shipments of coal.

Distillate stocks in the Northeast totaled 52.3 million barrels on September 30, nearly 7 million barrels higher than at the same time last year. The September 30 inventory level reflected a small decline from the previous week, when Northeast distillate stock levels were the highest since 2010. High stock levels should limit price volatility in the event of colder-than expected

temperatures. However, if temperatures become severely cold, the Northeast typically turns to imports for supply, and prices have the potential to rise to encourage imports to be shipped to the region.

**Electricity.** Households heating primarily with electricity are forecast to spend an average of \$49 (5%) more this winter, as a result of 5% higher consumption, including both heating and non-heating uses of electricity, and about 1% higher residential electricity prices than last winter. Among U.S. households, 39% rely on electricity as their primary heating source, ranging from 63% in the South to 15% in the Northeast.

In the 10%-colder-weather scenario, projected electricity expenditures are \$81 (9%) higher than last winter, as consumption would be expected to be 9% higher. Residential electricity prices would not rise immediately, but the effect of colder temperatures would pass through to retail electricity rates over the succeeding months of 2017. The effect of colder-than-forecast temperatures on electricity prices would be greatest in the West South Central states, where annual average residential prices would rise by 6% next year if there is a cold winter, in contrast to the region's base case forecast of a 4% increase.

In past years, electricity prices in New England have been affected by constrained fuel supplies. The region's power industry has become more reliant on natural gas for electricity generation. Natural gas currently supplies 50% of total generation in New England, compared with 37% in 2005. This increased reliance on natural gas can put generation fuel supplies in competition with natural gas used for space heating during cold spells. Winter electricity prices on the New England wholesale electricity market have generally tended to be higher than prices at other times of the year, and occasional price spikes have occurred.

**Propane.** Nearly 5% of all U.S. households heat primarily with propane. EIA expects these households to spend less on heating this winter than in eight out of the past ten winters, but more than last winter, when both heating demand and propane prices were low. The projected increase in expenditures from last winter varies by region. EIA expects that households heating with propane in the Midwest will spend an average of \$290 (30%) more this winter than last winter, reflecting prices that are about 14% higher and consumption that is 13% higher than last winter. Households in the Northeast are expected to spend an average of \$346 (21%) more this winter, with average prices that are about 7% higher and consumption that is 13% higher than last winter. However, average propane expenditures across the two regions are 18% below average expenditures from the five winters prior to last winter.

Propane inventories, which were at record-high levels throughout last winter, are going into this heating season at even higher levels. U.S. inventories of propane reached 104.0 million barrels as of September 30, almost 4 million barrels (4%) higher than at the same time last year. Last winter, inventories of propane were drawn down by 33.8 million barrels during the heating season (October-March). An inventory draw of 40.6 million barrels is expected this winter. The projected draw would leave inventories 32% above the previous five-year average at the end of the heating season in March. Current inventory levels should be sufficient to allow for even

stronger-than-projected inventory draws given colder weather, higher crop-drying use, or stronger exports. With the addition of new export facilities over the past several years, and a new Gulf Coast terminal expected to begin operations later this month, the United States has the capacity to support higher-than-forecast levels of propane exports when spot shipments are economically viable.

Inventories on the Gulf Coast have been the main contributor to the record-high storage levels, with propane inventories in that region 55% above the previous five-year average for the week ending September 30. Much of this storage is at facilities connected to industrial users and export terminals, and transport of the propane to the Midwest and Northeast is often costly. However, propane inventories in the Midwest and Northeast are 9% and 42% above the five-year average, respectively, as of September 30. Higher inventory levels and improved rail delivery networks for propane should contribute to more robust propane supply chains than three years ago, when the Midwest saw prices spike during extremely cold weather. However, local markets could still see tight supply conditions, particularly in cases of severely cold temperatures.

**Wood.** The number of households using cord wood or wood pellets as the primary residential space heating fuel has increased by 26% since 2005, to about 2.5 million households in 2015. About 8% of households use wood as a secondary source of heat, making wood second only to electricity as a supplemental heating fuel.

About 20% of homes in New England (1.1 million) used wood for space heating, water heating, or cooking in 2009 (EIA, [Residential Energy Consumption Survey 2009](#)), which is nearly twice the national rate. Almost half of all rural households in New England used wood, compared with only 12% of the region's urban households.

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**Table WF01. Average Consumer Prices and Expenditures for Heating Fuels During the Winter**

U.S. Energy Information Administration | Short-Term Energy Outlook - October 2016

Fuel / Region	Winter of							Forecast	
	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	% Change
<b>Natural Gas</b>									
<b>Northeast</b>									
Consumption (Mcf**)	75.7	80.7	66.4	76.1	84.0	84.7	67.7	76.9	13.6
Price (\$/mcf)	13.31	12.66	12.21	11.71	11.53	10.85	10.20	11.56	13.3
Expenditures (\$)	1,007	1,022	812	891	969	919	691	889	28.8
<b>Midwest</b>									
Consumption (Mcf)	78.6	80.2	65.4	77.6	88.1	83.1	67.7	76.7	13.4
Price (\$/mcf)	9.44	9.23	8.99	8.36	8.69	8.56	7.61	8.70	14.4
Expenditures (\$)	742	740	587	648	766	711	515	668	29.7
<b>South</b>									
Consumption (Mcf)	53.2	49.3	40.8	46.5	52.1	50.5	40.7	45.9	12.8
Price (\$/mcf)	11.52	11.02	11.45	10.71	10.77	10.84	10.88	11.88	9.1
Expenditures (\$)	613	543	468	497	561	547	443	545	23.1
<b>West</b>									
Consumption (Mcf)	49.9	49.4	49.1	48.6	46.4	41.4	45.8	45.2	-1.3
Price (\$/mcf)	9.91	9.67	9.35	9.13	9.96	10.67	9.90	10.54	6.5
Expenditures (\$)	494	478	459	444	462	442	453	476	5.1
<b>U.S. Average</b>									
Consumption (Mcf)	64.4	65.0	55.7	62.5	68.0	64.8	55.7	61.3	10.0
Price (\$/mcf)	10.83	10.46	10.25	9.72	9.97	9.91	9.31	10.37	11.3
Expenditures (\$)	698	679	570	607	677	642	519	635	22.4
<b>Heating Oil</b>									
<b>U.S. Average</b>									
Consumption (gallons)	544.7	580.7	471.1	545.4	607.1	608.0	481.4	553.3	14.9
Price (\$/gallon)	2.85	3.38	3.73	3.87	3.88	3.04	2.06	2.48	20.1
Expenditures (\$)	1,552	1,965	1,757	2,113	2,353	1,849	992	1,370	38.1
<b>Electricity</b>									
<b>Northeast</b>									
Consumption (kWh***)	6,847	7,076	6,436	6,862	7,221	7,251	6,494	6,907	6.4
Price (\$/kwh)	0.152	0.154	0.154	0.152	0.163	0.168	0.165	0.167	1.1
Expenditures (\$)	1,039	1,091	993	1,046	1,177	1,222	1,071	1,152	7.5
<b>Midwest</b>									
Consumption (kWh)	8,660	8,733	7,897	8,588	9,168	8,858	8,031	8,538	6.3
Price (\$/kwh)	0.099	0.105	0.111	0.112	0.112	0.118	0.121	0.123	1.8
Expenditures (\$)	856	914	875	958	1,031	1,043	972	1,052	8.2
<b>South</b>									
Consumption (kWh)	8,482	8,220	7,466	7,972	8,381	8,281	7,458	7,903	6.0
Price (\$/kwh)	0.103	0.104	0.107	0.107	0.109	0.111	0.111	0.110	-0.3
Expenditures (\$)	873	855	797	851	913	919	827	873	5.6
<b>West</b>									
Consumption (kWh)	7,239	7,216	7,190	7,150	6,981	6,600	6,947	6,904	-0.6
Price (\$/kwh)	0.110	0.112	0.115	0.119	0.123	0.126	0.130	0.131	0.9
Expenditures (\$)	799	809	825	848	860	835	901	903	0.3
<b>U.S. Average</b>									
Consumption (kWh)	7,935	7,842	7,251	7,670	7,980	7,801	7,238	7,590	4.9
Price (\$/kwh)	0.110	0.113	0.116	0.117	0.120	0.123	0.124	0.125	0.5
Expenditures (\$)	873	884	842	895	955	960	896	945	5.4

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Fuel / Region	Winter of							Forecast	
	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	% Change
<b>Propane</b>									
<b>Northeast</b>									
Consumption (gallons)	672.0	717.5	595.6	675.8	745.1	751.2	607.2	686.6	13.1
Price* (\$/gallon)	2.98	3.24	3.34	3.00	3.56	3.00	2.71	2.90	7.0
Expenditures (\$)	2,004	2,321	1,990	2,031	2,653	2,254	1,646	1,991	21.0
<b>Midwest</b>									
Consumption (gallons)	779.6	791.9	644.3	766.4	868.6	813.3	667.7	757.2	13.4
Price* (\$/gallon)	1.99	2.11	2.23	1.74	2.61	1.91	1.47	1.68	14.3
Expenditures (\$)	1,548	1,674	1,437	1,333	2,267	1,553	982	1,272	29.6

**Number of households by primary space heating fuel (thousands)**

<b>Northeast</b>									
Natural gas	10,992	11,118	11,236	11,345	11,522	11,724	11,842	11,959	1.0
Heating oil	6,016	5,858	5,701	5,458	5,241	5,101	4,971	4,827	-2.9
Propane	733	744	761	813	845	860	873	878	0.6
Electricity	2,645	2,776	2,894	3,011	3,036	3,104	3,222	3,307	2.6
Wood	501	512	548	582	585	566	541	536	-0.9
Other/None	311	315	324	377	436	438	434	452	4.2
<b>Midwest</b>									
Natural gas	18,050	17,977	18,019	18,054	18,072	18,167	18,092	18,046	-0.3
Heating oil	451	419	393	360	336	318	299	280	-6.5
Propane	2,098	2,073	2,037	2,063	2,088	2,079	2,076	2,061	-0.7
Electricity	4,715	4,922	5,119	5,333	5,422	5,500	5,722	5,924	3.5
Wood	616	618	631	640	632	612	602	612	1.7
Other/None	283	289	282	319	353	350	350	362	3.3
<b>South</b>									
Natural gas	13,731	13,657	13,636	13,681	13,793	13,906	13,914	13,962	0.3
Heating oil	906	853	790	738	698	680	656	623	-5.1
Propane	2,165	2,098	2,024	1,982	1,943	1,924	1,888	1,828	-3.2
Electricity	25,791	26,555	27,283	27,857	28,230	28,802	29,483	30,158	2.3
Wood	586	599	609	612	616	587	581	601	3.4
Other/None	314	309	304	367	419	408	405	410	1.3
<b>West</b>									
Natural gas	14,939	15,020	15,021	15,009	15,059	15,216	15,318	15,434	0.8
Heating oil	289	279	261	247	234	225	218	209	-4.0
Propane	940	914	885	909	930	917	910	899	-1.2
Electricity	7,877	8,126	8,439	8,671	8,754	8,919	9,221	9,489	2.9
Wood	721	725	736	728	744	747	724	731	1.0
Other/None	850	850	829	903	1,015	1,076	1,074	1,076	0.2
<b>U.S. Totals</b>									
Natural gas	57,713	57,771	57,912	58,088	58,446	59,014	59,166	59,401	0.4
Heating oil	7,662	7,408	7,145	6,803	6,509	6,324	6,144	5,938	-3.3
Propane	5,936	5,829	5,707	5,766	5,806	5,780	5,746	5,667	-1.4
Electricity	41,029	42,380	43,734	44,873	45,442	46,325	47,649	48,878	2.6
Wood	2,424	2,454	2,524	2,563	2,576	2,512	2,448	2,480	1.3
Other/None	1,758	1,763	1,739	1,965	2,222	2,272	2,263	2,300	1.7

**Heating degree days**

Northeast	4,933	5,337	4,217	4,964	5,594	5,644	4,318	5,042	16.8
Midwest	5,639	5,773	4,484	5,544	6,451	6,003	4,687	5,471	16.7
South	2,867	2,629	2,019	2,426	2,783	2,689	2,010	2,375	18.1
West	3,285	3,258	3,229	3,181	2,989	2,565	2,946	2,897	-1.7
U.S. Average	3,936	3,938	3,223	3,720	4,108	3,880	3,198	3,610	12.9

Note: Winter covers the period October 1 through March 31. Fuel prices are nominal prices. Fuel consumption per household is based only on households that use that fuel as the primary space-heating fuel. Included in fuel consumption is consumption for water heating, appliances, and lighting (electricity). Per-household consumption based on an average of EIA 2005 and 2009 Residential Energy Consumption Surveys corrected for actual and projected heating degree days. Number of households using heating oil includes kerosene.

\* Prices exclude taxes

\*\* thousand cubic feet

\*\*\* kilowatthour

# EIA Winter Fuels Outlook



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*October 13, 2016*

# Overview

- Although overall expenditures are expected to be higher than last year, they are comparable to or lower than the average winters from 2010-11 through 2014-15, except for electricity, where expenditures are higher in both cases
- EIA expects heating fuel prices for homes that heat with natural gas, propane, and heating oil to be higher than prices last winter; forecast residential electricity prices are about the same as last winter
- The latest outlook from NOAA expects winter temperatures east of the Rocky Mountains to be colder than last winter, with projected heating degree days in the Northeast, Midwest, and South about 16-18% higher. In the West, this winter is expected to be similar to last winter. This winter's forecast is a return to close to normal temperatures

Expenditures are expected to be higher this winter (October 1–March 31) compared with last winter, but close to or lower than average expenditures for winters prior to last winter

Fuel	Percent change in expenditures	
	Compared to average winters 2010-14	Compared to last winter
Heating Oil	<b>-32</b>	<b>38</b>
Natural Gas	<b>0</b>	<b>22</b>
Propane *	<b>-18</b>	<b>27</b>
Electricity	<b>5</b>	<b>2</b>

Note: \* Propane expenditures are a volume-weighted average of the Northeast and Midwest regions. All others are U.S. volume-weighted averages. Propane prices do not reflect prices locked in before the winter heating season starts

Source: EIA Short-Term Energy Outlook, October 2016.

## EIA forecasts scenarios if temperatures are 10% warmer and 10% colder than the base case

Percent change in fuel bills from last winter (forecast)

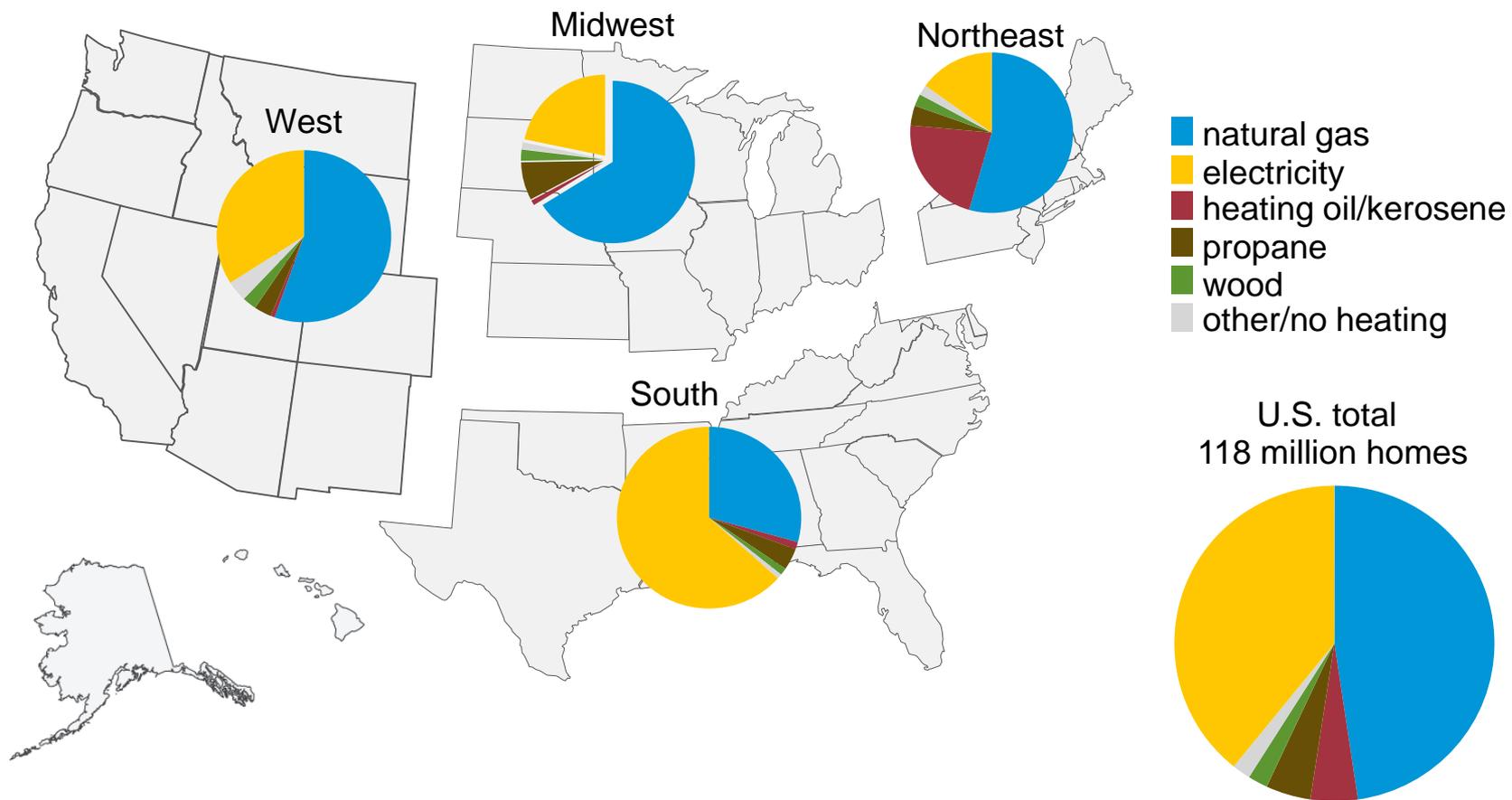
Fuel bill	Base case forecast	If 10% warmer than forecast	If 10% colder than forecast
Heating oil	<b>38</b>	<b>23</b>	<b>56</b>
Natural gas	<b>22</b>	<b>12</b>	<b>31</b>
Propane *	<b>26</b>	<b>6</b>	<b>49</b>
Electricity	<b>5</b>	<b>2</b>	<b>9</b>

Note: \* Propane expenditures are a volume-weighted average of the Northeast and Midwest regions. All others are U.S. volume-weighted averages. Propane prices do not reflect prices locked in before the winter heating season starts

Source: EIA Short-Term Energy Outlook, October 2016.

# Heating fuel market shares vary across U.S. regions

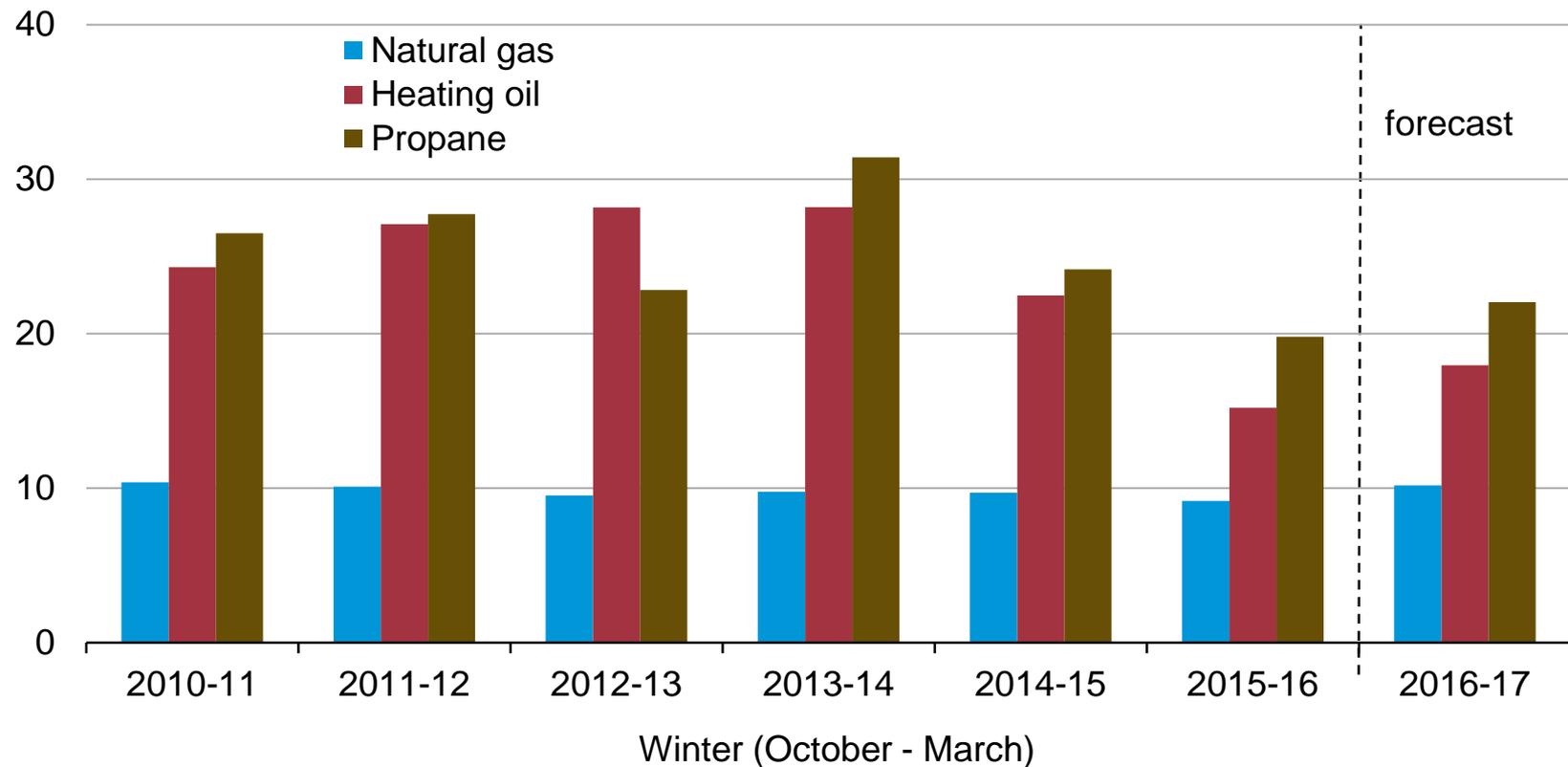
Share of homes by primary space-heating fuel and Census Region



Source: U.S. Energy Information Administration based on 2015 American Community Survey

# Prices for all fuels are forecast to be higher than last winter, but heating oil and propane prices are expected to remain below levels from 2010-14 when crude oil prices were higher

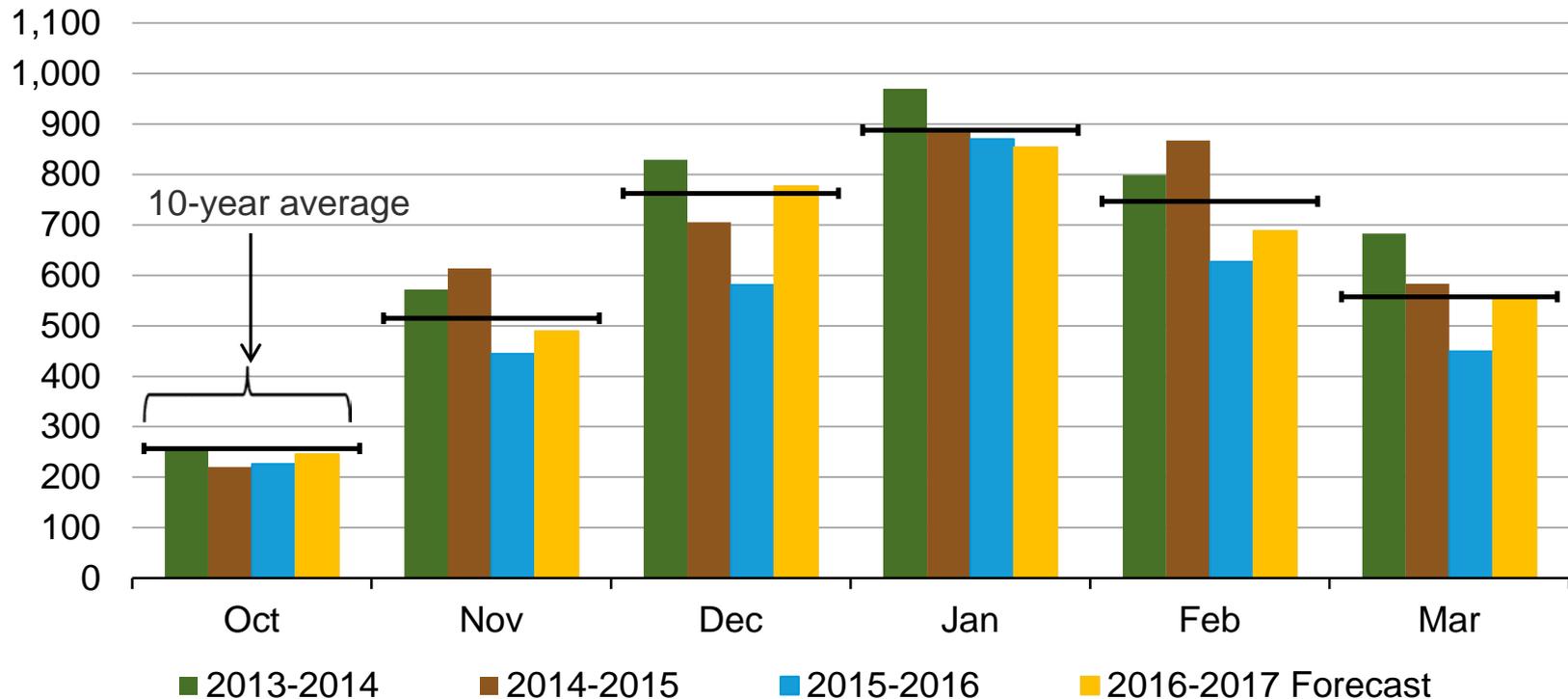
U.S. average residential winter heating fuel prices  
dollars per million Btu



Source: EIA Short-Term Energy Outlook, October 2016.

# NOAA forecasts U.S. heating degree days this winter to be 13% higher than last winter, but below the 10-year average

U.S. current population-weighted heating degree days



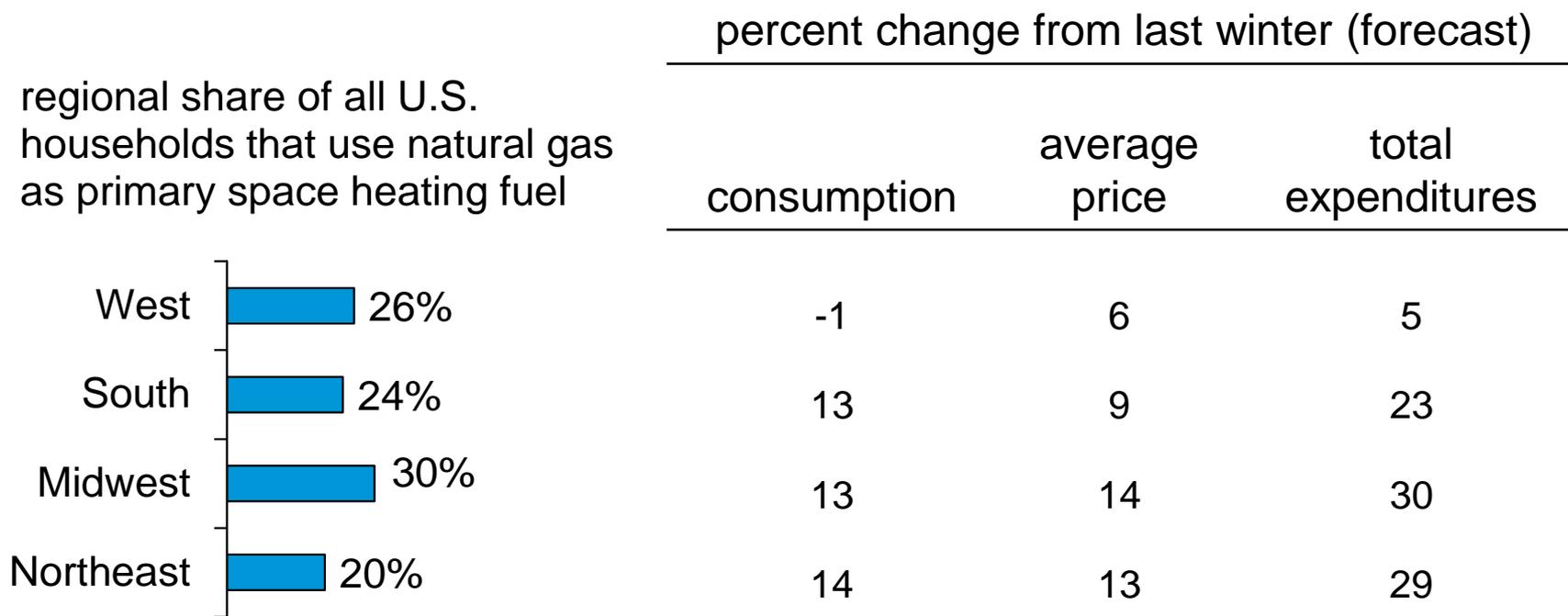
Note: EIA calculations based on National Oceanic and Atmospheric Administration (NOAA) data. Horizontal lines indicate 10-year average over the period Oct. 2006 – Mar. 2016. Projections reflect NOAA's 14-16 month outlook. Source: EIA Short-Term Energy Outlook, October 2016.

# Natural Gas

## Winter 2016-17 takeaways – Natural gas

- As of September 30, inventories of natural gas in working storage were 2% above year-ago levels, and are expected to end October at near-record levels
- Dry natural gas production this winter is projected to average 75.2 Bcf/day, an increase of 1.7 Bcf/day (2%) compared with last winter
- Henry Hub prices were below \$3 per million Btu (MMBtu) during the last winter. However, this year lower production and increased demand contribute to the projected Henry Hub spot price averaging \$3.15/MMBtu this winter compared with \$2.06/MMBtu last winter
- Ongoing transportation constraints for delivering natural gas to Northeast consumers, especially in New England, could contribute to localized price volatility during periods of very cold temperatures

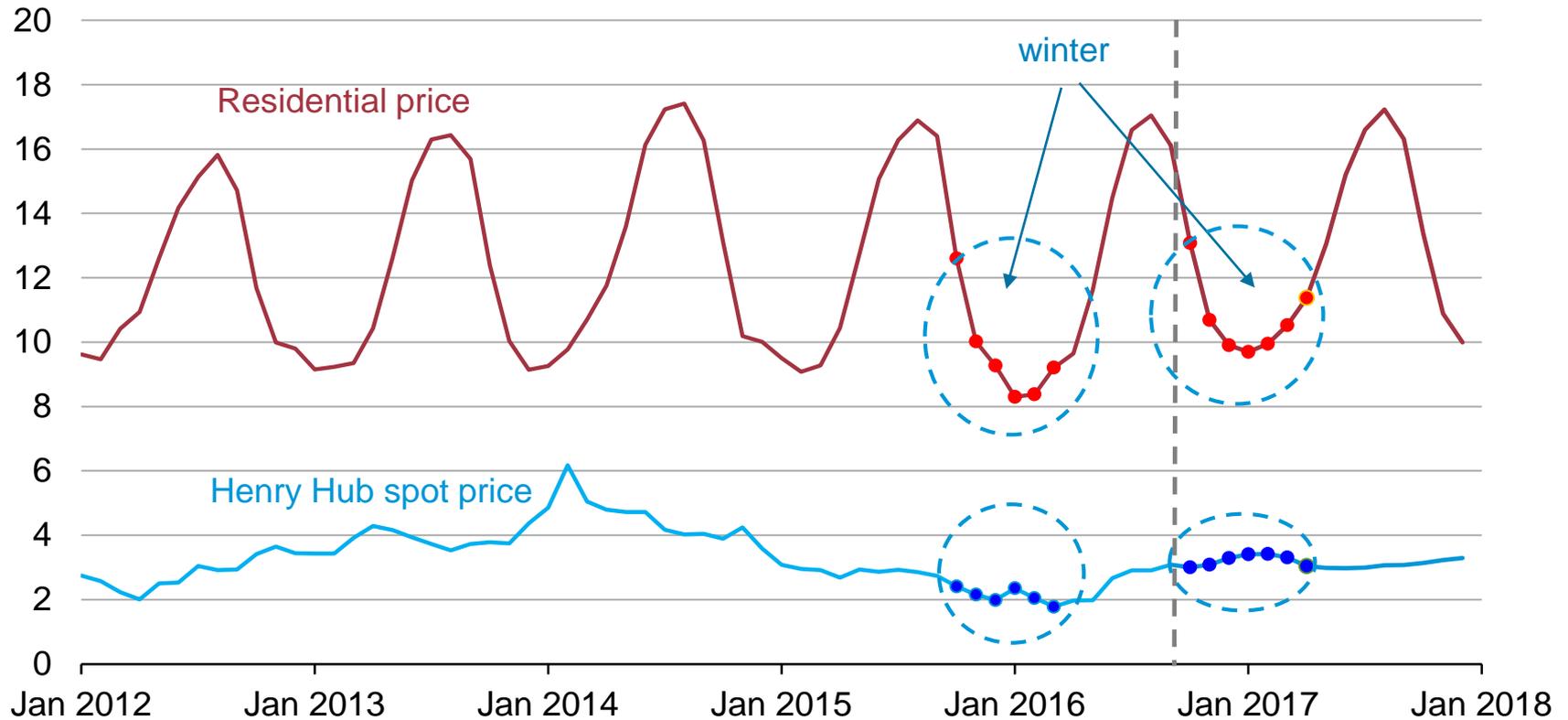
Natural gas heating expenditures are expected to increase significantly across in the eastern half of the country, but they are similar to levels from winters 2010-11 through 2014-15



Source: EIA Short-Term Energy Outlook, October 2016.

# EIA expects average residential natural gas prices to be 11% above prices last winter

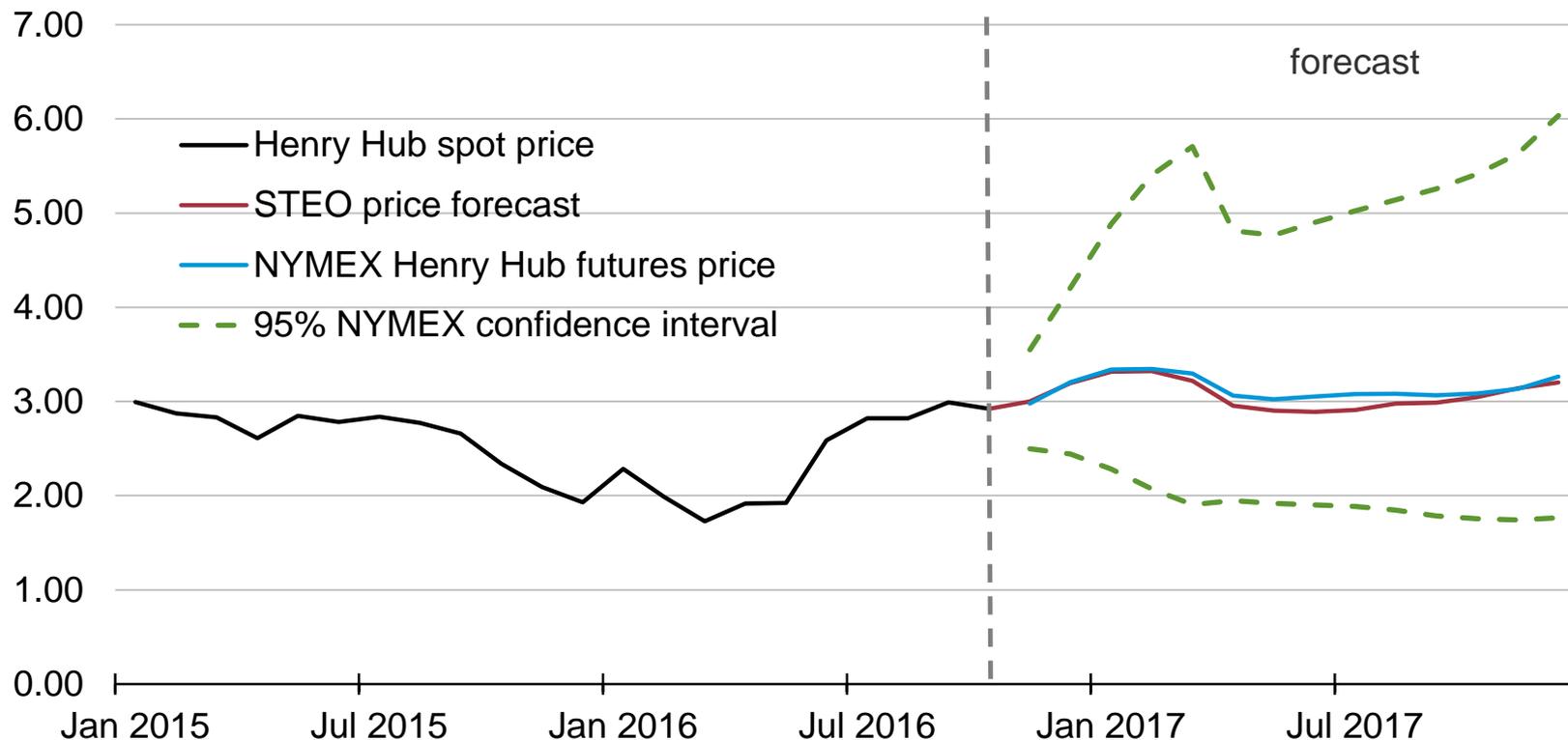
monthly average natural gas prices  
dollars per thousand cubic feet (Mcf)



Source: EIA Short-Term Energy Outlook, October 2016.

# EIA forecasts Henry Hub spot prices to average \$3.15/MMBtu this winter, but significant uncertainty exists (as always)

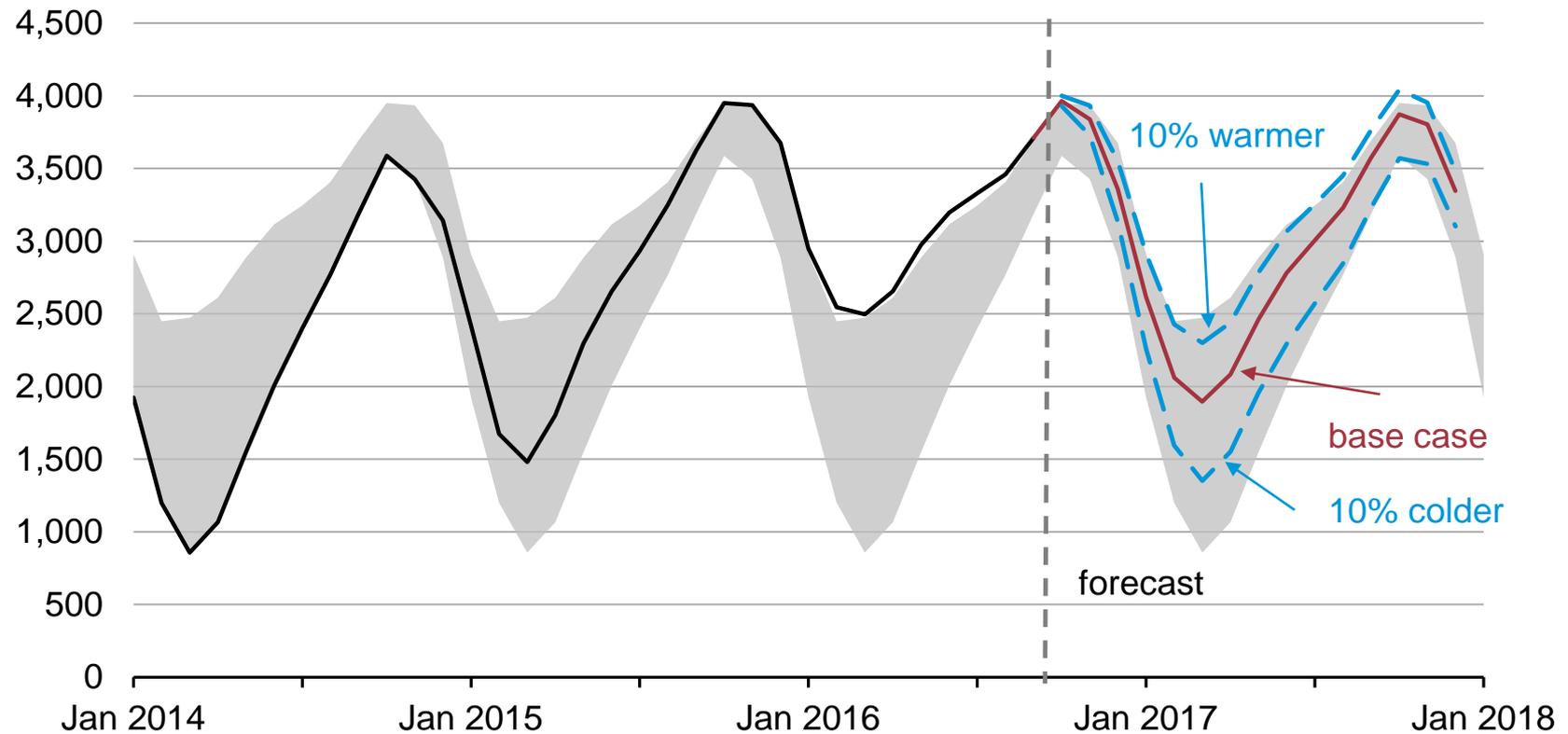
Henry Hub natural gas price  
dollars per million Btu



*Note: Confidence interval derived from options market information for the 5 trading days ending October 6, 2016. Intervals not calculated for months with sparse trading in near-the-money options contracts.*  
*Source: EIA Short-Term Energy Outlook, October 2016, and CME Group.*

# Natural gas inventories on September 30 were 90 Bcf higher than last year and 220 Bcf above the previous five-year average

U.S. total end-of-month working natural gas inventories  
billion cubic feet



Note: Gray band represents the range between the minimum and maximum from 2011 to 2015

Source: EIA Short-Term Energy Outlook, October 2016.

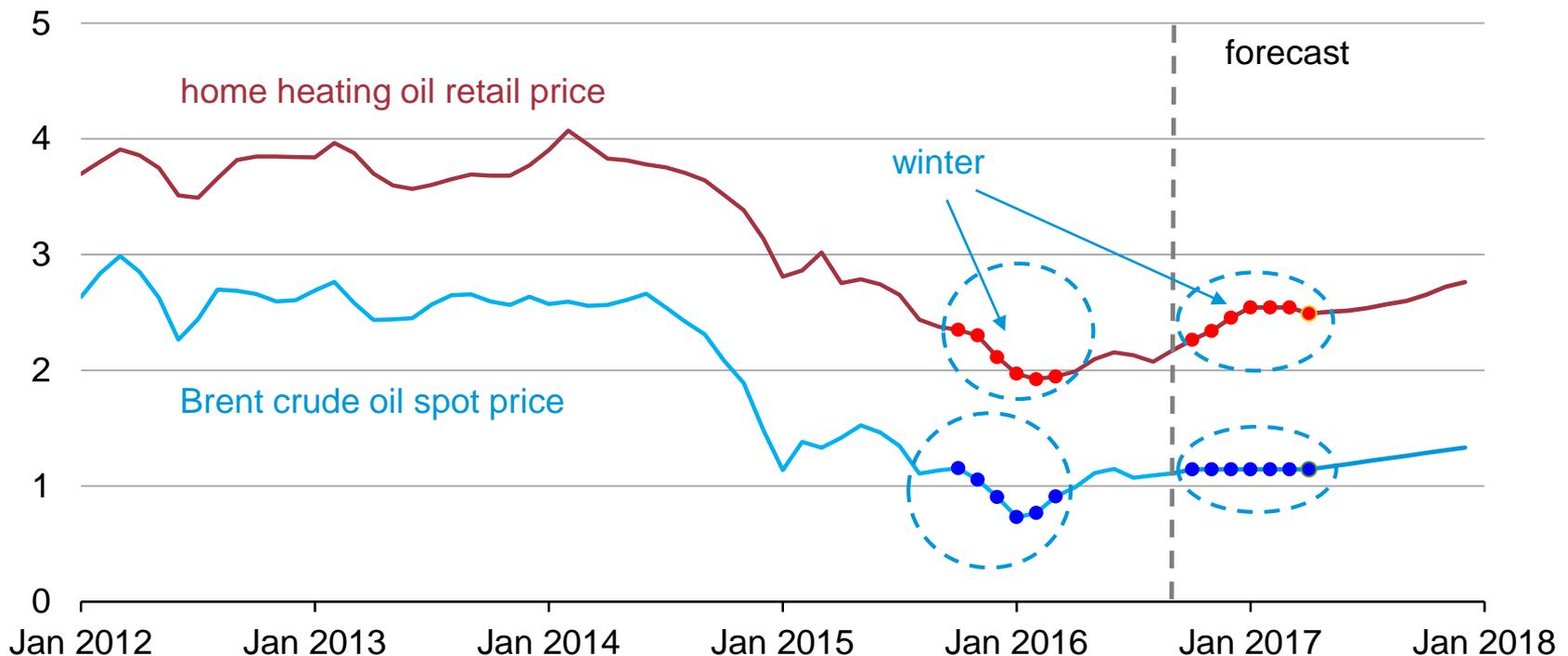
# Heating Oil

## Winter 2016-17 takeaways – Heating oil

- Brent crude oil spot prices are expected to average \$48 per barrel (b) this winter, \$9/b (22 cents/gal) higher than last winter, but they are not expected to return to levels seen from 2010-14; however, crude oil prices are very uncertain
- Distillate stocks in the Northeast totaled 52.3 million barrels on September 30, 6.9 million barrels (15%) above the same time last year and close to the highest level for any week since 2010
- Unless severely cold temperatures in the Northeast coincide with severely cold temperatures in Europe, ample supplies should be available to meet demand, but localized supply issues are possible

# Higher forecast residential heating oil prices this winter reflect higher crude oil prices

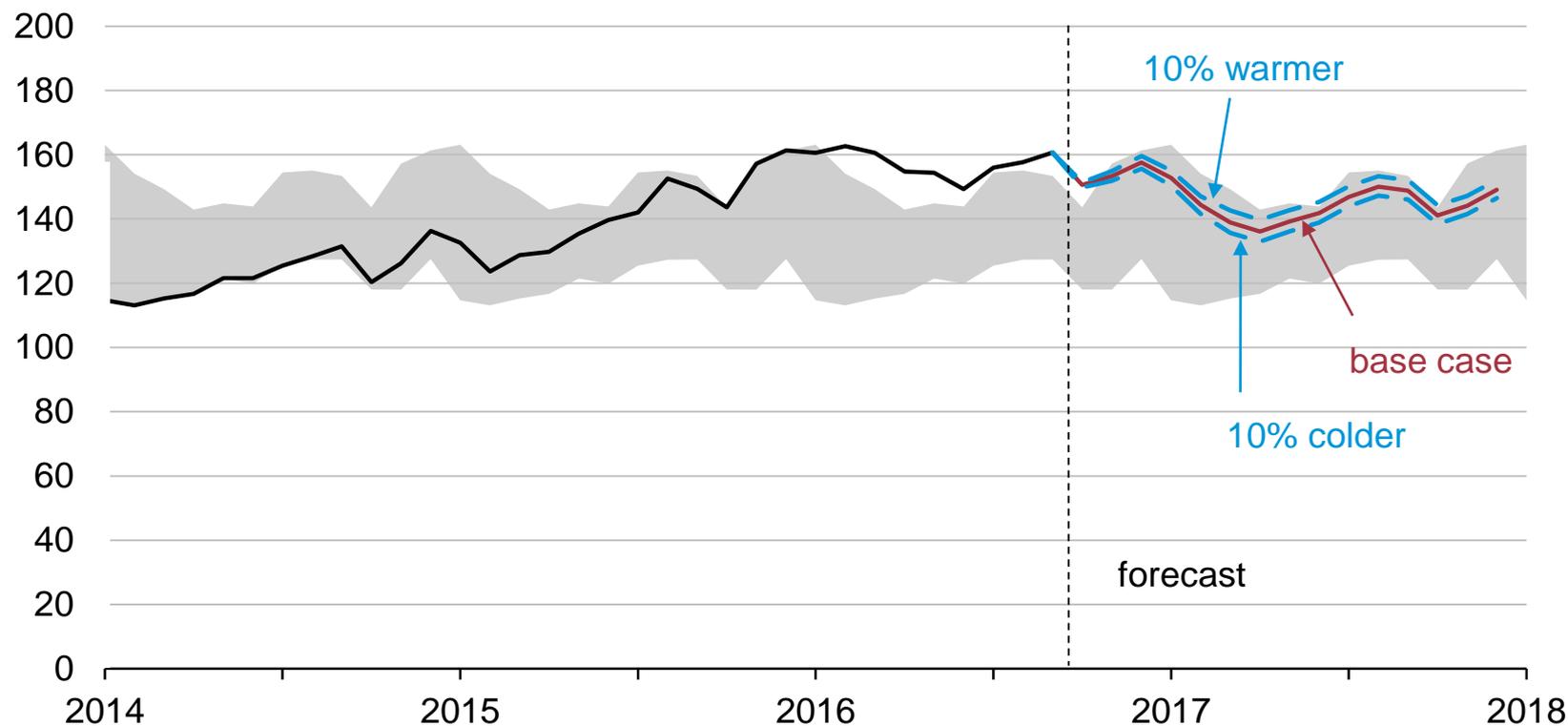
monthly average heating oil and Brent crude oil prices  
dollars per gallon



Note: Home heating oil retail price includes taxes.  
Source: EIA Short-Term Energy Outlook, October 2016.

# Total U.S. distillate inventories are forecast to stay within the five-year range in a 10% colder scenario

U.S. total end-of-month distillate fuel inventories  
million barrels



Note: Gray band represents the range between the minimum and maximum from 2011 to 2015

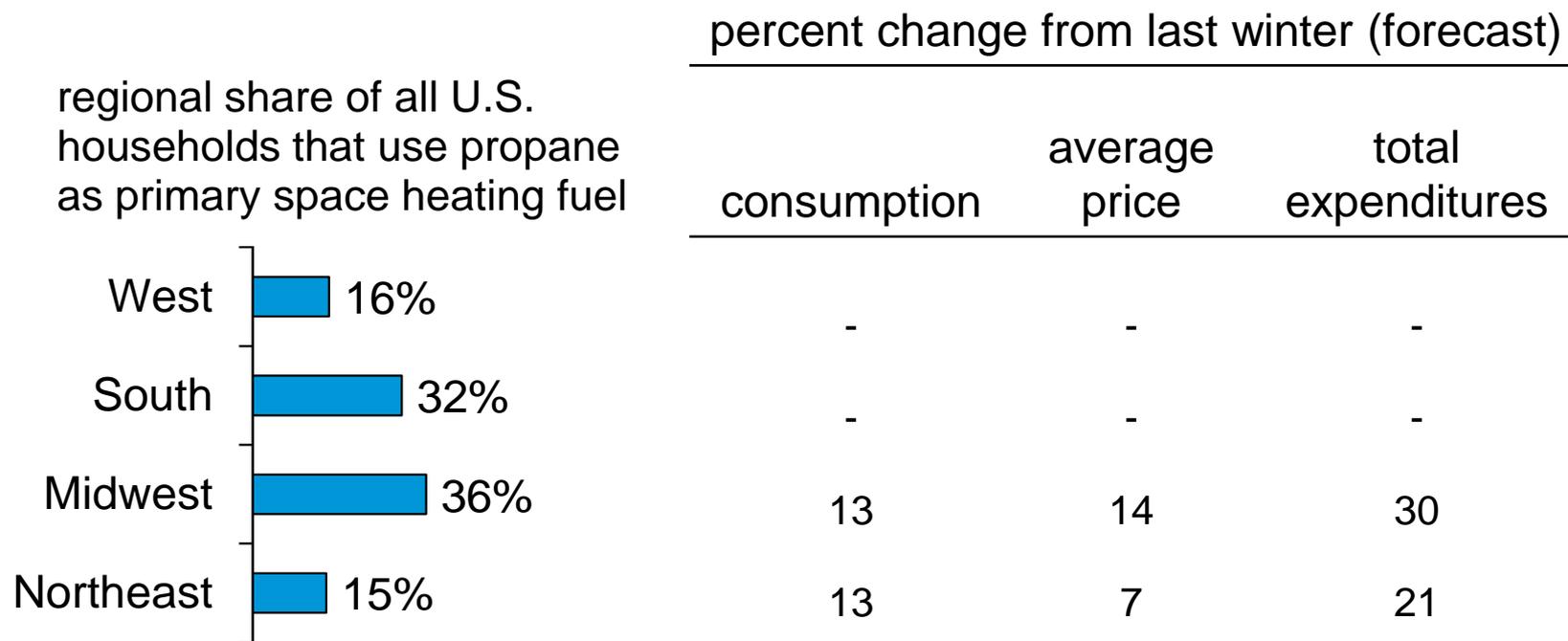
Source: EIA Short-Term Energy Outlook, October 2016

# Propane

## Winter 2016-17 takeaways – Propane

- U.S. propane inventories on September 30 were 4 million barrels (4%) higher than year-ago levels, and 28 million barrels (36%) above the five-year average; however, most incremental inventories above five-year average are on the Gulf Coast, distant from the main areas that use propane for heating
- Propane exports have reached record levels in 2016, increasing by 230,000 b/d (41%) during 1H2016 compared with 1H2015
- Propane production at natural gas liquids plants and refineries is expected to be 1% higher than last winter

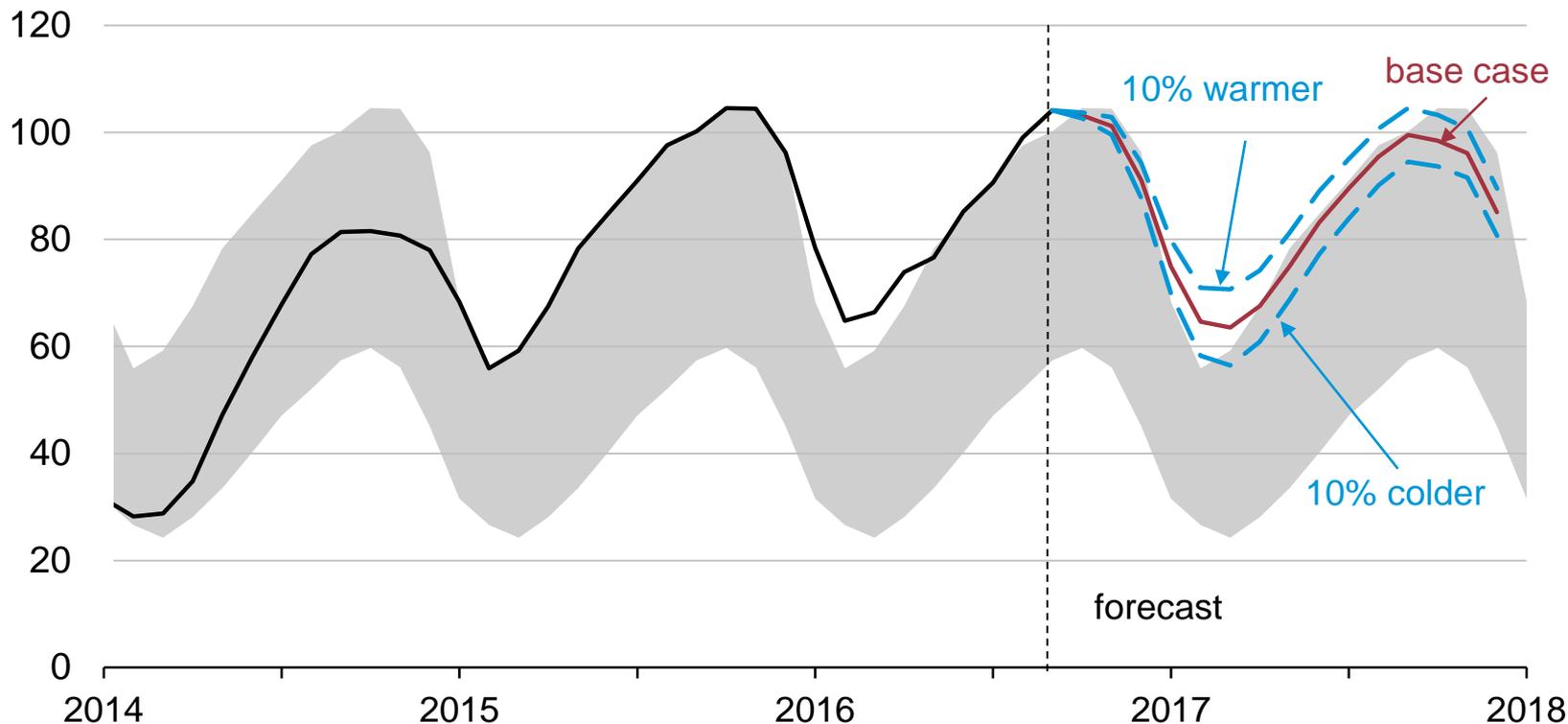
EIA's propane expenditures are expected to be higher than last winter's level but 18% lower than the average winter expenditures from 2010-11 through 2014-15



Source: EIA Short-Term Energy Outlook, October 2016

# U.S. propane inventories begin this winter similar to year-ago levels, but near the top of the five-year range

U.S. total end-of-month propane and propylene inventories  
million barrels



Note: Gray band represents the range between the minimum and maximum from 2011 to 2015

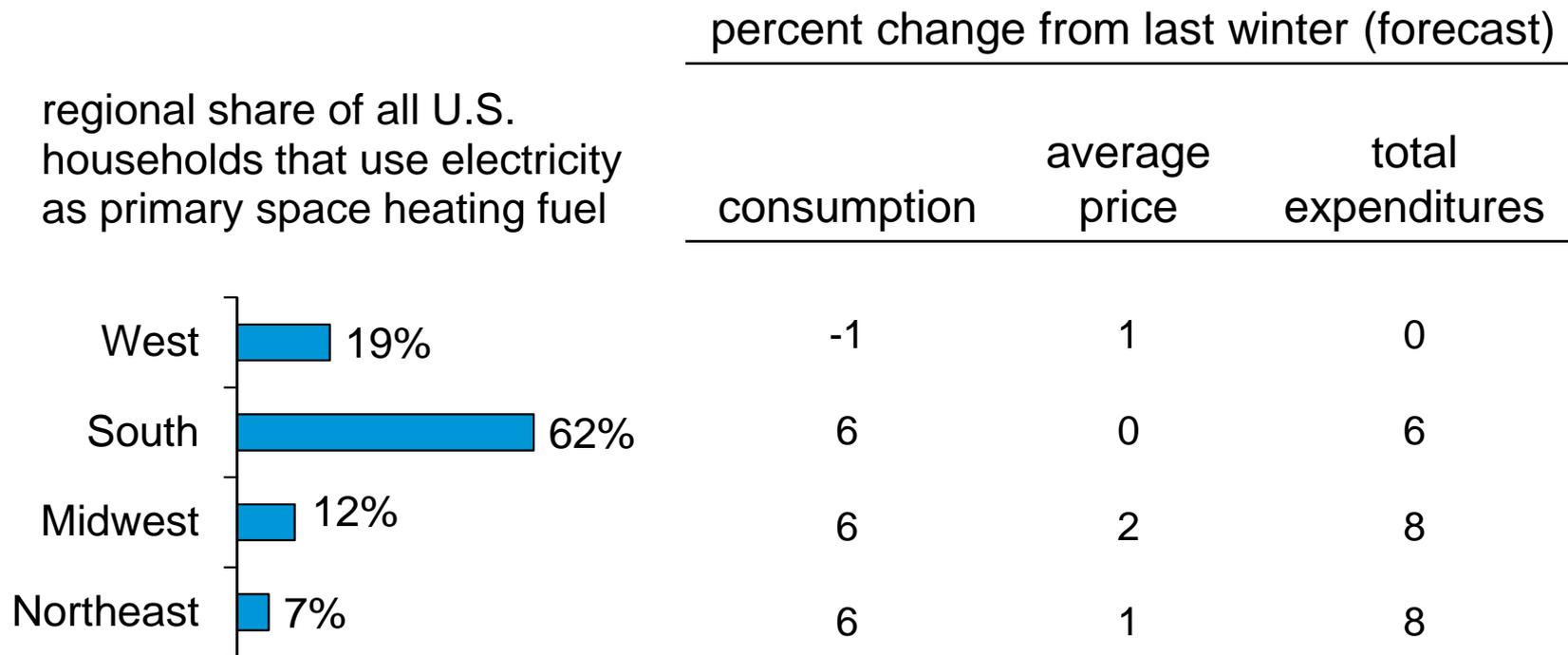
Source: EIA Short-Term Energy Outlook, October 2016

# Electricity

## Winter 2016–17 takeaways – Electricity

- Although residential electricity prices for much of 2016 have been lower than 2015, EIA expects winter residential prices to be slightly higher than last winter
- Because wholesale price increases are slow to pass through to consumers, yearly expenditure deviations are driven more by temperatures
- New natural gas pipeline capacity into New England should help alleviate some competition for the fuel between power generators and residential space heating, but Northeast electricity markets could still be affected by constrained natural gas supplies into the region

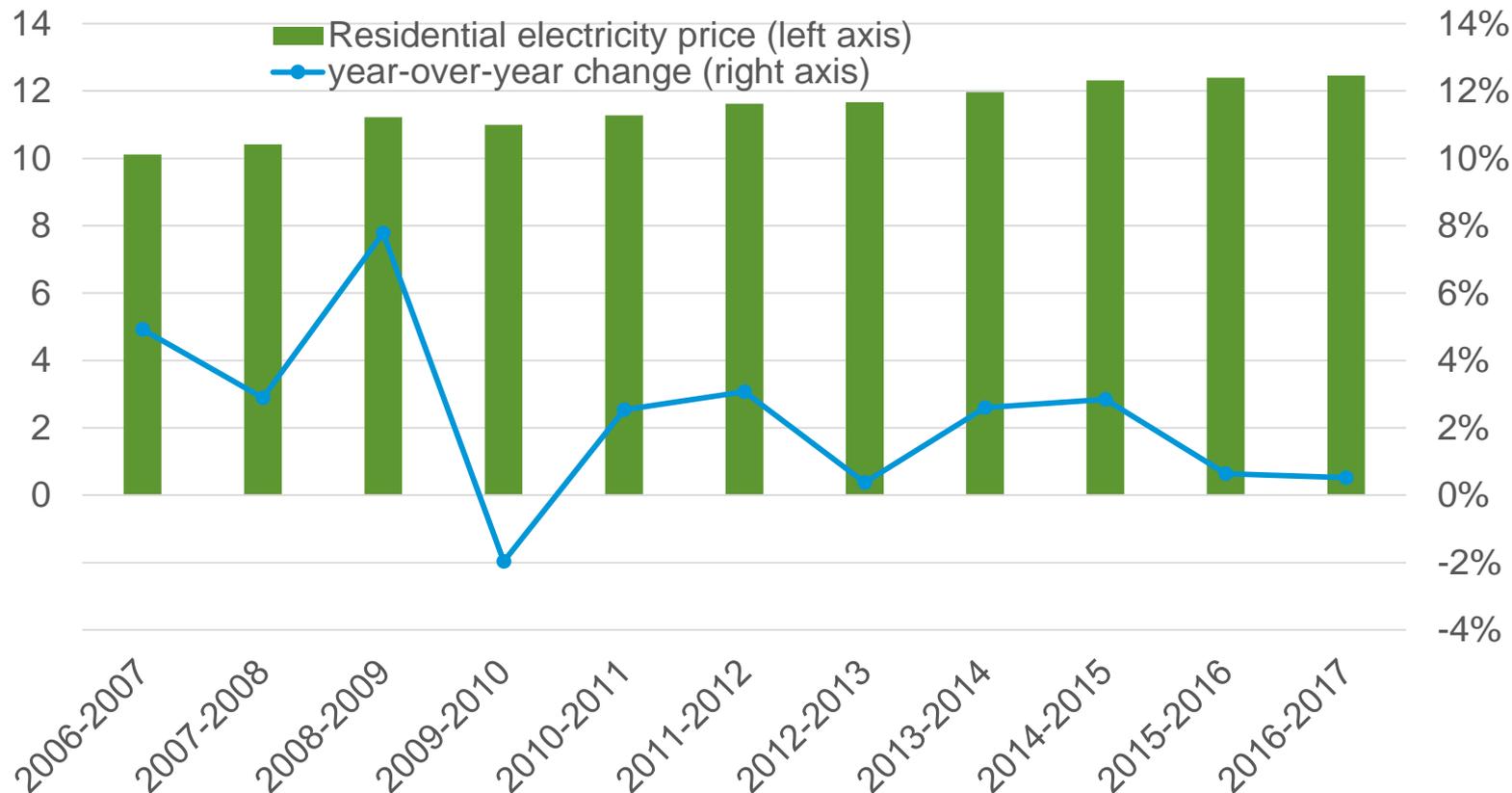
# Winter electricity bills are expected to be higher compared with last winter in regions east of the Rocky Mountains



Source: EIA Short-Term Energy Outlook, October 2016

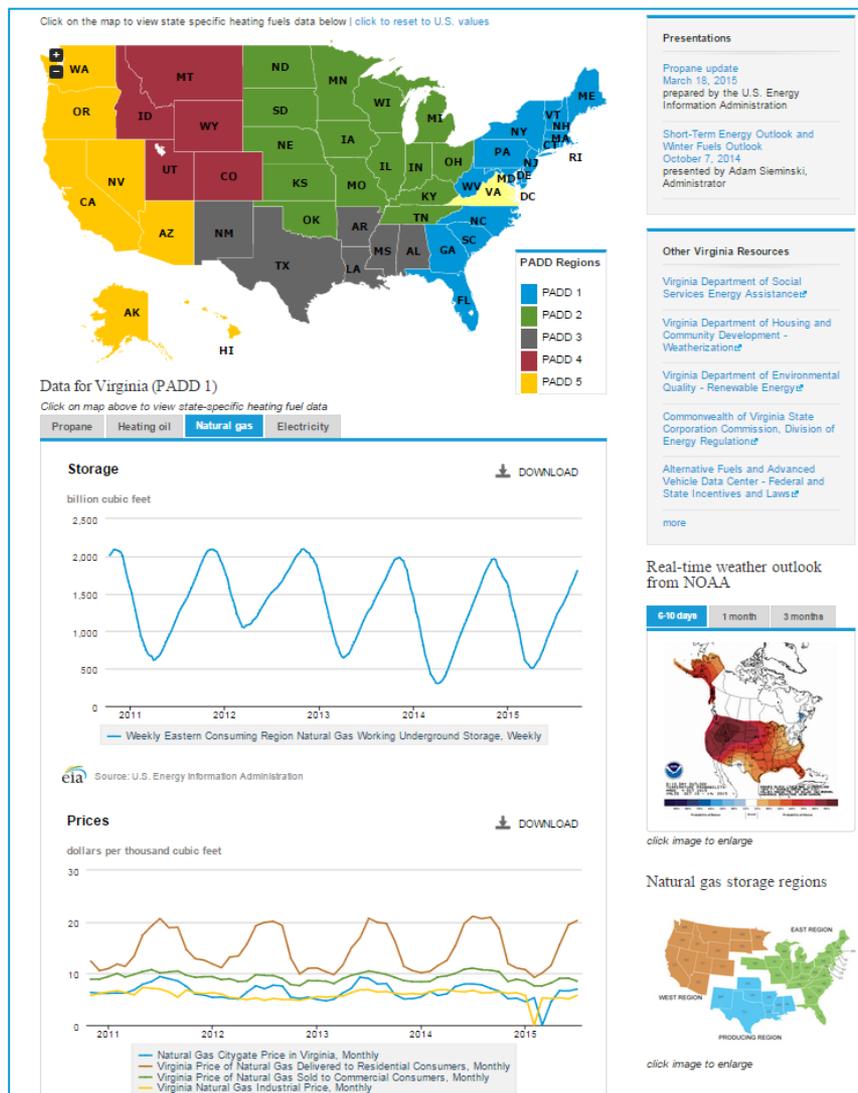
# Growth in residential electricity prices has slowed in recent years

U.S. winter average residential electricity price  
cents/kilowatthour



Source: EIA Short-Term Energy Outlook, October 2016

# Winter Heating Fuels Webpage



[www.eia.gov/special/heatingfuels](http://www.eia.gov/special/heatingfuels)

- Availability and pricing for the four principals heating fuels
  1. propane
  2. heating oil
  3. natural gas
  4. electricity
- Data relevant to each state available through clickable map
- Links to resources for each state
- Current week and 3-month weather forecasts from NOAA
- Every graph can be downloaded as an image or as a spreadsheet