

# EIA Winter Fuels Outlook



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*NASEO 2017-2018 Winter Energy Outlook Webinar  
October 11, 2017*

## The main determinants of winter heating fuels expenditures are temperatures and prices

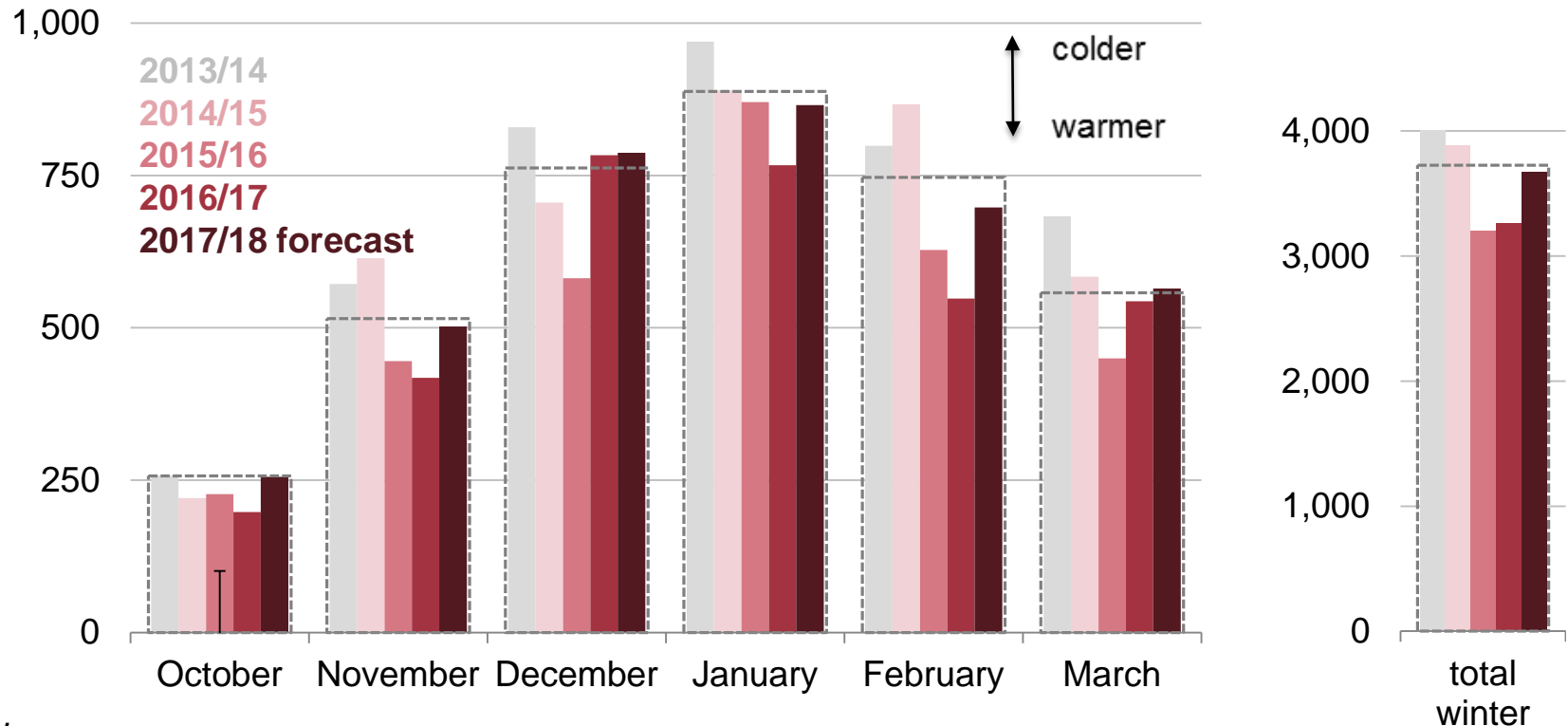
**Temperatures:** This winter's weather forecast predicts a return to close-to-normal temperatures. The latest outlook from the National Oceanic and Atmospheric Administration (NOAA) expects winter temperatures to be colder than last winter, with projected heating degree days in the Northeast, Midwest, South, and West ranging from 4% colder in the West to 27% colder in the South.

**Prices:** EIA expects heating fuel prices for homes that heat with electricity, heating oil, natural gas, and propane to be higher than prices last winter.

**Expenditures:** Although overall heating fuel expenditures are expected to be higher than last winter, they are comparable to or lower than during winters from 2010–11 through 2014–15, except for electricity, where expenditures are higher than both last year and the 2010–11 through 2014–15 average.

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

U.S. current population-weighted heating degree days

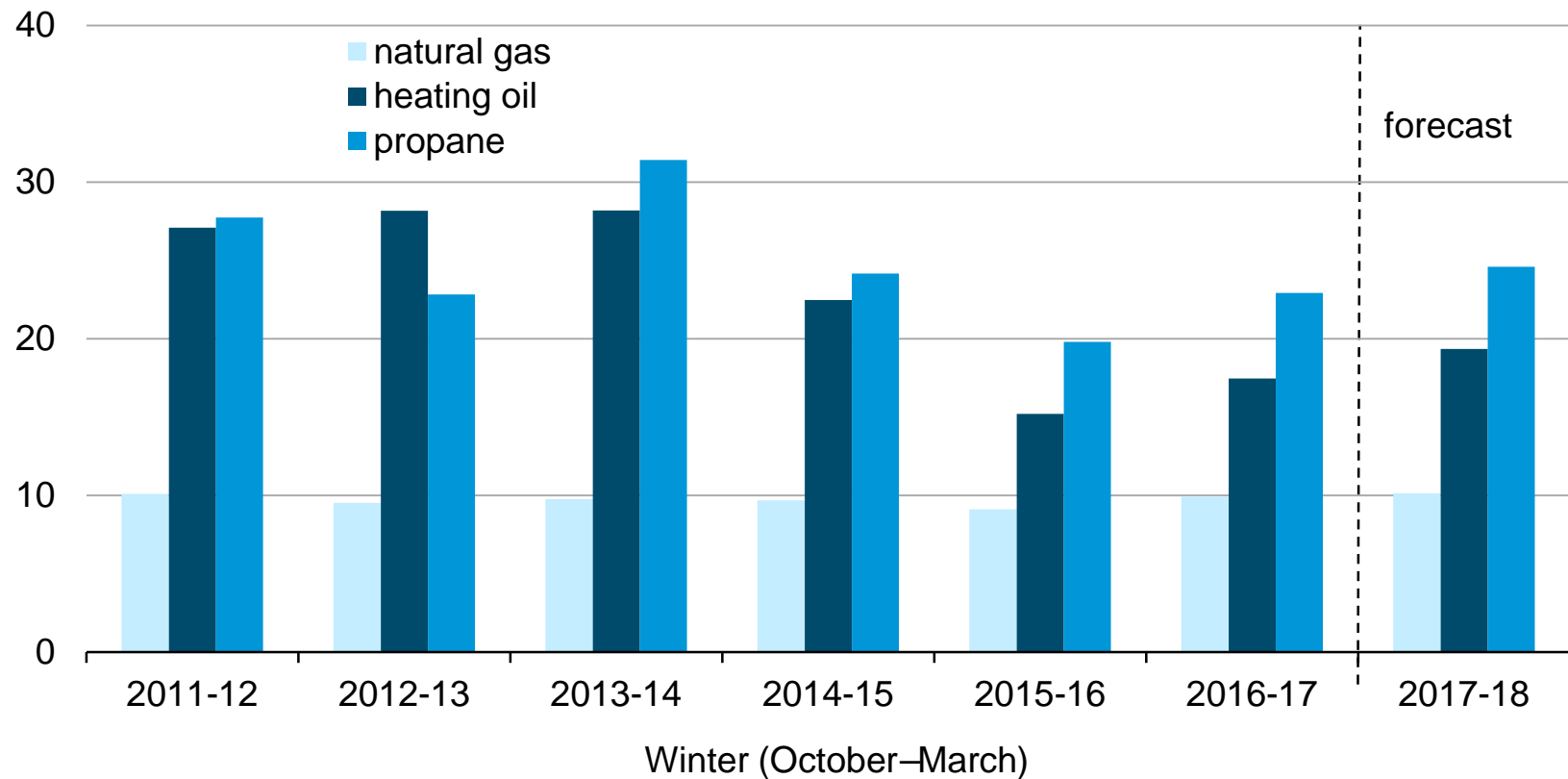


Note: EIA calculations based on National Oceanic and Atmospheric Administration (NOAA) data. The dashed lines indicate each month's prior 10-year average for October 2007–March 2017. Projections reflect NOAA's 14–16 month outlook.

Source: EIA Short-Term Energy Outlook, October 2017.

# Fuel prices are forecast to be slightly higher than last winter, but heating oil prices are expected to remain below levels from 2011–14 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 2017.

Fuel expenditures are expected to be higher this winter (October 1–March 31) compared with last winter, but the comparison with the previous five winters is mixed

Change in base case forecast fuel expenditures		
Fuel	Compared with previous five-winter average	Compared with last winter
Heating oil*	<b>-14%</b>	<b>17%</b>
Natural gas	<b>6%</b>	<b>12%</b>
Propane *	<b>2%</b>	<b>18%</b>
Electricity	<b>6%</b>	<b>8%</b>

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

Source: EIA Short-Term Energy Outlook, October 2017.

## EIA's outlook includes scenarios with temperature forecasts that are 10% warmer and 10% colder than the base case

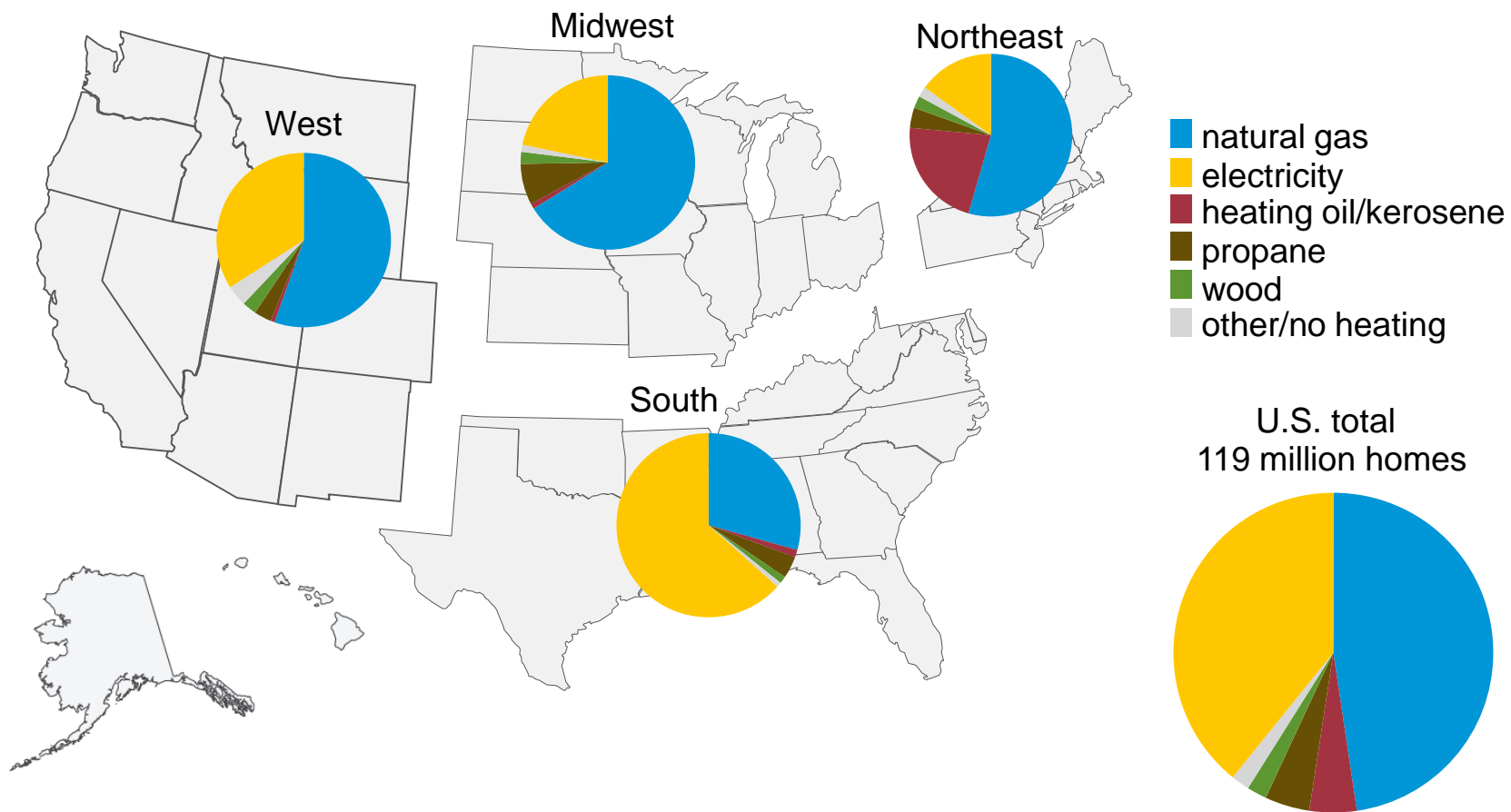
Change in forecast fuel expenditures from last winter			
Fuel	Base Case	If 10% warmer than forecast	If 10% colder than forecast
Heating oil*	<b>17%</b>	<b>5%</b>	<b>32%</b>
Natural gas	<b>12%</b>	<b>3%</b>	<b>19%</b>
Propane *	<b>18%</b>	<b>2%</b>	<b>41%</b>
Electricity	<b>8%</b>	<b>4%</b>	<b>12%</b>

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

Source: EIA Short-Term Energy Outlook, October 2017.

# 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 2016 American Community Survey

# Natural Gas



## Winter 2017–18 takeaways – Natural gas

**Prices:** Henry Hub spot prices are forecast to average \$3.18/million British thermal units (MMBtu) this winter, a 5% increase from last winter, because demand is expected to be higher with the return to typical winter temperatures.

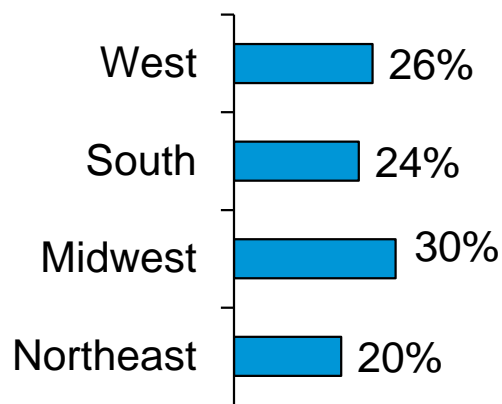
**Inventories:** Inventories are expected to end October at 3.8 trillion cubic feet, which would be 1% lower than the five-year average for this time of year. As of September 29, inventories of natural gas in working storage were similar to the five-year average but 4% lower than year-ago levels.

**Production:** Dry natural gas production this winter is forecast to average 77 billion cubic feet/day, an 8% increase compared with last winter.

**Infrastructure:** Although pipeline buildout has improved the ability to move Marcellus and Utica natural gas to demand centers in the Northeast, not all planned projects are currently online, and consumers could still experience localized price volatility during periods of very cold temperatures.

## Natural gas heating expenditures are expected to increase based on the current forecast, but temperatures will be a key variable

Regional share of all U.S. households that use natural gas as their primary space heating fuel



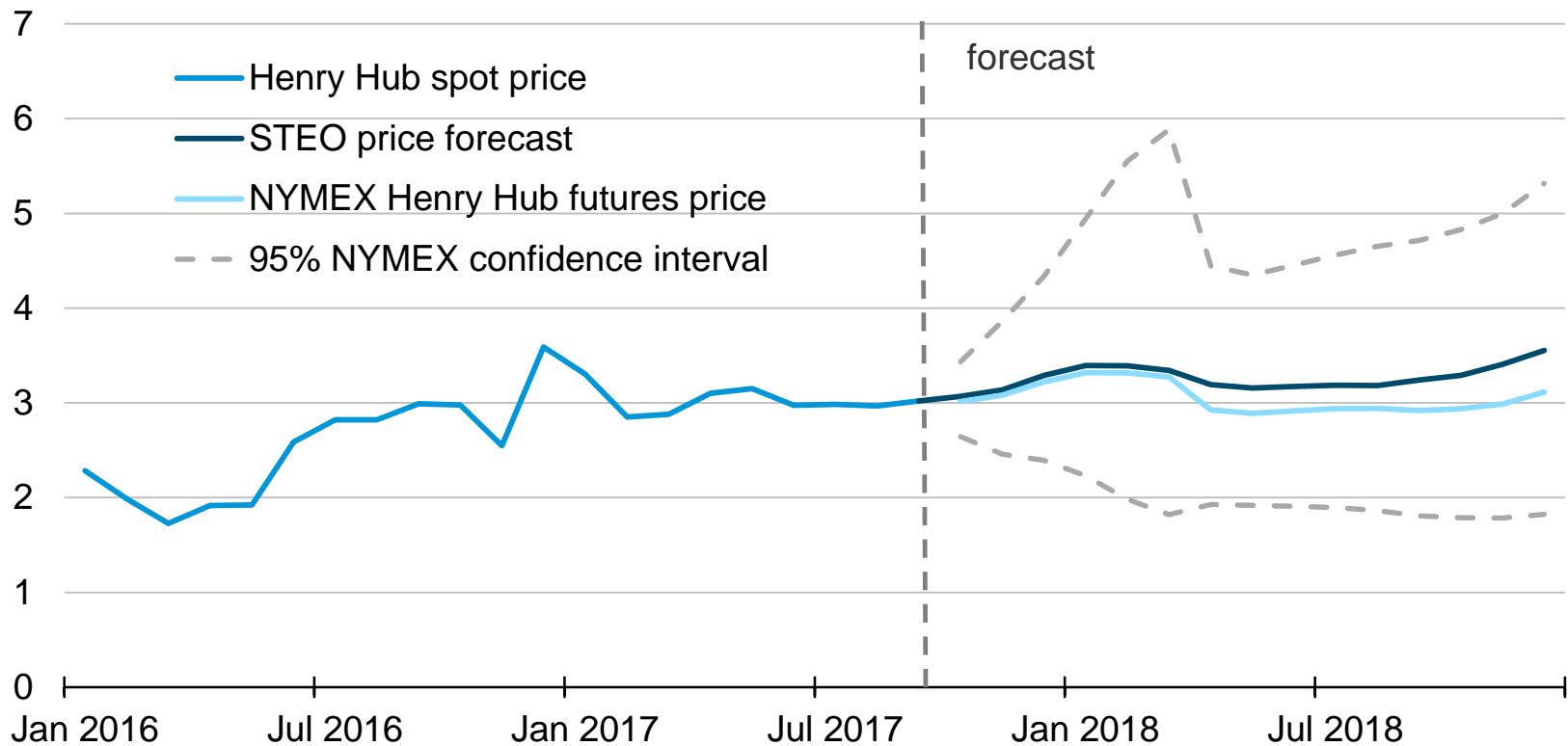
Change from last winter (forecast)

	Consumption	Average price	Total expenditures
West	3%	1%	4%
South	20%	-6%	13%
Midwest	12%	7%	20%
Northeast	5%	4%	10%

Source: EIA Short-Term Energy Outlook, October 2017.

# EIA forecasts Henry Hub spot prices (wholesale) to average \$3.18/MMBtu this winter, but significant uncertainty exists

Henry Hub natural gas price  
dollars per million Btu

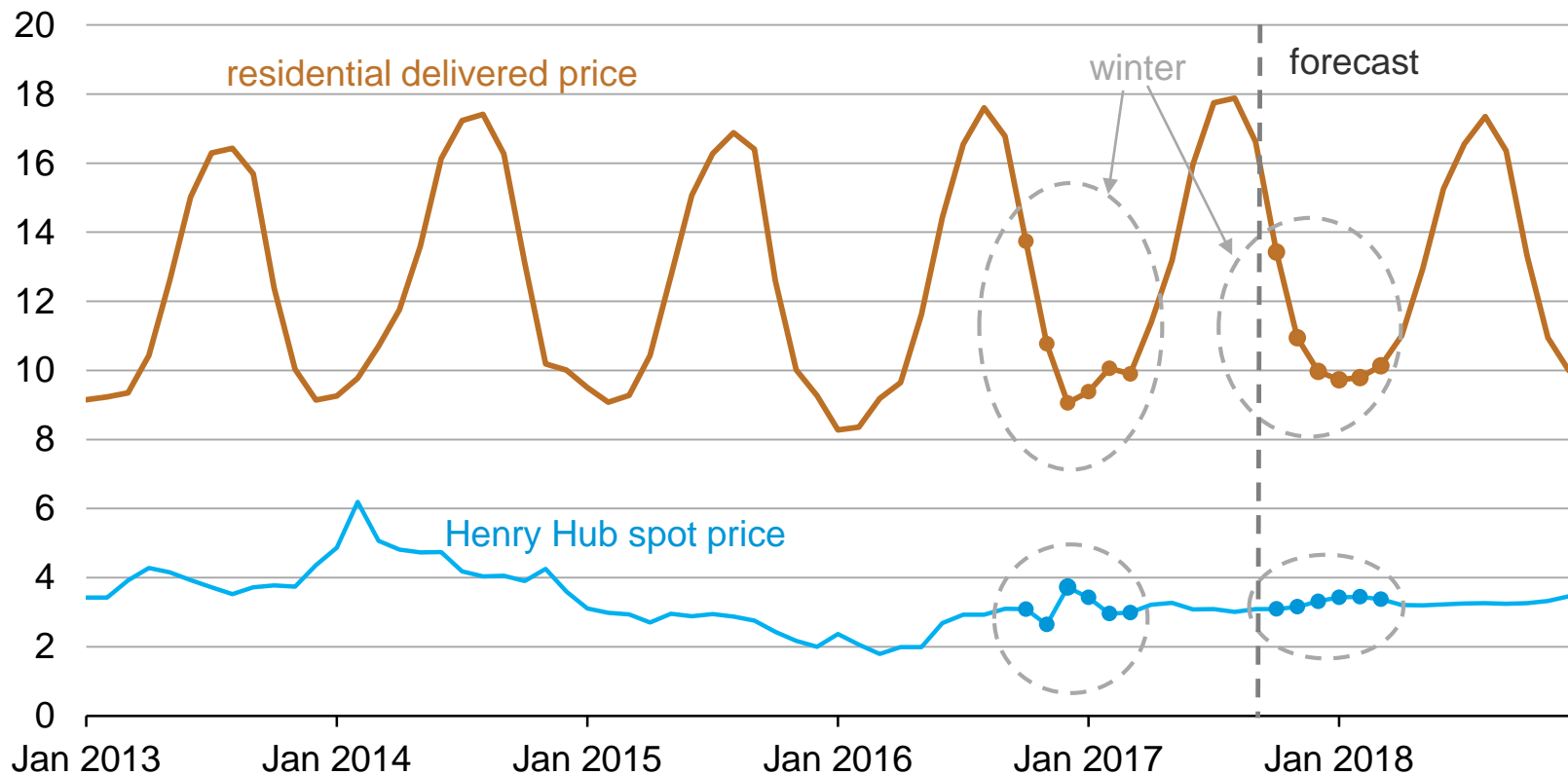


Note: Confidence interval and futures prices derived from market information for the five trading days ending October 5, 2017. Intervals not calculated for months with sparse trading in near-the-money options contracts.

Source: EIA Short-Term Energy Outlook, October 2017, and CME Group.

# EIA expects average residential natural gas prices to be 2% higher than prices last winter

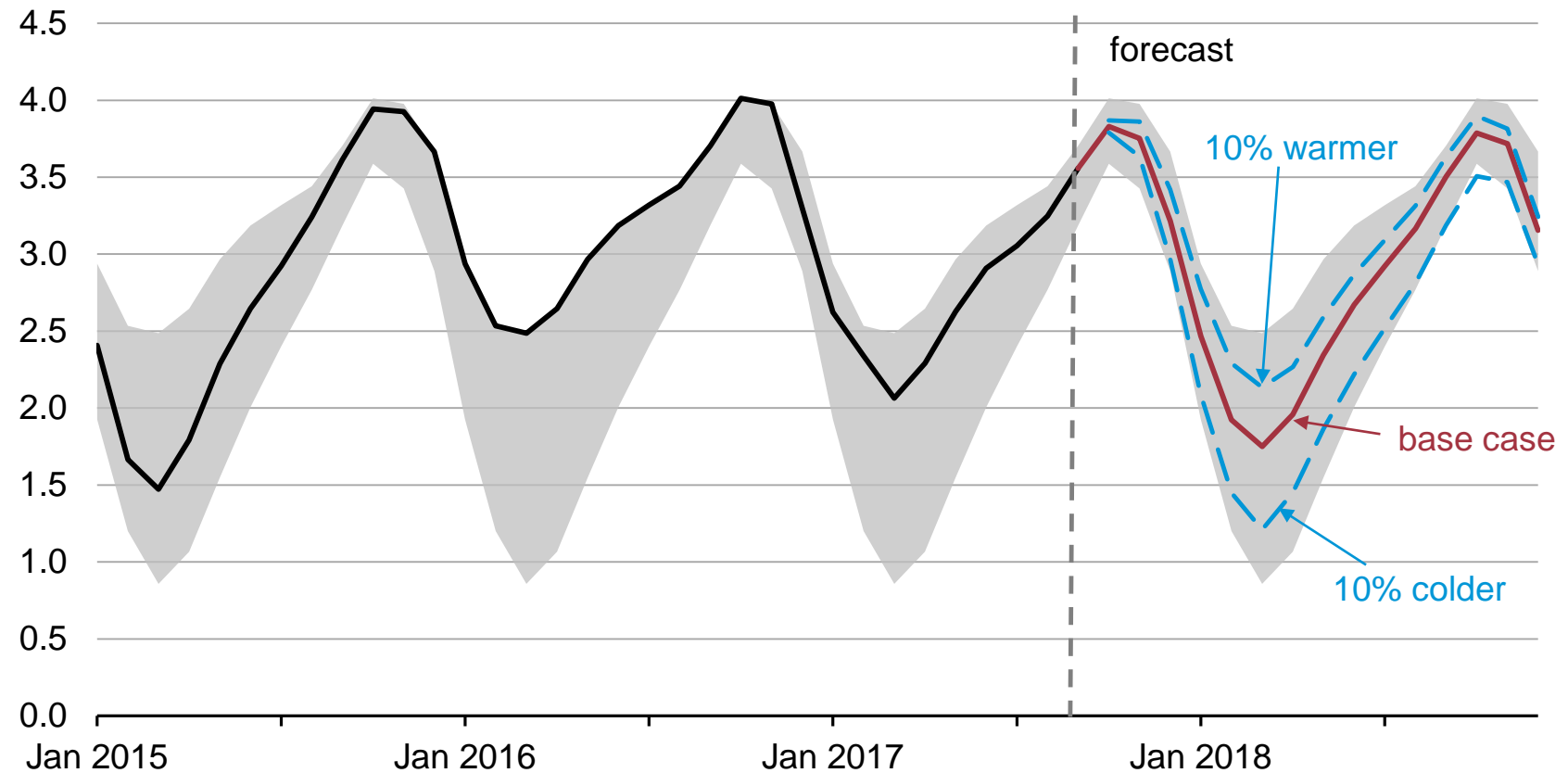
monthly average natural gas prices  
dollars per thousand cubic feet (Mcf)



Source: EIA Short-Term Energy Outlook, October 2017, and Thomson Reuters.

# Natural gas inventories on September 29 were near the previous five-year average

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

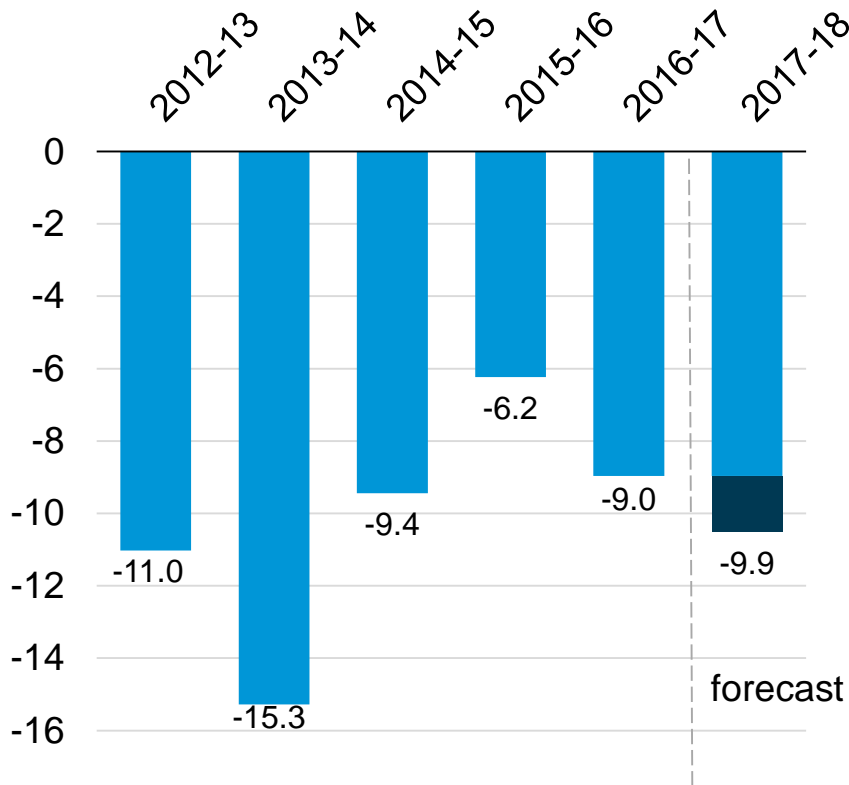


Note: Gray band represents the range between the minimum and maximum from 2012 to 2016.

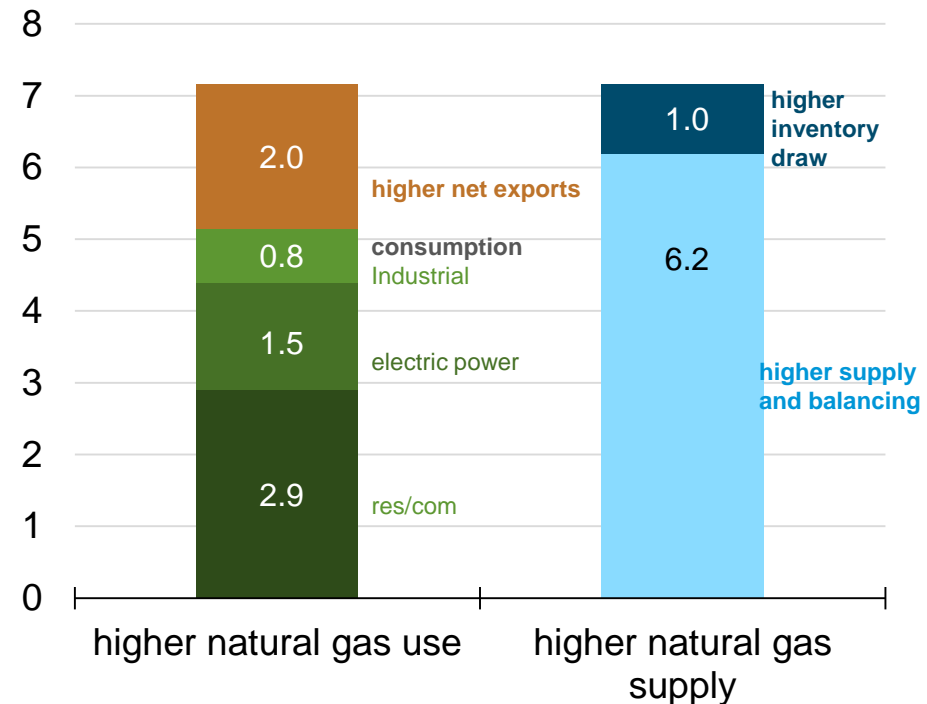
Source: EIA Short-Term Energy Outlook, October 2017.

# Natural gas inventory draws are expected to be slightly higher this winter, driven by higher forecast consumption and exports

Winter natural gas inventory change  
billion cubic feet per day



Projected change from previous winter  
billion cubic feet per day



Source: EIA Short-Term Energy Outlook, October 2017.

# Heating Oil

## Winter 2017–18 takeaways – Heating oil

**Prices:** Brent crude oil spot prices are expected to average \$54 per barrel (b) this winter, \$2/b (6 cents/gal) higher than last winter, but they are not expected to return to 2010–14 levels; however, crude oil prices are very uncertain.

**Inventories:** Distillate stocks in the Northeast totaled 35.5 million barrels on September 29, 16.8 million barrels (32%) lower than the same time last year and 5% lower than the previous five-year average.

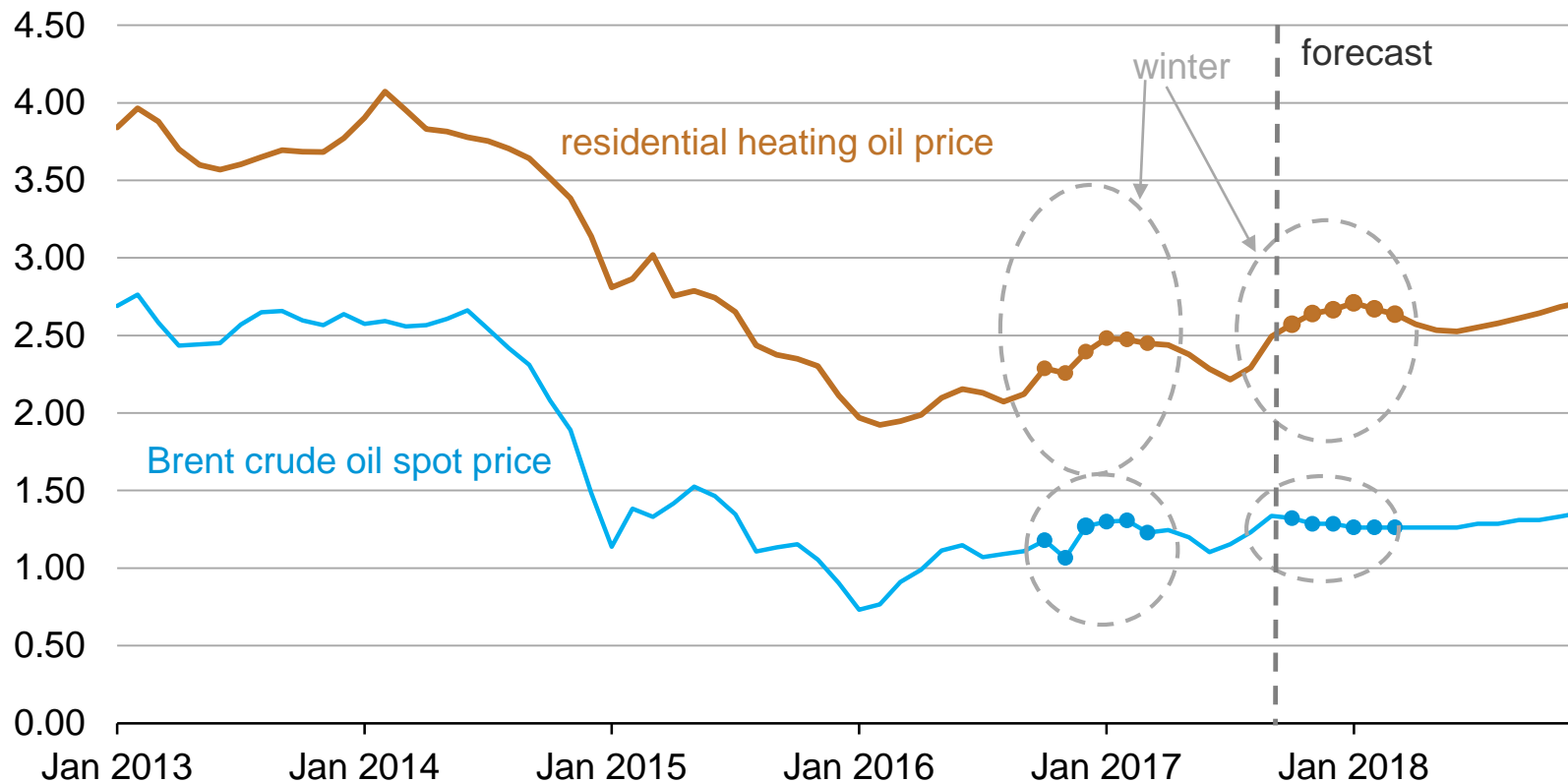
**Supply:** Unless severely cold temperatures in the Northeast coincide with severely cold temperatures in Europe, ample distillate supplies should be available to meet demand, but localized supply issues are possible.

**Consumption:** Distillate fuel demand growth has been stronger than in recent years, contributing to higher heating oil prices.



# EIA expects average residential heating oil prices to be 10% higher than prices last winter

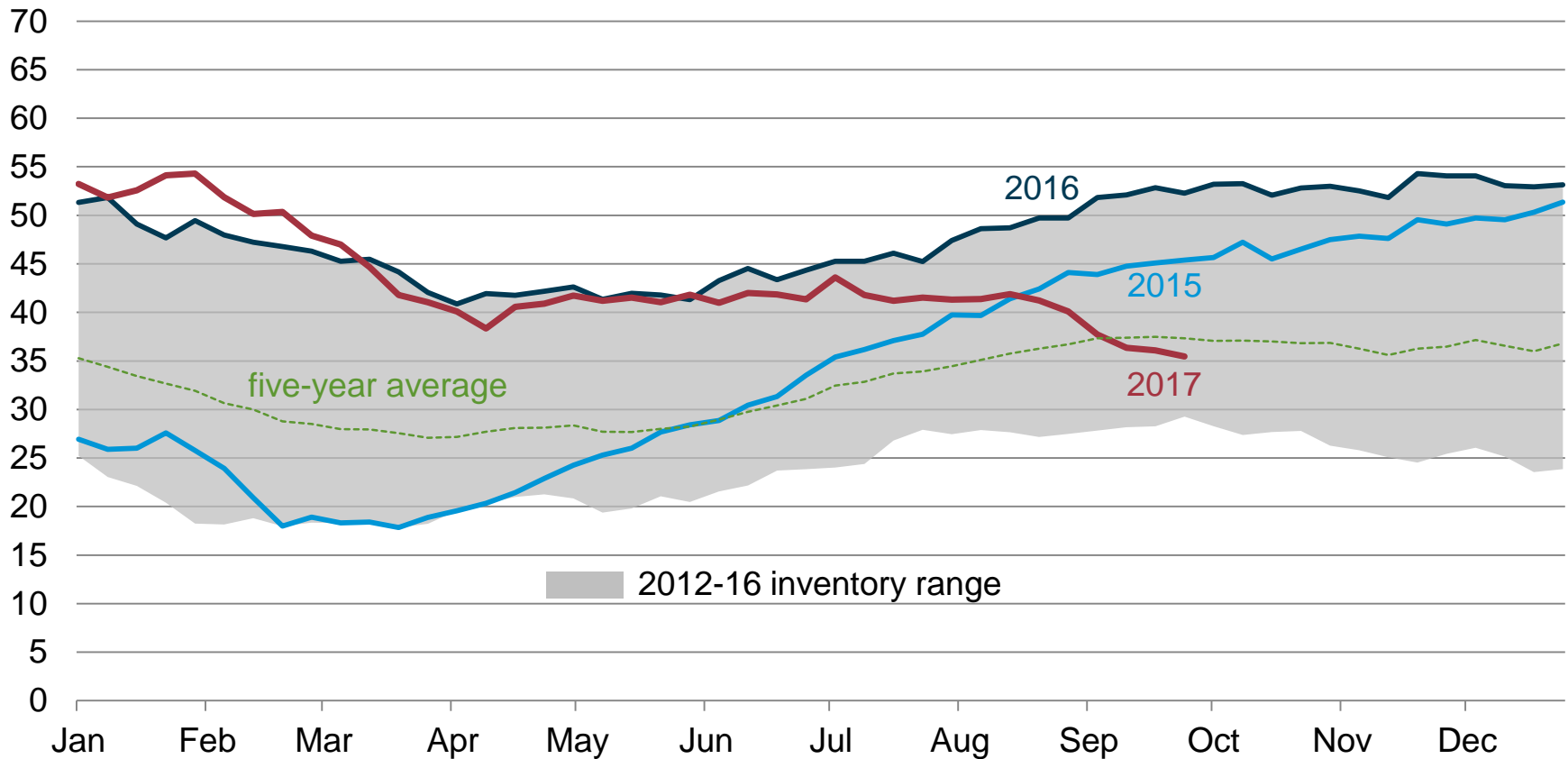
monthly average heating oil and Brent crude oil prices  
dollars per gallon



Source: EIA Short-Term Energy Outlook, October 2017, and Thomson Reuters.

# Northeast distillate inventories have fallen in recent weeks, partly because of the effects of Hurricane Harvey

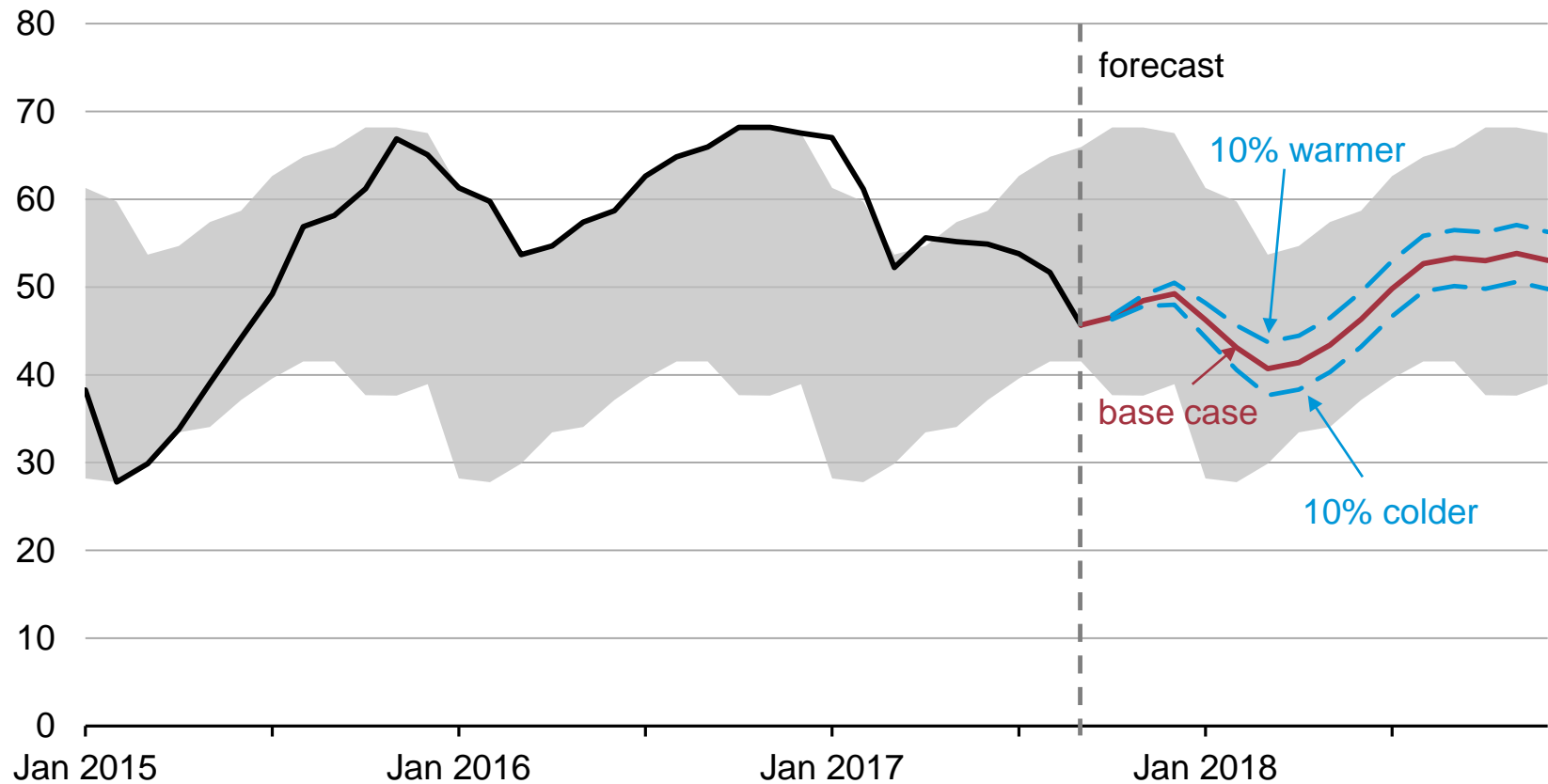
Weekly Northeast distillate inventories  
million barrels



Source: EIA, Weekly Petroleum Status Report and Petroleum Supply Monthly.

# East Coast distillate inventories are expected to remain within the five-year average range even in the 10%-colder scenario

East Coast end-of-month distillate inventories  
million barrels



Note: Gray band represents the range between the minimum and maximum from 2012 to 2016

Source: EIA Short-Term Energy Outlook, October 2017.

# Propane

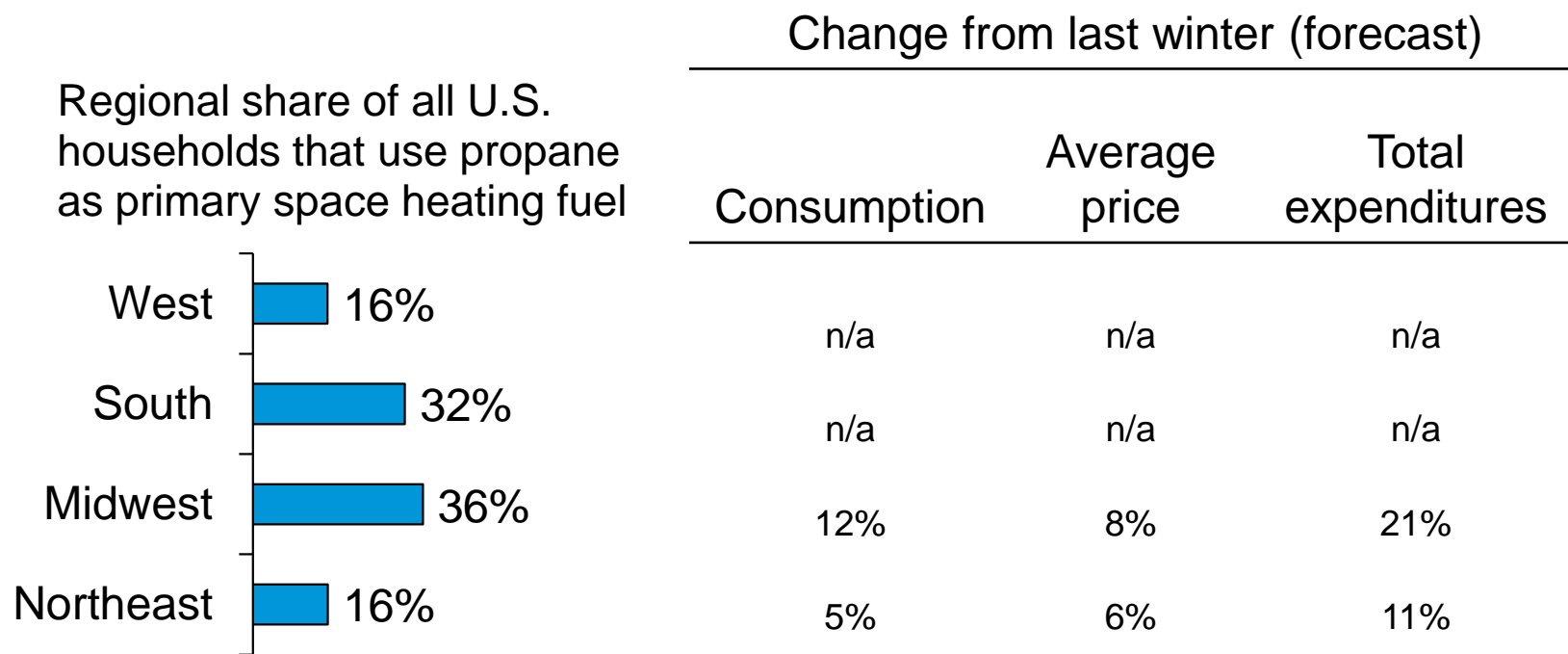
## Winter 2017–18 takeaways – Propane

**Inventories:** Propane inventories enter this heating season at levels lower than the five-year average for this time of year after beginning last winter well above the five-year average level. U.S. propane inventories in the last week of September were 78.0 million barrels, which was 9% lower than the previous five-year average for that time of year.

Inventories in the Midwest, the region most reliant on propane for heating and agricultural uses, ended September 4% lower than the five-year average. However, regional detail shows stocks across the northern Midwest at or above the five-year average.

**Production:** Propane production is forecast to be 7% higher this winter compared with last winter, while total propane consumption is expected to be 2% higher than last winter and net exports 4% lower.

# EIA forecasts propane expenditures to be higher than last winter's level but lower than the average winter expenditures from 2010–11 through 2014–15

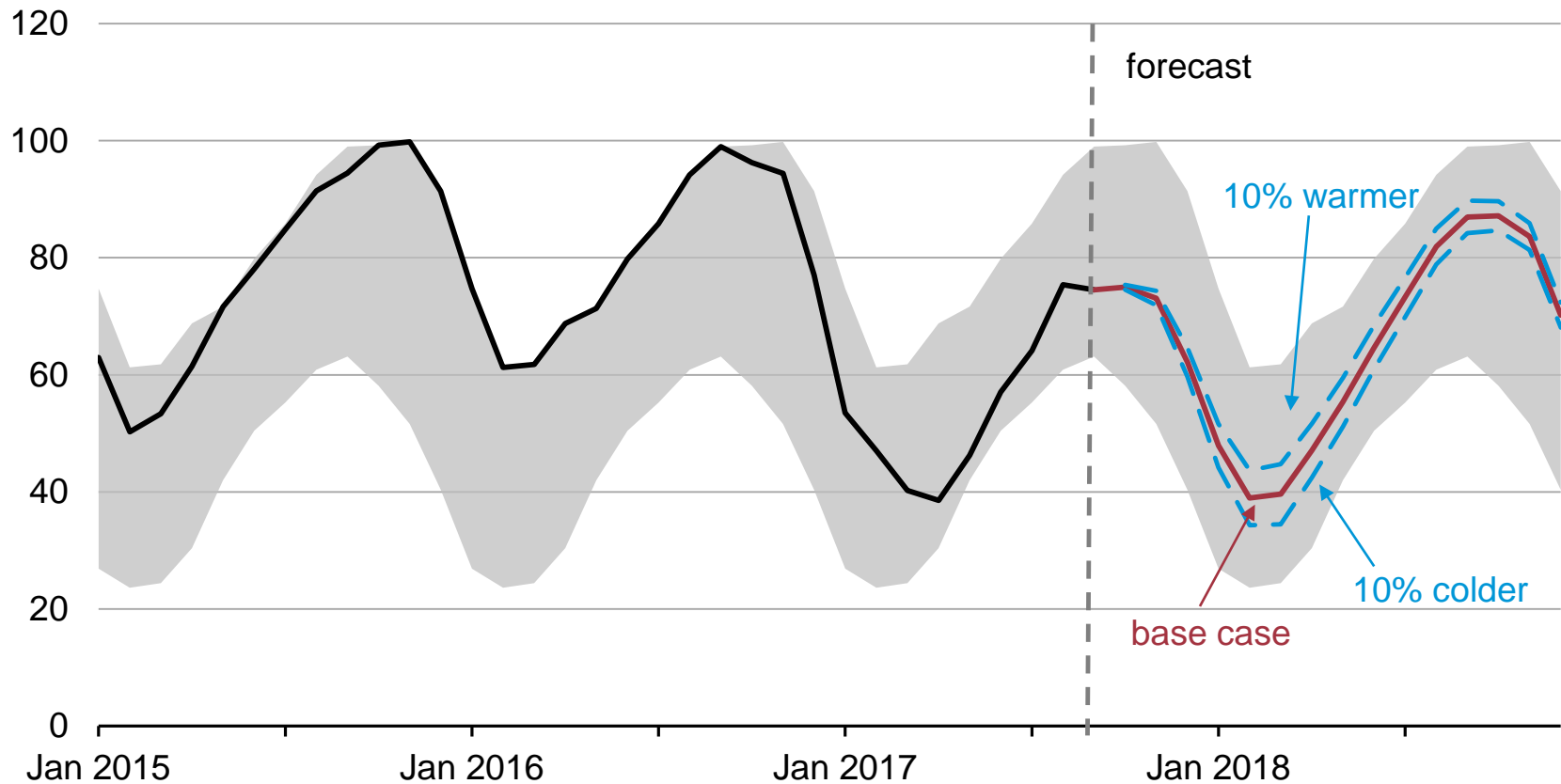


Note: n/a = not available because of insufficient underlying data to create forecast

Source: EIA Short-Term Energy Outlook, October 2017.

# Propane inventories are starting the winter in the middle of the five-year range but below 2016 record high levels

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

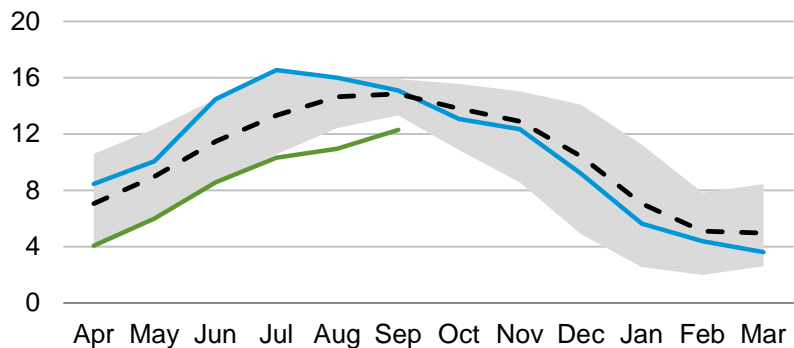


Note: Gray band represents the range between the minimum and maximum from 2012 to 2016.

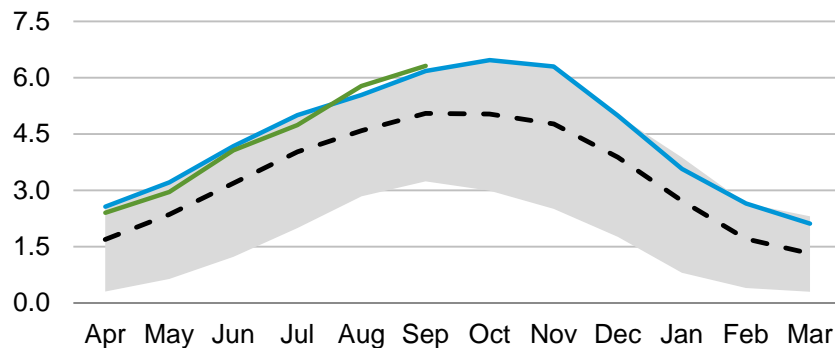
Source: EIA Short-Term Energy Outlook, October 2017.

# Propane inventories in most areas of the Midwest are relatively high, but they are low in Kansas

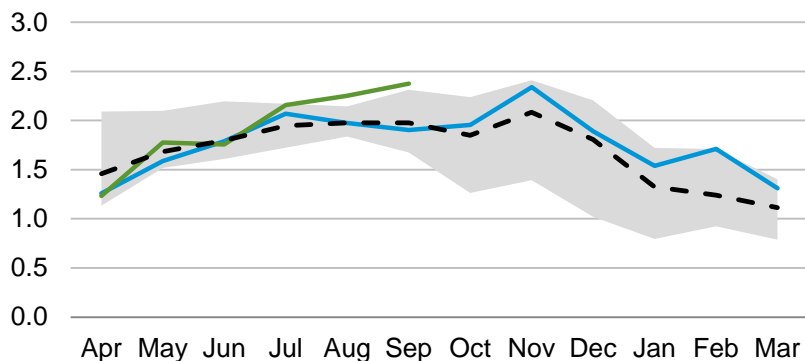
**Kansas propane stocks**  
million barrels



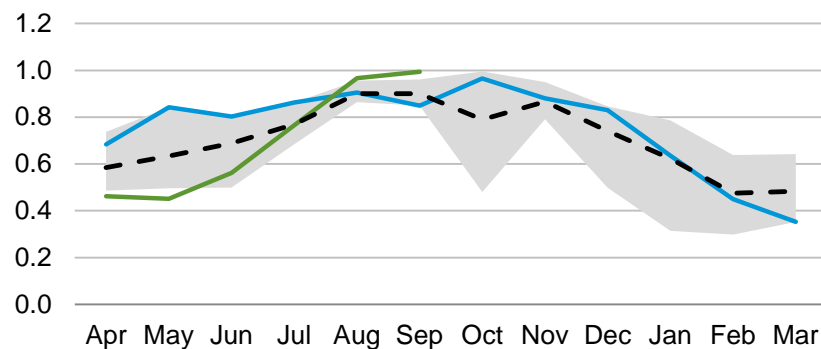
**Michigan propane stocks**  
million barrels



**Illinois, Indiana, Ohio propane stocks**  
million barrels



**Iowa, Minnesota, Wisconsin propane stocks**  
million barrels



*Note: Propane/propylene for fuel use only; data include stocks at terminals, gas plants, and refineries only (excluding pipelines)  
Source: EIA Weekly Petroleum Status Report.*



# Electricity

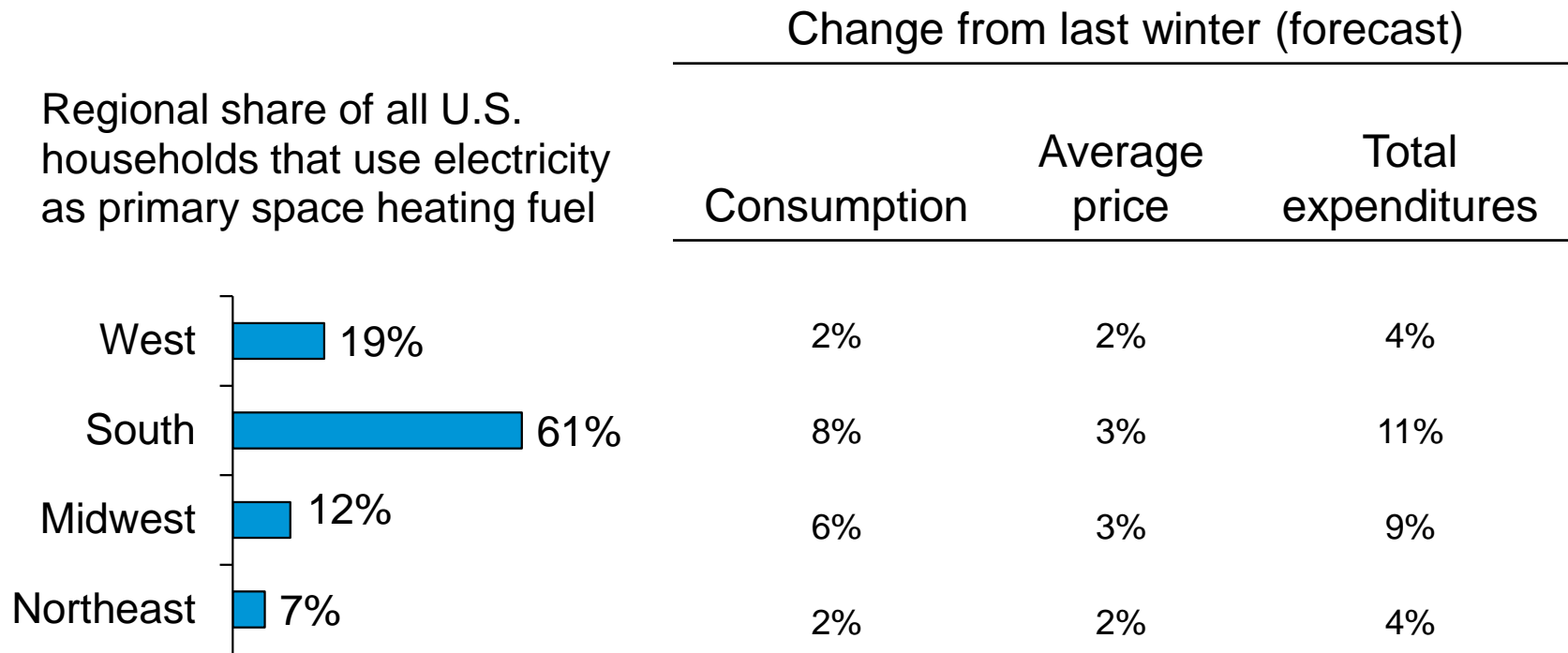
## Winter 2017–18 takeaways – Electricity

**Prices:** Because wholesale electricity prices are slow to pass through to consumers, yearly increases in expenditure deviations are driven more by temperatures. Residential electricity prices are expected to be up 2% this winter compared with last winter.

**Consumption:** Electricity consumption is expected to be 6% higher this winter compared with last winter because of a forecast return to relatively normal temperatures.

**Infrastructure:** New natural gas pipeline capacity into New England should help alleviate some competition for the fuel between power generators and residential consumers, 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, but temperatures will be a key variable



Source: EIA Short-Term Energy Outlook, October 2017

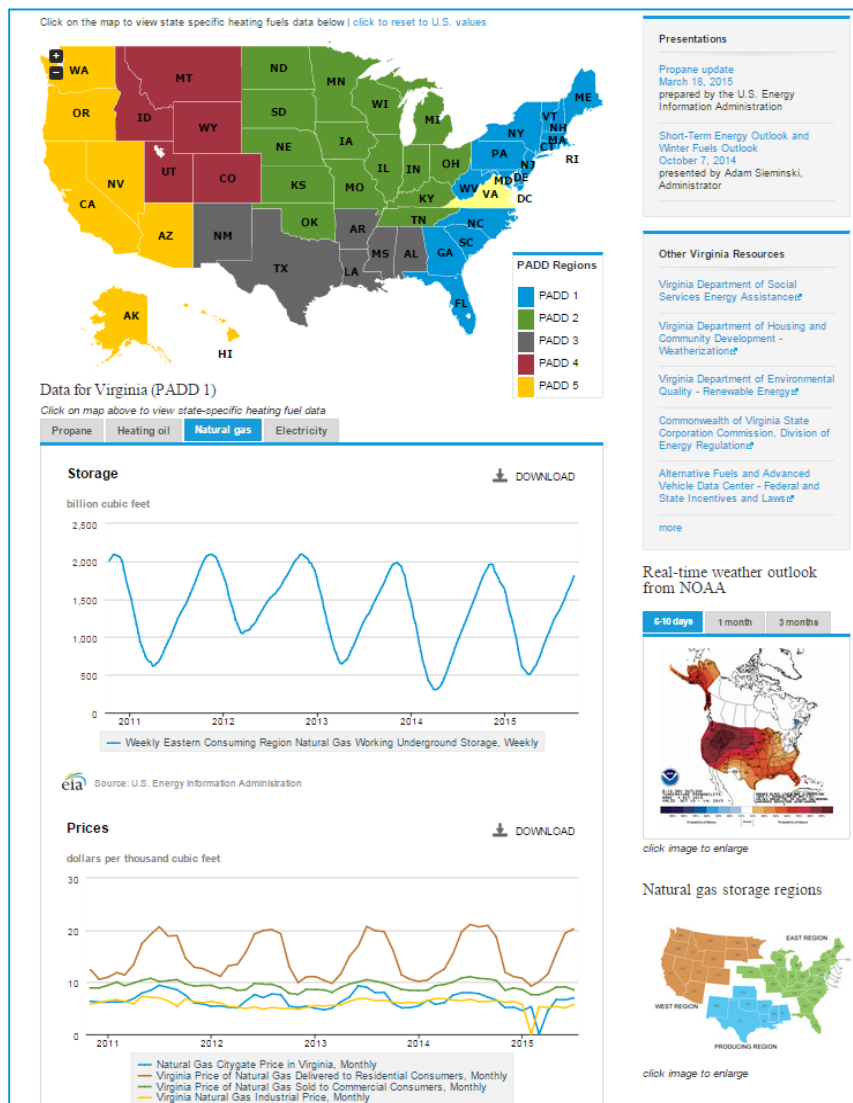
# Annual growth in residential electricity prices averaged 1.5% over the past five winters

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



Source: EIA Short-Term Energy Outlook, October 2017

# Winter Heating Fuels Webpage



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

- Availability and pricing for the four principals heating fuels
  - Propane
  - Heating oil
  - Natural gas
  - Electricity
- Data for each state are available on the clickable map
- Links to resources for each state
- Current week and three-month weather forecasts from NOAA
- Downloadable graphs as an image or as a spreadsheet

# For more information

*U.S. Energy Information Administration home page* / [www.eia.gov](http://www.eia.gov)

*Annual Energy Outlook* / [www.eia.gov/aeo](http://www.eia.gov/aeo)

*Short-Term Energy Outlook* / [www.eia.gov/steo](http://www.eia.gov/steo)

*International Energy Outlook* / [www.eia.gov/ieo](http://www.eia.gov/ieo)

*Monthly Energy Review* / [www.eia.gov/mer](http://www.eia.gov/mer)

*Today in Energy* / [www.eia.gov/todayinenergy](http://www.eia.gov/todayinenergy)

*State Energy Profiles* / [www.eia.gov/state](http://www.eia.gov/state)

*Drilling Productivity Report* / [www.eia.gov/petroleum/drilling/](http://www.eia.gov/petroleum/drilling/)

*International Energy Portal* / [www.eia.gov/beta/international/?src=home-bl](http://www.eia.gov/beta/international/?src=home-bl)