

# EIA 2018–19 Winter Fuels Outlook



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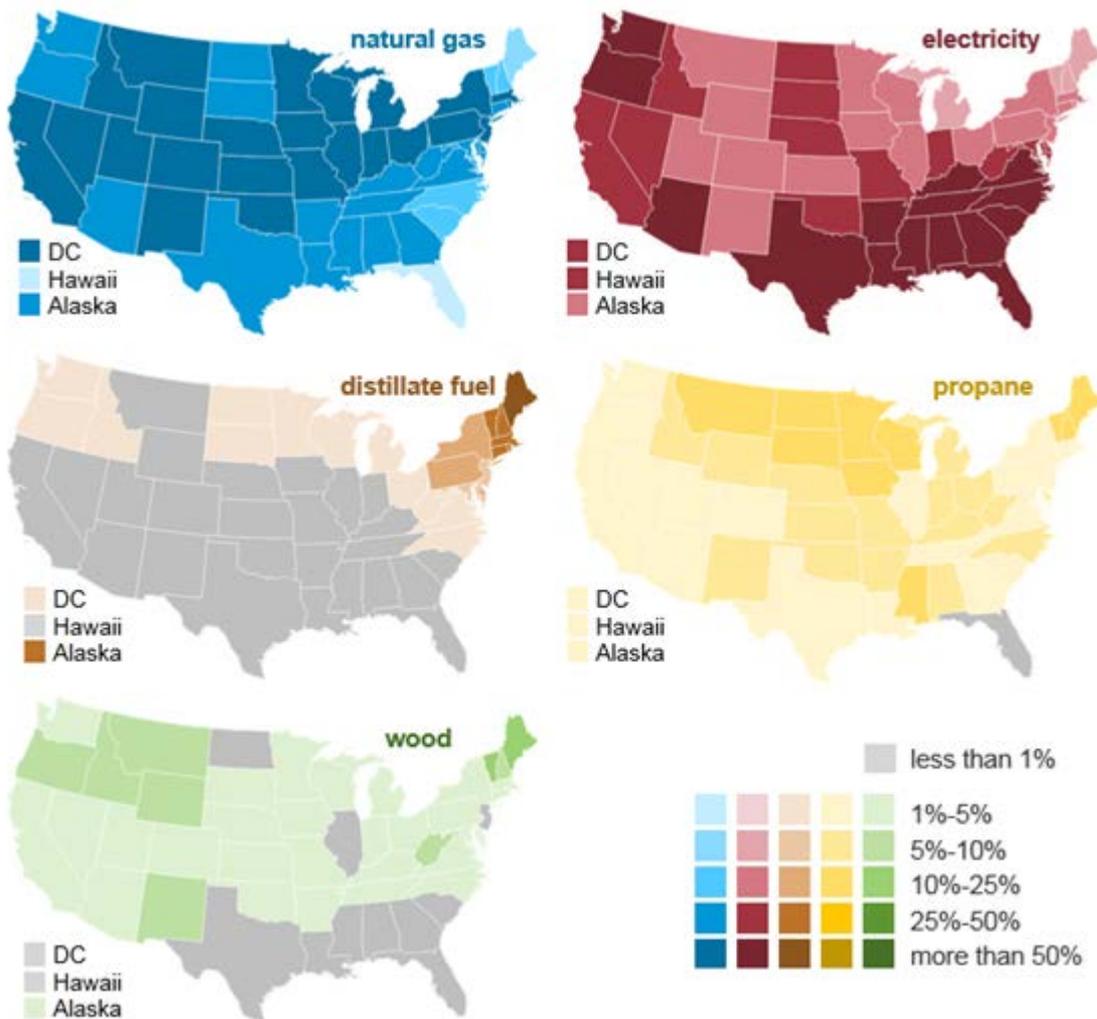
*NASEO-EIA 2018-19 Winter Energy Outlook Webinar  
October 10, 2018*

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

- The latest winter weather outlook from the National Oceanic and Atmospheric Administration (NOAA) indicates temperatures be similar to both last year and the previous 10-year average, with projected heating degree days for the United States on average 1% more than last winter.
- EIA expects heating fuel prices for homes that heat with electricity, heating oil, natural gas, and propane to be higher than prices last winter.
- Temperature outcomes tend to vary more than retail fuel prices during the winter, as changes in retail prices for electricity and natural gas tend to happen over longer periods of time.
- EIA expects natural gas inventories to end October at the lowest levels for that time of year since 2005. Inventories of distillate fuel and propane are also below the five-year (2013–17) average in several regions. Although inventory levels are low, EIA expects fuel supplies to be adequate to meet winter demand, but localized supply issues are possible, particularly in the case of severely cold weather.

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

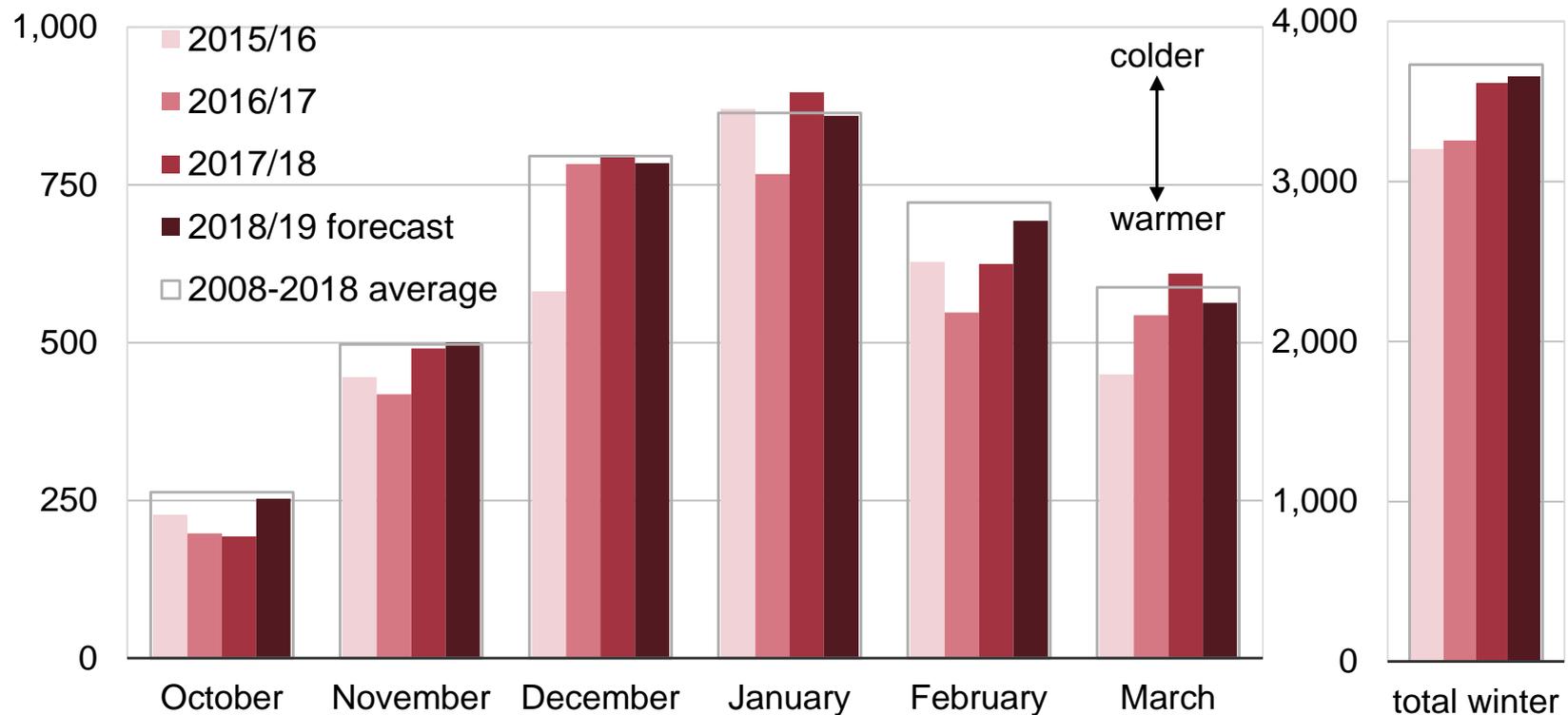
Primary home heating fuel by state, 2017



Source: U.S. Energy Information Administration based on 2017 American Community Survey

# NOAA forecasts U.S. heating degree days this winter to be 1% higher than last winter but 1% lower than the 10-year average

U.S. current population-weighted heating degree days

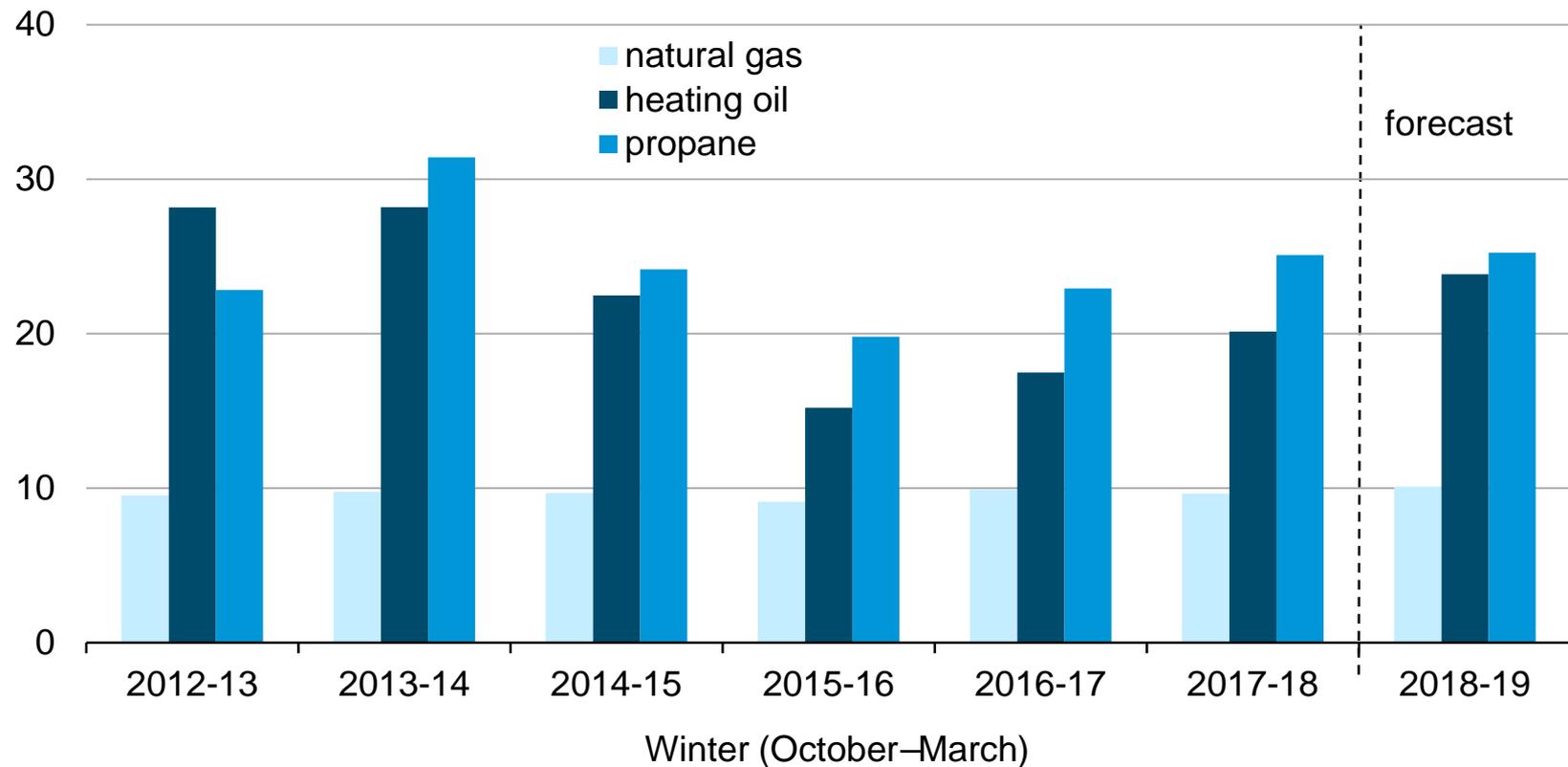


Note: EIA calculations based on National Oceanic and Atmospheric Administration (NOAA) data. The dashed lines indicate each month's prior 10-year average for October 2008–March 2018. Projections reflect NOAA's 14–16 month outlook.

Source: EIA Short-Term Energy Outlook, October 2018.

# 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 2018.

Fuel expenditures are mostly expected to be higher this winter (October 1–March 31) compared with both last winter and the previous five-year average

Change in base case forecast fuel expenditures		
Fuel	Compared with previous five-winter average	Compared with last winter
Heating oil*	<b>14%</b>	<b>20%</b>
Natural gas	<b>6%</b>	<b>5%</b>
Propane *	<b>1%</b>	<b>-1%</b>
Electricity	<b>6%</b>	<b>3%</b>

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

Source: EIA Short-Term Energy Outlook, October 2018.

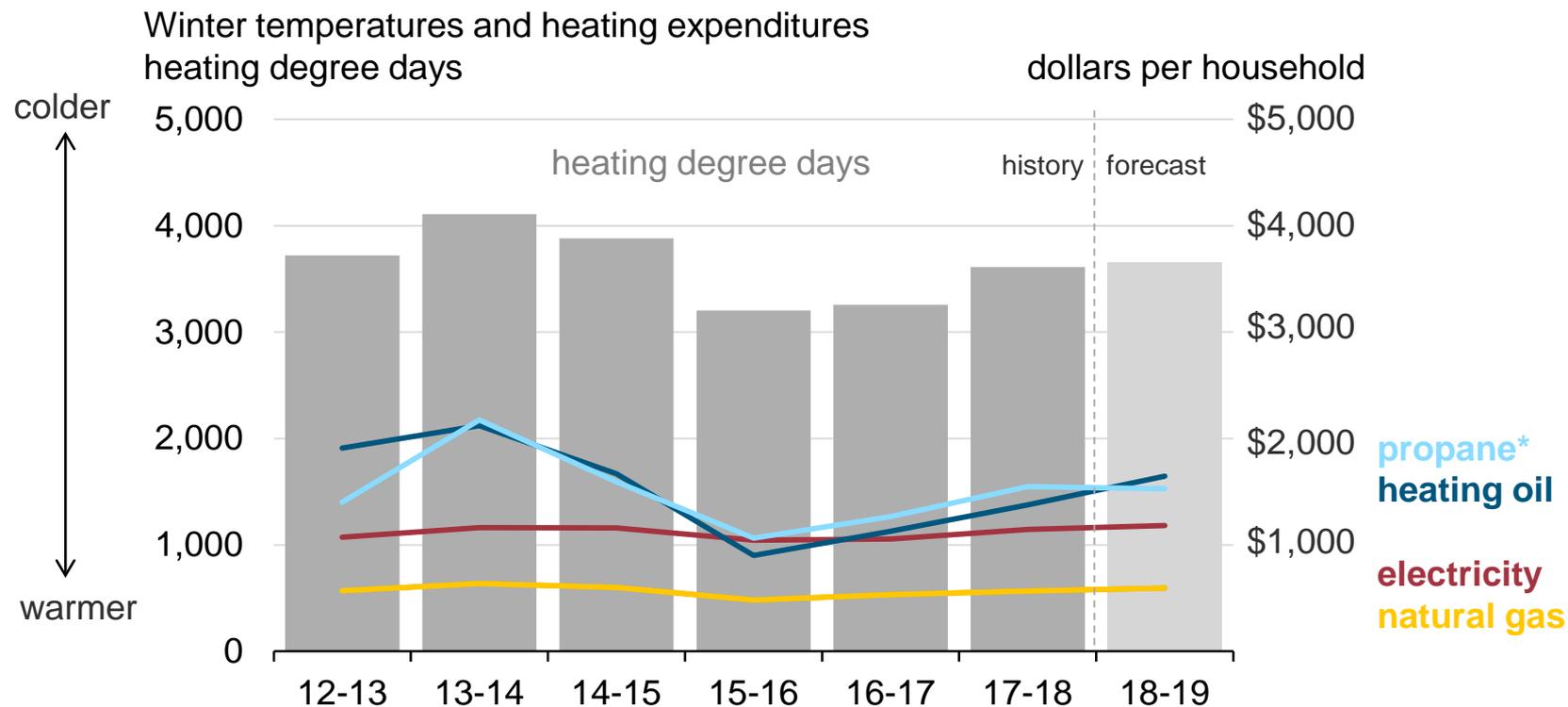
Colder or warmer (+/- 10% HDD) than forecast winters can swing expected expenditures by as much as 16% or as little as 5% depending on the fuel

Change in forecast fuel expenditures from last winter			
Fuel	Base Case	If 10% warmer than forecast	If 10% colder than forecast
Heating oil*	<b>20%</b>	<b>7%</b>	<b>33%</b>
Natural gas	<b>5%</b>	<b>-4%</b>	<b>16%</b>
Propane *	<b>-1%</b>	<b>-17%</b>	<b>15%</b>
Electricity	<b>3%</b>	<b>-2%</b>	<b>9%</b>

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

Source: EIA Short-Term Energy Outlook, October 2018.

# Propane and heating oil expenditures vary more winter to winter than do electricity and natural gas expenditures



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

Source: EIA Short-Term Energy Outlook, October 2018.

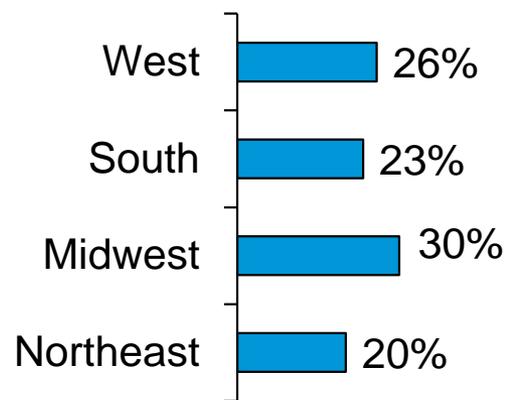
# Natural Gas

## Winter 2018–18 takeaways – Natural gas

- As of September 28, inventories of natural gas in working storage were 18% lower than year-ago levels and 17% below the five-year average.
- Inventories are expected to end October at 3.3 trillion cubic feet, which would be 14% lower than the five-year average for this time of year.
- Dry natural gas production this winter is forecast to average 86 billion cubic feet/day, a 10% increase compared with last winter.
- Henry Hub spot prices are forecast to average \$3.20/million British thermal units (MMBtu) this winter, an 8% increase from last winter, because of lower inventory levels.
- Low inventory levels could contribute to localized wholesale price spikes in the case of very cold weather; however, price spikes do not tend to be reflected immediately in retail prices, and record levels of natural gas production might be reducing the need for inventory holding at the margin.

Natural gas heating expenditures are expected to increase in the West and Midwest and decline in the South and Northeast 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



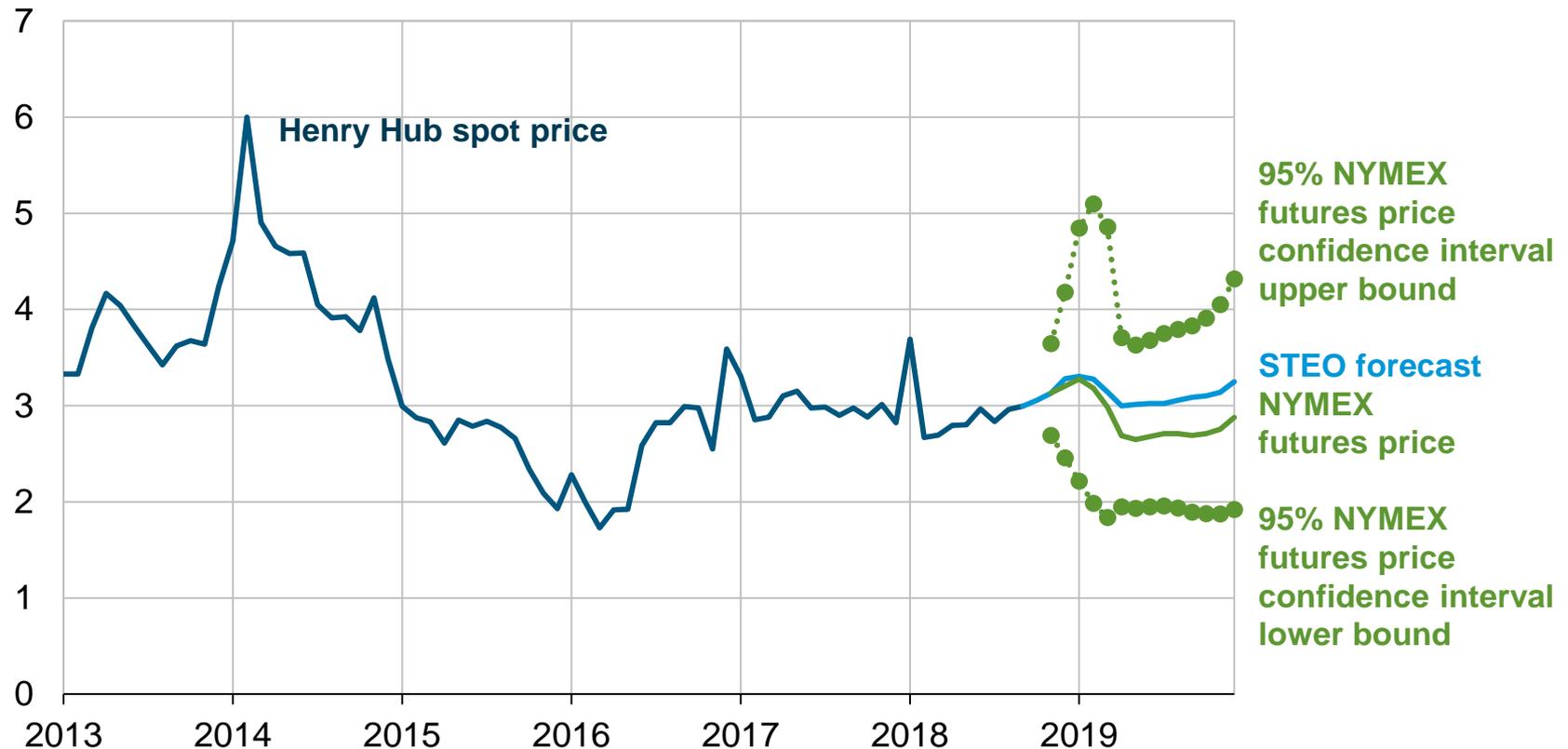
Change from last winter (forecast)

	Consumption	Average price	Total expenditures
West	5%	8%	13%
South	2%	-3%	-1%
Midwest	-3%	15%	12%
Northeast	1%	-3%	-3%

Source: EIA Short-Term Energy Outlook, October 2018.

# EIA forecasts Henry Hub spot prices (wholesale) to average \$3.20/MMBtu this winter, but significant uncertainty exists

Henry Hub natural gas price  
dollars per million Btu

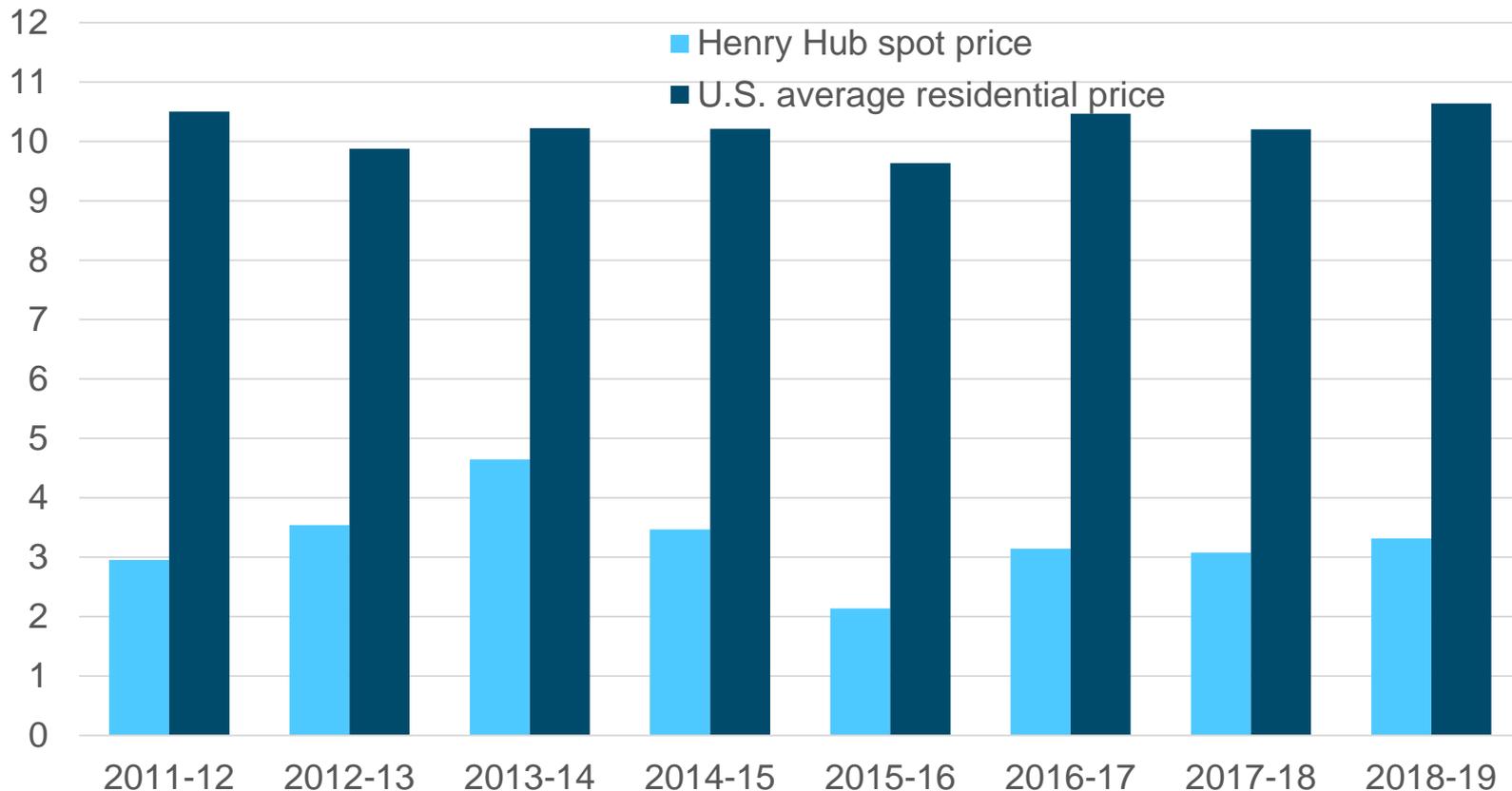


Note: Confidence interval and futures prices derived from market information for the five trading days ending October 4, 2018. Intervals not calculated for months with sparse trading in near-the-money options contracts.

Source: EIA Short-Term Energy Outlook, October 2018, and CME Group.

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

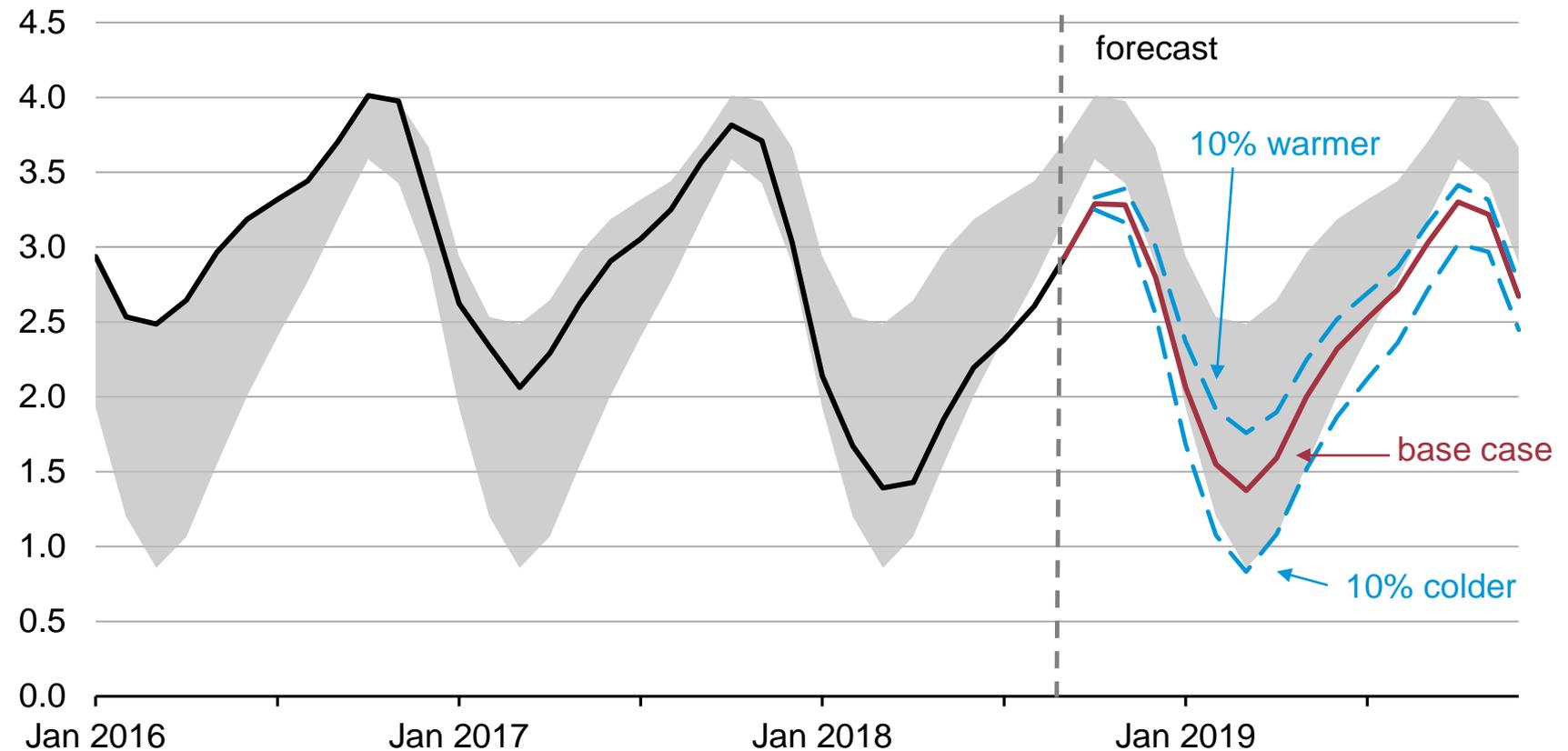
winter average natural gas prices  
dollars per thousand cubic feet (Mcf)



Source: EIA Short-Term Energy Outlook, October 2018, and Thomson Reuters.

# EIA expects natural gas inventories to start the winter at the lowest levels since 2005

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 2013 to 2017.

Source: EIA Short-Term Energy Outlook, October 2018.

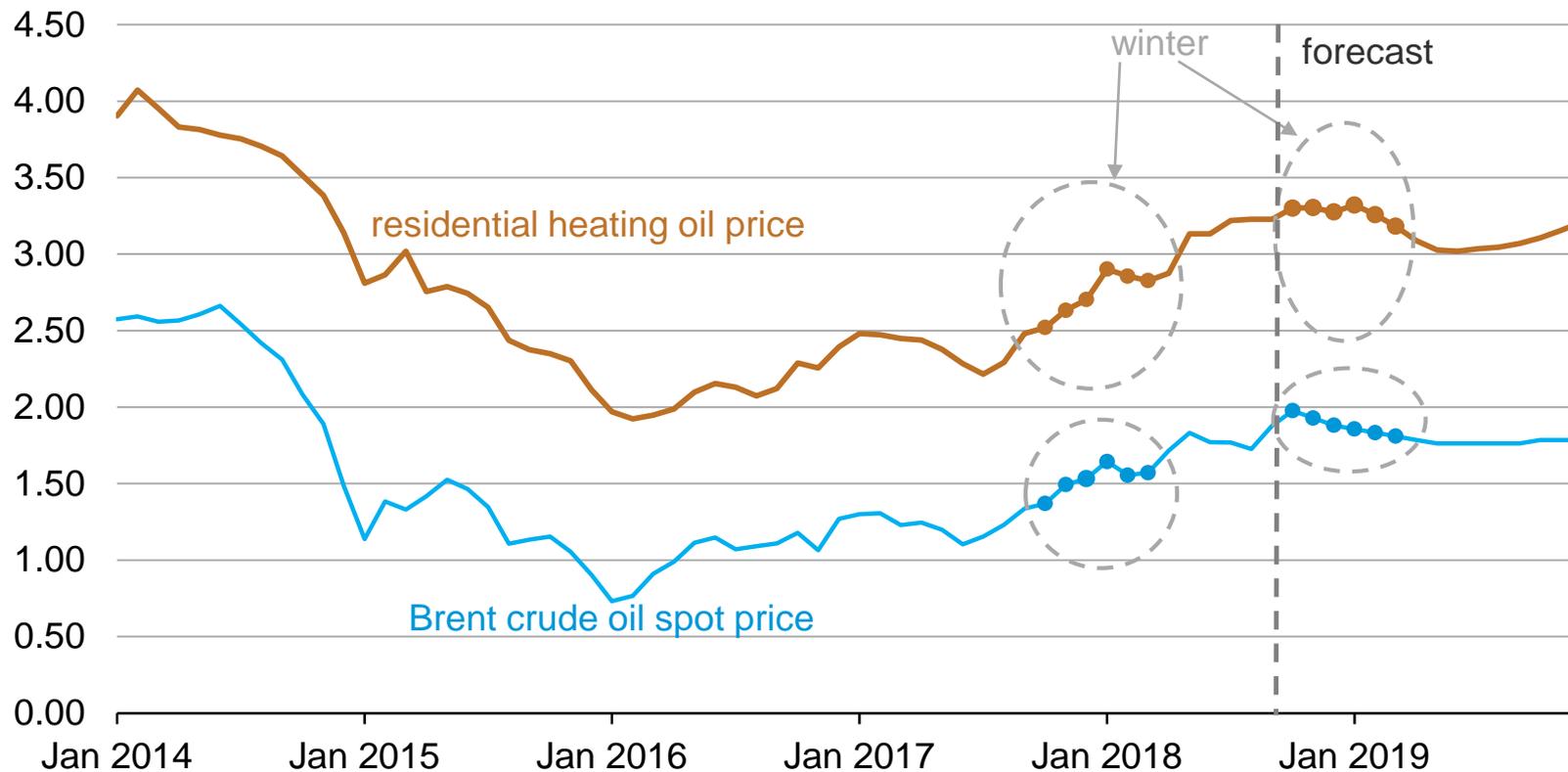
# Heating Oil

## Winter 2018–19 takeaways – Heating oil

- EIA expects Brent crude oil spot prices to average \$79 per barrel (b) this winter, \$15/b (36 cents/gal) higher than last winter, but they are not expected to return to 2010–14 levels above \$100/b; however, crude oil prices are very uncertain.
- Distillate stocks in the Northeast totaled 30.9 million barrels on September 28, 4.6 million barrels (13%) lower than the same time last year and 19% lower than the previous five-year average.
- 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.
- International Maritime Organization 2020 regulations that reduce the amount of sulfur allowable in global bunker fuel have the potential to put upward pressure on heating oil prices in upcoming winters

# EIA expects average residential heating oil prices to be 18% higher than prices last winter

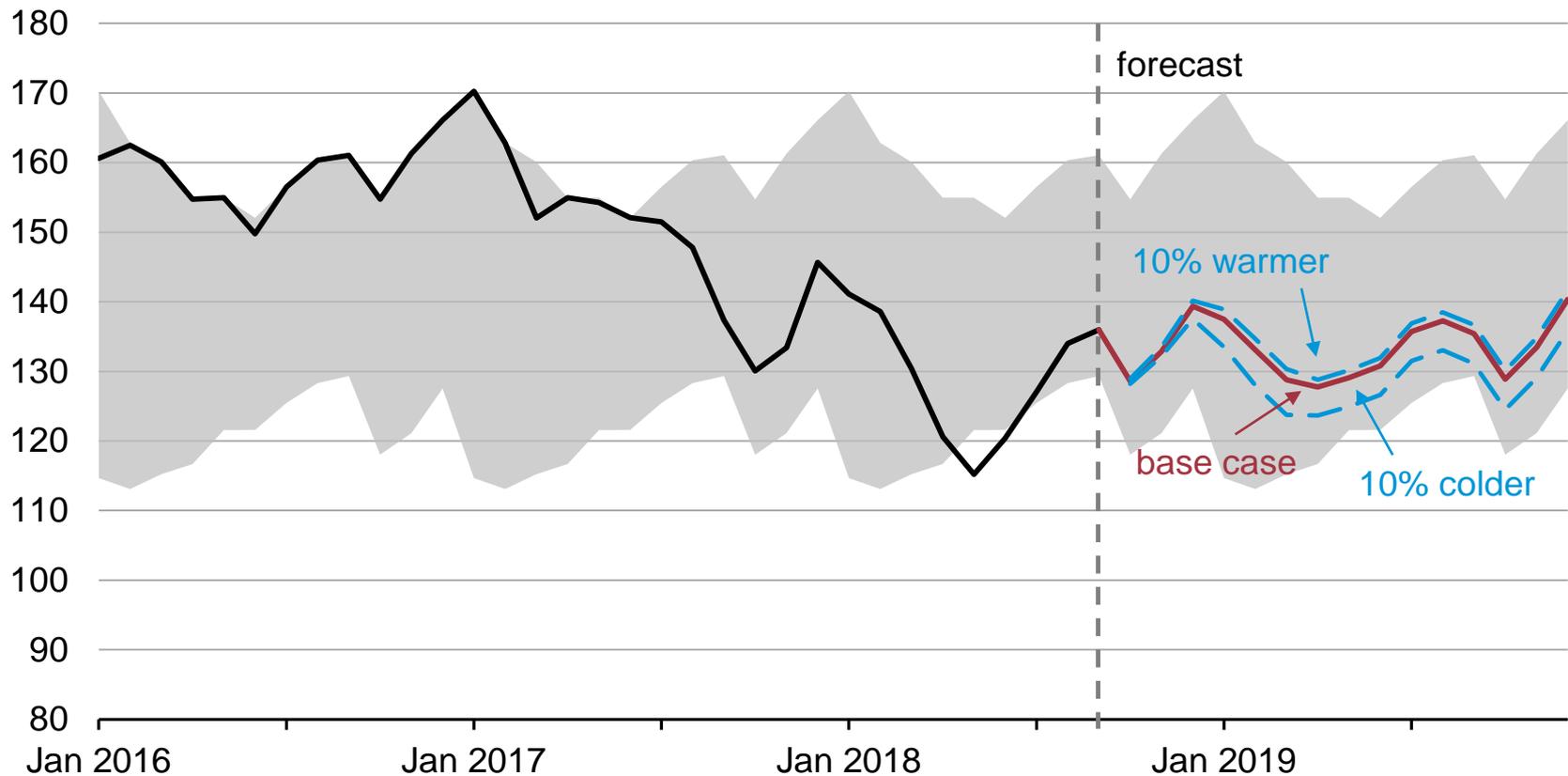
monthly average heating oil and Brent crude oil prices  
dollars per gallon



Source: EIA Short-Term Energy Outlook, October 2018, and Thomson Reuters.

# EIA forecasts distillate inventories to remain within the five-year average range, even in the 10% colder scenario

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

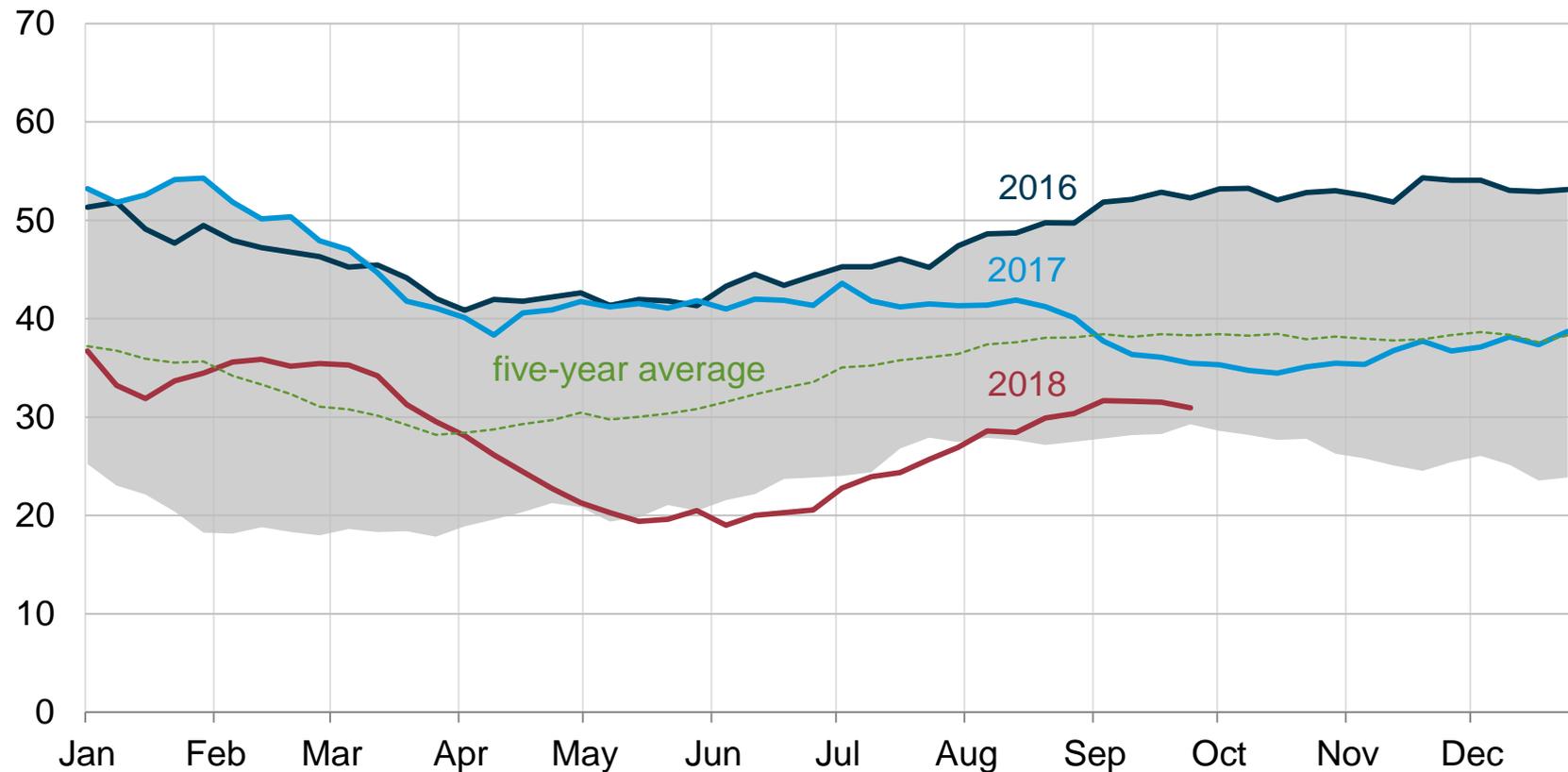


Note: Gray band represents the range between the minimum and maximum from 2013 to 2017.

Source: EIA Short-Term Energy Outlook, October 2018.

# Distillate inventories in the Northeast have risen since the summer to move within the five-year range

Northeast region weekly distillate inventories  
million barrels



Note: Gray band represents the range between the minimum and maximum from 2013 to 2017.

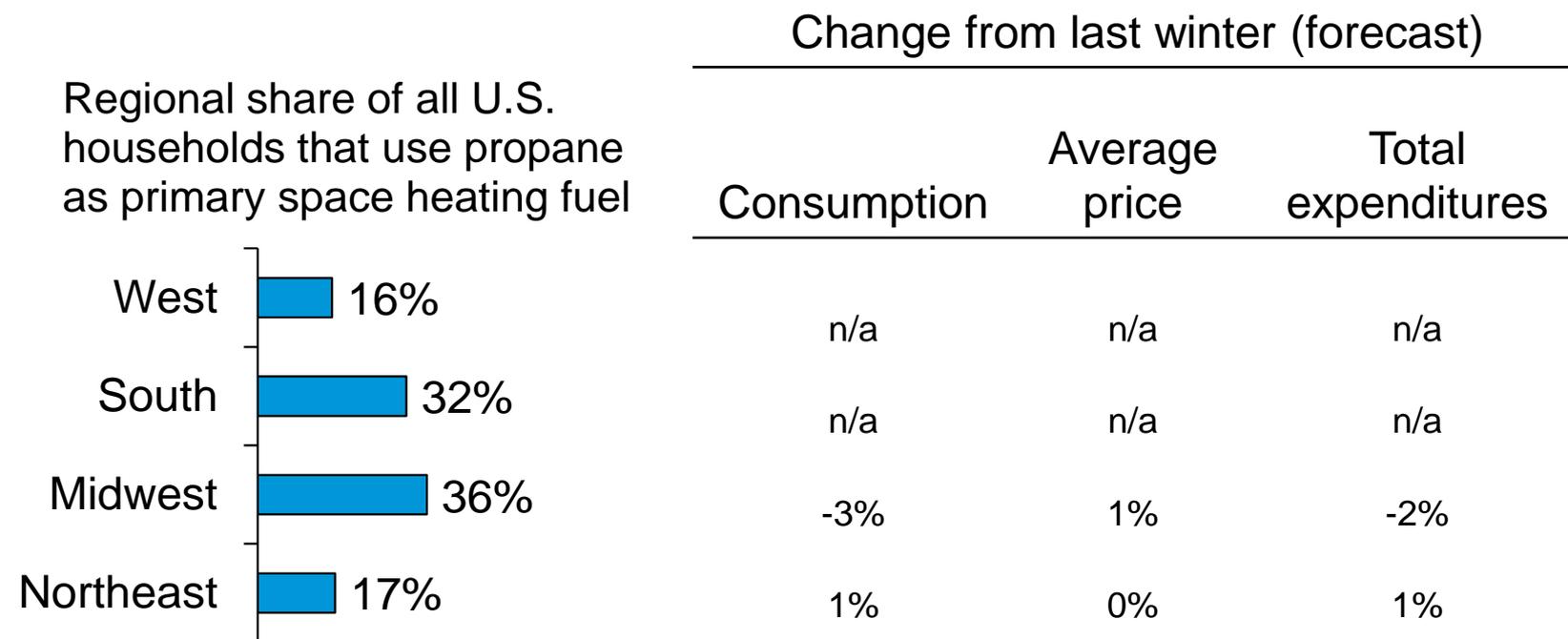
Source: EIA, Weekly Petroleum Status Report.

# Propane

## Winter 2018–19 takeaways – Propane

- EIA forecasts propane production to be 14% higher this winter compared with last winter, while total propane consumption is expected to be unchanged from last winter and net exports 19% higher.
- U.S. propane inventories at the end of September were 79.4 million barrels, which was 8% below 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 at 3% above the five-year average. Regional detail shows stocks across the northern Midwest at or above the five-year average.

## EIA forecasts propane expenditures to be similar to last winter's level

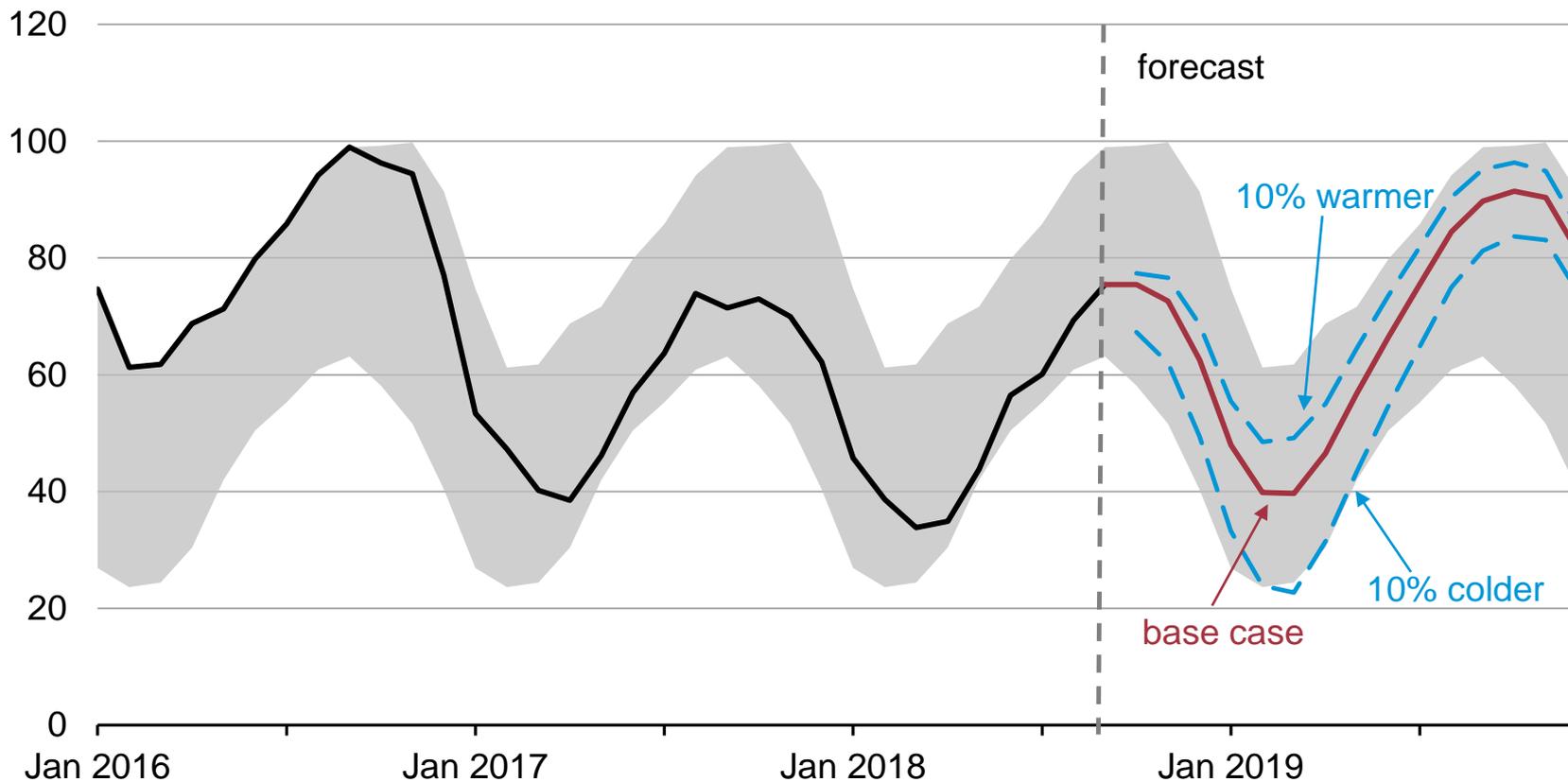


Note: n/a = not available because of insufficient underlying data to create forecast

Source: EIA Short-Term Energy Outlook, October 2018.

# U.S. propane inventories are starting the winter near the middle of the five-year range

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

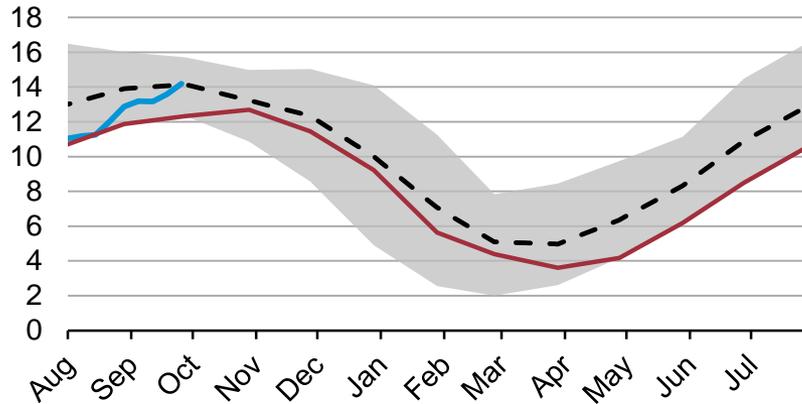


Note: Gray band represents the range between the minimum and maximum from 2013 to 2017.

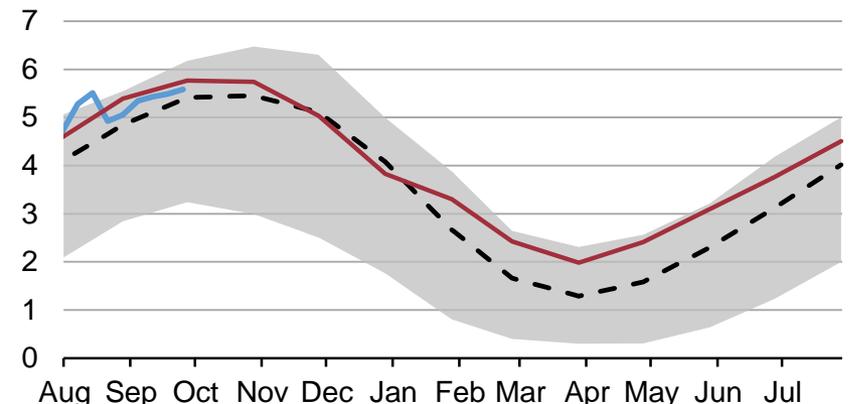
Source: EIA Short-Term Energy Outlook, October 2018.

# Midwest propane/propylene inventories in the Midwest are generally above the five-year average

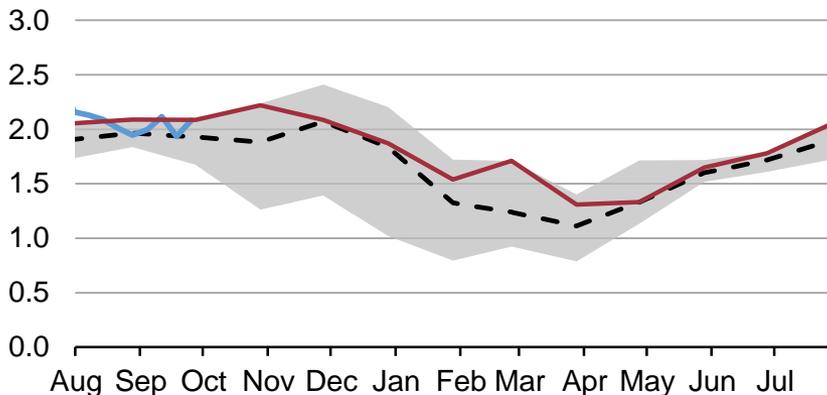
Kansas propane/propylene inventories  
million barrels



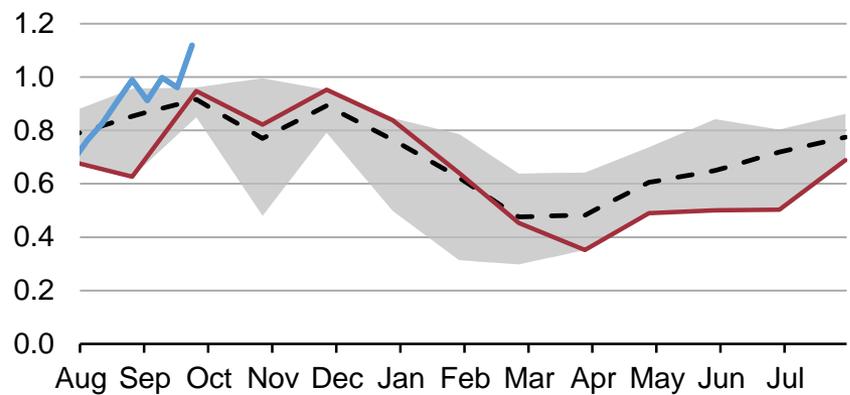
Michigan propane/propylene inventories  
million barrels



Illinois, Indiana, Ohio propane/propylene inventories  
million barrels



Iowa, Minnesota, Wisconsin propane/propylene inventories  
million barrels



Note: Inventories are for refineries, terminals, and natural gas plants and do not include pipelines.

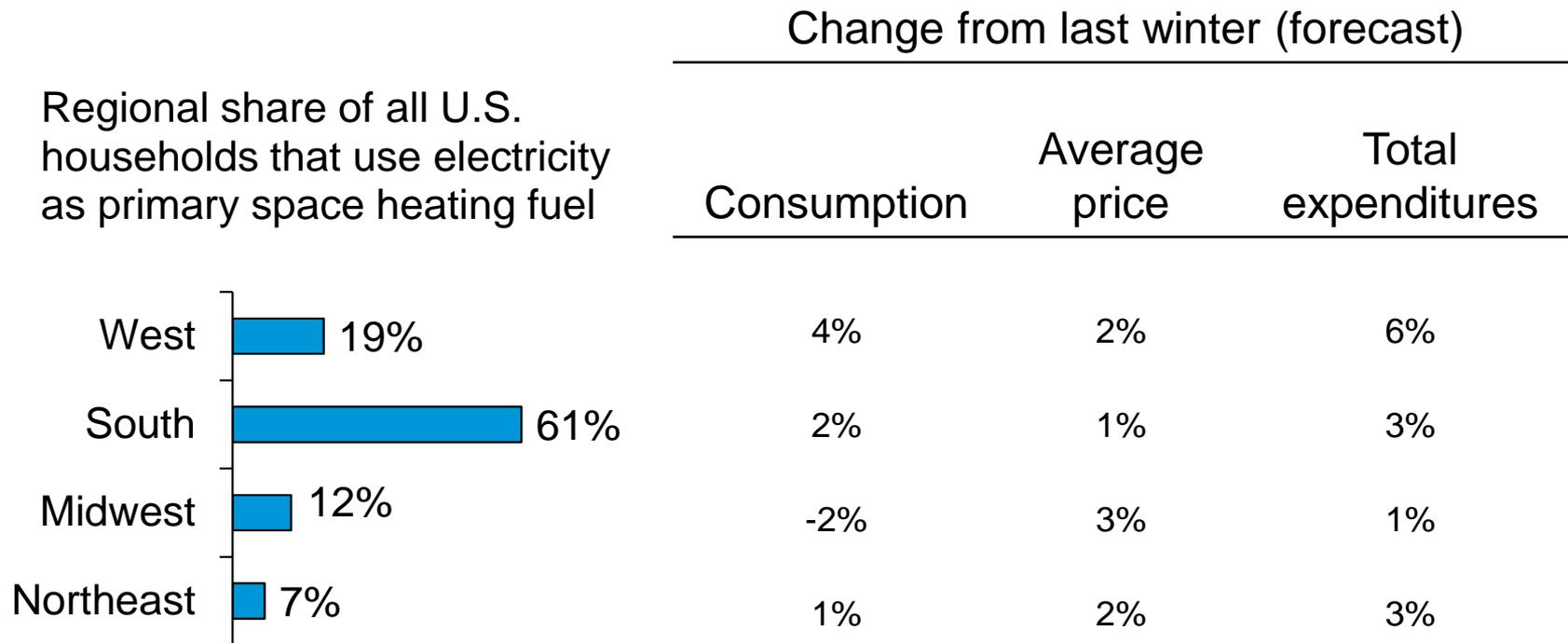
Source: EIA, Petroleum Supply Monthly and Weekly Petroleum Status Report.

# Electricity

## Winter 2018–19 takeaways – Electricity

- Because wholesale electricity prices are slow to pass through to consumers, yearly increases in expenditure deviations are driven more by temperatures.
- Electricity consumption is expected to be 1% higher this winter compared with last winter because of a forecast of slightly higher HDD than last winter.
- EIA expects residential electricity prices to be up 2% this winter compared with last winter.
- In the case of very cold temperatures, Northeast electricity markets could see constrained natural gas supplies into the region causing electricity generation to be supplied by more expensive fuels, such as petroleum, which could contribute to higher wholesale electricity prices.

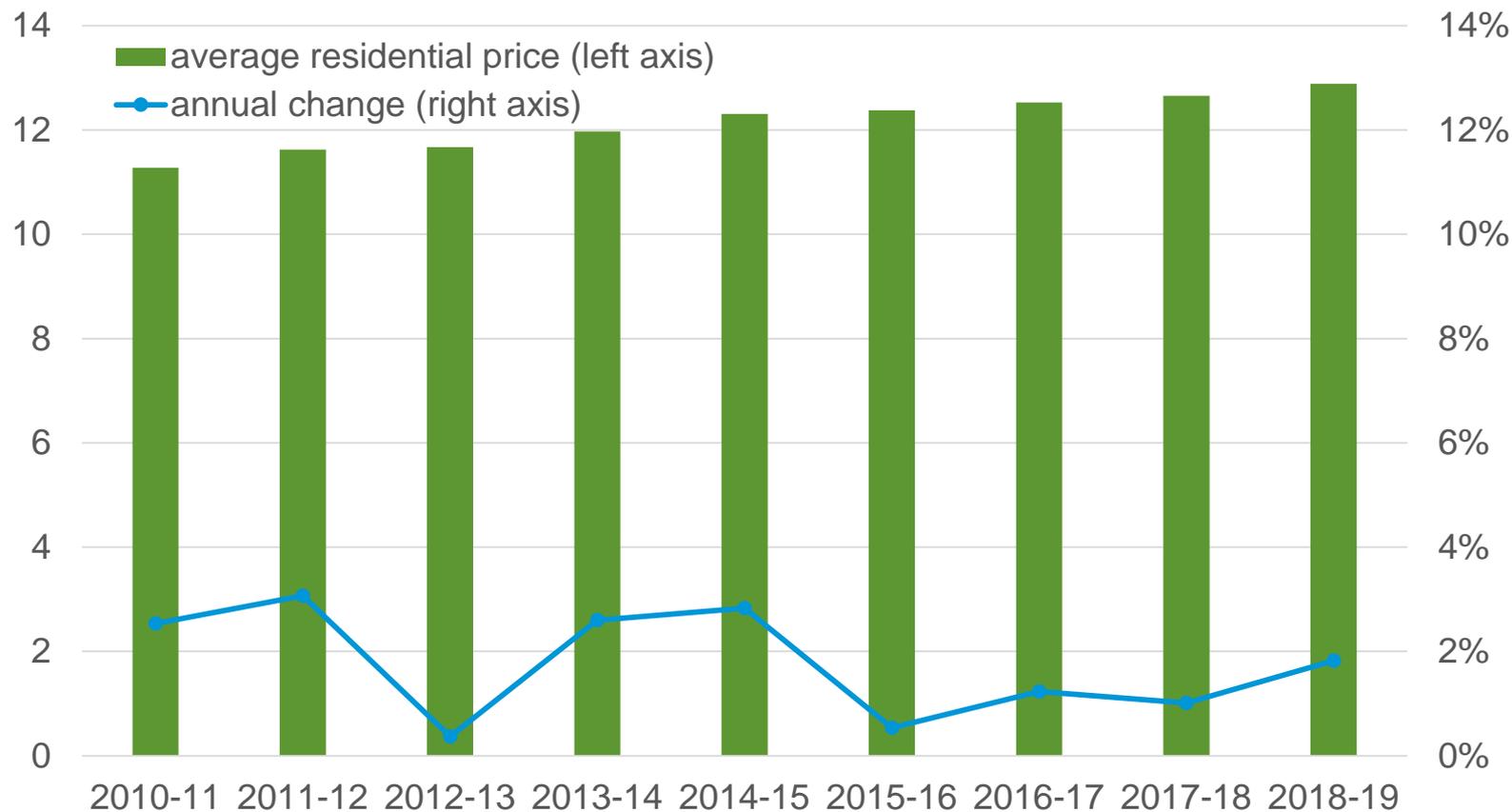
## Winter electricity bills are expected to be higher compared with last winter, but temperatures will be a key variable



Source: EIA Short-Term Energy Outlook, October 2018

# Annual growth in residential electricity prices averaged 1.6% over the past five winters

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



Source: EIA Short-Term Energy Outlook, October 2018

# EIA's winter Heating Fuels Webpage provides more detailed information on winter fuel supply and prices

[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

