Overview

• Winter Fuels Outlook focuses on households.

• EIA expects higher prices this winter for homes that heat with natural gas and electricity. Propane and home heating oil prices are expected to be lower than last winter.

• Forecast temperatures are much warmer than last winter east of the Rocky Mountains with the Northeast, Midwest, and South about 11%, 16%, and 12% warmer, respectively. Forecast temperatures are 5% warmer than last winter in the West.

• Projected changes in average U.S. household expenditures from last winter are:
  – 5% lower for homes that heat primarily with natural gas
  – 15% lower for heating oil; 27% lower for propane
  – 2% lower for electricity
Expenditures are expected to be lower this winter (October 1–March 31) unless there is a repeat of last winter’s cold weather.

### Percent change in fuel bills from last winter (forecast)

<table>
<thead>
<tr>
<th>Fuel bill</th>
<th>Base case forecast</th>
<th>If 10% warmer than forecast</th>
<th>If 10% colder than forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating oil</td>
<td>-15%</td>
<td>-24%</td>
<td>-5%</td>
</tr>
<tr>
<td>Natural gas</td>
<td>-5%</td>
<td>-12%</td>
<td>6%</td>
</tr>
<tr>
<td>Propane *</td>
<td>-27%</td>
<td>-37%</td>
<td>-15%</td>
</tr>
<tr>
<td>Electricity</td>
<td>-2%</td>
<td>-5%</td>
<td>2%</td>
</tr>
</tbody>
</table>

* 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 2014.
Heating fuel market shares vary regionally

Share of homes by primary space heating fuel and Census Region

- **United States**
  - natural gas
  - electricity
  - heating oil and kerosene
  - propane
  - wood
  - other/no heating

**Source:** EIA calculations based on the U.S. Census Bureau, 2013 American Community Survey.
Although forecast expenditures for all fuels are lower than last winter, electricity and heating oil expenditures are still higher than the previous 5-winter average.

Source: EIA Short-Term Energy Outlook, October 2014.

Note: All prices are U.S. averages except propane, which is an average of Northeast and Midwest prices.
The differences between natural gas, heating oil, and propane prices narrow this winter, with natural gas price 6% higher, heating oil price down 6%, and propane 17% lower.

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

<table>
<thead>
<tr>
<th>Winter (October - March)</th>
<th>History</th>
<th>Forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008-09</td>
<td>Natural gas</td>
<td>10.5</td>
</tr>
<tr>
<td>2009-10</td>
<td>Heating oil</td>
<td>13.0</td>
</tr>
<tr>
<td>2010-11</td>
<td>Propane</td>
<td>15.5</td>
</tr>
<tr>
<td>2011-12</td>
<td>Natural gas</td>
<td>10.0</td>
</tr>
<tr>
<td>2012-13</td>
<td>Heating oil</td>
<td>12.5</td>
</tr>
<tr>
<td>2013-14</td>
<td>Propane</td>
<td>15.0</td>
</tr>
<tr>
<td>2014-15</td>
<td>Natural gas</td>
<td>10.5</td>
</tr>
</tbody>
</table>

Source: EIA Short-Term Energy Outlook, October 2014.
U.S. heating degree days this winter season forecast by NOAA to be 12% lower than last winter

U.S. current population-weighted heating degree days


Source: EIA Short-Term Energy Outlook, October 2014.
Natural Gas
Reduced natural gas consumption lowers average fuel bills in all regions this winter

### Regional Share of All U.S. Households that Use Natural Gas as Primary Space Heating Fuel

<table>
<thead>
<tr>
<th>Region</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>West</td>
<td>26%</td>
</tr>
<tr>
<td>South</td>
<td>23%</td>
</tr>
<tr>
<td>Midwest</td>
<td>31%</td>
</tr>
<tr>
<td>Northeast</td>
<td>20%</td>
</tr>
</tbody>
</table>

### Percent Change from Last Winter (Forecast)

<table>
<thead>
<tr>
<th>Region</th>
<th>Consumption</th>
<th>Average Price</th>
<th>Total Expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td>West</td>
<td>-4%</td>
<td>2%</td>
<td>-2%</td>
</tr>
<tr>
<td>South</td>
<td>-9%</td>
<td>6%</td>
<td>-4%</td>
</tr>
<tr>
<td>Midwest</td>
<td>-13%</td>
<td>6%</td>
<td>-8%</td>
</tr>
<tr>
<td>Northeast</td>
<td>-9%</td>
<td>7%</td>
<td>-3%</td>
</tr>
</tbody>
</table>

Source: EIA Short-Term Energy Outlook, October 2014.
Winter 2014-15 takeaways and potential issues–Natural Gas

• Natural gas production gains contributed to record storage injections this year. Dry natural gas production this winter is projected to average 71 Bcf/day, an increase of 3 Bcf/day (4.5%) over last winter.

• Growing production and record storage injections this year helped lower the 2014-15 winter futures prices (Nov. 2014 - Mar. 2015) for natural gas at Henry Hub from almost $5/MMBtu in late April to near $4/MMBtu in recent trading. The projected Henry Hub spot price this winter averages $4.00/MMBtu compared with $4.52/MMBtu last winter.

• Working gas stocks on Sep. 26 were 373 Bcf (11%) lower than this time last year, but are sufficient to meet winter demand.
EIA expects residential natural gas prices to be 6% higher than last winter’s prices.

Source: EIA Short-Term Energy Outlook, October 2014.
Future natural gas prices remain highly uncertain

Dollars per million Btu

History

Forecast


- Henry Hub spot price
- STEO price forecast
- NYMEX Henry Hub futures price
- 68% NYMEX confidence interval
- 95% NYMEX confidence interval

Note: Confidence interval derived from options market information for the 5 trading days ending Oct. 2, 2014. Intervals not calculated for months with sparse trading in near-the-money options contracts.

Source: EIA Short-Term Energy Outlook, October 2014, and CME Group.
The probability of the January 2015 Henry Hub natural gas price being higher than $5.00 per MMBtu is about 14%.

Nymex Henry Hub natural gas futures price for delivery during January 2015 = $4.19 per million Btu.

Forecast natural gas inventories on Sep. 26 are 373 Bcf lower than last winter and 399 Bcf below the previous 5-year average.

Note: Normal range (gray band) represents the range between the minimum to maximum from Jan. 2009 to Dec. 2013.

Source: EIA Short-Term Energy Outlook, October 2014.
Heating Oil
Winter 2014-15 takeaways and potential issues—Heating Oil

• Brent crude oil spot price forecast to average $9/barrel (22 cents/gal) lower this winter.

• Distillate stocks in the Northeast totaled 29.3 million barrels on September 26, 0.2 million barrels below the same time last year and the lowest level for this time of year since 2000. However, unless severe weather in the Northeast coincides with severe weather in Europe, demand should be readily met via supplies from the Atlantic Basin market.

• Five states (CT, MA, NJ, RI, VT) lowered their heating oil maximum sulfur specification in July from 2,000+ ppm to 500 ppm.

• New regulations (MARPOL Annex VI) limit marine vessel fuel sulfur levels in certain coastal waters to 1,000 ppm in January 2015.
EIA expects residential heating oil prices to average 6% lower this winter than last.
Going into winter, distillate inventories remain at the low end of the previous 5-year range.

Note: Normal range (gray band) represents the range between the minimum to maximum from Jan. 2009 to Dec. 2013.

Source: EIA Short-Term Energy Outlook, October 2014.
Heating oil sulfur specifications lowered in five states as of July 1, 2014

### Schedule for maximum sulfur content of heating oil in the Northeast by year

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>2,000 - 15,000 ppm</td>
<td>15 ppm</td>
<td>500 ppm</td>
<td>500 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
</tr>
<tr>
<td>New Jersey</td>
<td>2,000 - 3,000 ppm</td>
<td>500 ppm</td>
<td>500 ppm</td>
<td>500 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
</tr>
<tr>
<td>Connecticut</td>
<td>3,000 ppm</td>
<td>500 ppm</td>
<td>500 ppm</td>
<td>500 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>3,000 ppm</td>
<td>500 ppm</td>
<td>500 ppm</td>
<td>500 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>5,000 ppm</td>
<td>500 ppm</td>
<td>500 ppm</td>
<td>500 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
</tr>
<tr>
<td>Vermont</td>
<td>20,000 ppm</td>
<td>500 ppm</td>
<td>500 ppm</td>
<td>500 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
</tr>
<tr>
<td>Delaware</td>
<td>3,000 - 10,000 ppm</td>
<td>15 ppm</td>
<td>50 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
</tr>
<tr>
<td>Maine</td>
<td>3,000 - 5,000 ppm</td>
<td>500 ppm</td>
<td>500 ppm</td>
<td>500 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
</tr>
<tr>
<td>Pennsylvania*</td>
<td>2,000 - 5,000 ppm</td>
<td>500 ppm</td>
<td>500 ppm</td>
<td>500 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
<td>15 ppm</td>
</tr>
</tbody>
</table>

Note: Specifications change on July 1 of the years shown, with the exception of Maine's 15 ppm requirement, which changes on January 1, 2018.

* Philadelphia, Pennsylvania changes from 2,000 ppm to 15 ppm on July 1, 2015.

Source: U.S. Energy Information Administration.
Propane
Forecast propane expenditures lower than last winter because of lower prices and consumption

### Percent change from last winter (forecast)

<table>
<thead>
<tr>
<th></th>
<th>Consumption</th>
<th>Average price</th>
<th>Total expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td>West</td>
<td></td>
<td>-13%</td>
<td>-34%</td>
</tr>
<tr>
<td>Northeast</td>
<td>-9%</td>
<td>-5%</td>
<td>-13%</td>
</tr>
<tr>
<td>Midwest</td>
<td>-13%</td>
<td>-24%</td>
<td>-34%</td>
</tr>
<tr>
<td>South</td>
<td>-13%</td>
<td>-24%</td>
<td>-34%</td>
</tr>
</tbody>
</table>

Regional share of all U.S. households that use propane as primary space heating fuel:

- **West**: 16%
- **South**: 32%
- **Midwest**: 37%
- **Northeast**: 15%

Source: EIA Short-Term Energy Outlook, October 2014.
Winter 2014-15 takeaways and potential issues—Propane

- Primary propane stocks in the Gulf Coast and Midwest on Sep. 26 were 10 million barrels (17%) higher than this time last year and are at the highest level for any week since at least 1993.

- Propane production at natural gas liquids plants has been rising and is projected to average 970,000 bbl/d this winter, 110,000 bbl/d (12%) higher than last winter.

- Propane spot prices are currently within 3 cents/gal of prices last year at this time.

- The outlook for propane demand is uncertain.
  - Another record corn crop is expected.
  - U.S. winter heating degree days have recently ranged from a low of 3,225 in 2011-12 to 4,114 in 2013-14.

- Propane supply is adjusting to recent infrastructure changes
  - Cochin Pipeline Reversal.
  - New and expanded rail facilities in the Midwest.
U.S. propane inventories begin this winter about 12 million barrels higher than last winter

Note: Normal range (gray band) represents the range between the minimum to maximum from Jan. 2009 to Dec. 2013.

Source: EIA Short-Term Energy Outlook, October 2014.
Winter 2014-15 propane supply diagram

Legend
- Market hub
- Pipeline flow
- Rail shipments
- Distribution terminal

Source: U.S. Energy Information Administration
Electricity
Winter electricity bill forecasts are lower in all regions compared with last winter despite higher prices

Regional share of all U.S. households that use electricity as primary space heating fuel

<table>
<thead>
<tr>
<th>Region</th>
<th>Share</th>
<th>Percent change from last winter (forecast)</th>
</tr>
</thead>
<tbody>
<tr>
<td>West</td>
<td>19%</td>
<td>Consumption: -2%, Average price: 1%, Total expenditures: -1%</td>
</tr>
<tr>
<td>South</td>
<td>62%</td>
<td>Consumption: -5%, Average price: 3%, Total expenditures: -2%</td>
</tr>
<tr>
<td>Midwest</td>
<td>12%</td>
<td>Consumption: -7%, Average price: 4%, Total expenditures: -3%</td>
</tr>
<tr>
<td>Northeast</td>
<td>7%</td>
<td>Consumption: -5%, Average price: 2%, Total expenditures: -2%</td>
</tr>
</tbody>
</table>

Source: EIA Short-Term Energy Outlook, October 2014.
Winter 2014–15 takeaways and potential issues–Electricity

• New England natural gas basis futures are significantly higher than last year at this time; shows concern about possible regional constraints.

• Natural gas forward prices are reflected in forward electricity markets; January 2015 on-peak power in New England is now trading at over $180 per megawatt-hour.

• Closure of Entergy’s 604-megawatt Vermont Yankee nuclear plant, expected in the fourth quarter of 2014, may contribute to significantly higher electricity rates for many homes in New England.

• New England, which lacks significant underground gas storage capacity, relies on a mix of peak-shaving, satellite LNG, and storage capacity located outside the region to help meet winter natural gas demand.
Natural gas pipeline constraints into New England may produce periods of localized higher wholesale pricing.

Natural gas fueled less than 30% of the electricity generated in New England in 2001, but increased to an average 52% in 2012 and 45% in 2013.

Increased gas use for power generation has contributed to pipeline transportation constraints in the New England regional natural gas market.

These pipeline constraints are more pronounced in winter months and contributed to extreme price spikes in spot natural gas and electricity prices in New England during January and February 2014.

EIA’s Market Alerts are published on eia.gov during periods of stress caused by cold snaps in the winter or heat waves in the summer.
For more information


Short-Term Energy Outlook | www.eia.gov/steo

Annual Energy Outlook | www.eia.gov/aeo

International Energy Outlook | www.eia.gov/ieo

Monthly Energy Review | www.eia.gov/mer

Today in Energy | www.eia.gov/todayinenergy

State Energy Portal | www.eia.gov/state