

# Winter Fuels Outlook 2021-2022



## Findings

- Winter energy expenditures are likely to be higher than previous winter across all fuels and all regions, which mostly reflects higher retail prices
- U.S. retail energy prices are starting the winter at multi-year highs
- Winter temperatures are currently forecast to be slightly colder than previous winter
- Propane and natural gas inventories—which are already lower than normal—could fall to record lows, especially in a colder weather scenario
- High fuel prices in global markets provide incentive to continue exporting propane and natural gas

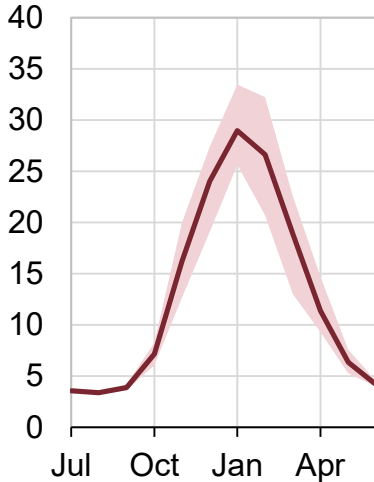
## Key notes and definitions

- EIA defines the winter season as October through March, and we provide forecast expenditures for households grouped by their primary space heating fuel
- Fuel expenditures for individual households depend on the size and energy efficiency of individual homes and their heating equipment, along with thermostat settings and weather conditions.
- Each fuel also has its own market structure, physical infrastructure, regulations, and limitations that can affect the connection between wholesale and retail market events.
- This analysis uses the [Residential Energy Consumption Survey](#) (RECS) as a baseline for the average amount of energy that homes use for space heating and other appliances.
- The reported expenditures in the report are for the total bill for a given primary heating fuel, not just for heating use.

# For most fuels, residential consumption is concentrated in winter

## Natural gas

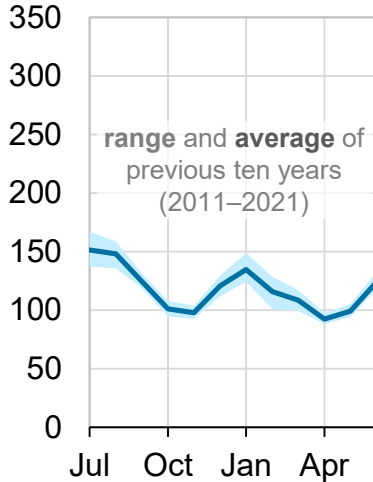
billion cubic feet per day



The winter months of October through March account for **79%** of annual residential **natural gas** consumption...

## Electricity

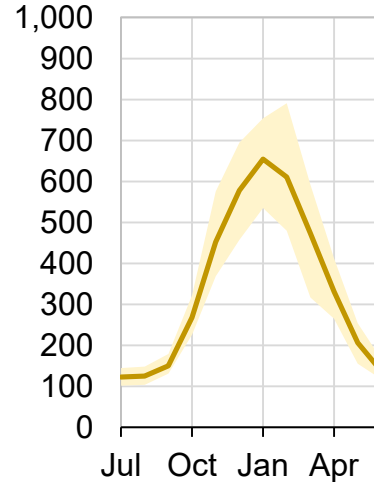
billion kilowatthours



...**48%** of annual residential **electricity** consumption...

## Propane

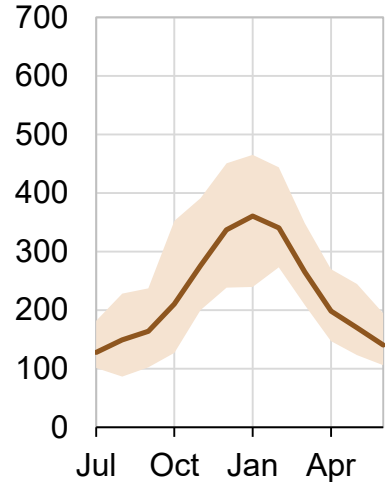
thousand barrels per day



...**74%** of annual residential **propane** consumption...

## Distillate fuel oil

thousand barrels per day



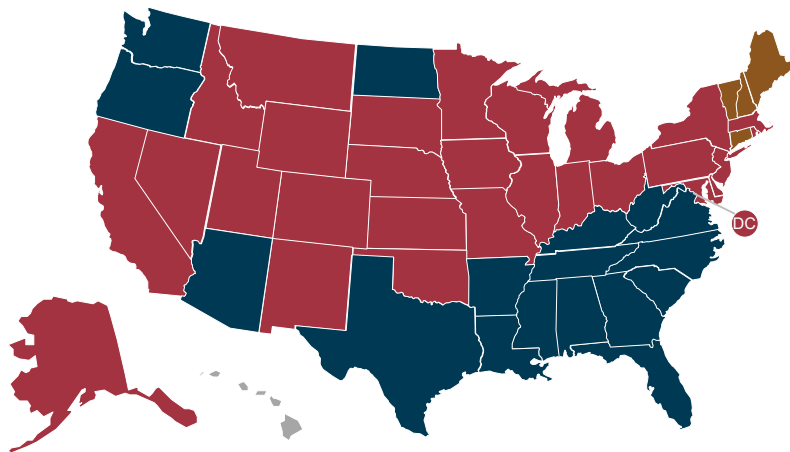
...and **65%** of annual residential **distillate fuel oil** consumption.

*Note: Reflects consumption in all households, not just those using the fuel for primary space heating.*

*Source: U.S. Energy Information Administration, Monthly Energy Review*

# Almost 90% of U.S. homes are primarily heated by natural gas or electricity; heating oil and propane are regionally concentrated

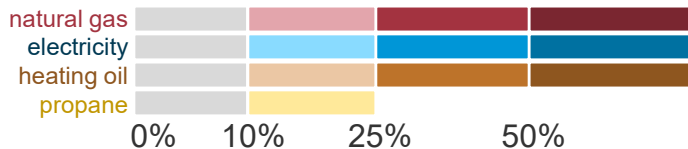
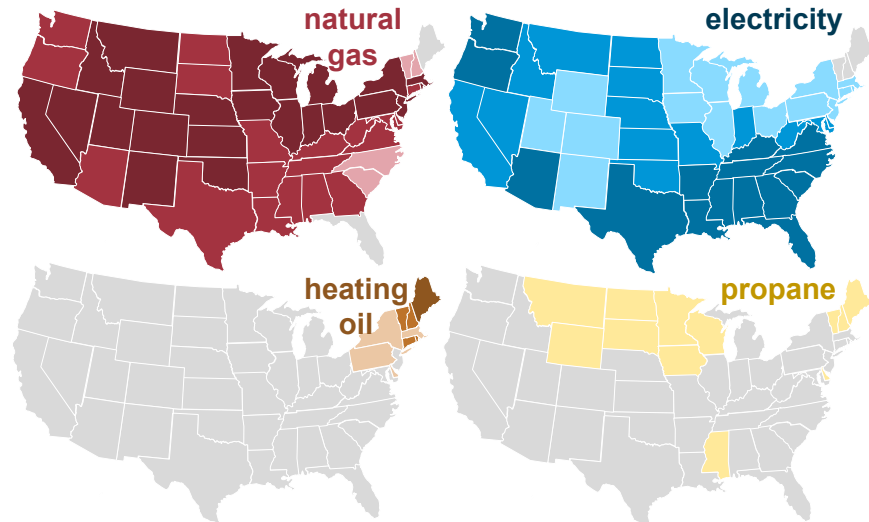
Most prevalent home heating fuel by state (2019)



share of U.S. households from 2019 ACS

- natural gas (48%)**
- electricity (39%)**
- heating oil (4%)**
- propane (5%)**
- other / none (3%)**

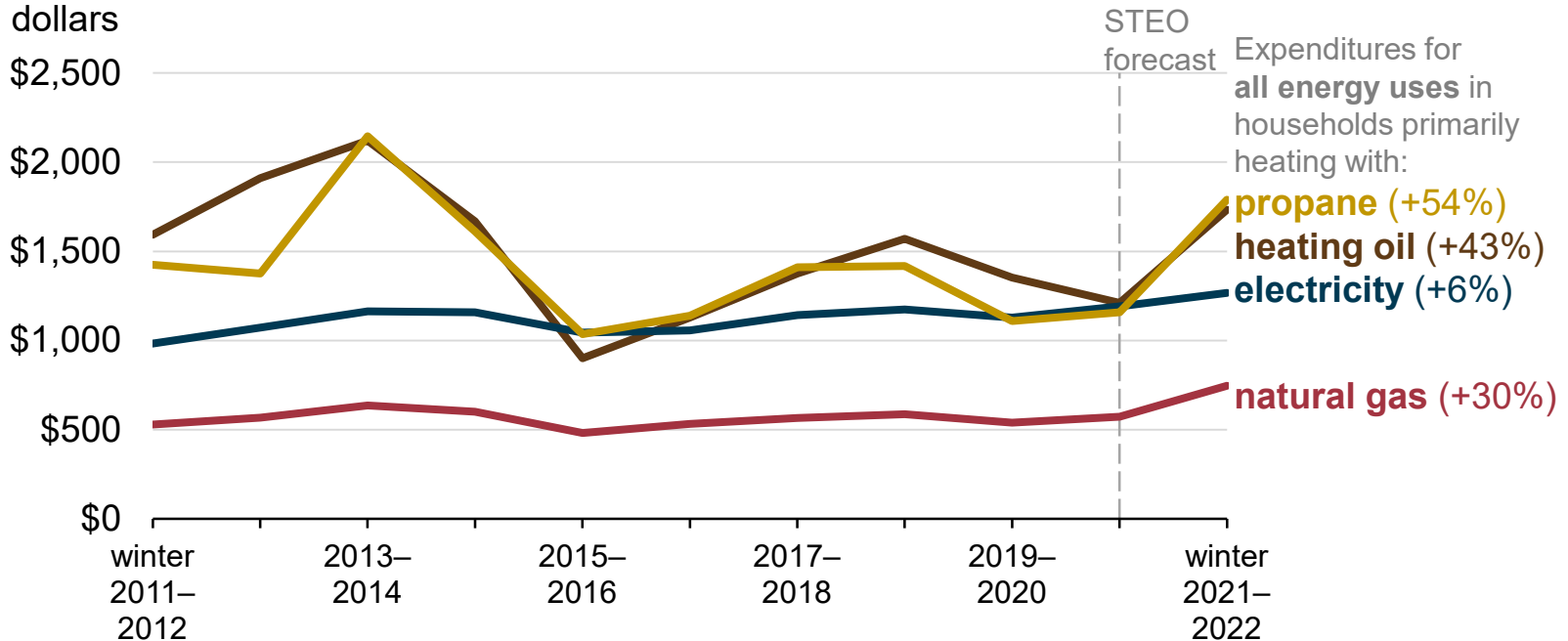
Primary home heating fuel by state (2019)



Source: U.S. Energy Information Administration based on data from the U.S. Census Bureau, American Community Survey 2019

# We expect energy expenditures to increase for all heating fuels, primarily driven by higher prices

## Average winter household energy expenditures (winter = Oct–Mar, 2011–2022)



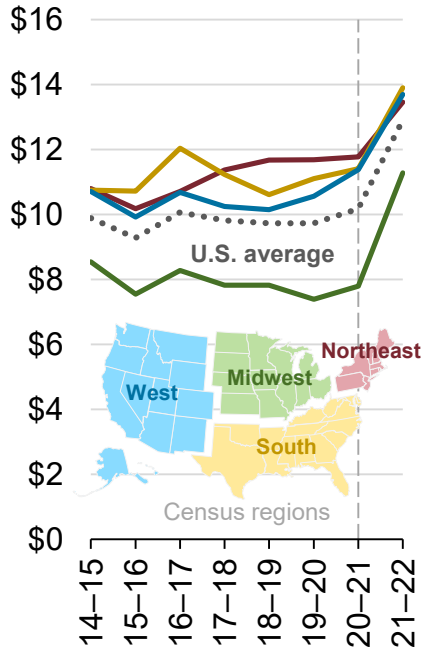
Note: Propane price reflects the average of Northeast and Midwest regions through winter 2013–14 and average of Northeast, Midwest, and South regions after winter 2013–14.

Source: U.S. Energy Information Administration

# Prices across all fuels and all regions in the forecast are higher compared with recent winters

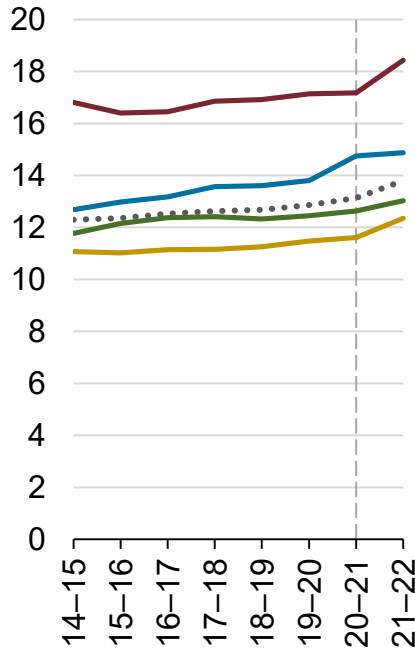
## Natural gas

dollars per thousand cubic feet



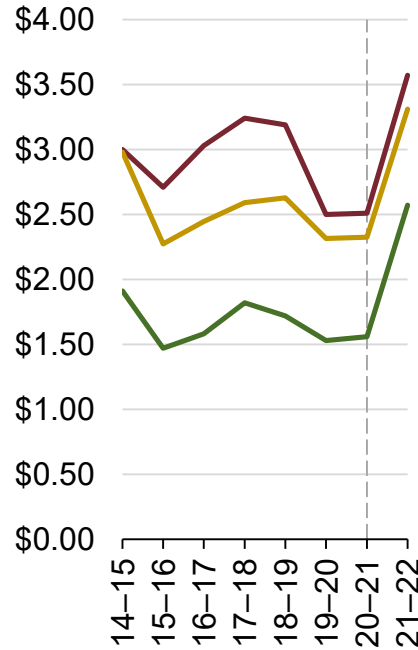
## Electricity

cents per kilowatt-hour



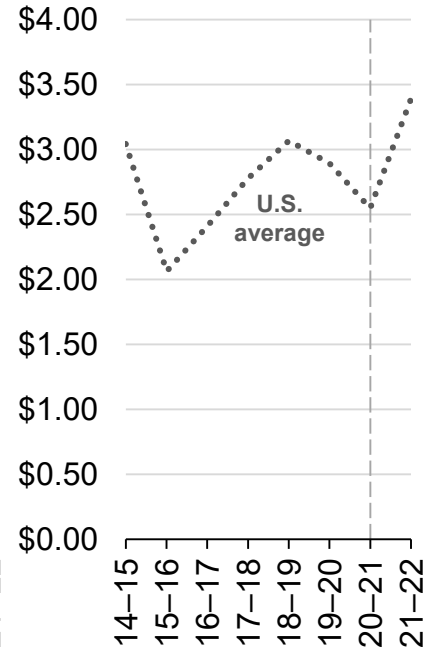
## Propane

dollars per gallon



## Heating oil

dollars per gallon

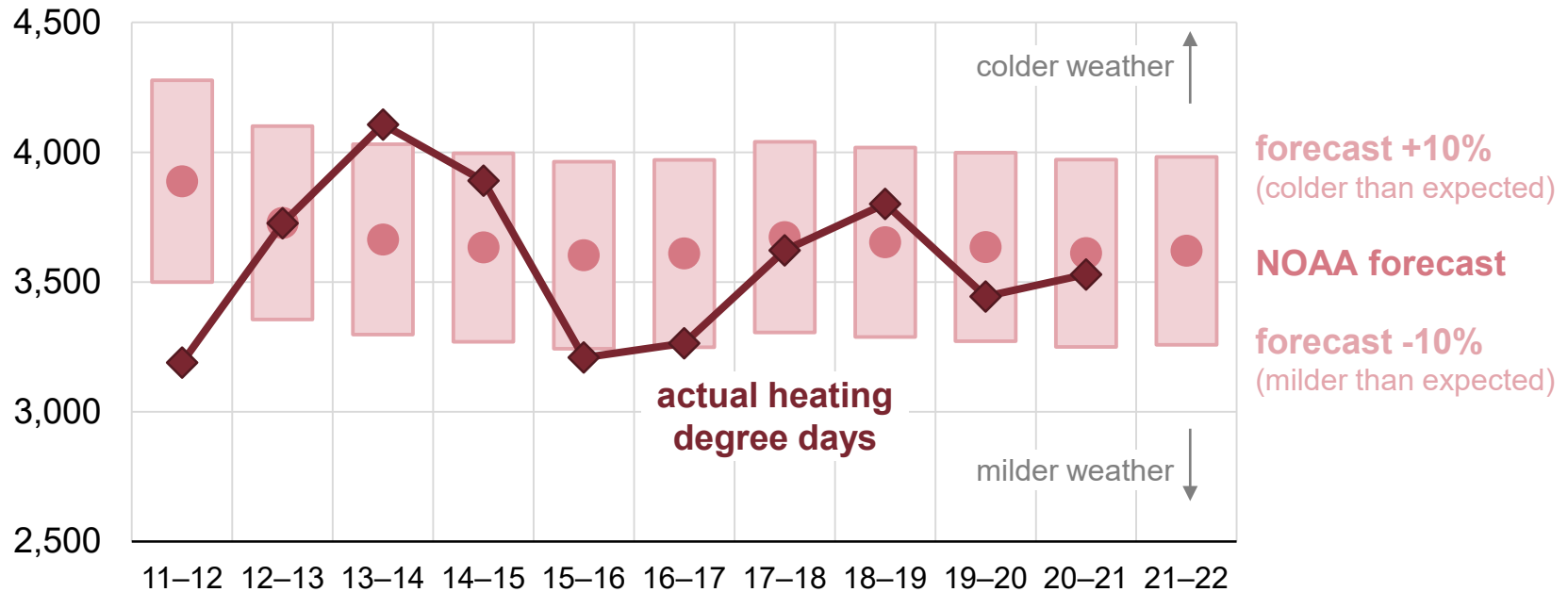


Source: U.S. Energy Information Administration

# Actual heating degree days tend to be within 10% of the forecast

U.S. population-weighted winter heating degree days (winter = Oct–Mar, 2011–2022)

heating degree days



Source: U.S. Energy Information Administration based on data from NOAA



# Because of higher prices in the forecast, even in a warmer than forecast scenario, expenditures are up from last winter

	U.S. average household expenditures <b>Base Case</b> (Oct–Mar total)		U.S. average household expenditures <b>10% Colder</b> (Oct–Mar total)		U.S. average household expenditures <b>10% Warmer</b> (Oct–Mar total)	
	winter 2021–22	Change from last winter	winter 2021–22	Change from last winter	winter 2021–22	Change from last winter
Natural Gas	\$746	+30%	\$859	+50%	\$700	+22%
Heating Oil	\$1734	+43%	\$1925	+59%	\$1573	+30%
Electricity	\$1268	+6%	\$1370	+15%	\$1237	+4%
Propane	\$1789	+54%	\$2246	+94%	\$1497	+29%

Source: U.S. Energy Information Administration

# Natural gas summary

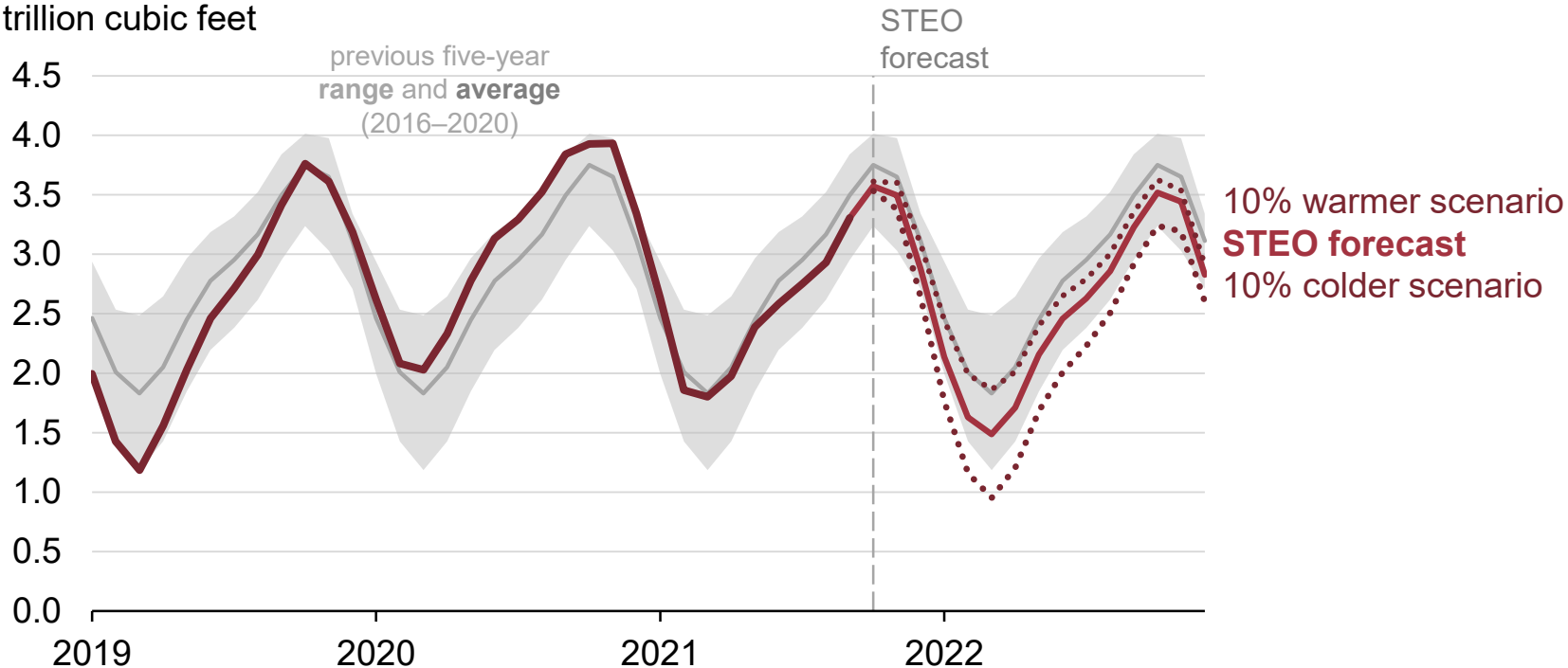
	Households primarily heating with natural gas		Average household Consumption (million cubic feet)		Average household Retail price (\$ / million cubic feet)		Average household Expenditures (Oct–Mar total)	
	millions	fuel share of region	winter 2021–22	change	winter 2021–22	Change	winter 2021–22	Change
Northeast	12.7	57%	64	+3%	\$13.46	+14%	\$865	+18%
Midwest	18.1	64%	73	+3%	\$11.28	+45%	\$818	+48%
South	14.4	29%	45	0%	\$13.90	+22%	\$623	+22%
West	15.6	54%	48	+3%	\$13.69	+20%	\$654	+24%
U.S. total	60.8	47%	58	+2%	\$12.92	+27%	\$746	+30%

Source: U.S. Energy Information Administration

# Natural gas inventories are likely to be lower than the five-year average

## End-of-month U.S. working natural gas in storage (Jan 2019–Dec 2022)

trillion cubic feet

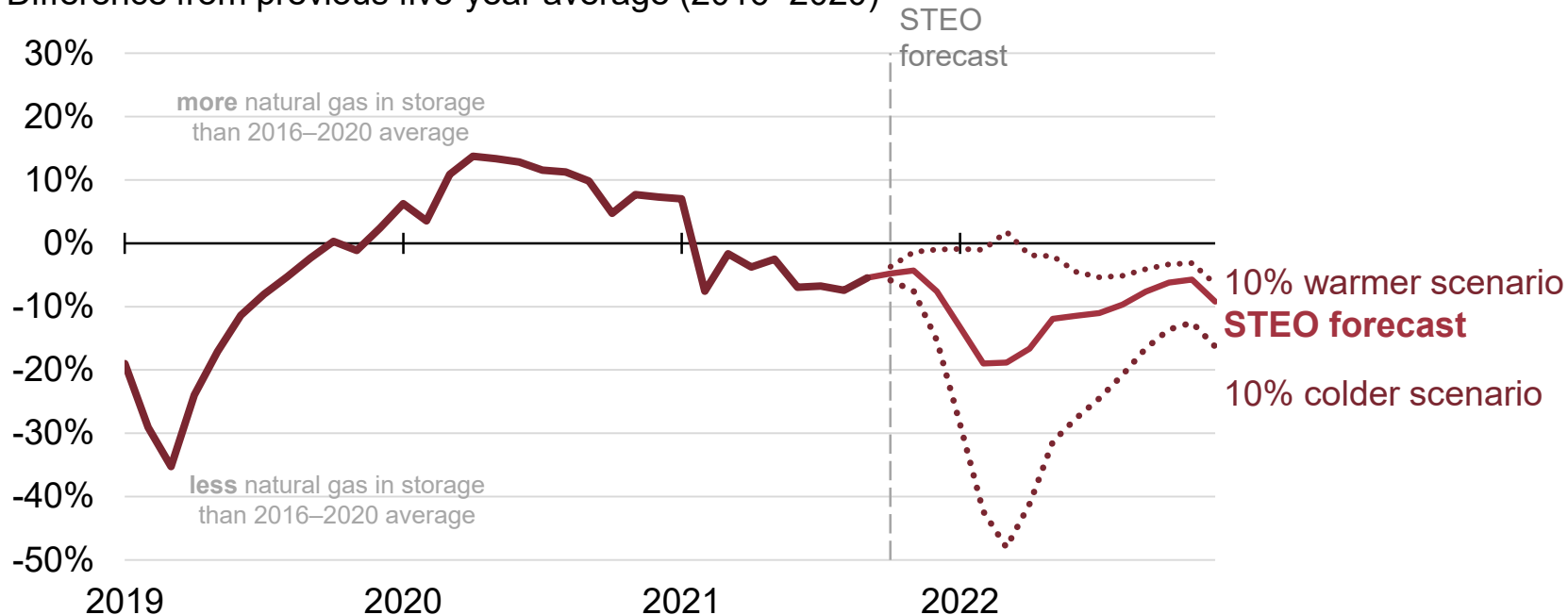


Source: U.S. Energy Information Administration

# Weather could reduce or increase natural gas storage deficit to the five-year average

## End-of-month U.S. working natural gas in storage (Jan 2019–Dec 2022)

Difference from previous five-year average (2016–2020)

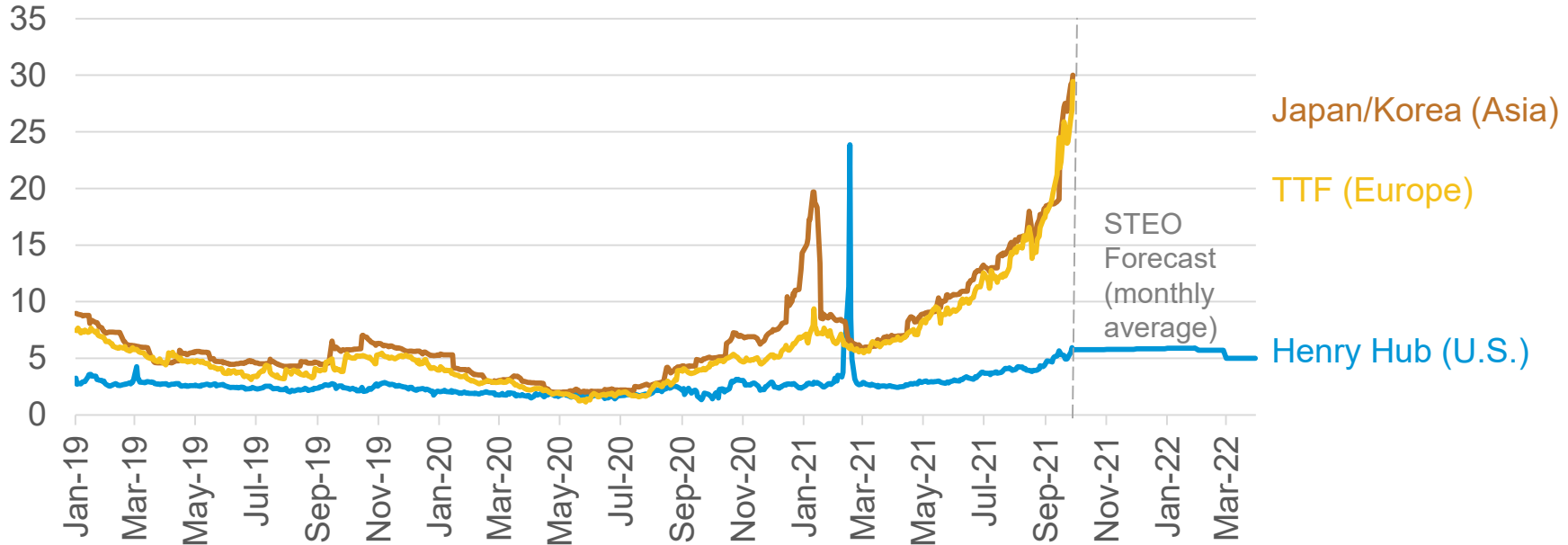


Source: U.S. Energy Information Administration

# High natural gas prices in Europe and Asia are supporting U.S. LNG exports

## International natural gas spot prices

dollars per million British thermal units



Source: U.S. Energy Information Administration based on data from Bloomberg L.P. and Refinitiv, an LSEG business

# Electricity summary

	Households primarily heating with electricity		Average household Consumption (kilowatt hours)		Average household Retail price (cents / kilowatt hour)		Average household Expenditures (Oct–Mar total)	
	millions	fuel share of region	winter 2021–22	change	winter 2021–22	Change	winter 2021–22	Change
Northeast	3.8	17%	8,346	+2%	18.4	+7%	\$1538	+10%
Midwest	6.7	24%	10,336	+2%	13.0	+3%	\$1346	+5%
South	31.9	64%	9,498	0%	12.3	+6%	\$1173	+7%
West	10.3	36%	8,939	+2%	14.9	+1%	\$1330	+3%
U.S. total	52.7	41%	9,193	+1%	13.8	+5%	\$1268	+6%

Source: U.S. Energy Information Administration

## Propane summary

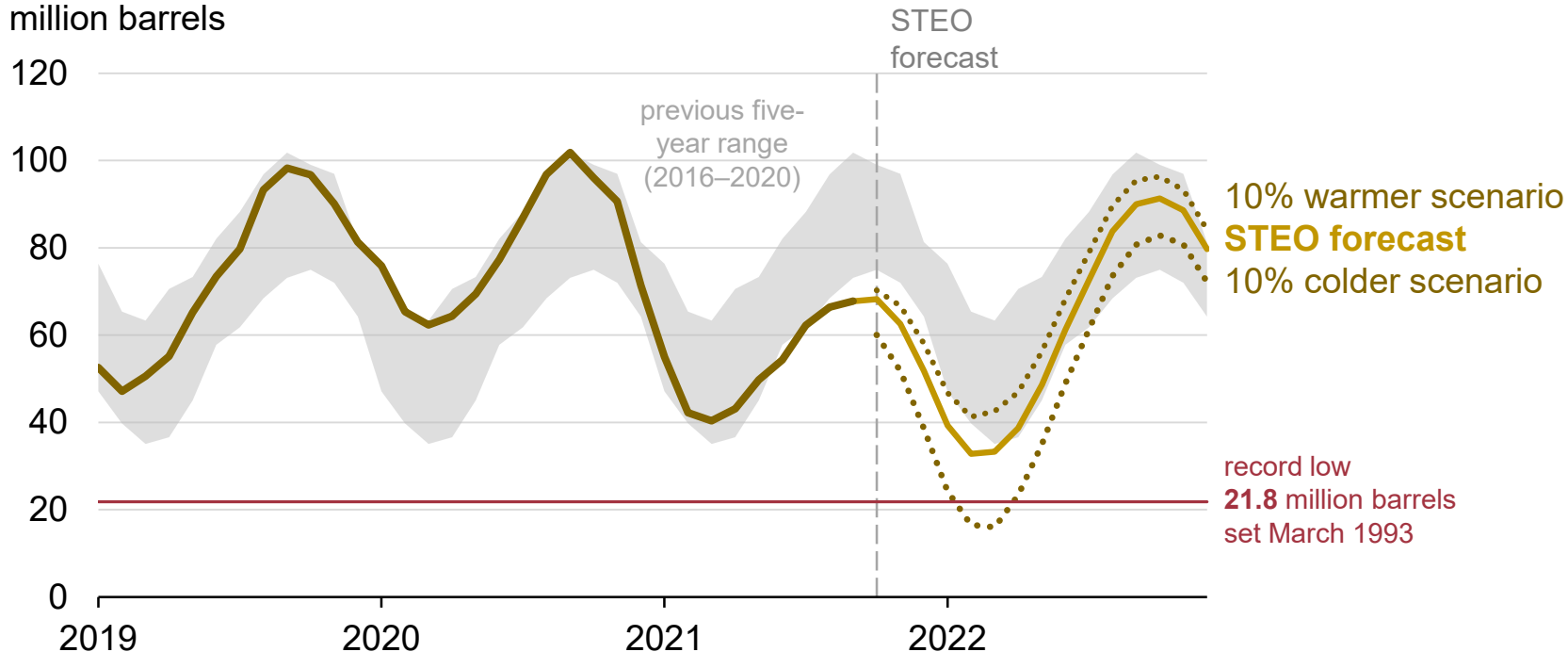
	Households primarily heating with propane		Average household Consumption (gallons)		Average household Retail price (\$ / gallon)		Average household Expenditures (Oct–Mar total)	
	millions	fuel share of region	winter 2021–22	change	winter 2021–22	Change	winter 2021–22	Change
Northeast	1.1	5%	564	+3%	\$3.57	+42%	\$2012	+47%
Midwest	2.3	8%	702	+2%	\$2.57	+65%	\$1805	+69%
South	1.9	4%	496	0%	\$3.31	+42%	\$1643	+43%

Source: U.S. Energy Information Administration

# Propane inventories, already low, could fall to record low in colder scenario

## End-of-month U.S. propane and propylene inventories (Jan 2019–Dec 2022)

million barrels



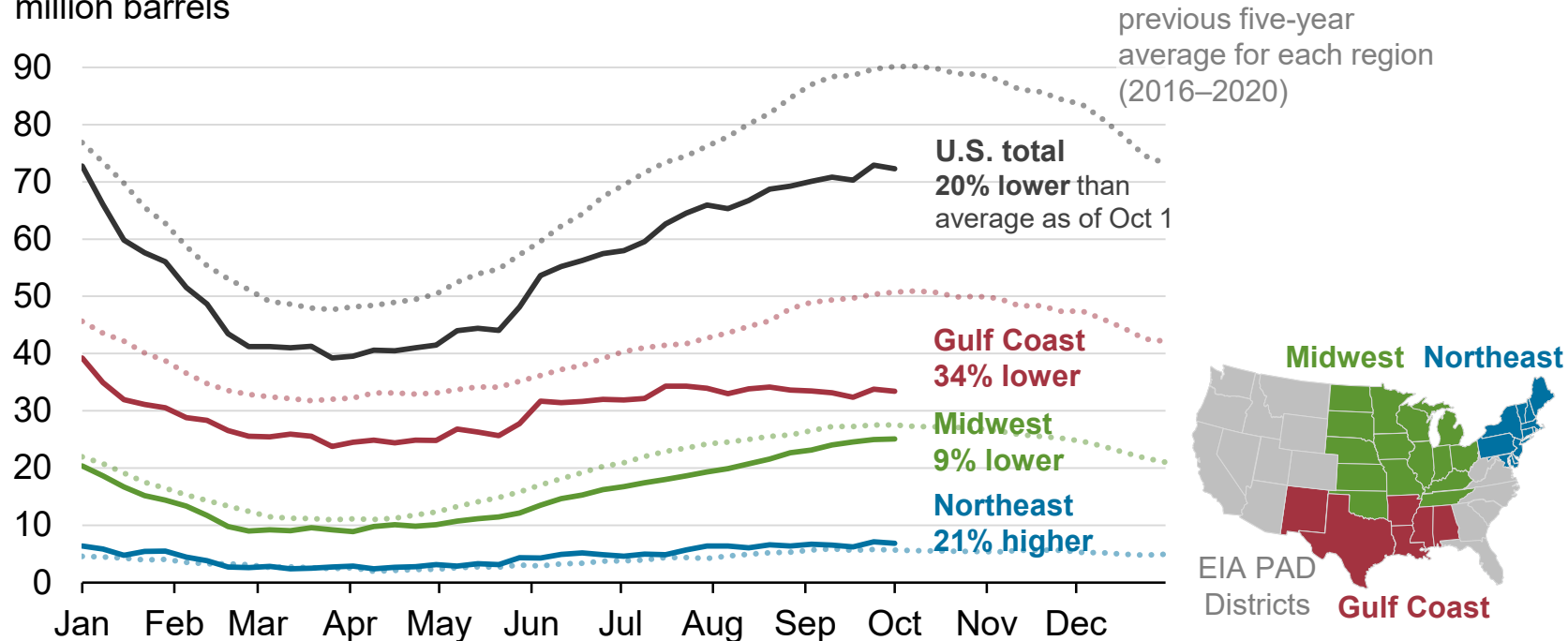
Source: U.S. Energy Information Administration



# Propane inventories are particularly low in the Gulf Coast and Midwest

## Weekly propane inventories by region (Jan 1–Oct 1, 2021)

million barrels

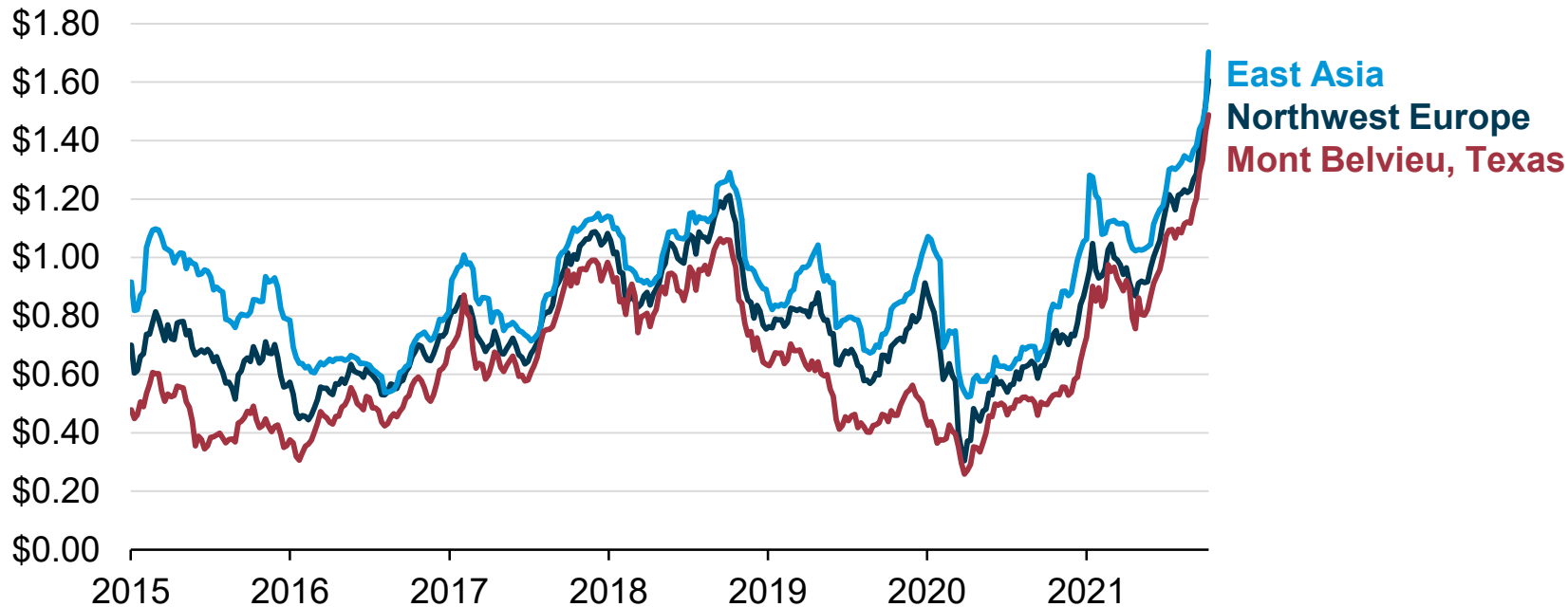


Source: U.S. Energy Information Administration

# International propane prices are encouraging propane exports from the United States

## Propane spot prices at selected hubs (Jan 2015–Oct 2021)

dollars per gallon

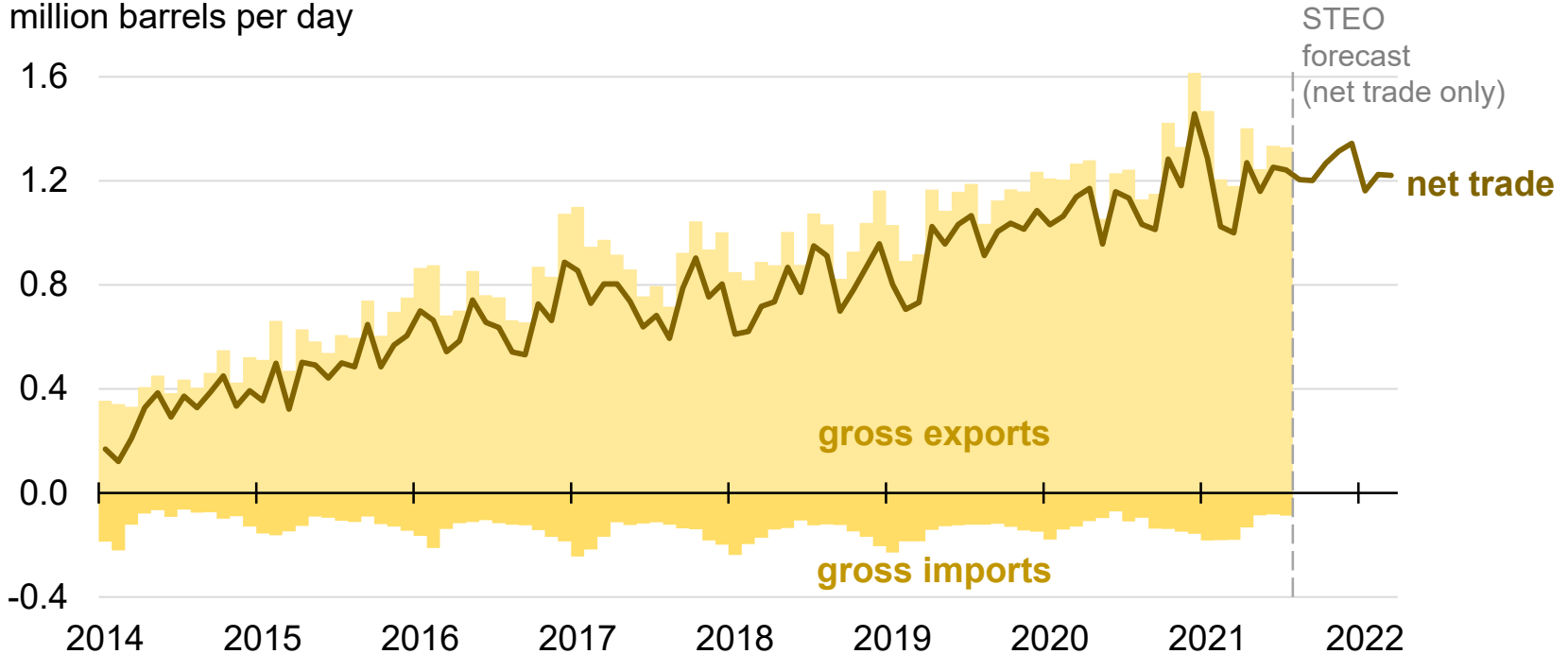


Source: U.S. Energy Information Administration based on data from Bloomberg L.P.

# U.S. exports of propane remain relatively high through winter in our forecast

## Monthly U.S. propane and propylene trade (Jan 2014–Mar 2022)

million barrels per day



Source: U.S. Energy Information Administration

# Heating oil summary

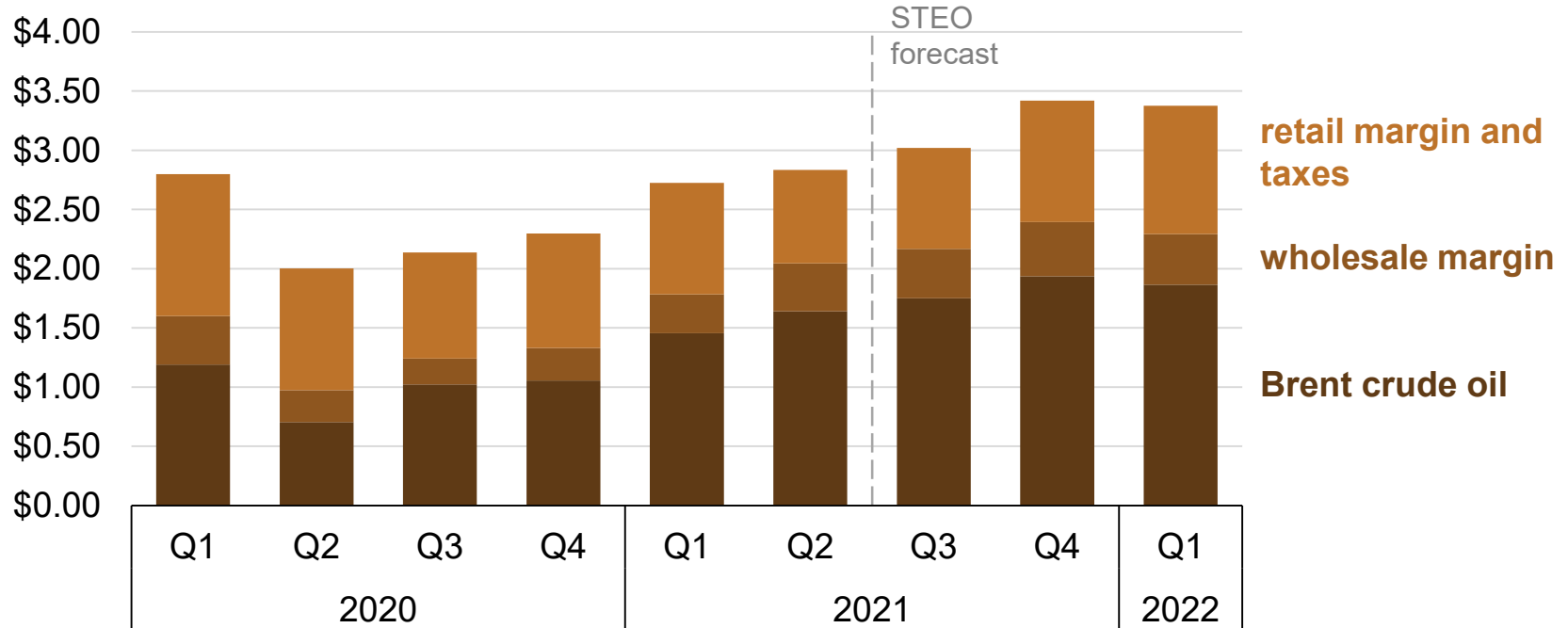
	Households primarily heating with heating oil		Average household Consumption (gallons)		Average household Retail price (\$ / gallon)		Average household Expenditures (Oct–Mar total)	
	millions	fuel share of region	winter 2021–22	change	winter 2021–22	Change	winter 2021–22	change
U.S. total	5.1	4%	511	+8%	\$3.39	+33%	\$1734	+43%

Source: U.S. Energy Information Administration

# Forecast heating oil prices are higher than last winter because of higher crude oil prices and wholesale margins

## Estimated components of U.S. heating oil retail price (Jan 2020–Mar 2022)

dollars per gallon

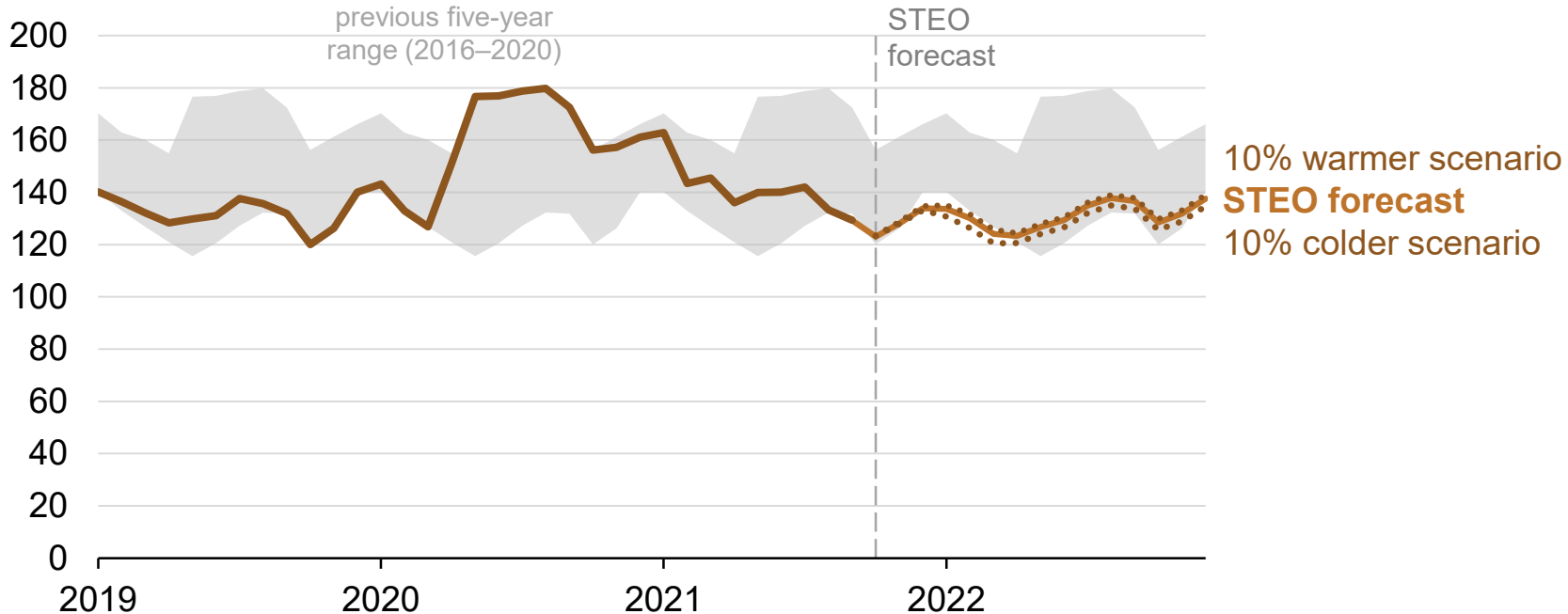


Source: U.S. Energy Information Administration based on data from Refinitiv, an LSEG Business

# Distillate inventories are currently low, but weather scenarios have relatively little implication for distillate inventories

## End-of-month U.S. distillate fuel inventories (Jan 2019–Dec 2022)

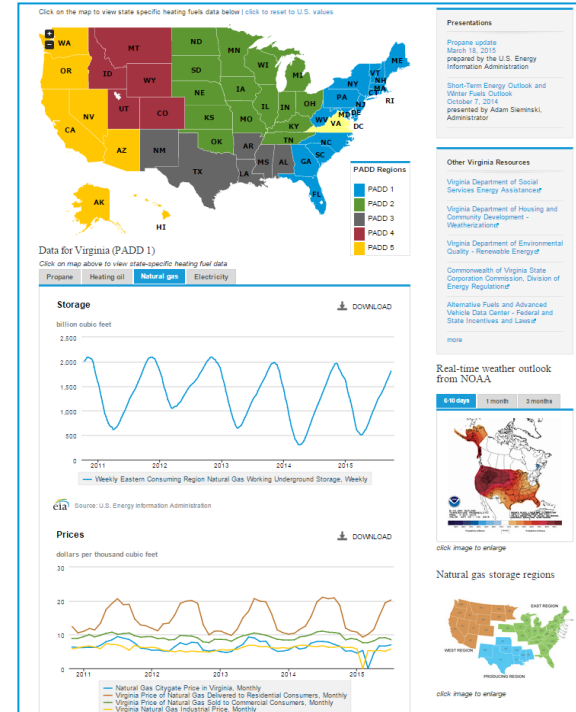
million barrels



Source: U.S. Energy Information Administration

# SHOPP / other winter heating fuels resources at EIA

- [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
- New England Dashboard - <https://www.eia.gov/dashboard/newengland/electricity>



# For more information on EIA products go to:

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

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

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

Consumption and Efficiency Data | [www.eia.gov/consumption](http://www.eia.gov/consumption)

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

Monthly Energy Review | [www.eia.gov/totalenergy/data/monthly](http://www.eia.gov/totalenergy/data/monthly)

State Energy Portal | [www.eia.gov/state](http://www.eia.gov/state)