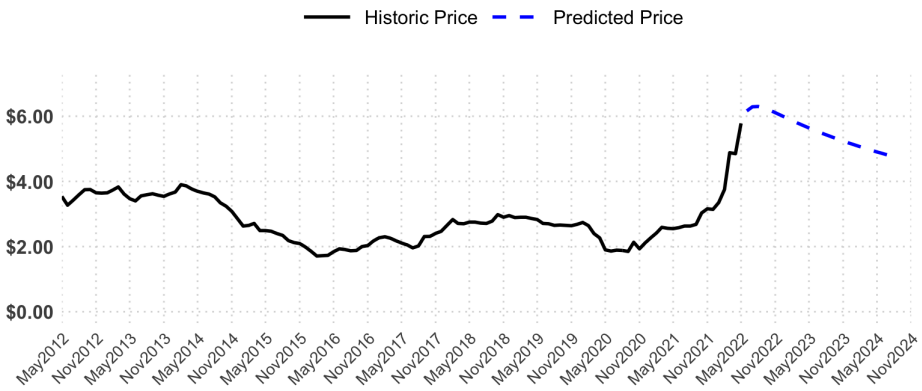
Looking Ahead to Heating Prices at the Start of the Next Two Heating Seasons in Maine

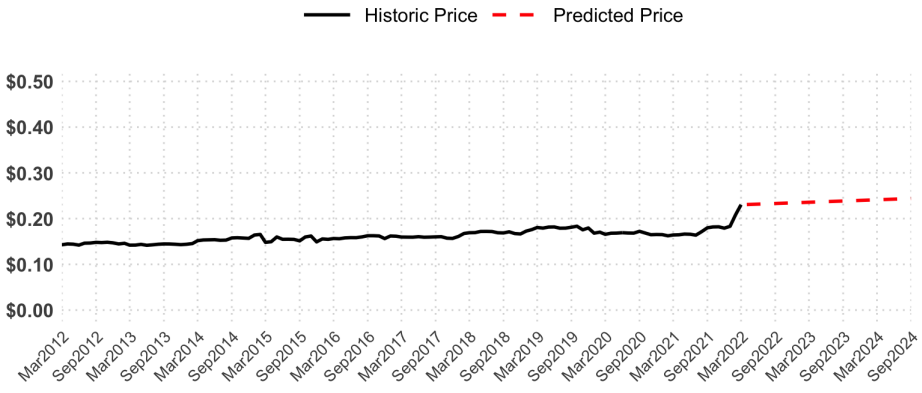
Roux Institute - Analytics Capstone Spring 2022

30-Month Heating Oil Price Forecast for Maine ($/gal)*



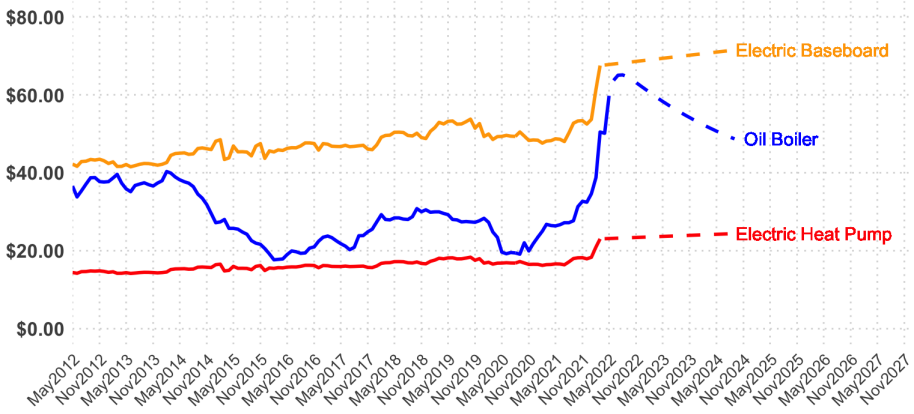
	Est. Price per Gallon*
Oct 2022	$ 6.19
Oct 2023	$ 5.30

30-Month Electricity Price Forecast for Maine ($/kwh)*



	Est. Price per kWh*
Oct 2022	$ 0.233
Oct 2023	$ 0.239

Heating Price Forecast Comparison ($ per million BTU)*



	Oct 2022	Oct 2023
Electric Baseboard	$ 68.43	$ 70.02
Oil Boiler	$ 63.95	$ 54.8
Electric Heat Pump	$ 23.35	$ 23.9

In **Oct 2022**, heating with an **oil boiler** is estimated to cost **2.7 x** more than heating with **electric heat pumps**, and heating with **electric baseboard heating** is estimated to cost **2.9 x** more than heating with **electric heat pumps**.

In **Oct 2023**, heating with an **oil boiler** is estimated to cost **2.3 x** more than heating with **electric heat pumps**, and heating with **electric baseboard heating** is estimated to cost **2.9 x** more than heating with **electric heat pumps**.

Notes:

- *Historic heating oil prices obtained from the State of Maine Governor's Energy Office data.*
- *Historic heating oil prices for non-heating-season months that were missing from the data were obtained by imputation using a linear regression model based on U.S. On-Highway Diesel Fuel Prices obtained from the U.S. Energy Information Administration.*
- *Heating oil prices predicted using an ARIMA(2,0,0) model, which has a 1-month forecast Mean Absolute Percentage Error (MAPE) of 3.44%, a 6-month forecast MAPE of 12.83%, and an 18-month forecast MAPE of 22.69%.*
- *Historic electricity prices obtained from the U.S. Energy Information Administration's average monthly residential price, which is calculated by total revenue divided by the number of customers.*
- *Electricity prices predicted using a random walk with drift model, which has a 1-month forecast Mean Absolute Percentage Error (MAPE) of 1.51%, a 6-month forecast MAPE of 3.30%, and an 18-month forecast MAPE of 4.95%.*
- *Calculating dollars per million BTU for each heating type was performed using BTU's per unit, system efficiencies, and distribution efficiencies obtained from Efficiency Maine.*