**The Roux Institute at Northeastern University**

**User Guide for The State of Maine Governor’s Energy Office (excerpt)**

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**Data Sources:**

1. **Heating Oil and Electricity Price Forecasts and Comparisons** 
   1. **Model Selection and Analysis**

*This section provides instructions on how to run the .R code that was used to analyze various forecast models for heating oil and electricity prices, including how to obtain the required data files.*

* + 1. To analyze and choose an appropriate forecast model for heating oil prices:
       1. Data Collection:

*Place the following files in the “price forecasts\data” folder:*

* + - * Monthly Maine heating oil #2 prices:
        + Use the internal Maine GEO spreadsheet for tracking propane, kerosene, and heating oil #2 prices.
        + File should be named "historical propane - k1 - #2 price tables\_charts1.xlsx"
      * Monthly New England on-highway diesel prices:
        + Navigate to <https://www.eia.gov/petroleum/gasdiesel/>
        + Scroll down to "U.S. On-Highway Diesel Fuel Prices (dollars per gallon)" and click on "full history XLS"
        + File should be named "psw18vwall.xls"
      * Monthly WTI spot prices in Cushing, Oklahoma:
        + Navigate to <https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=RWTC&f=M>
        + Click "Download Data (XLS File)" to obtain historic monthly
        + File should be named "RWTCm.xls"
      * Monthly average temperatures for Maine:
        + Navigate to <https://www.ncdc.noaa.gov/cag/statewide/time-series/17/tavg/all/12/2004-2022>
        + In drop-down menu, verify "End Year" is current year
        + Click "Plot”
        + Below the plot, click on the Excel icon to download data in CSV format
        + File should be named something similar to "17-tavg-all-12-2004-2022.csv".
        + Note: There should only be one file in the data directory with "tavg-all" in the filename.
      * Global Economic Uncertainty Index (GEPU):
        + Navigate to <https://www.policyuncertainty.com/global_monthly.html>
        + Click "Download Global EPU Data"
        + File should be named "Global\_Policy\_Uncertainty\_Data.xlsx"
      * Geopolitical Risk Index (GPR):
        + Navigate to <https://www.policyuncertainty.com/gpr.html>
        + Click “Download Data (New Methodology)”
        + File should be named “data\_gpr\_export.xls”
      * Monthly average closing price for the S&P 500:
        + Navigate to <https://www.marketwatch.com/investing/index/spx/download-data>?
        + Data can only be downloaded in one-year chunks
        + Scroll down to "Historical Quotes"
        + Select Start Date of 01/01/2004 and End Date of 12/31/2004
        + Click "Update Results"
        + "Daily" should be selected for Result Frequency
        + Click "DOWNLOAD DATA (.CSV)"
        + Update the Start and End Dates years to 2005 and do the same
        + Continue for all years up to and including the current year

Note: If your data folder already has these files, you only need to download an updated version of the current year

* + - * + There should now be several files in the data folder named "Download Data - INDEX\_US\_S&P US\_SPX.csv" or similar.
      1. From the “price forecasts” folder, run “import\_heatingoil\_data.R” in RStudio.
      2. From the “price forecasts” folder, run “import\_extfactors\_data.R” in RStudio.
      3. From the “price forecasts” folder, run “model\_selection\_heatingoil.R” in RStudio.
    1. To analyze and choose an appropriate forecast model for electricity prices:

*Place the following files in the “price forecasts\data” folder:*

* + - Monthly average electricity prices:
      * Navigate to <https://www.eia.gov/electricity/data.php#summary>
      * Expand the menu for "Sales (consumption), revenue, prices & customers"
      * Click "XLS" under "Monthly Form EIA-861M (formerly EIA-826) detailed data (1990 - present)"
      * File should be named "sales\_revenue.xlsx"
      1. From the “price forecasts” folder, run “import\_electricity\_data.R” in RStudio.
      2. From the “price forecasts” folder, run “model\_selection\_electricity.R” in RStudio.
  1. Export forecasts in CSV format:
     1. Heating Oil Price Forecast:
        1. Data Collection:

*Place the following files in the “price forecasts\data” folder:*

* + - * Monthly Maine heating oil #2 prices:
        + Use the internal Maine GEO spreadsheet for tracking propane, kerosene, and heating oil #2 prices.
        + File should be named "historical propane - k1 - #2 price tables\_charts1.xlsx"
      * Monthly New England on-highway diesel prices:
        + Navigate to <https://www.eia.gov/petroleum/gasdiesel/>
        + Scroll down to "U.S. On-Highway Diesel Fuel Prices (dollars per gallon)" and click on "full history XLS"
        + File should be named "psw18vwall.xls"
      1. From the “price forecasts” folder, run “import\_heatingoil\_data.R” in RStudio.
      2. From the “price forecasts” folder, run “export\_heatingoil\_price\_forecast.R” in RStudio.
    1. Electricity Price Forecast:
       1. Data Collection:

*Place the following files in the “price forecasts\data” folder:*

* + - * Monthly average electricity prices:
        + Navigate to <https://www.eia.gov/electricity/data.php#summary>
        + Expand the menu for "Sales (consumption), revenue, prices & customers"
        + Click "XLS" under "Monthly Form EIA-861M (formerly EIA-826) detailed data (1990 - present)"
        + File should be named "sales\_revenue.xlsx"
      1. From the “price forecasts” folder, run “import\_electricity\_data.R” in RStudio.
      2. From the “price forecasts” folder, run “export\_electricity\_price\_forecast.R” in RStudio.
  1. Heating Oil and Electricity Price Forecast Document

*This section provides instructions on how to update the R Markdown (.Rmd) file that displays the heating oil and electricity price forecasts in a user-friendly html format.*

* 1. If you have not already done so, collect the following files and place them in the “price forecasts\data” folder:
     1. Monthly Maine heating oil #2 prices:
     2. Use the internal Maine GEO spreadsheet for tracking propane, kerosene, and heating oil #2 prices.
     3. File should be named **"historical propane - k1 - #2 price tables\_charts1.xlsx"**
  2. Monthly New England on-highway diesel prices:
     1. Navigate to <https://www.eia.gov/petroleum/gasdiesel/>
     2. Scroll down to "U.S. On-Highway Diesel Fuel Prices (dollars per gallon)" and click on "full history XLS"
     3. File should be named "psw18vwall.xls"
  3. Monthly average electricity prices:
     1. Navigate to <https://www.eia.gov/electricity/data.php#summary>
     2. Expand the menu for "Sales (consumption), revenue, prices & customers"
     3. Click "XLS" under "Monthly Form EIA-861M (formerly EIA-826) detailed data (1990 - present)"
     4. File should be named "sales\_revenue.xlsx"
  4. Open “forecast.Rmd” in RStudio
  5. Click “Knit” on the RStudio menu