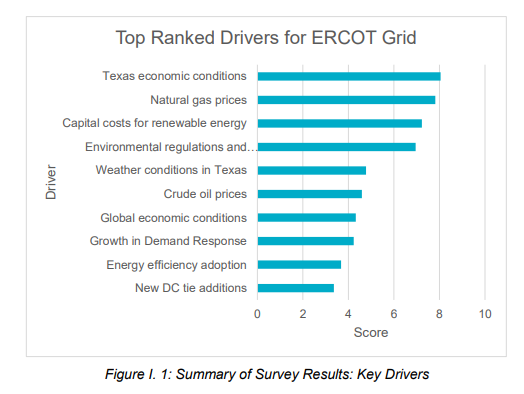
# Data

The data sources I used to inform my model are as listed in Table 1. These predictors were selected with guidance from the [2018 LTSA report](http://www.ercot.com/content/wcm/lists/144927/2018_LTSA_Report.pdf), with the relevant figure shown below, generated by a survey of ERCOT stakeholders. Note here that natural gas prices, Texas GDP, renewable energy capital costs, and weather conditions, all included as predictors in my model, are listed among the most important drivers in the ERCOT grid.



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Table 1: Data Sources | | | | |
| **Name** | **Source** | **Notes** | **Date Range** | **Time Resolution Downloaded** |
| Historical SPP | [ERCOT](http://mis.ercot.com/misapp/GetReports.do?reportTypeId=13061&reportTitle=Historical%20RTM%20Load%20Zone%20and%20Hub%20Prices&showHTMLView=&mimicKey) |  | 2011-2019 | 15 minutes |
| Historical Temperature | [NOAA](https://www.ncdc.noaa.gov/cdo-web/datatools/lcd) | Houston Airport | 2011-2020 | 1 hour |
| Temperature Forecasts | [USGS](http://regclim.coas.oregonstate.edu/visualization/rccv/states-counties/) | Texas-wide Used, Mean Model Used | 2020-2099 | 10 years |
| US Natural Gas Price Forecasts | [EIA](https://www.eia.gov/outlooks/aeo/data/browser/#/?id=13-AEO2018&cases=ref2018&sourcekey=0) | Industrial Used | 2016-2050 | 1 year |
| Historical US Natural Gas Price | [EIA](https://www.eia.gov/dnav/ng/hist/n3035us3A.htm) | Monthly available, Industrial Used | 1997-2019 | 1 year |
| Historical and Forecasted Peak and Annual Demand | [ERCOT](http://www.ercot.com/content/wcm/lists/114580/2017_Long-Term_Hourly_Peak_Demand_and_Energy_Forecast.pdf) | Extrapolate for 2027-2039, not yet included in model | 2007-2026 | 1 year |
| Historical Texas GDP | [US Bureau of Economic Development](https://fred.stlouisfed.org/series/TXNGSP) |  | 1997-2019 | 1 year |
| Texas GDP Forecasts | [ERCOT](http://www.ercot.com/content/wcm/lists/144927/2018_LTSA_Report.pdf) | Growth rate applied to 2019 GDP | 1.4% growth (normal), 2.2% (high) | 1 year |
| Capacity-Weighted Average Renewable Costs | [EIA](https://www.eia.gov/electricity/generatorcosts/) | Extrapolate exponentially for years outside range, past and future | 2013-2018 | 1 year |

# Scenarios

BAU

High economic growth:

* Affects GDP growth rate and NG prices

High Renewable Penetration:

* Affects renewable energy costs

# Assumptions and Limitations

* Aggregation
* Extrapolation for Renewable costs
* Flat GDP growth rate (used ERCOT’s assumptions)
* Temperature forecasts a very aggregate