Results

#### MAPE Cross validation results of remainders cycle1, cycle2, and cycle3 (part b)

## [,1] [,2] [,3]  
## Window LOOCV 0.7303158 0.899521 0.6977499  
## 12 step 0.9804064 1.383797 0.9397779

#### Reject null hypothesis that Gas prices are not granger caused by Electricity prices (part m)

## Granger causality test  
##   
## Model 1: VAR\_elecp ~ Lags(VAR\_elecp, 1:5) + Lags(gasp, 1:5)  
## Model 2: VAR\_elecp ~ Lags(VAR\_elecp, 1:5)  
## Res.Df Df F Pr(>F)  
## 1 407   
## 2 412 -5 0.1557 0.9783

## Granger causality test  
##   
## Model 1: gasp ~ Lags(gasp, 1:5) + Lags(VAR\_elecp, 1:5)  
## Model 2: gasp ~ Lags(gasp, 1:5)  
## Res.Df Df F Pr(>F)   
## 1 407   
## 2 412 -5 2.7347 0.01913 \*  
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

#### MAPE Testing results model comparisons (part n)

## Mod1 Auto Arima ETS Holt-Winters Combination VAR   
## 0.2414583 0.7152450 0.8705170 0.4591887 0.5515894 0.7158291

#### Forward 2020 forecasts from February (part h)

## Jan Feb Mar Apr May Jun Jul  
## 2020 0.1340804 0.1336859 0.1333080 0.1345800 0.1382781 0.1387831  
## 2021 0.1331084   
## Aug Sep Oct Nov Dec  
## 2020 0.1381448 0.1378254 0.1343304 0.1322127 0.1324894  
## 2021

#### Forward 2020 forecasts from February (part o)

## T+1 T+2 T+3 T+4 T+5 T+6 T+7  
## Jan 2020 0.13449 0.1345337 0.1342449 0.1343771 0.1346522 0.1353342 0.1356824  
## T+8 T+9 T+10 T+11 T+12  
## Jan 2020 0.1357321 0.13568 0.1356688 0.13613 0.1365623