Rule start stop and electricity plot

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3/15/2019

A simplified ridge regression model is fitted

# Occupied period

## [1] "TN0088ZZ"  
## 47 x 1 sparse Matrix of class "dgCMatrix"  
## 1  
## F 19.49  
## AHU Cooling Failure----AHU -0.98  
## AHU Cooling Failure----HVAC .   
## AHU Cooling Valve Leaking----HVAC 0.14  
## AHU Cooling Valve Unstable----HVAC 0.25  
## AHU Damper Unstable----HV .   
## AHU Damper Unstable----HVAC -3.00  
## AHU Discharge Fan Unstable----HVAC .   
## AHU Discharge Temperature Setpoint Unreachable----HVAC 0.28  
## AHU Discharge Temperature Unstable----HVAC .   
## AHU Excessive Discharge Fan Speed----HVAC -0.04  
## AHU Heating Failure----HV .   
## AHU Heating Valve Leaking----HV .   
## AHU Heating Valve Leaking----HVAC .   
## AHU Heating Valve Unstable----HVAC .   
## AHU Outside Damper Stuck Closed----HVAC .   
## AHU Outside Damper Stuck Open----HVAC .   
## Bad Energy Data----DW 0.49  
## Bad Energy Data----NG 0.93  
## Boiler Cycling----HWS .   
## Chilled Water Pressure Setpoint Unreachable----CWS -0.25  
## Chilled Water Pressure Unstable----CWS .   
## Chiller Cycling----CWS .   
## Cooling Tower Temperature Setpoint Unreachable----TWR -3.20  
## Missing Data----AHU .   
## Missing Data----CWS .   
## Missing Data----DDT .   
## Missing Data----DW -0.03  
## Missing Data----EL -0.15  
## Missing Data----GBL .   
## Missing Data----HV .   
## Missing Data----HVAC .   
## Missing Data----NG -0.78  
## Missing Data----TWR .   
## Missing Data----VAV .   
## Occupied Cooling Setpoint Out of Range----AHU 0.02  
## Occupied Cooling Setpoint Out of Range----HVAC -0.56  
## Occupied Zone Temperature Out of Range----AHU 0.22  
## Occupied Zone Temperature Out of Range----HVAC 0.07  
## Pump Cycling----CWS .   
## Sensor Failure----DDT .   
## Sensor Failure----HVAC .   
## Sensor Out Of Range----CWS -0.53  
## Sensor Out Of Range----DDT .   
## Sensor Out Of Range----HV .   
## Sensor Out Of Range----HVAC .   
## Sensor Out Of Range----TWR .   
## [1] "IN1703ZZ"  
## 53 x 1 sparse Matrix of class "dgCMatrix"  
## 1  
## F -2.46  
## AHU Cooling & Heating Simultaneously----AHU .   
## AHU Cooling Failure----AHU -7.06  
## AHU Cooling Valve Leaking----AHU -0.35  
## AHU Cooling Valve Unstable----AHU -14.00  
## AHU Damper Unstable----AHU 3.31  
## AHU Discharge Fan Failure----AHU .   
## AHU Discharge Fan Unstable----AHU -1.78  
## AHU Discharge Pressure Setpoint Unreachable----AHU 0.44  
## AHU Discharge Pressure Unstable----AHU .   
## AHU Discharge Temperature Setpoint Unreachable----AHU 0.89  
## AHU Discharge Temperature Unstable----AHU .   
## AHU Economizing & Cooling Simultaneously----AHU 0.00  
## AHU Economizing & Heating Simultaneously----AHU .   
## AHU Excessive Discharge Fan Speed----AHU 1.66  
## AHU Excessive Outside Air During Unoccupancy----AHU -0.35  
## AHU Excessive Return Fan Speed----AHU .   
## AHU Heating Failure----AHU .   
## AHU Heating Valve Leaking----AHU 1.97  
## AHU Heating Valve Unstable----AHU .   
## AHU Outside Damper Stuck Closed----AHU -1.51  
## AHU Outside Damper Stuck Open----AHU -0.62  
## Bad Energy Data----DW 0.65  
## Bad Energy Data----NG 0.64  
## Boiler Cycling----HWS .   
## Chiller Cycling----CWS .   
## Excessive Water Usage During Unoccupancy----DW -3.90  
## Hot Water System Failure----HWS .   
## Maximum Demand During Unoccupancy----EL .   
## Missing Data----AHU -0.19  
## Missing Data----CWS .   
## Missing Data----DW -0.01  
## Missing Data----EL 0.02  
## Missing Data----GBL .   
## Missing Data----HWS .   
## Missing Data----NG -0.11  
## Missing Data----TWR .   
## Missing Data----VAV .   
## Pump Cycling----CWS .   
## Pump Cycling----HWS .   
## Sensor Failure----AHU 0.00  
## Sensor Failure----CWS 0.04  
## Sensor Failure----VAV 0.01  
## Sensor Out Of Range----AHU .   
## Sensor Out Of Range----CWS 0.55  
## Sensor Out Of Range----HWS .   
## Sensor Out Of Range----TWR -0.21  
## Sensor Out Of Range----VAV 3.45  
## Terminal Unit Airflow Setpoint Unreachable----VAV 0.89  
## Terminal Unit Airflow Unstable----VAV 4.49  
## Terminal Unit Heating Failure----VAV .   
## Terminal Unit Heating Valve Leaking----VAV .   
## Unoccupied Cooling Setpoint Out of Range----VAV .   
## [1] "DC0084ZZ"  
## 38 x 1 sparse Matrix of class "dgCMatrix"  
## 1  
## F 13.20  
## AHU Cooling Valve Leaking----AHU 0.96  
## AHU Cooling Valve Unstable----AHU 0.15  
## AHU Damper Unstable----AHU .   
## AHU Discharge Temperature Setpoint Unreachable----AHU -0.37  
## AHU Discharge Temperature Unstable----AHU -0.27  
## AHU Excessive Outside Air During Unoccupancy----AHU -0.57  
## AHU Heating Failure----AHU 0.66  
## AHU Heating Valve Leaking----AHU .   
## AHU Heating Valve Unstable----AHU -1.47  
## AHU Outside Damper Stuck Closed----AHU .   
## AHU Outside Damper Stuck Open----AHU .   
## Building Running Too Late----EL .   
## Building Starting Too Early----EL -7.08  
## Chiller Cycling----CWS .   
## Heat Exchanger Temp Setpoint Unreachable----HHX .   
## Heat Exchanger Temp Unstable----HHX .   
## Maximum Demand During Unoccupancy----EL .   
## Missing Data----14606A -0.05  
## Missing Data----14607A 0.19  
## Missing Data----14608A 0.17  
## Missing Data----14610A -0.05  
## Missing Data----AHU 0.02  
## Missing Data----CHX 0.22  
## Missing Data----CWS 0.05  
## Missing Data----EL -0.05  
## Missing Data----GBL 0.23  
## Missing Data----HHX 0.06  
## Missing Data----ST 0.15  
## Missing Data----TWR 0.04  
## Pump Cycling----CWS .   
## Sensor Out Of Range----AHU -0.56  
## Sensor Out Of Range----CHX -0.64  
## Sensor Out Of Range----CWS 0.15  
## Sensor Out Of Range----GBL -0.56  
## Sensor Out Of Range----HHX -0.49  
## Sensor Out Of Range----TWR .   
## Short Demand Peak----EL 4.52

# Un-occupied period

## [1] "TN0088ZZ"  
## 47 x 1 sparse Matrix of class "dgCMatrix"  
## 1  
## F 19.14  
## AHU Cooling Failure----AHU -0.96  
## AHU Cooling Failure----HVAC .   
## AHU Cooling Valve Leaking----HVAC 0.14  
## AHU Cooling Valve Unstable----HVAC 0.27  
## AHU Damper Unstable----HV .   
## AHU Damper Unstable----HVAC -2.97  
## AHU Discharge Fan Unstable----HVAC .   
## AHU Discharge Temperature Setpoint Unreachable----HVAC 0.27  
## AHU Discharge Temperature Unstable----HVAC .   
## AHU Excessive Discharge Fan Speed----HVAC -0.02  
## AHU Heating Failure----HV .   
## AHU Heating Valve Leaking----HV .   
## AHU Heating Valve Leaking----HVAC .   
## AHU Heating Valve Unstable----HVAC .   
## AHU Outside Damper Stuck Closed----HVAC .   
## AHU Outside Damper Stuck Open----HVAC .   
## Bad Energy Data----DW 0.48  
## Bad Energy Data----NG 0.91  
## Boiler Cycling----HWS .   
## Chilled Water Pressure Setpoint Unreachable----CWS -0.24  
## Chilled Water Pressure Unstable----CWS .   
## Chiller Cycling----CWS .   
## Cooling Tower Temperature Setpoint Unreachable----TWR -3.22  
## Missing Data----AHU .   
## Missing Data----CWS .   
## Missing Data----DDT .   
## Missing Data----DW -0.04  
## Missing Data----EL -0.14  
## Missing Data----GBL .   
## Missing Data----HV .   
## Missing Data----HVAC .   
## Missing Data----NG -0.77  
## Missing Data----TWR .   
## Missing Data----VAV .   
## Occupied Cooling Setpoint Out of Range----AHU 0.02  
## Occupied Cooling Setpoint Out of Range----HVAC -0.55  
## Occupied Zone Temperature Out of Range----AHU 0.23  
## Occupied Zone Temperature Out of Range----HVAC 0.08  
## Pump Cycling----CWS .   
## Sensor Failure----DDT .   
## Sensor Failure----HVAC .   
## Sensor Out Of Range----CWS -0.52  
## Sensor Out Of Range----DDT .   
## Sensor Out Of Range----HV .   
## Sensor Out Of Range----HVAC .   
## Sensor Out Of Range----TWR .   
## [1] "IN1703ZZ"  
## 53 x 1 sparse Matrix of class "dgCMatrix"  
## 1  
## F -14.95  
## AHU Cooling & Heating Simultaneously----AHU .   
## AHU Cooling Failure----AHU -11.16  
## AHU Cooling Valve Leaking----AHU -0.27  
## AHU Cooling Valve Unstable----AHU -15.97  
## AHU Damper Unstable----AHU 4.33  
## AHU Discharge Fan Failure----AHU .   
## AHU Discharge Fan Unstable----AHU -3.90  
## AHU Discharge Pressure Setpoint Unreachable----AHU -0.74  
## AHU Discharge Pressure Unstable----AHU .   
## AHU Discharge Temperature Setpoint Unreachable----AHU 1.29  
## AHU Discharge Temperature Unstable----AHU .   
## AHU Economizing & Cooling Simultaneously----AHU 0.04  
## AHU Economizing & Heating Simultaneously----AHU .   
## AHU Excessive Discharge Fan Speed----AHU 3.77  
## AHU Excessive Outside Air During Unoccupancy----AHU 0.06  
## AHU Excessive Return Fan Speed----AHU .   
## AHU Heating Failure----AHU .   
## AHU Heating Valve Leaking----AHU 0.76  
## AHU Heating Valve Unstable----AHU .   
## AHU Outside Damper Stuck Closed----AHU -15.21  
## AHU Outside Damper Stuck Open----AHU 11.63  
## Bad Energy Data----DW 2.09  
## Bad Energy Data----NG 2.00  
## Boiler Cycling----HWS .   
## Chiller Cycling----CWS .   
## Excessive Water Usage During Unoccupancy----DW -7.96  
## Hot Water System Failure----HWS .   
## Maximum Demand During Unoccupancy----EL .   
## Missing Data----AHU -1.87  
## Missing Data----CWS .   
## Missing Data----DW -5.53  
## Missing Data----EL 7.64  
## Missing Data----GBL .   
## Missing Data----HWS .   
## Missing Data----NG -7.04  
## Missing Data----TWR .   
## Missing Data----VAV .   
## Pump Cycling----CWS .   
## Pump Cycling----HWS .   
## Sensor Failure----AHU 0.36  
## Sensor Failure----CWS -5.02  
## Sensor Failure----VAV -0.29  
## Sensor Out Of Range----AHU .   
## Sensor Out Of Range----CWS 8.14  
## Sensor Out Of Range----HWS .   
## Sensor Out Of Range----TWR -2.94  
## Sensor Out Of Range----VAV 6.52  
## Terminal Unit Airflow Setpoint Unreachable----VAV -6.25  
## Terminal Unit Airflow Unstable----VAV 5.77  
## Terminal Unit Heating Failure----VAV .   
## Terminal Unit Heating Valve Leaking----VAV .   
## Unoccupied Cooling Setpoint Out of Range----VAV .   
## [1] "DC0084ZZ"  
## 38 x 1 sparse Matrix of class "dgCMatrix"  
## 1  
## F 12.92  
## AHU Cooling Valve Leaking----AHU 0.94  
## AHU Cooling Valve Unstable----AHU 0.14  
## AHU Damper Unstable----AHU .   
## AHU Discharge Temperature Setpoint Unreachable----AHU -0.34  
## AHU Discharge Temperature Unstable----AHU -0.23  
## AHU Excessive Outside Air During Unoccupancy----AHU -0.58  
## AHU Heating Failure----AHU 0.67  
## AHU Heating Valve Leaking----AHU .   
## AHU Heating Valve Unstable----AHU -1.44  
## AHU Outside Damper Stuck Closed----AHU .   
## AHU Outside Damper Stuck Open----AHU .   
## Building Running Too Late----EL .   
## Building Starting Too Early----EL -7.04  
## Chiller Cycling----CWS .   
## Heat Exchanger Temp Setpoint Unreachable----HHX .   
## Heat Exchanger Temp Unstable----HHX .   
## Maximum Demand During Unoccupancy----EL .   
## Missing Data----14606A -0.05  
## Missing Data----14607A 0.18  
## Missing Data----14608A 0.16  
## Missing Data----14610A -0.05  
## Missing Data----AHU 0.02  
## Missing Data----CHX 0.22  
## Missing Data----CWS 0.05  
## Missing Data----EL -0.05  
## Missing Data----GBL 0.23  
## Missing Data----HHX 0.06  
## Missing Data----ST 0.15  
## Missing Data----TWR 0.04  
## Pump Cycling----CWS .   
## Sensor Out Of Range----AHU -0.55  
## Sensor Out Of Range----CHX -0.57  
## Sensor Out Of Range----CWS 0.14  
## Sensor Out Of Range----GBL -0.55  
## Sensor Out Of Range----HHX -0.47  
## Sensor Out Of Range----TWR .   
## Short Demand Peak----EL 4.53