



# SDG&E GRC Phase 2 Demand Charge Alternatives Comparison

2019-08-27

# Need for Load Shift Resources



WIND AND SOLAR CURTAILMENT TOTALS BY MONTH

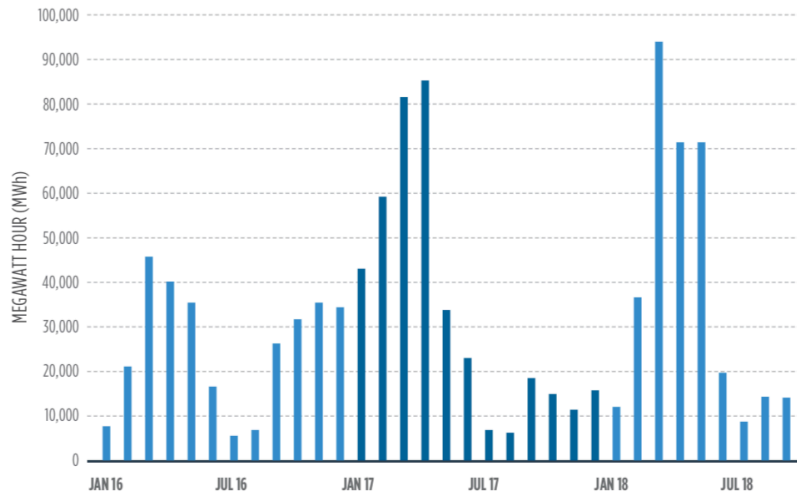


FIGURE 2. California Wind and Solar Monthly Curtailments

## ADDRESSING CHALLENGES OF RENEWABLE INTEGRATION

Stylized shift dispatch

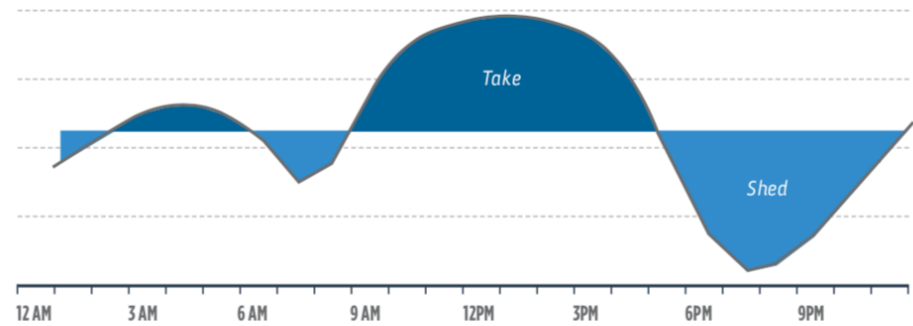


FIGURE 3. Targeted Load Shift

Source: LBNL for the Load Shift Working Group

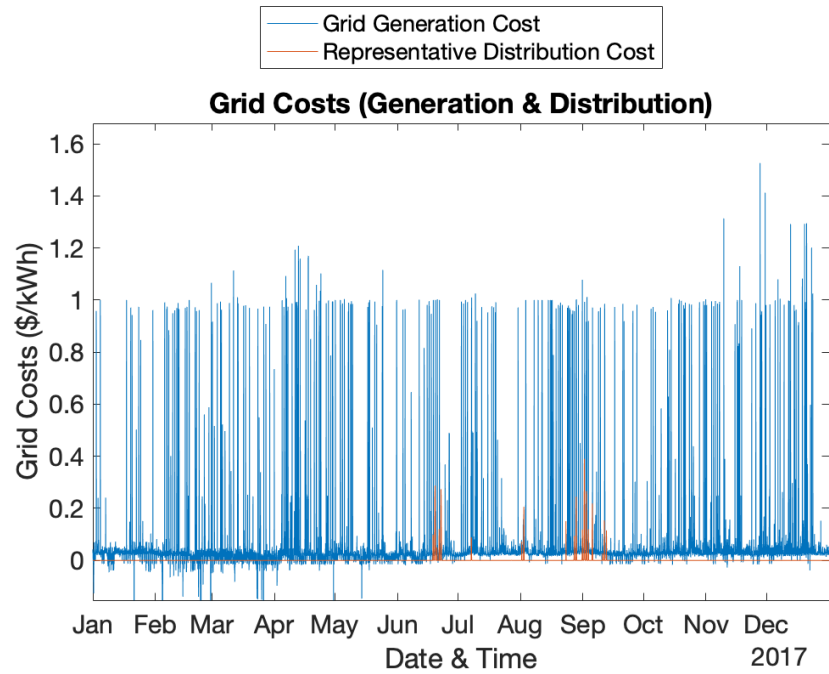
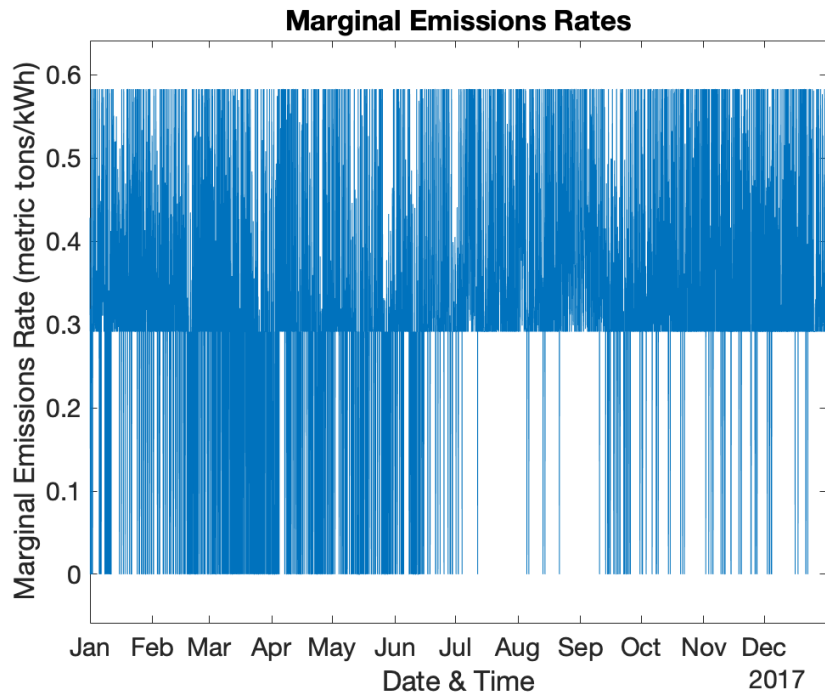
Source: Load Shift Working Group Final Report

## Modeling Input Values

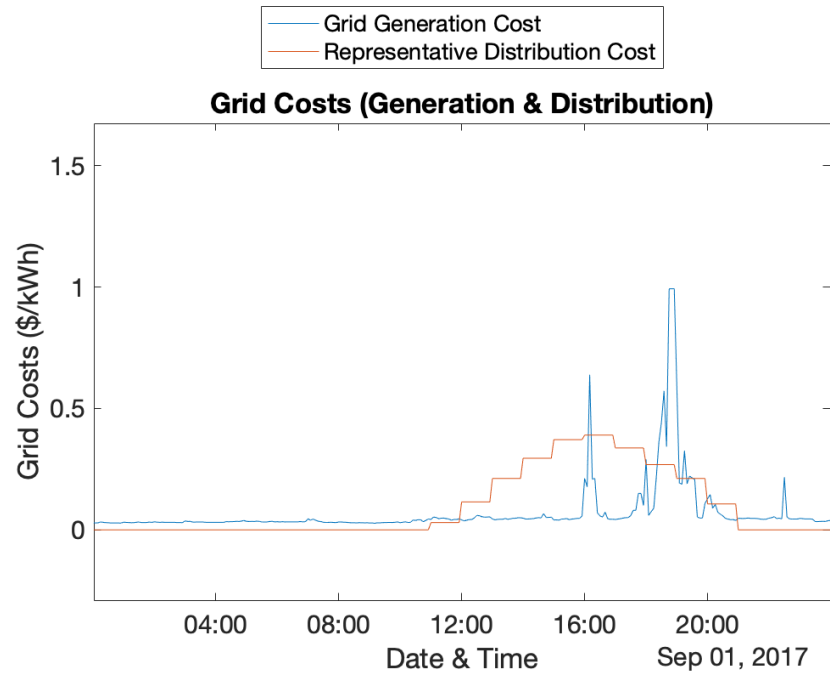
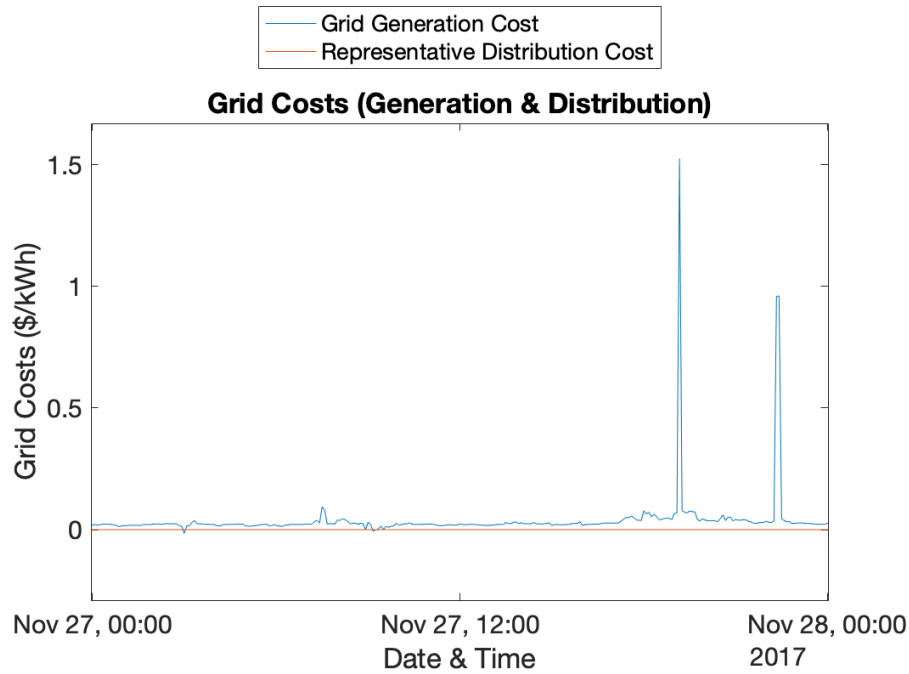


- Energy Storage Dispatch Model:
  - Open-Source Energy Storage Model (OSESMO) from SGIP GHG Technical Working Group
- Storage-Only: 200 kW x 400 kWh
- Load Profile: EnerNOC San Diego Office (from EnerNOC Open Data 2012)
- Utility Marginal Cost Data: 2017 SP15 RT5M LMP + PG&E Mission Feeder Distribution Cost
- GHG Data: 2017 CAISO SP15 (SGIP Implied-Heat-Rate Methodology)
- Rates:
  - SDG&E AL-TOU (Current)
  - PG&E B-19S Option S (Final Decision)
  - SDG&E VGI (2018 Pilot EV Rate)
  - Modified SDG&E VGI (Proposed Rate)
  - Utility Marginal Costs (“Gold Standard” Benchmark)

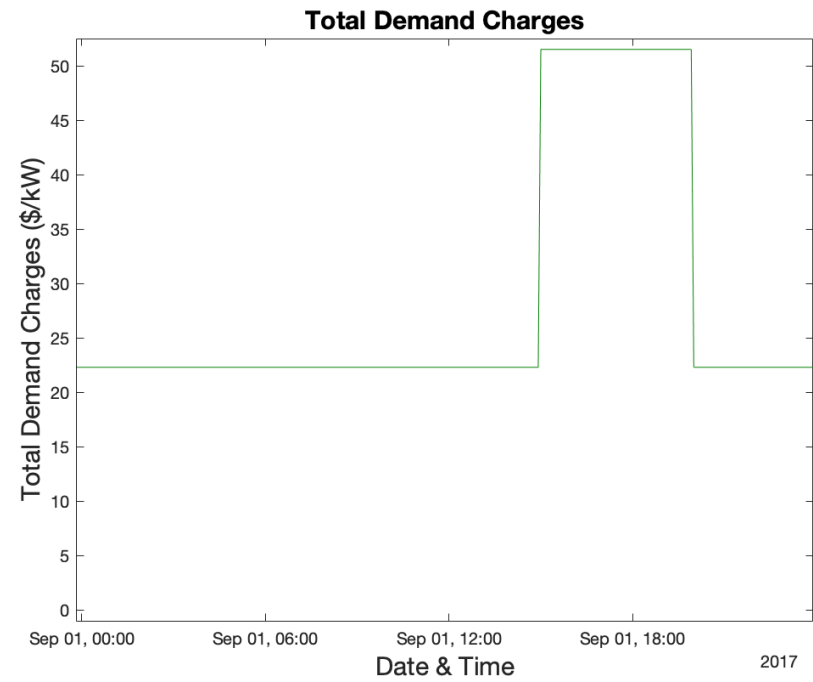
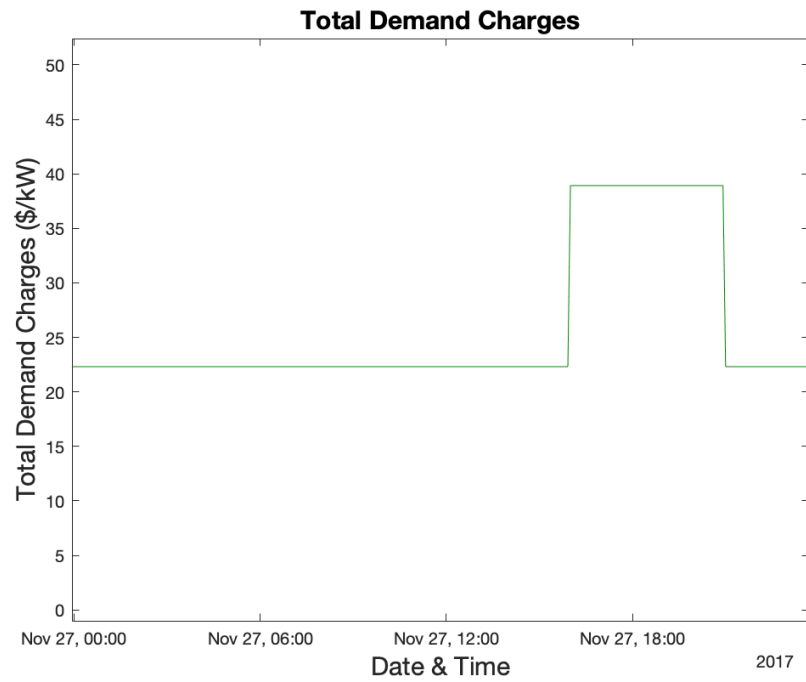
# GHG Emissions Rates & Utility Marginal Costs



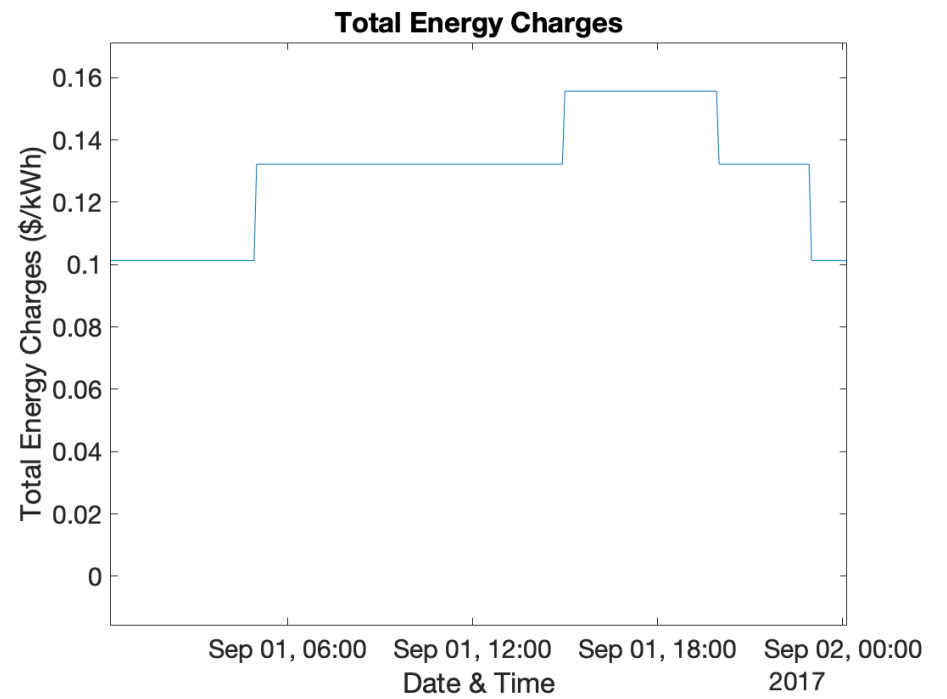
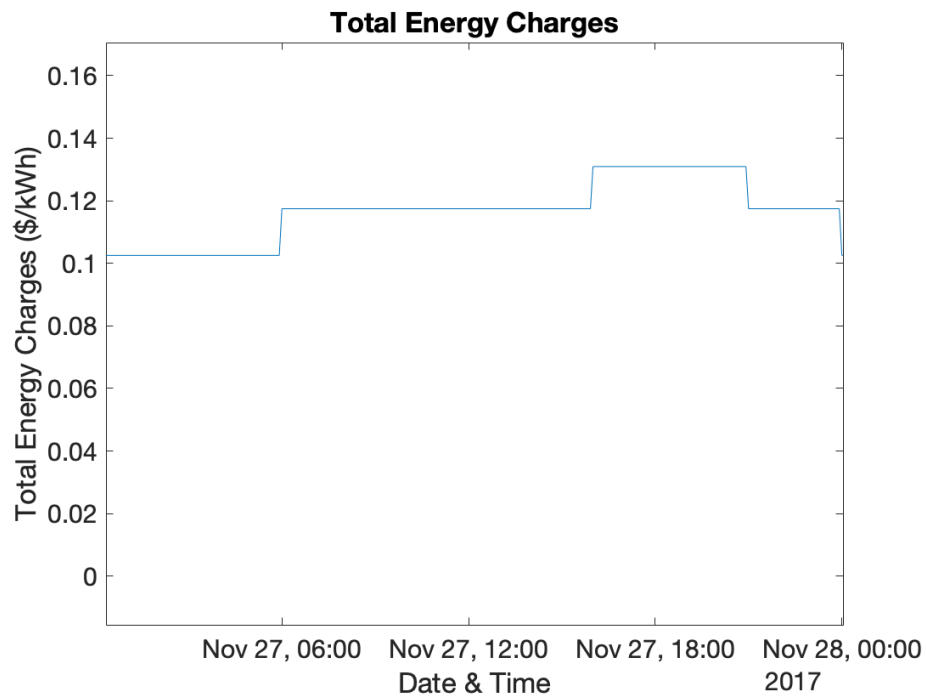
# Utility Marginal Costs – Peak Days



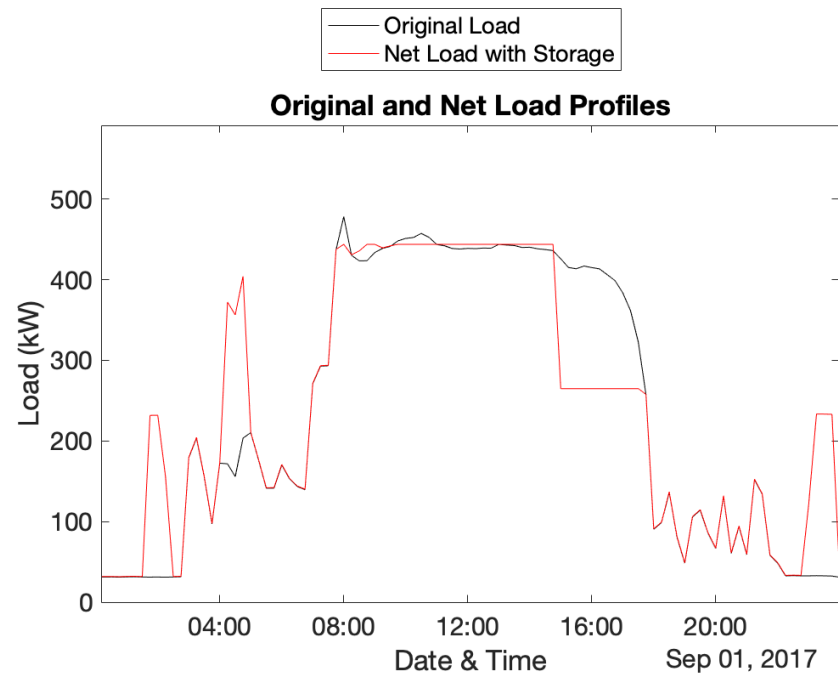
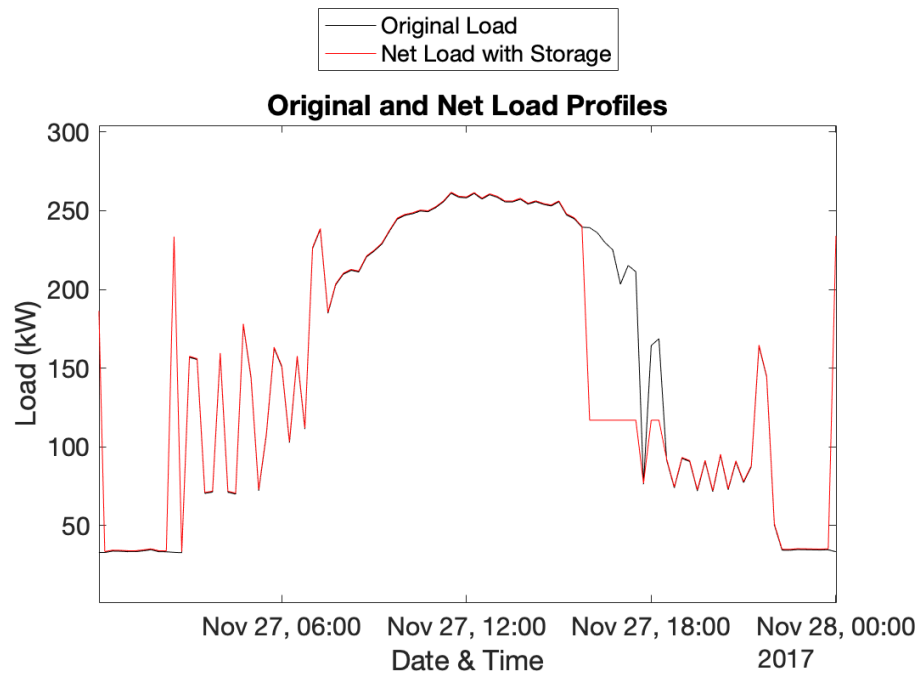
# SDG&E AL-TOU – Demand Charges



# SDG&E AL-TOU – Energy Charges

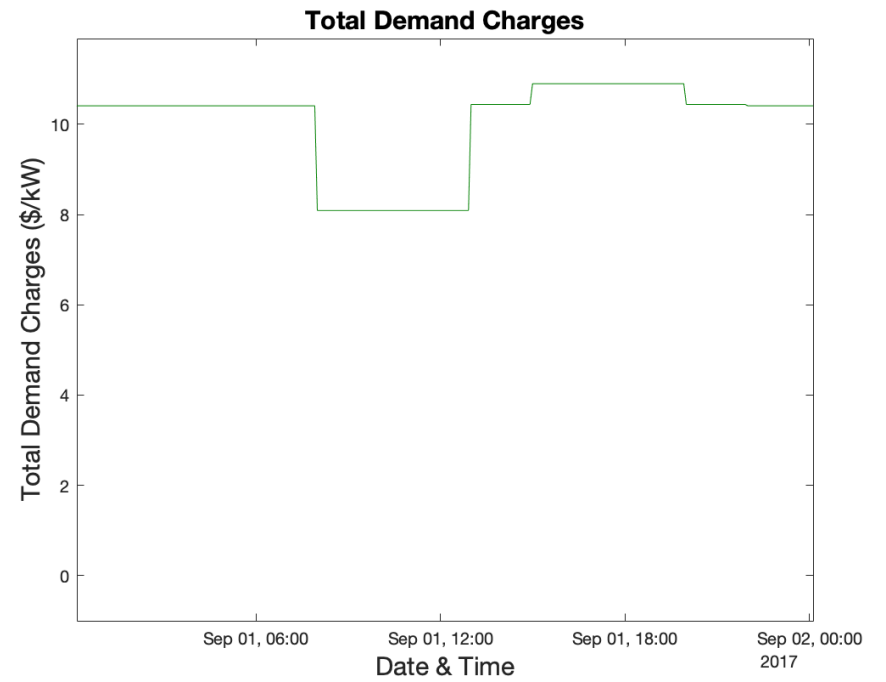
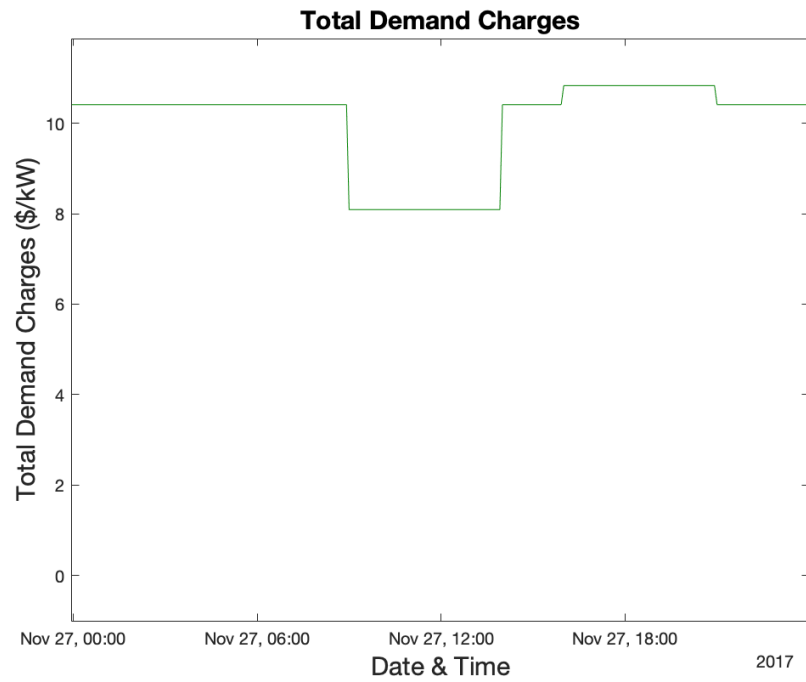


# SDG&E AL-TOU – Storage Dispatch

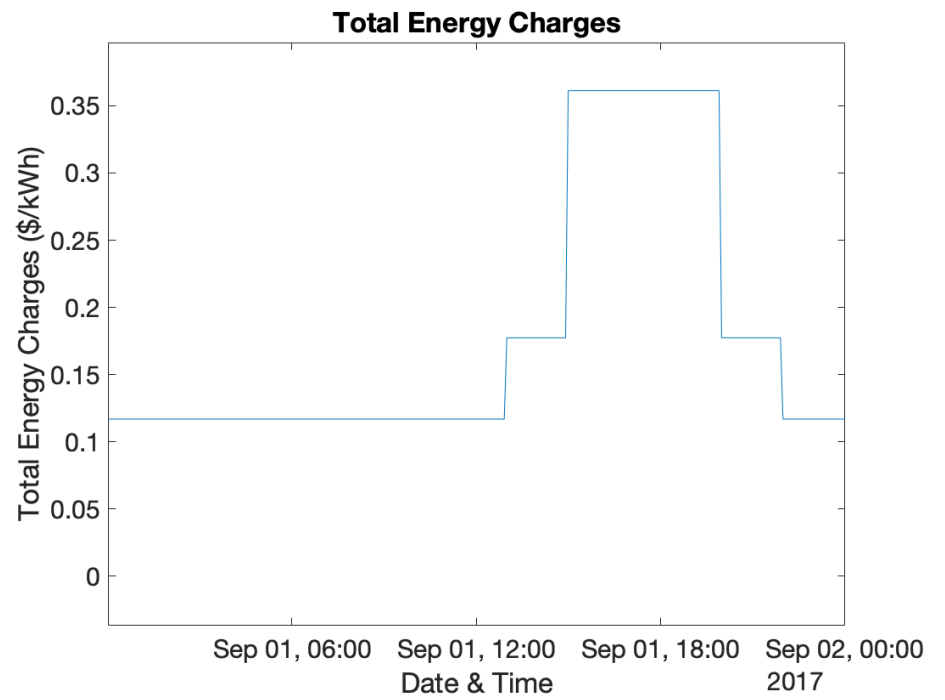
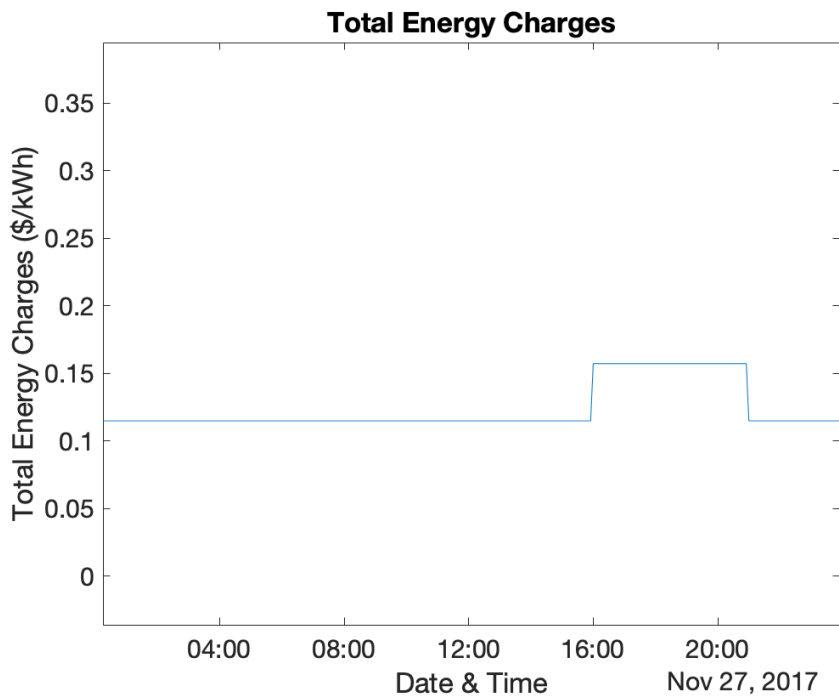




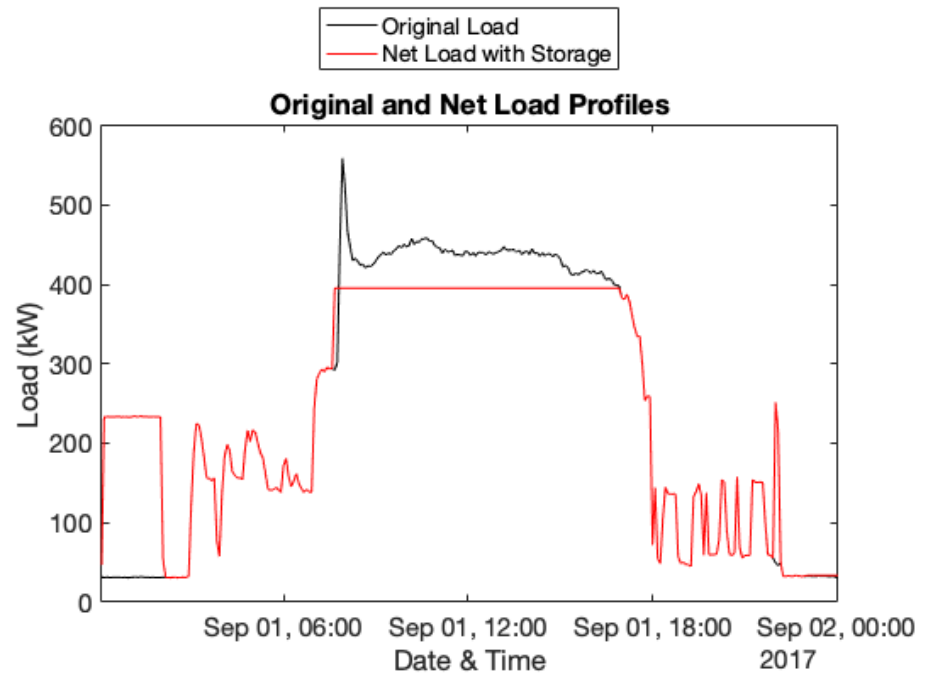
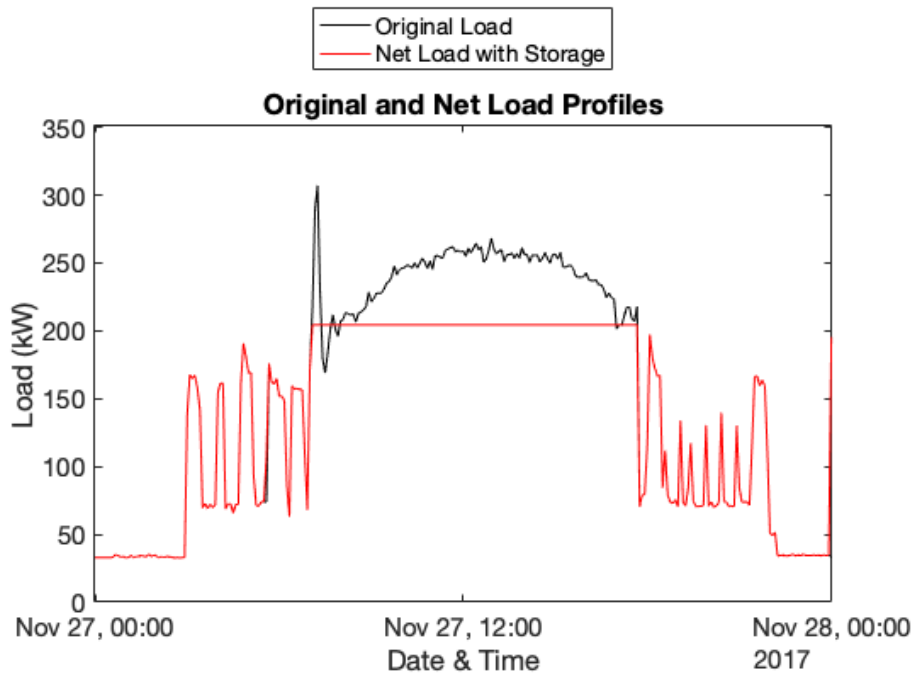
# PG&E B-19S Option S – Demand Charges



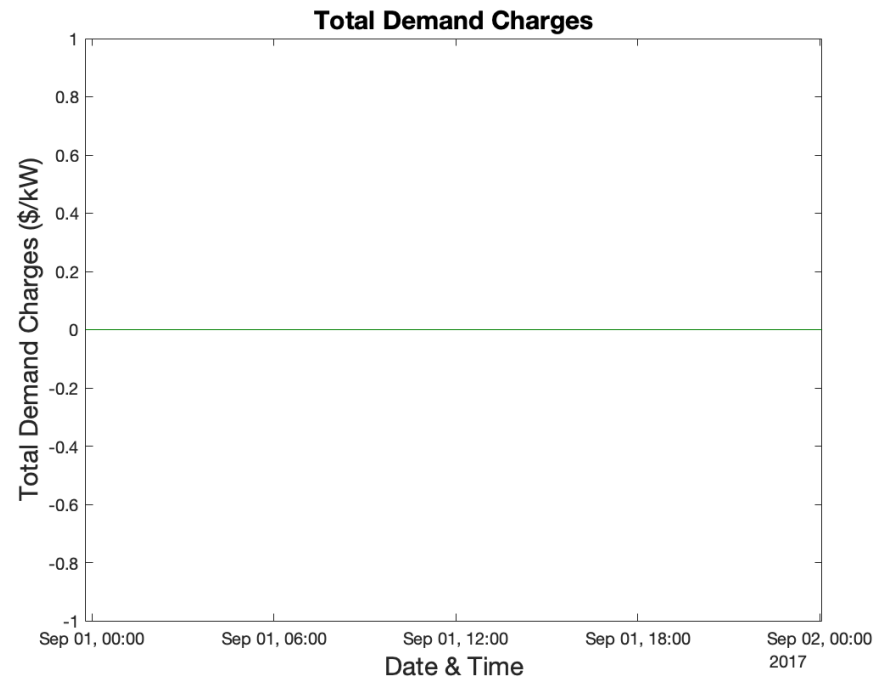
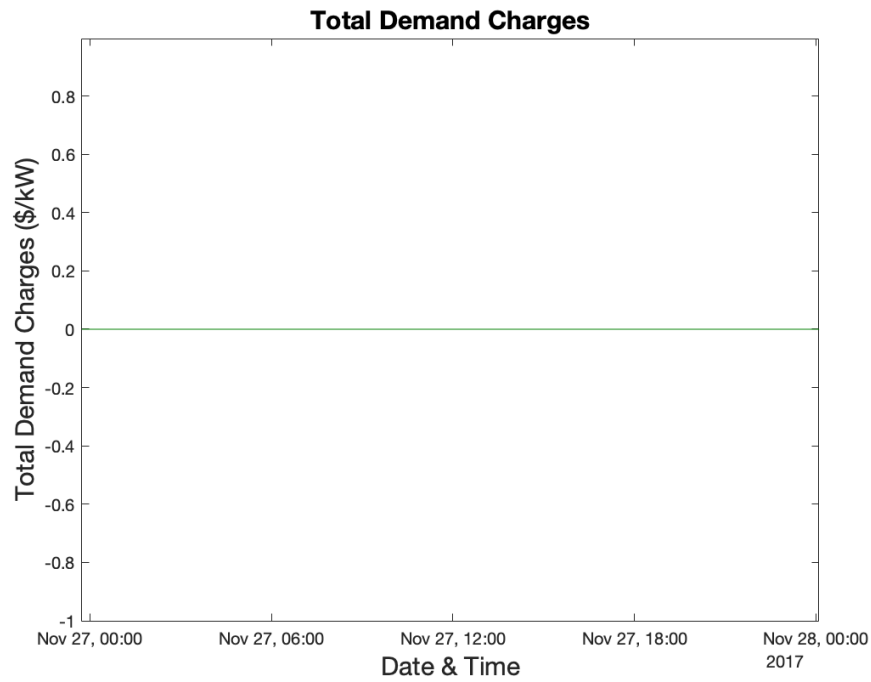
# PG&E B-19S Option S – Energy Charges



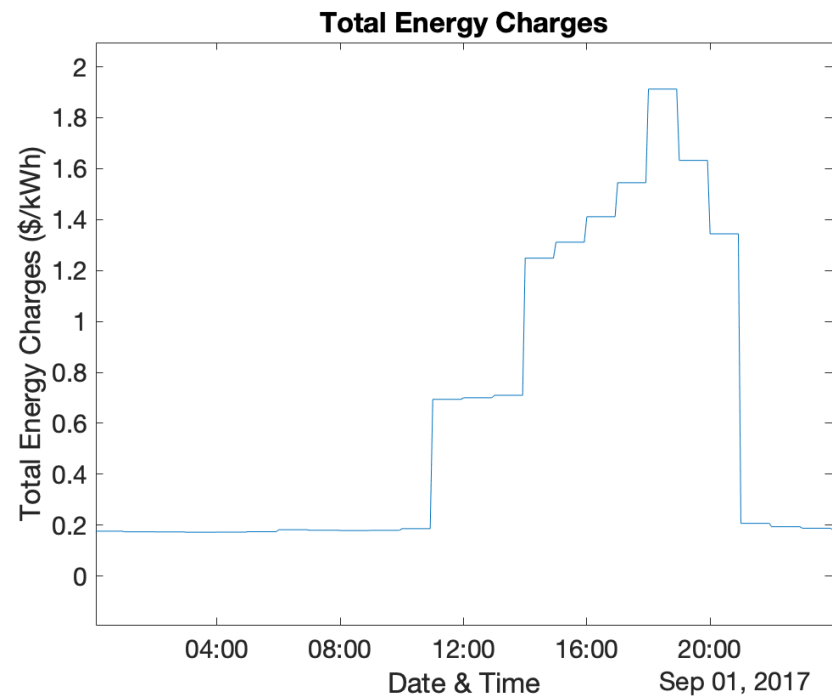
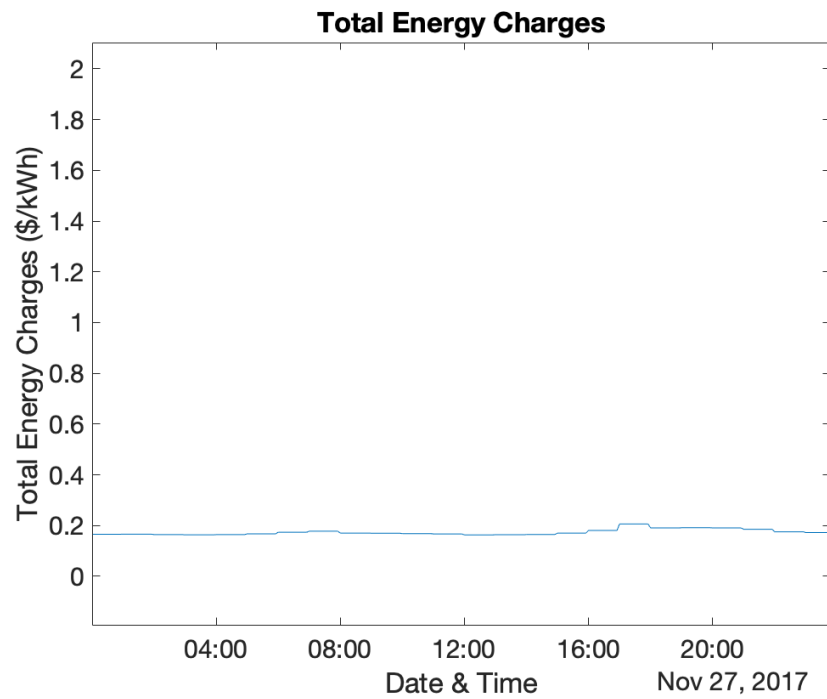
# PG&E B-19S Option S – Storage Dispatch



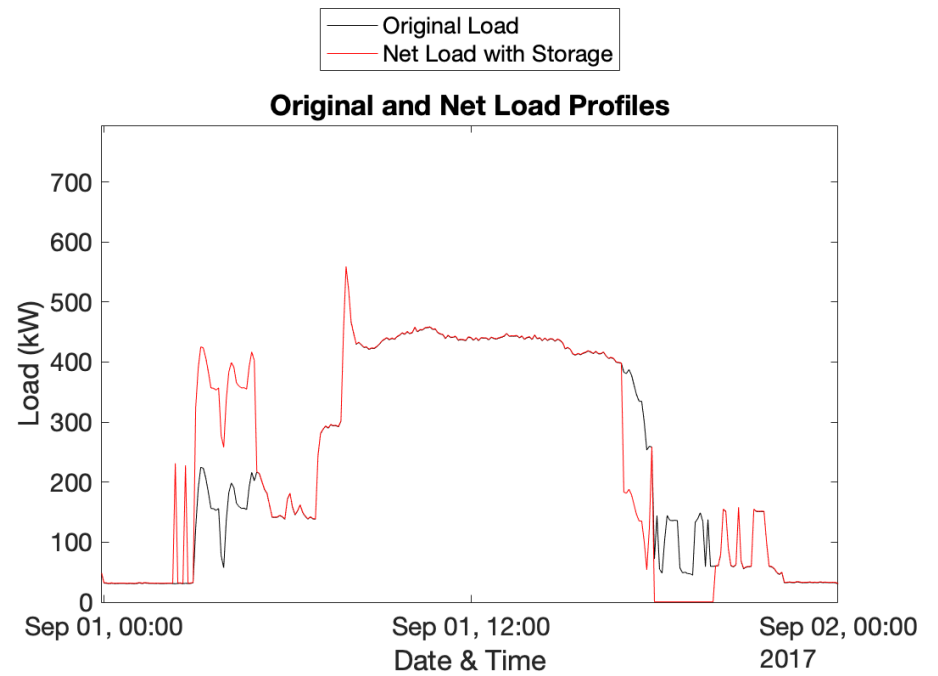
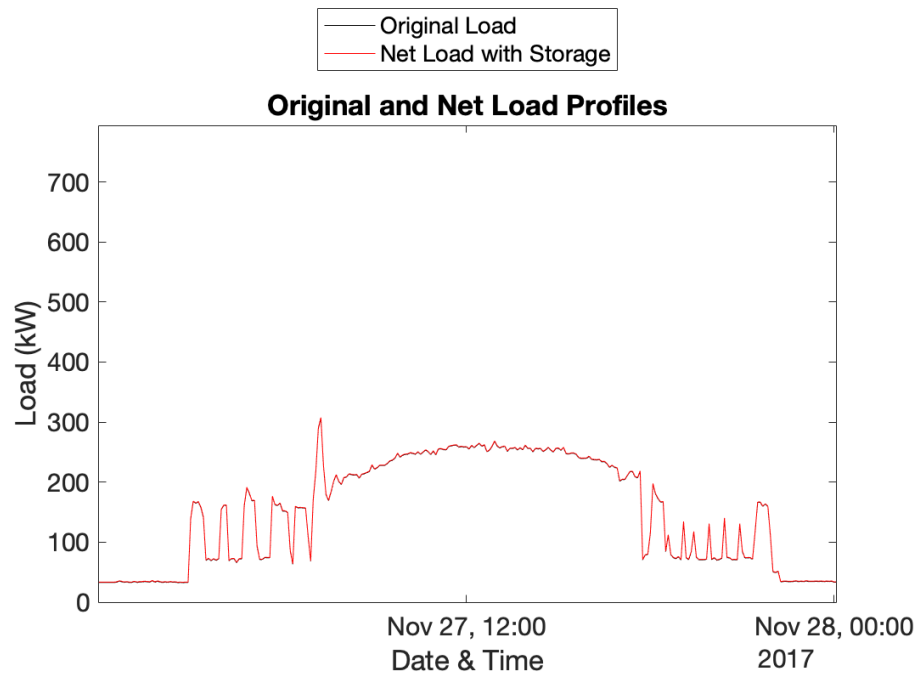
# SDG&E VGI – Demand Charges



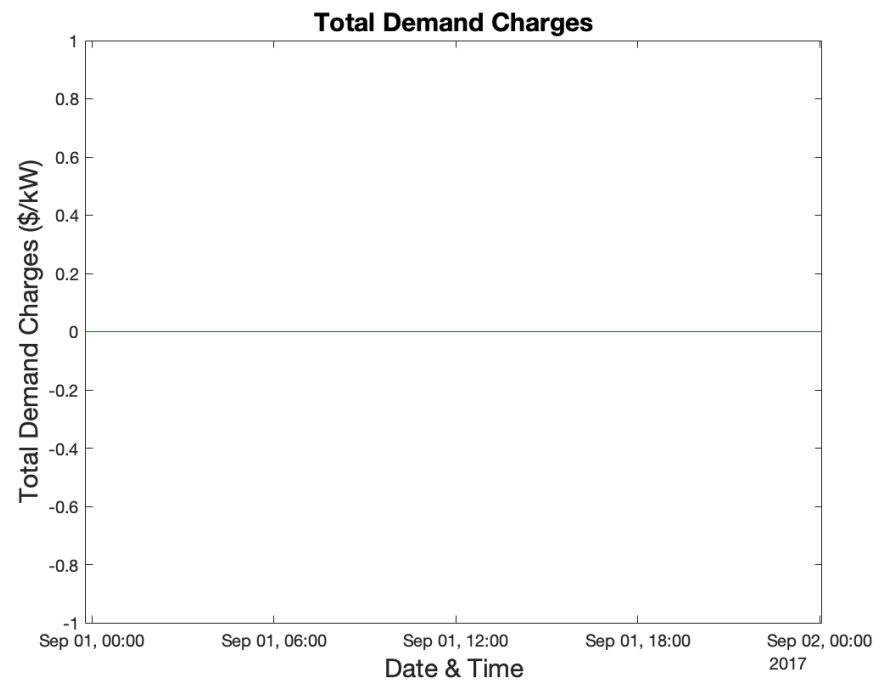
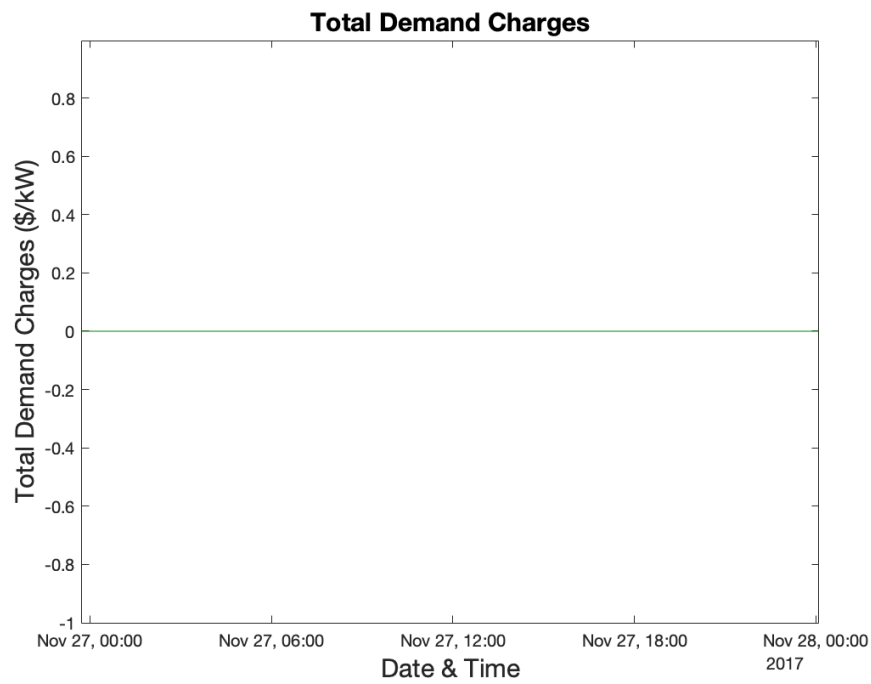
# SDG&E VGI – Energy Charges



# SDG&E VGI – Storage Dispatch



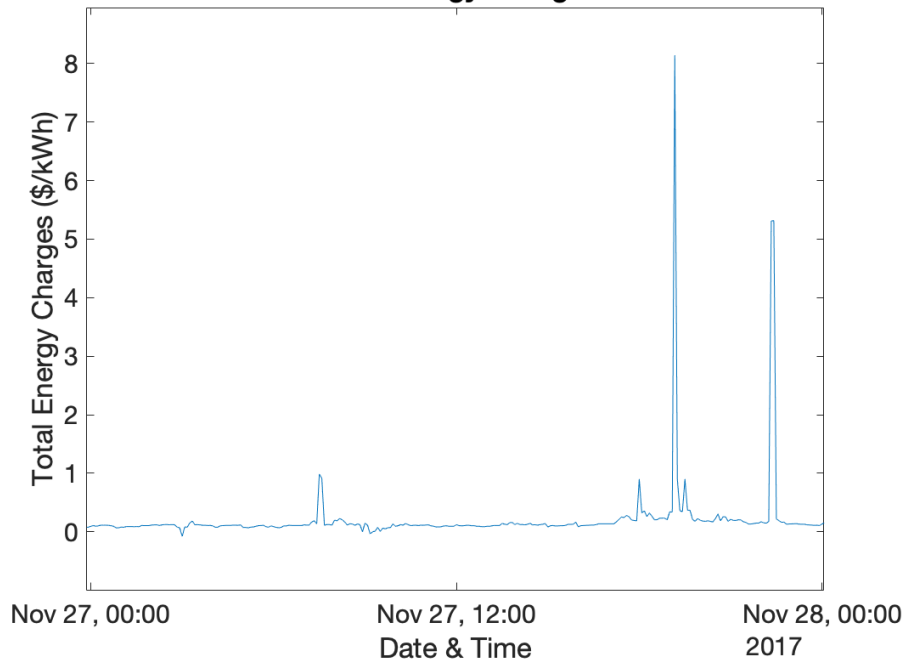
# SDG&E Modified VGI – Demand Charges



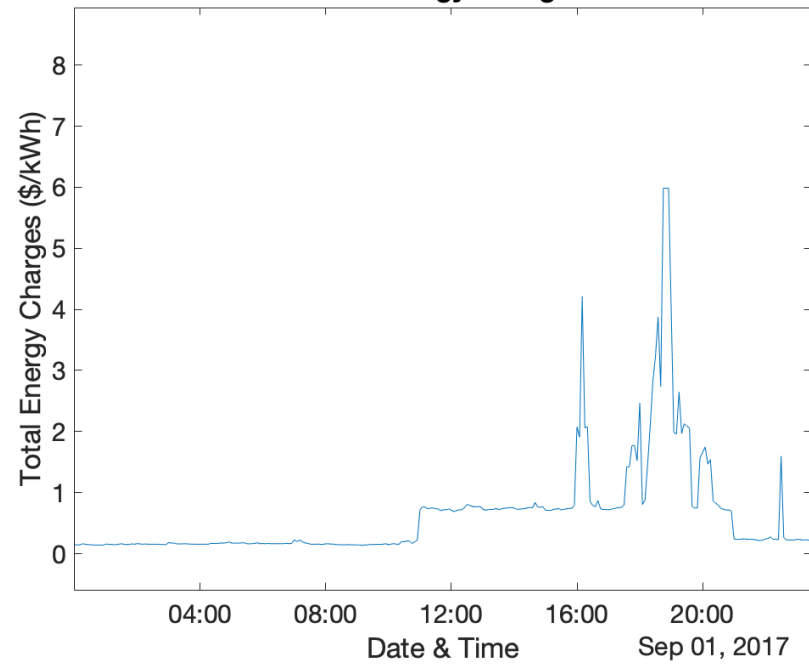
# SDG&E Modified VGI – Energy Charges



Total Energy Charges

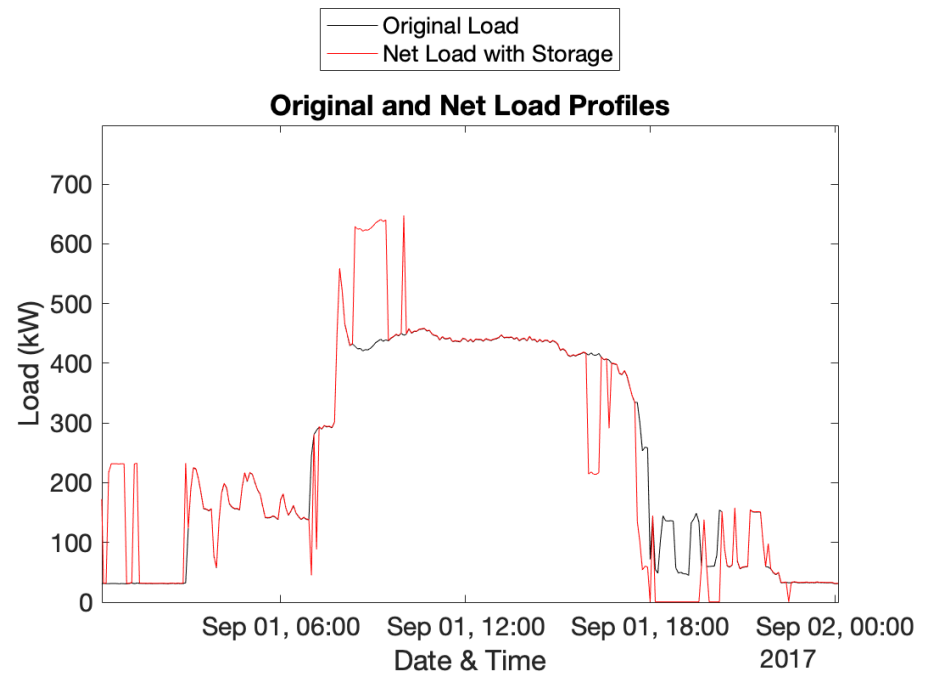
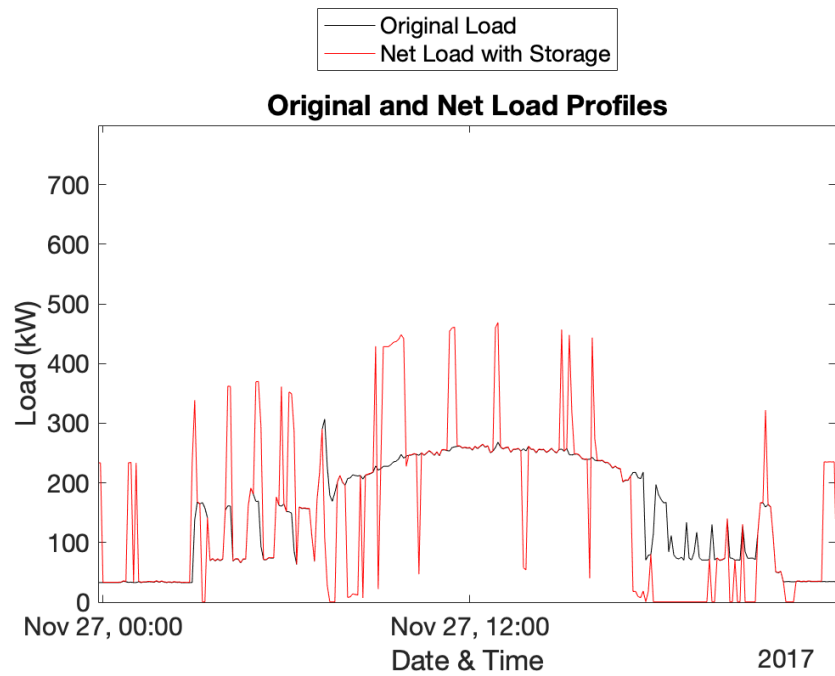


Total Energy Charges

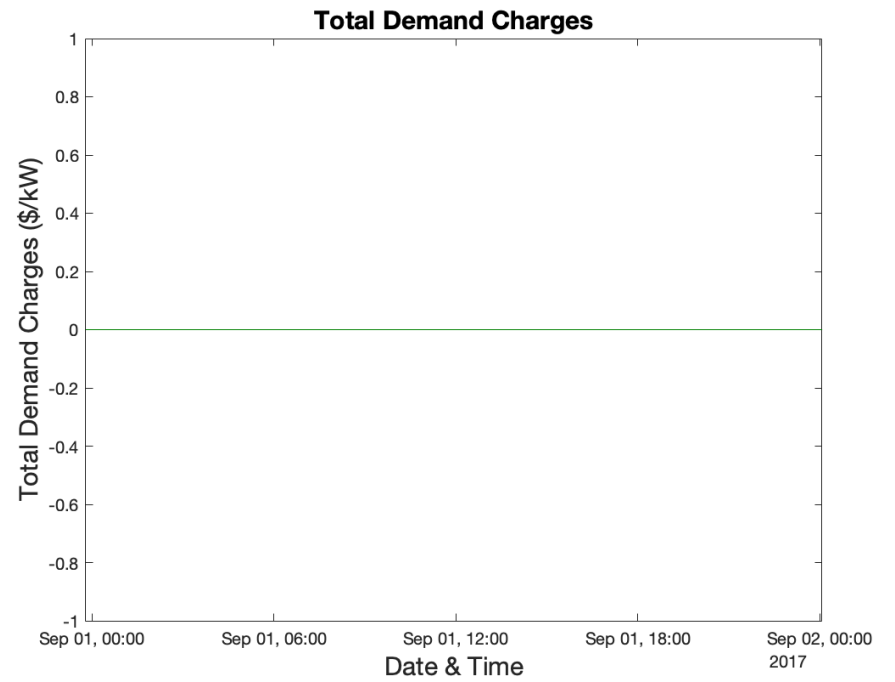
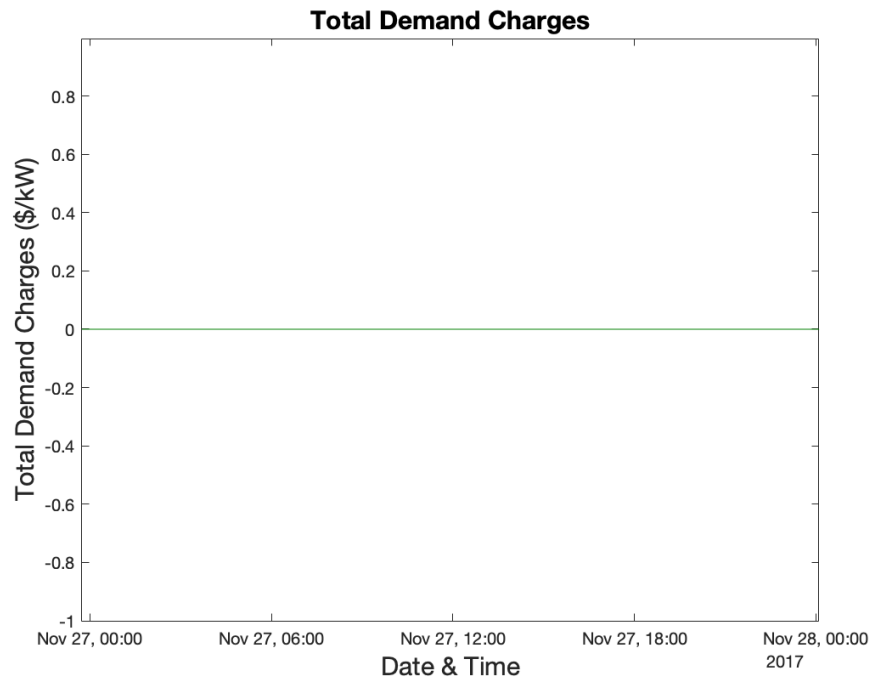




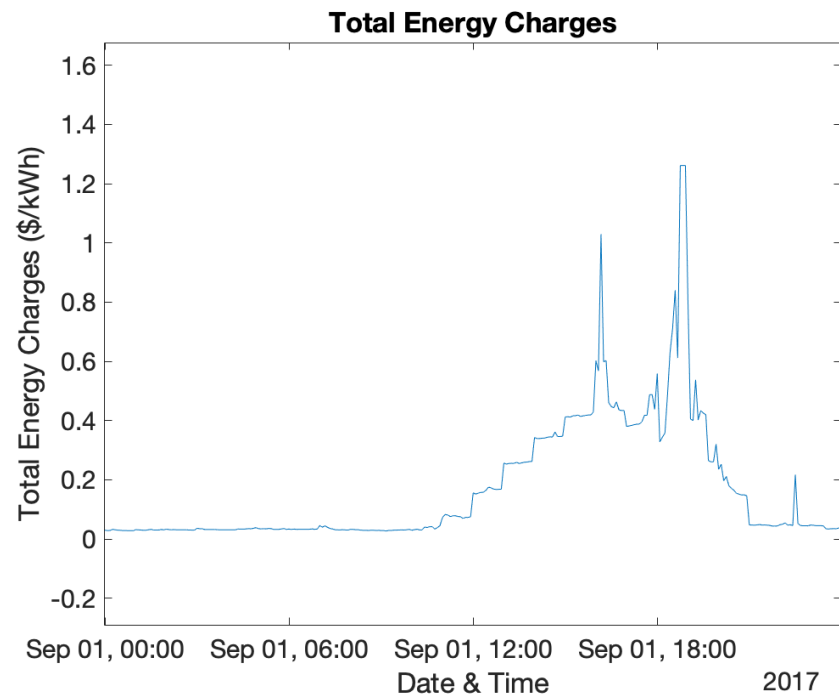
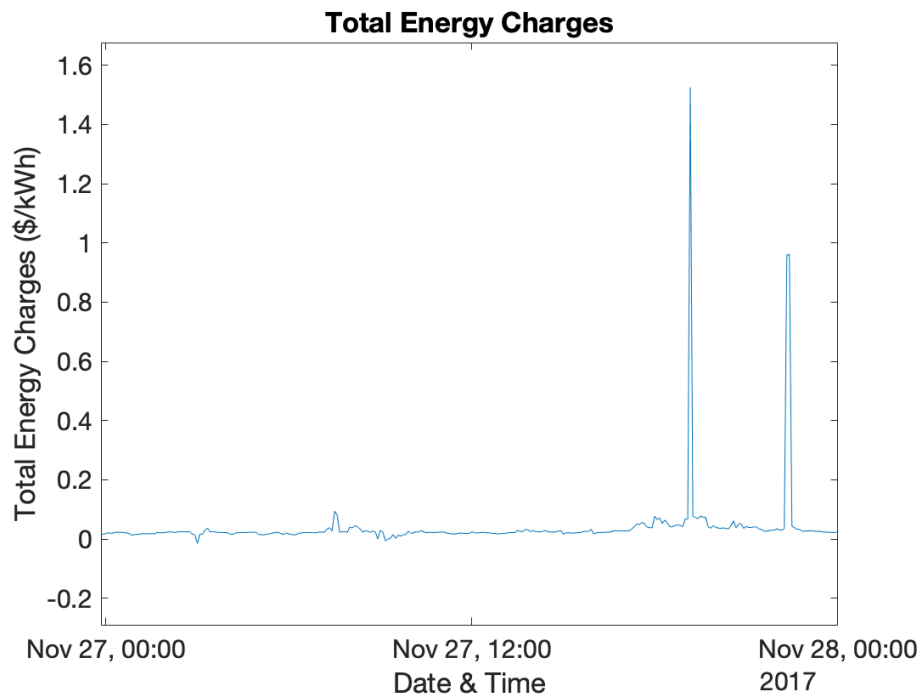
# SDG&E Modified VGI – Storage Dispatch



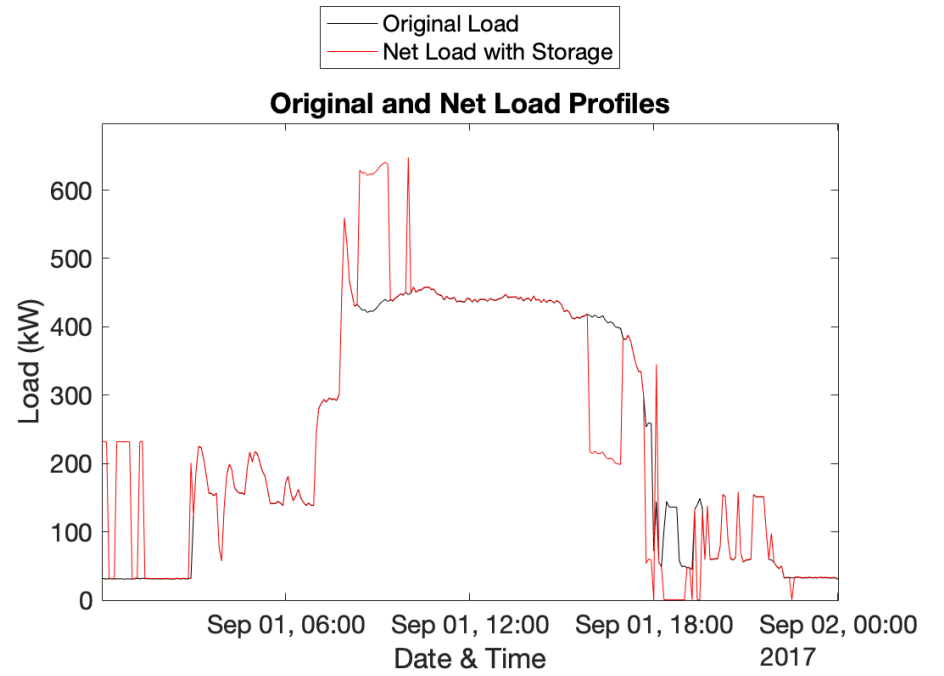
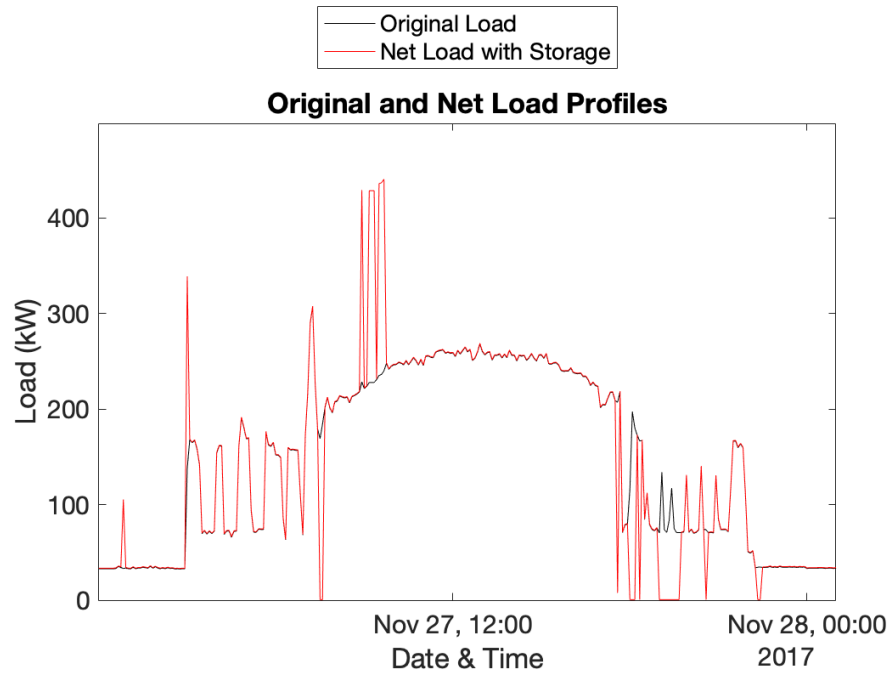
# Utility Marginal Costs – Demand Charges



# Utility Marginal Costs – Energy Charges



# Utility Marginal Costs – Storage Dispatch



## San Diego Office – Annual Savings Comparison



Rate	Utility Generation Cost Savings	Utility Distribution Cost Savings	GHG Emissions Reduction
SDG&E AL-TOU (Current)	\$1,389	\$714	1.0 metric tons/year increase
PG&E B-19S Option S (Final Decision)	-\$323	\$494	8.8 metric tons/year increase
SDG&E VGI (2018 Pilot Rate)	\$1,641	\$664	3.5 metric tons/year decrease
SDG&E Modified VGI (Proposed Rate)	\$12,784	\$665	43.1 metric tons/year decrease
Utility Marginal Costs	\$10,770	\$881	28.6 metric tons/year decrease

# Proposed Rate – Modified SDG&E VGI



Original SDG&E VGI Rate	Proposed Modified SDG&E VGI Rate
No Fixed Charges	Fixed charge based on connection voltage and kVA
No Demand Charges	No Demand Charges
CAISO Day-Ahead Hourly Price	CAISO Real-Time 5-Minute Price
\$0.14/kW Base Rate (Subtotal Base Rate + Commodity Base Rate + Distribution Base Rate)	~5x Multiplier on CAISO RT5M Price
\$0.51/kWh Commodity CPP Hourly Adder on Top 150 Day-Ahead System Peak Hours	~\$0.50/kWh Commodity CPP Adder on Top ~1800 Real-Time System Peak Intervals
\$0.51/kWh Distribution CPP Hourly Adder on Top 200 Day-Ahead Circuit Peak Hours	~\$0.50/kWh Distribution CPP Adder on Top ~2400 Real-Time Circuit Peak Intervals
No power factor/kVAR charges	Dynamic \$/kWh and \$/kVARh adders based on circuit loading, voltage at meter (based on Volt-VAR/Volt-Watt curves).