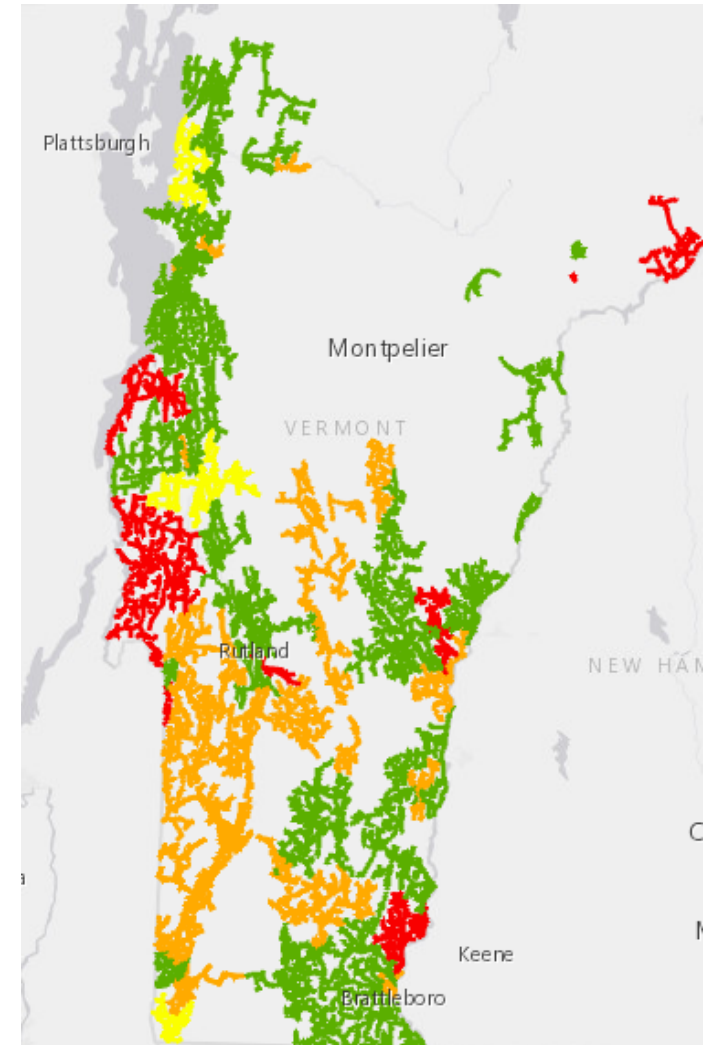
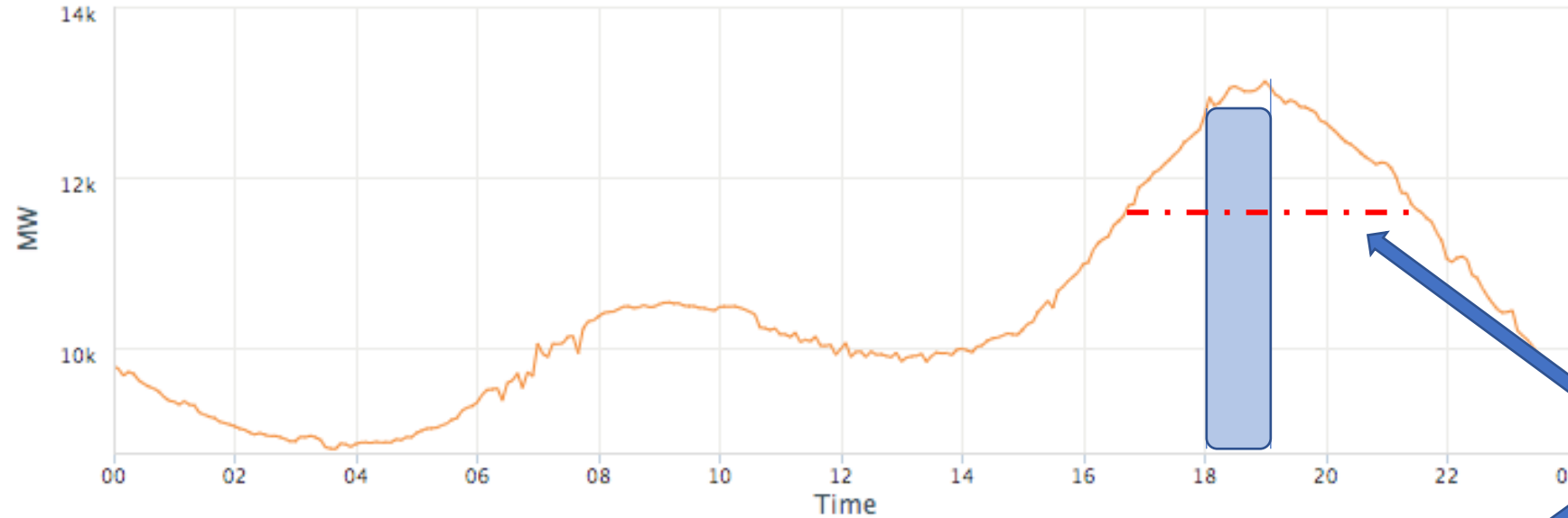


WHY ENERGY STORAGE IS IMPORTANT IN VERMONT

- ▶ **Resilience:** stay up and running during storms, which have become more frequent & severe in Vermont due to climate change
- ▶ **Affordability:** cost-effective, seamless backup power, plus peak shaving drives down costs for all customers
- ▶ **Grid flexibility:** provides GMP new tools to manage an increasingly distributed grid & support more renewables
- ▶ **Carbon reduction:** batteries charge off low-emission supply and displace dirty peaks



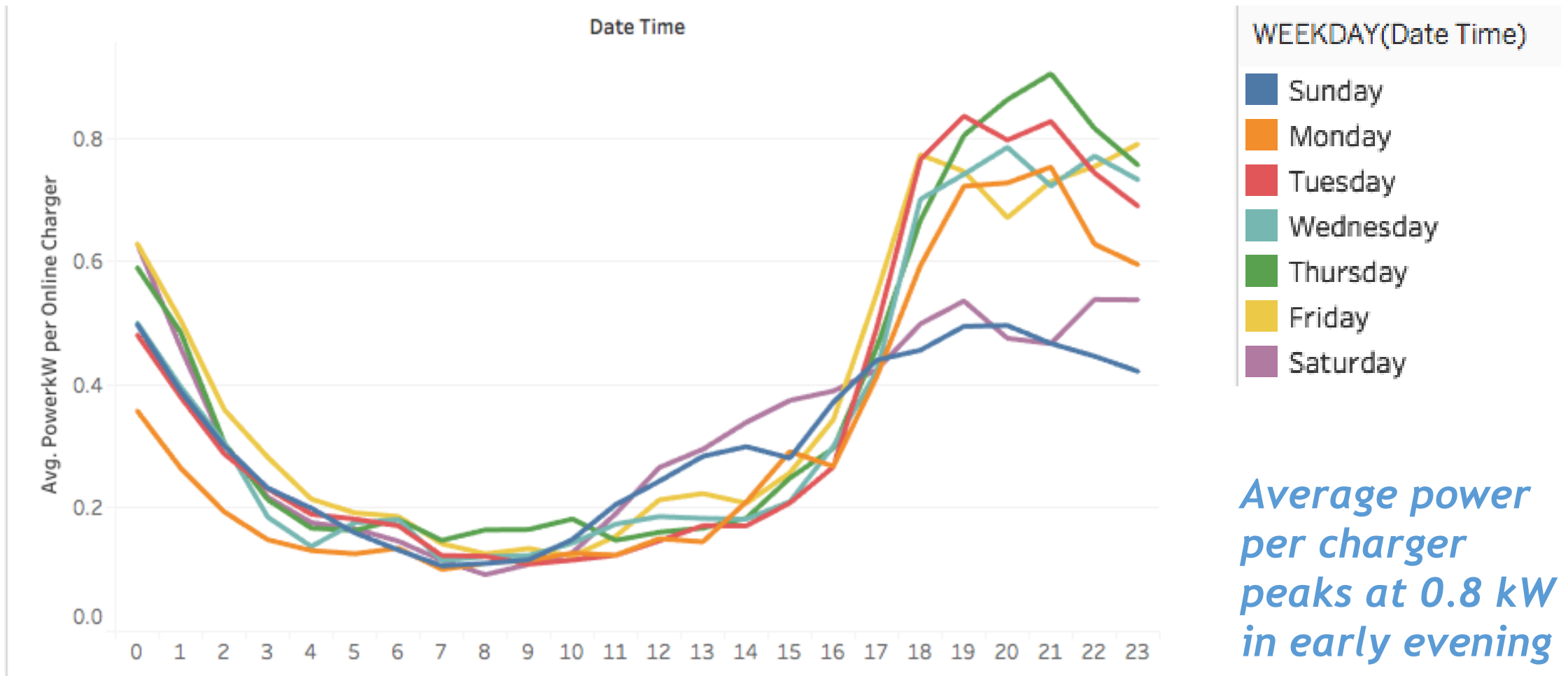
PEAK SHAVING 101: GENERATE SAVINGS FOR ALL CUSTOMERS



- ▶ GMP power supply costs driven by single hour of highest VT demand each month
- ▶ Batteries clip or lower the peaks by discharging



EV DATA FROM UNCONTROLLED DAYS



Average power per charger peaks at 0.8 kW in early evening

EV SATURATION TESTING

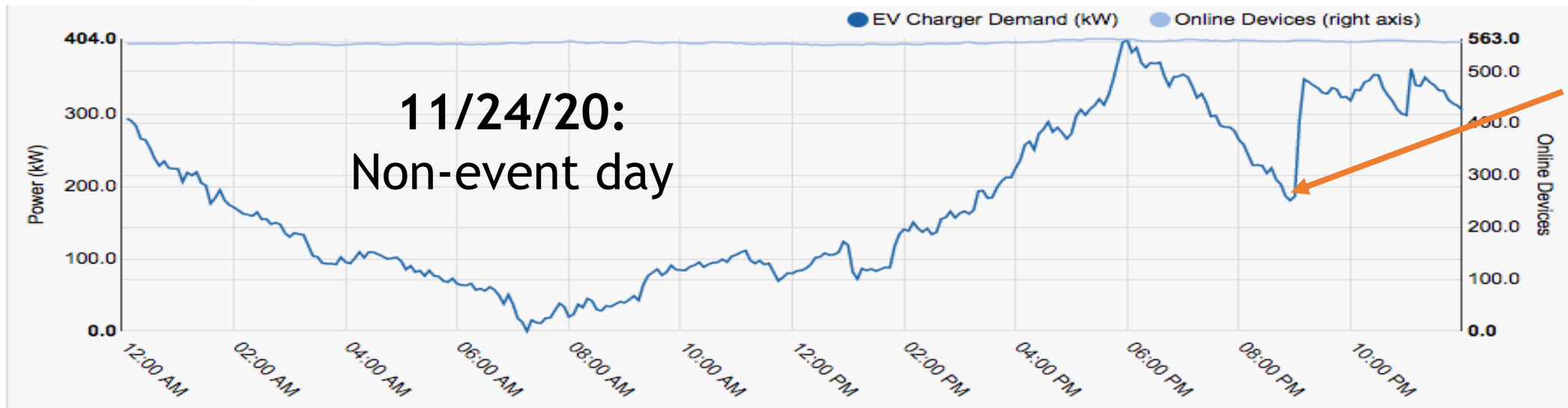
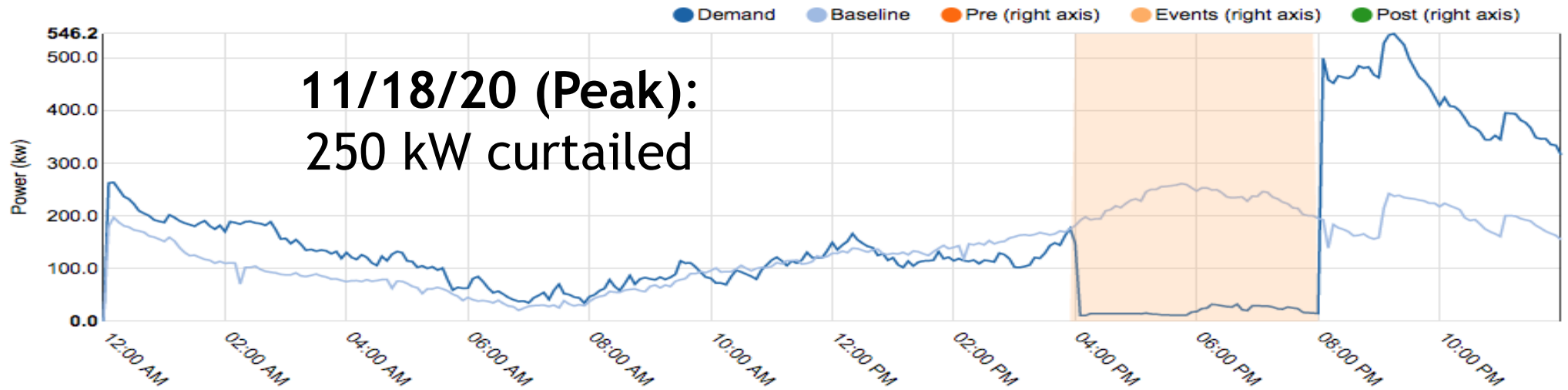
Circuit	Residential Customers	5 KVA Transformers	7.5 KVA Transformers	10 KVA Transformers	15 KVA Transformers	Case	Overloaded Fuses	Overloaded Sections of Conductors and Cables	Overloaded Regulators	Overloaded Reclosers
5F-G20	1626	166	4	375	362	Base	0	0	0	0
						Add EV to 50% of residences	4	1	0	0
						Add EV to 100% of residences	6	3	2	4

*Example from Circuit Saturation Run

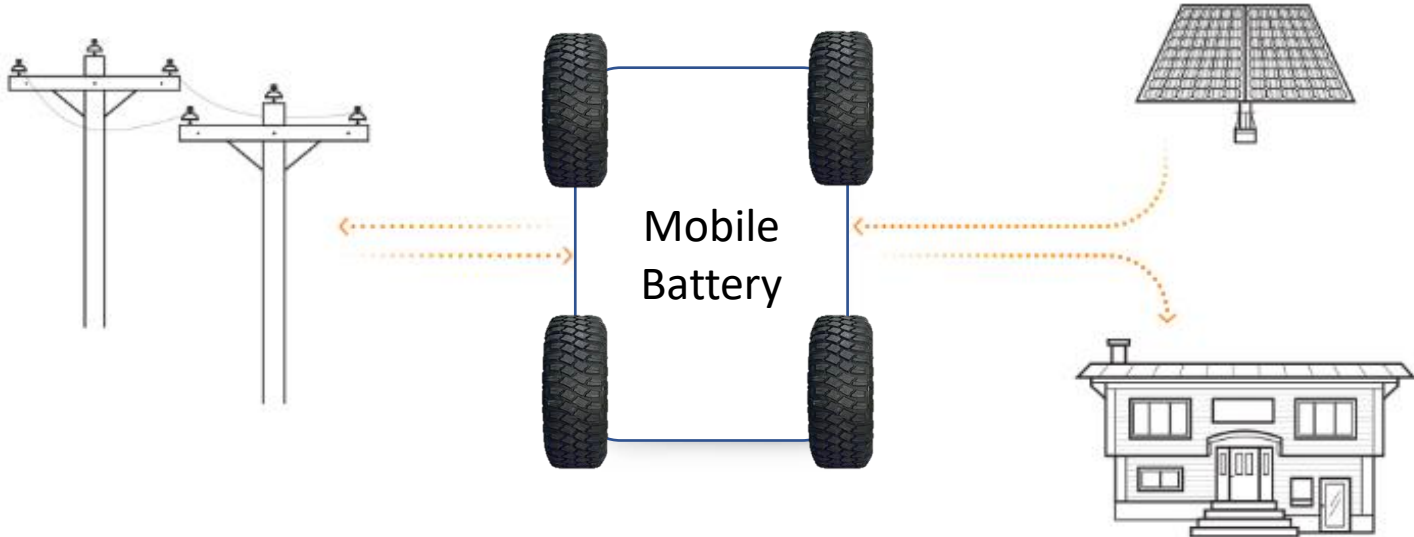
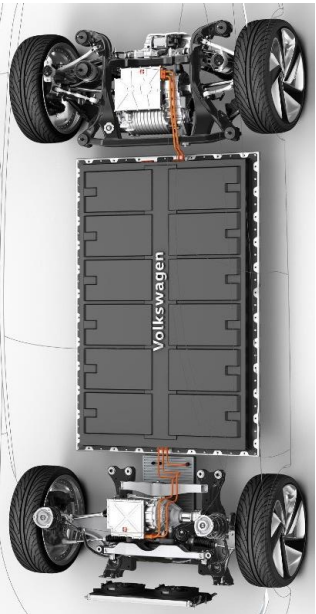
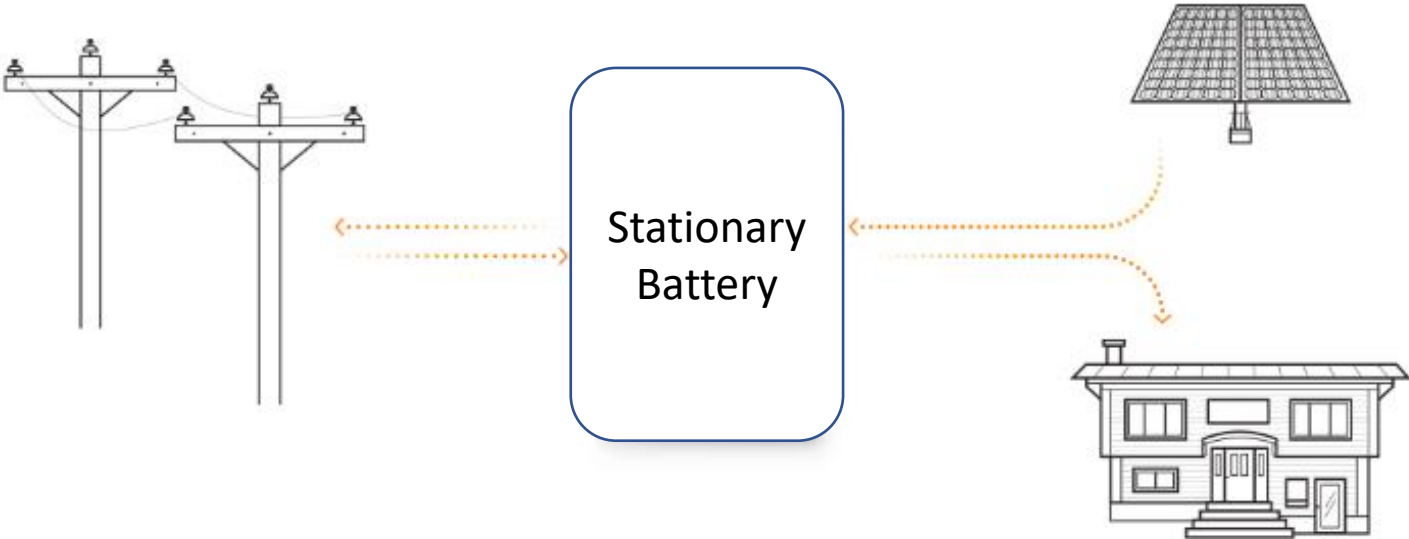
- We took 10 circuits spread out across the State, applied 50% and 100% residential uptake of EV's, and ran load flows
- We assumed NO load control in this modeling
- Results show that we do not run into significant distribution limitations beyond some specific device changeouts.

PEAK MANAGEMENT RESULTS

550 total EVs



It's 9pm, do you know where your EV is?



GMP FLEET

	Pre-2013	2013-2016	2017+
CAR	1	2	4
SUV	14	17	12
SM PKUP	8	20	32
MD PKUP	10	31	18
LG PKUP	6	3	4
Pick Up	0	0	1
Jeep	1	0	0
Bucket	24	17	29

254 vehicles total



GMP FLEET ELECTRIFICATION

Our goal: 100% light-duty EV by 2025, then keep going

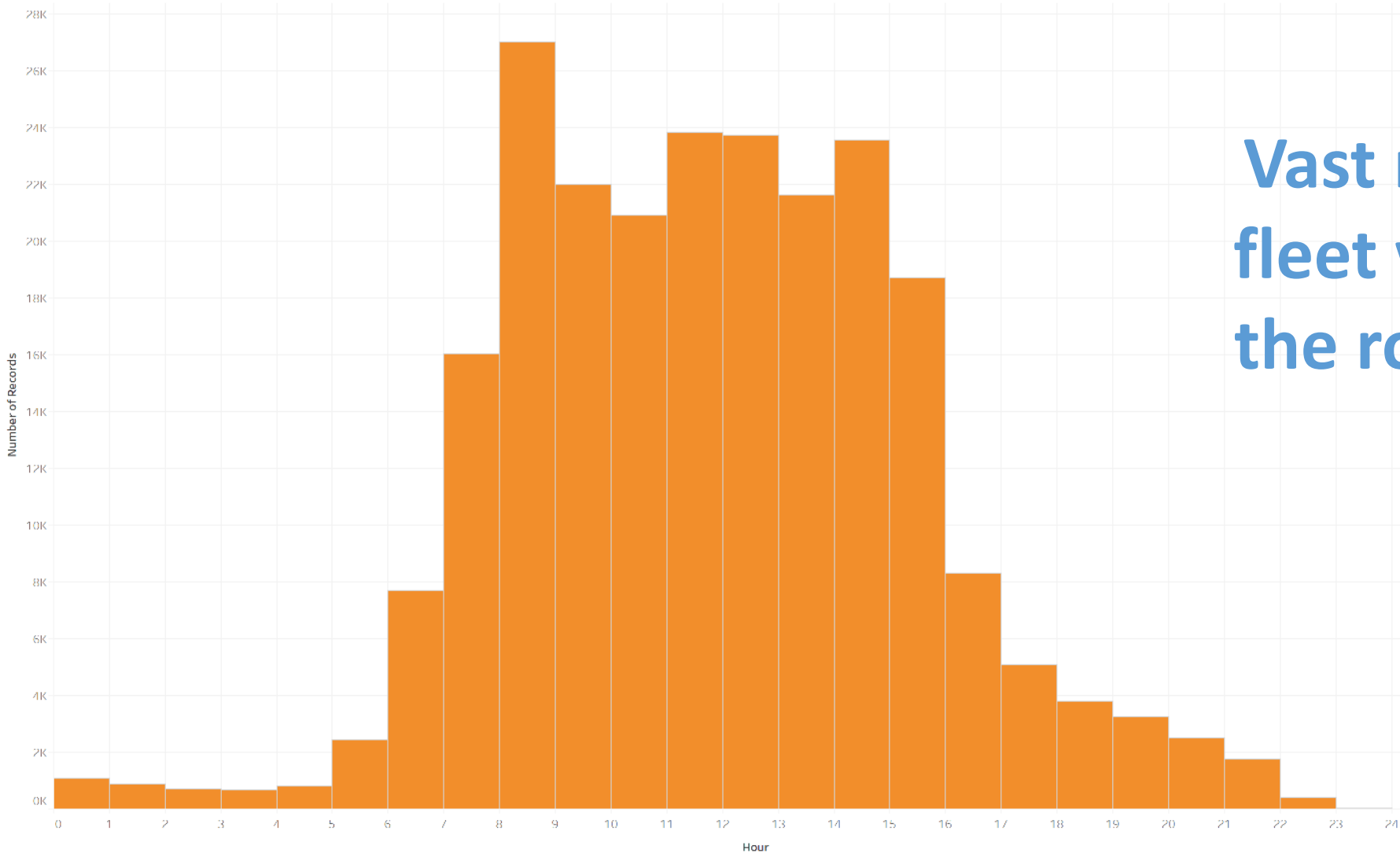


**Drive Electric
PLEDGE**

Sign the Pledge!

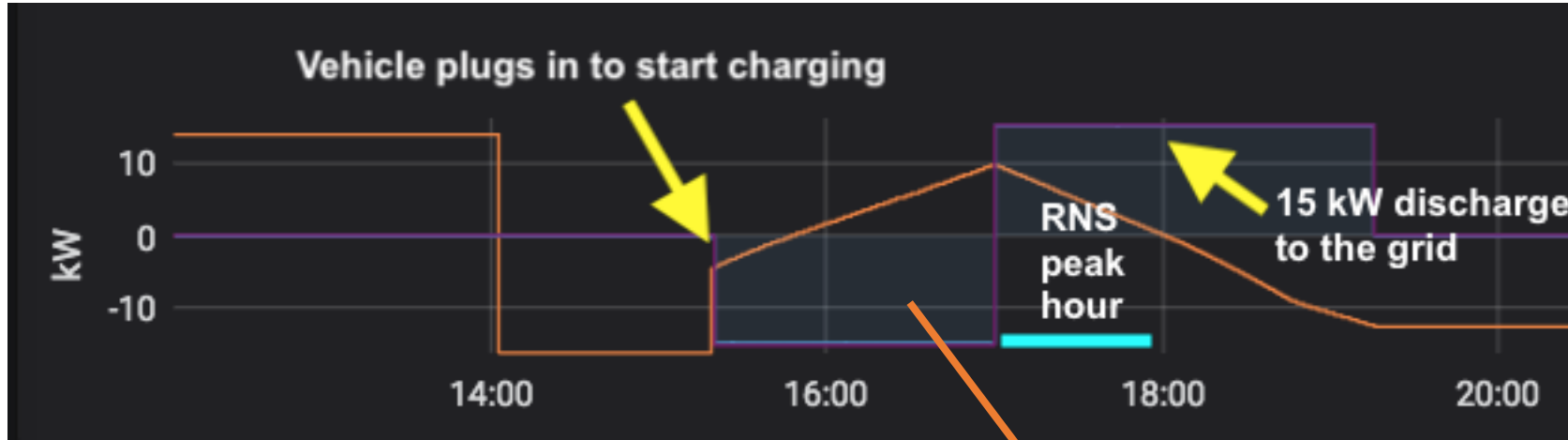
A graphic for the "Drive Electric Pledge" featuring a background of a forest and mountains. The text "Drive Electric PLEDGE" is prominently displayed in white, with a yellow plug icon on either side. Below the text is an orange button that says "Sign the Pledge!".

GMP FLEET ELECTRIFICATION



Vast majority of fleet vehicles off the road by 4pm

V2G IN OUR OWN FLEET



EXPANDING TO HEAVY DUTY



336 kWh truck battery, 60 kW bidirectional charger



Thank you!

Questions?

graham.turk@greenmountainpower.com

Real place in
Vermont