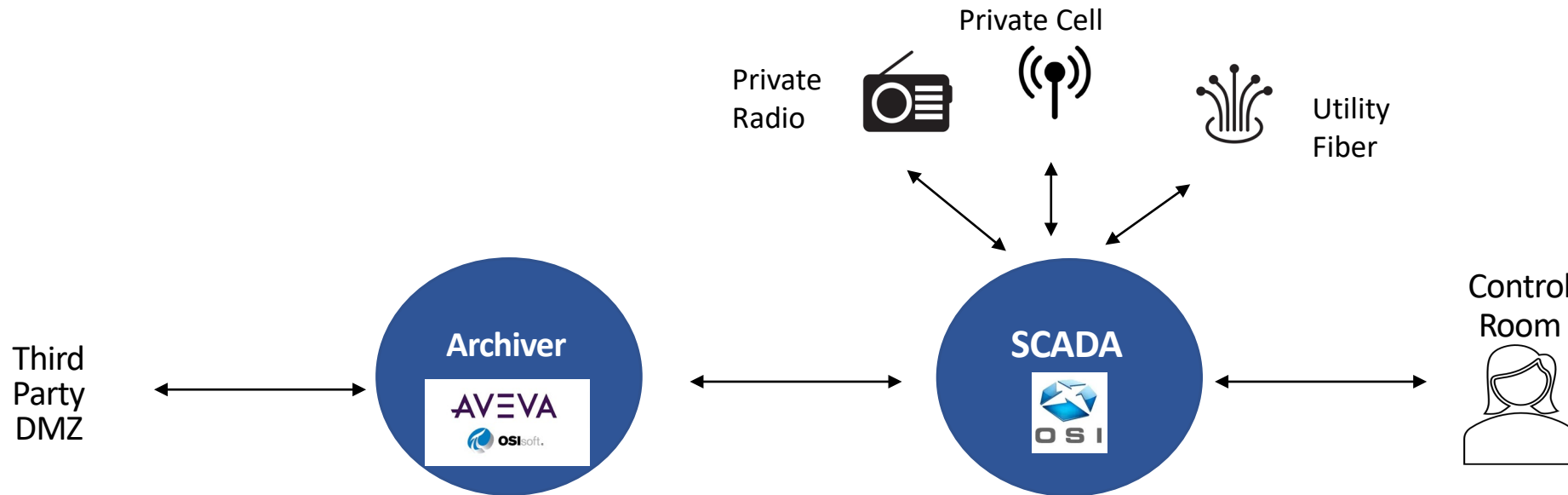
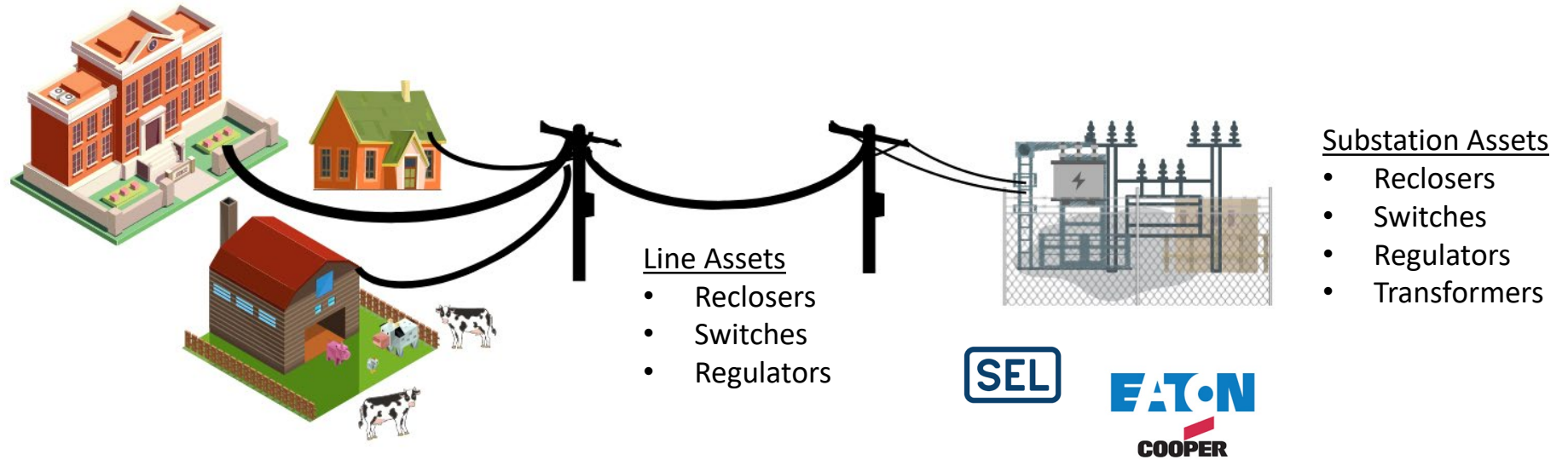




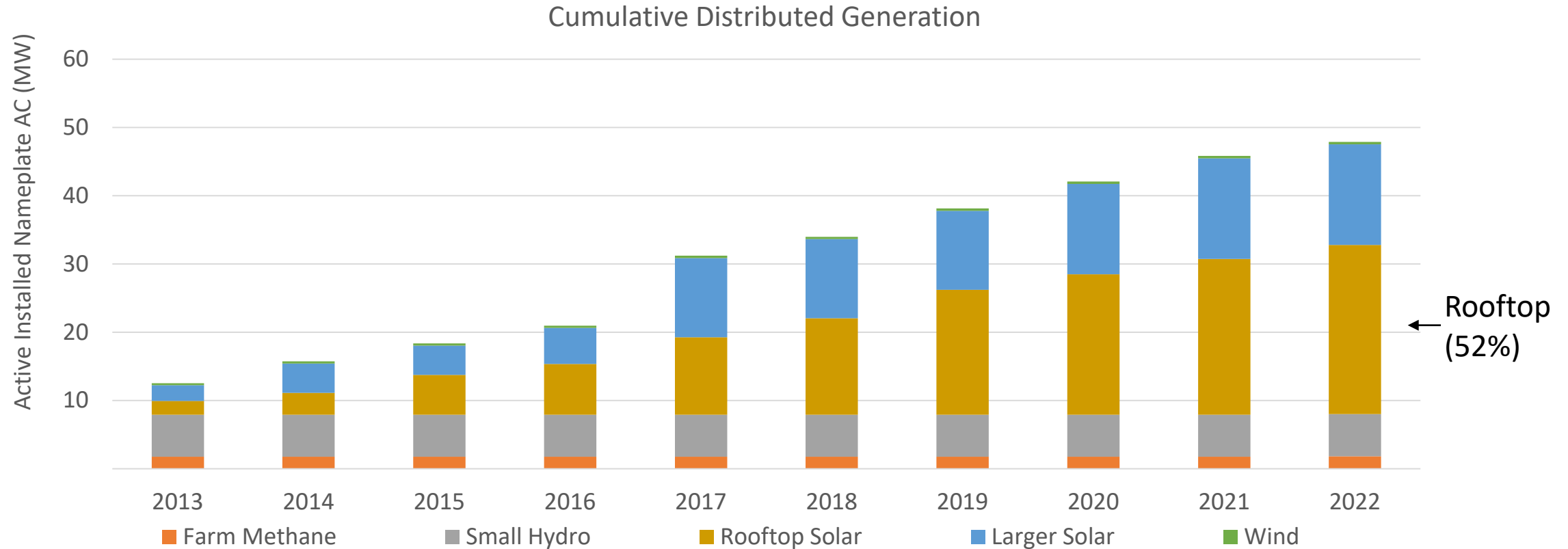
*VSPC Technical
Working Group
Overview on DER
Communications/
Control*

Founded in 1938, Vermont Electric Cooperative is a member owned electric distribution utility that provides safe, affordable, and reliable energy services.

Traditional Communications and Control



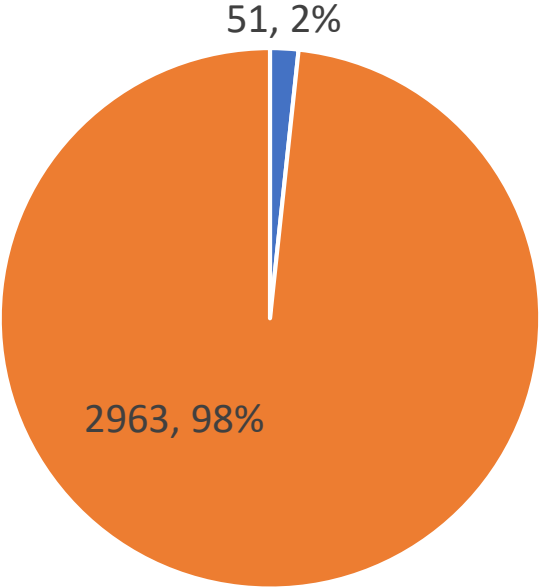
What kind of DG growth are we seeing?



- Vermont is 7th per capita in the USA for solar growth
- VEC Peak Load – 87 MW at 7PM
- Spring and Fall Peak midday loads around 34 MW
- Several substations with reverse flow, sporadic voltage issues

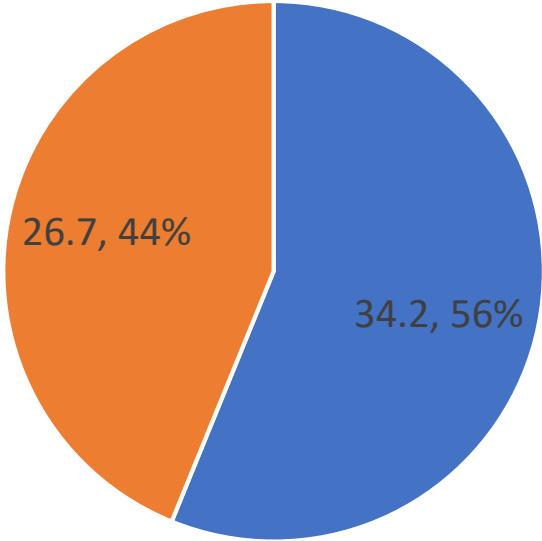
Real-Time Visibility and Control of DG

Number of Facilities



■ Control and Visibility ■ No Control/Visibility

Size (MW)

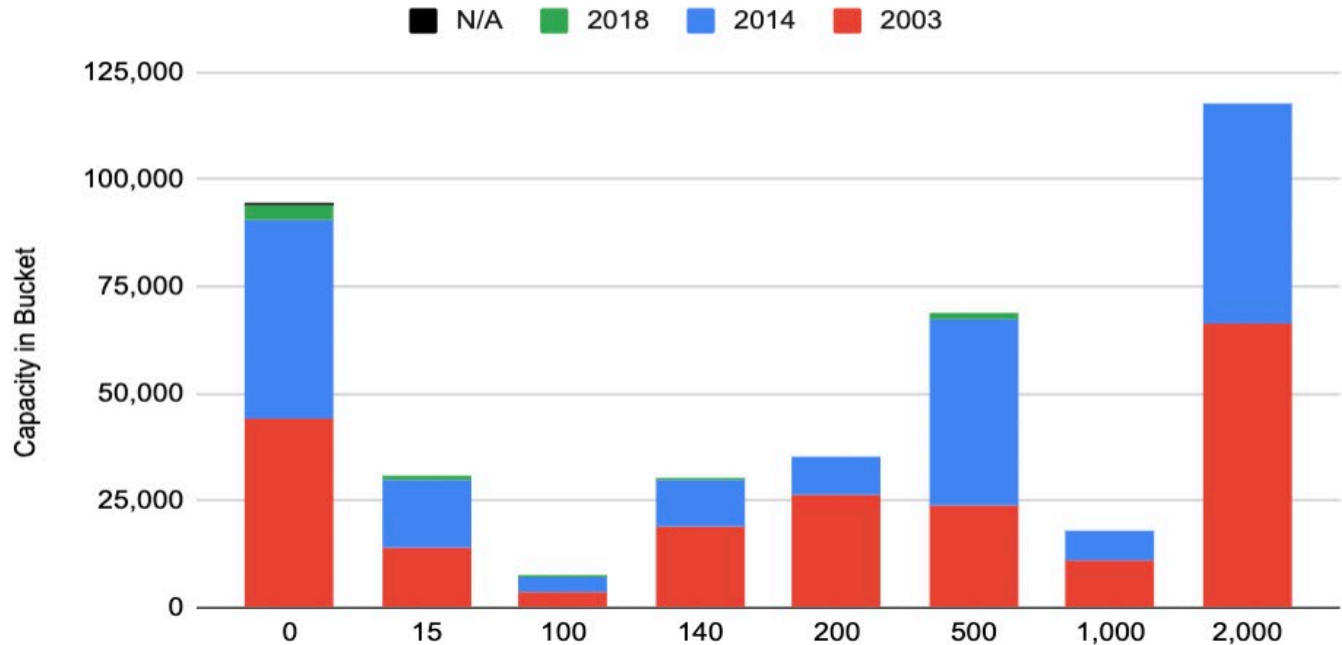


■ Control and Visibility ■ No Control/Visibility

- Control is in this case is typically through a SCADA controlled motor operated switch, recloser or secondary contactor
- At this time no communications directly to inverter (no Volt/VAR)

Inverter Controls and Communications

Total capacity by installation capacity bucket

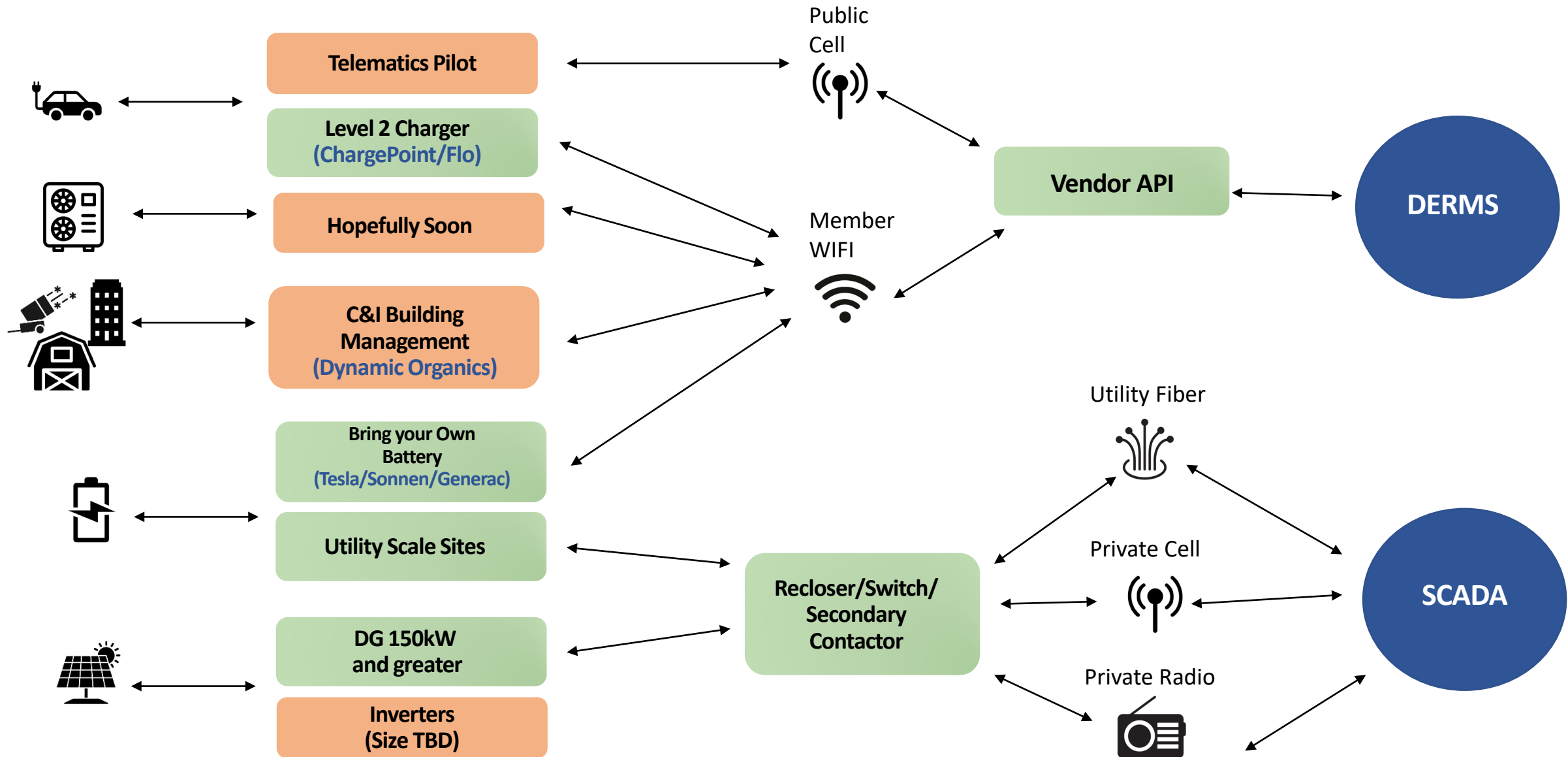


- How do we alter 2014 settings, potentially enable Volt/VAR curves
- New Projects
- Compensation for VAR output?

- 2003 – Only anti-islanding
- 2014 – Voltage and Frequency Ride Through capable
- 2018 – Voltage and Frequency Ride Through preset (ISONE SRD)



What about EV's Batteries and Heat Pumps?



Grid Orchestration to Maintain Reliability and Affordability

