

Paris Session 2022



Effective Coordination of DER Smart Inverter Functions & Conventional Voltage Regulation Equipment

SC C6 - PS2 – Q2.6

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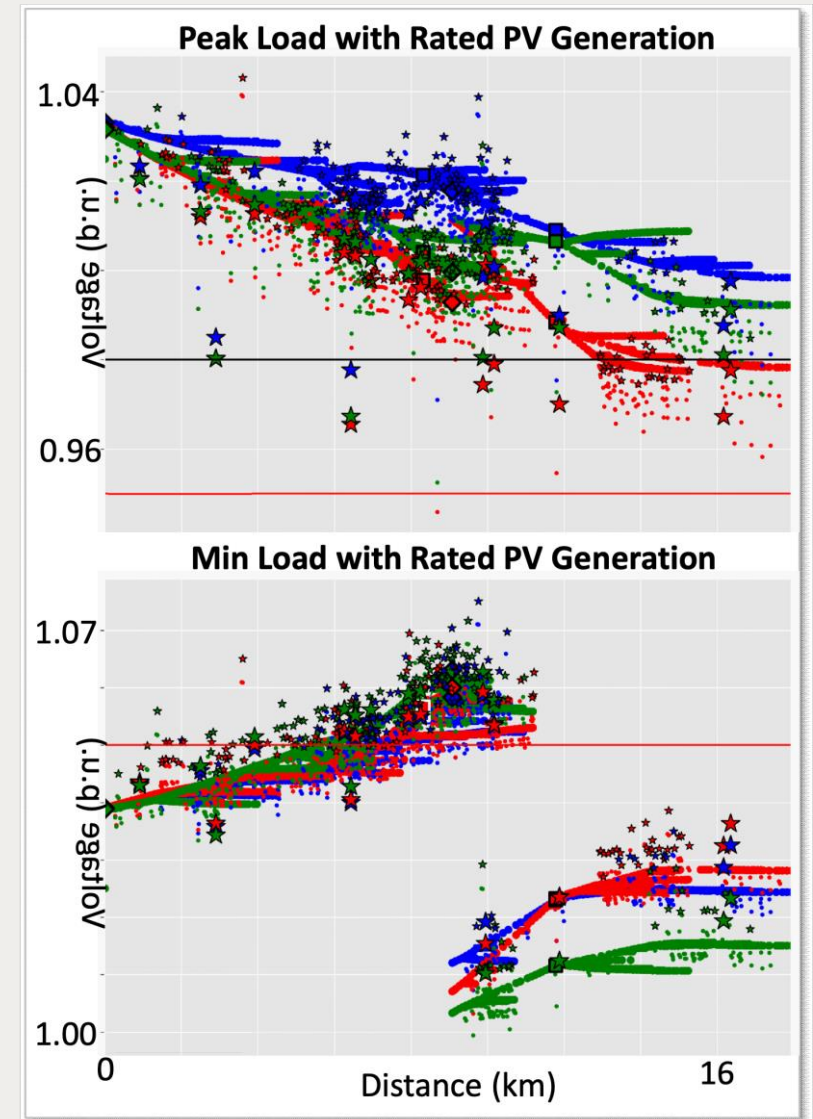
Group Discussion Meeting

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Increasing Complexity of Voltage Regulation

- Conventionally, voltages are regulated with locally controlled on-load tap changers, voltage regulators, and (switched) capacitor banks
- DER smart inverter (SI) functions are becoming increasingly available and adopted
- SI functions can mitigate DER voltage impacts but effective coordination of SI functions with conventional voltage regulation equipment is not trivial



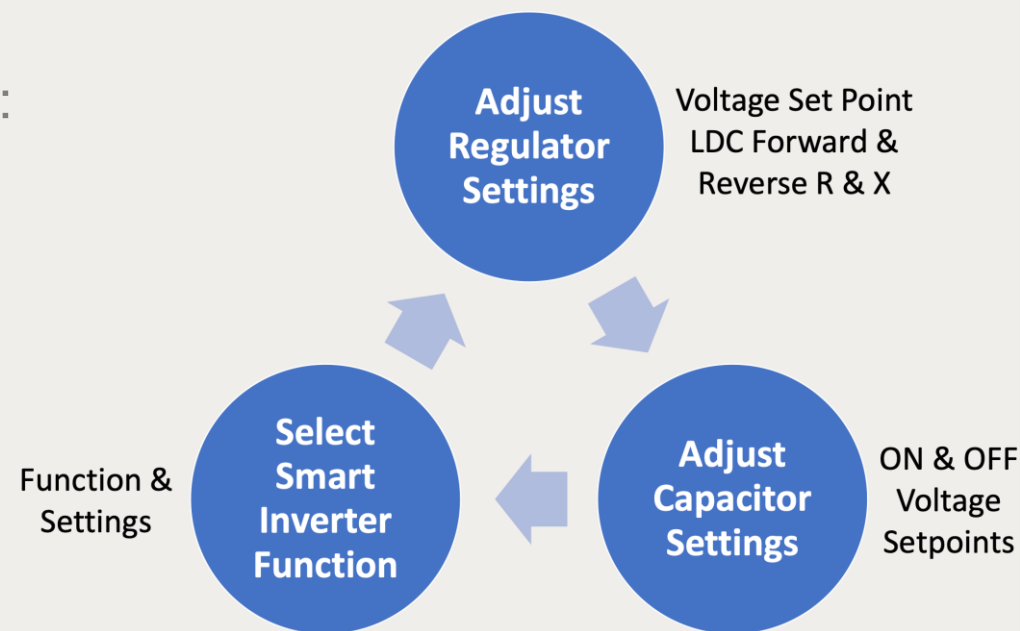
Effective Coordination Has Value

EPRI NYSERDA Project:

- Developed a refined approach to coordinate conventional voltage regulation equipment and smart inverters
- Compared the techno-economic impact and value of:
 - Different coordination approaches
 - Conventional voltage regulation upgrades vs. smart inverters
- Key findings:
 - Smart inverters support integrating more DER before upgrades are needed
 - Effective coordination can accommodate more DER than smart inverters or conventional equipment alone

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Sequential Coordination



Impacts to DER Owners

EPRI – PG&E Project:

- Analyzed the techno-economic impact and value of smart inverter functions of small behind-the-meter PV
- Volt-var and other reactive power functions (with reactive power priority) *may* lead to DER generation curtailment and increased DER inverter utilization
- Volt-Watt and other active power functions *may* cause DER generation curtailment
- Based on the project, the impacts are likely negligible for almost all DER provided that the customer voltages are maintained within the standard ranges
- Recommendation: Identify potential outlier cases to avoid non-negligible impacts to some DER

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