

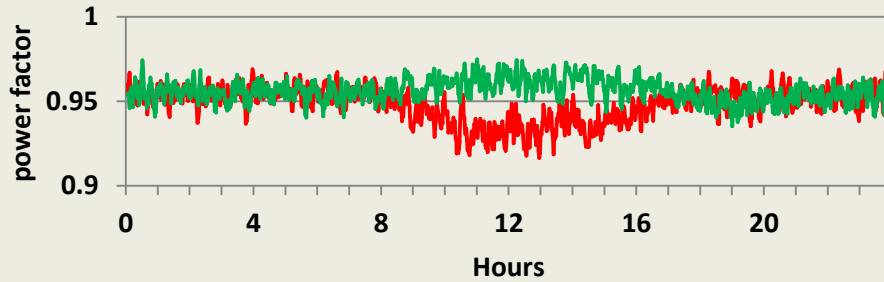
Inverter VAR Support

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- U.S. standards
 - IEEE 1547, UL 1741
 - Grid-connected PV systems operate at unity power factor
 - Current interconnection requirements will need to be evolved
- Advantages
 - Can vary quickly and continuously
 - Can better match demand
 - Does not vary with voltage
- Goals
 - Implement inverter behavior into MATLAB/Simulink model
 - Assess effect of inverter VAR support on power factor, losses, voltage profile
 - Investigate interactions/contingencies/tradeoffs of inverter VAR support with capacitor banks and energy storage

5% PV Penetration



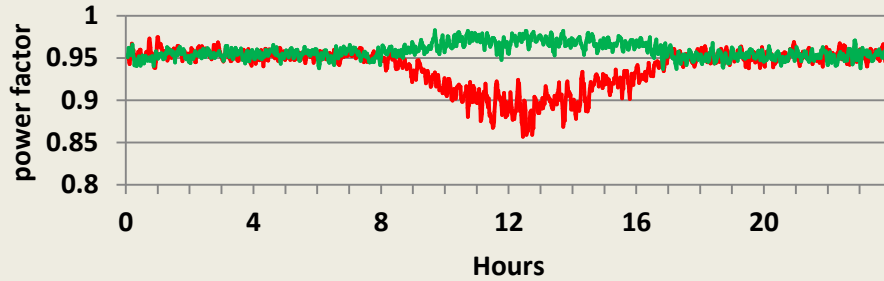
no IQ
IQ

Reduced Losses:

7.3%

8.4%

10% PV Penetration

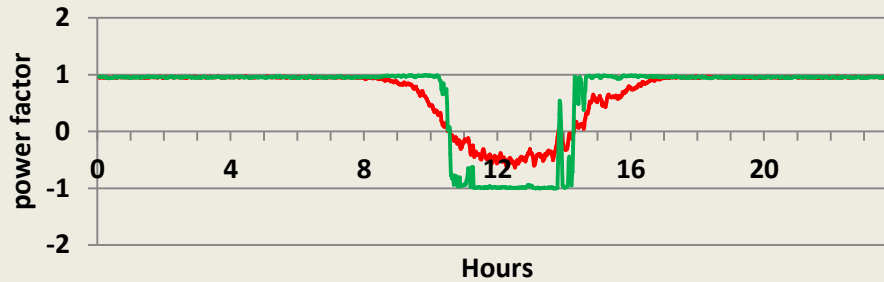


no IQ
IQ

14.2%

16.0%

30% PV Penetration



no IQ
IQ

30.4%

30.4%