**Existing PV system**

- Set P-Hz droop or Hi Hz cutoff for each array 0.2 Hz apart.

**Motorized power breaker with PLC**

- Intertie relay controller (Sync + anti-island detection meter)

**Microgrid with existing or new PV application**

- Basic: Microgrid, demand response and photo-voltaic application
  - Set to microgrid mode with each machine on same P-Hz setting
  - Enables perfect load sharing amongst PEMS units and control of the solar inverters production when islanded

- Advanced: Microgrid, demand response and photo-voltaic application
  - On-grid dispatch constantly adjusted by remote or 3rd party client site based controller
  - Off-grid operation controlled by PEMS and PV inverter (f-function)

**Demand response application ADVANCED using external 3rd party or PPS controller**

- Production dispatch constantly adjusted by remote or client site based controller

**Demand response application BASIC using internal PEMS controls**

- Production dispatch constantly adjusted by simple preprogrammed internal “baseline” peak demand threshold and/or “Time of use” schedule

**Demand response application ADVANCED using external 3rd party or PPS controller**

- Production dispatch constantly adjusted by remote or client site based controller

**Legend**

- Inverter
- Battery pack
- Electricity meter, for control or utility metering
- Third party controller, typically a mix of cloud and local control. Provider of dispatch power levels. Typically not in control of microgrid breaker
- Auto transformer – not isolated
- Delta: Wye transformer isolated
- Photo-voltaic array
- UPS/Inverter with 1:1 D:Y transformer on transformer port in UL approved configuration connected to battery system
- Self contained switch located at load or source
- Utility meter
- Demand response meter

**From Demand Response through to Microgrids**

- 250 kW - 500 kWh model pictured here

**PLC / CTRL MODBUS TCP / 485**