CLAIMS

What is claimed is:

1. A system for controlling islanding, comprising:

a multi-port meter comprising:

a grid port configured for connecting the meter to an electric power grid;

an auxiliary port configured for connecting the meter to an external inverter;

a load port configured for connecting the meter to a premises load;

a grid switch connected to the grid port and configured for connecting the grid port to the load port and an auxiliary switch;

the auxiliary switch connected to the auxiliary port and configured for connecting the auxiliary port to the grid switch and the load port; and

a processing unit configured for processing power grid data measured by the meter and controlling states of the grid switch and the auxiliary switch; and

the inverter, wherein the inverter is connected to a distributed energy resource device and is configurable for operating in a grid-forming mode, wherein an inverter output transitions from a grid-following mode to the grid-forming mode when the grid switch transitions from a closed state to an open state, wherein the grid-following mode provides a synchronous output which tracks voltage, frequency, and phase of the electric power grid and the grid-forming mode provides an isochronous output which uses an inverter-generated voltage, frequency, and phase.

2. The system of claim 1, wherein the processing unit is configured to control the grid switch to the open state when the power grid data measured by the meter indicates a power outage.

3. The system of claim 2, wherein the meter further includes a communication module for communicating with a remote system and the processing unit is configured to control the grid switch to the open state in response to the communication module receiving a command from the remote system to open the grid switch.

4. The system of claim 1, wherein the meter further includes a communication module for communicating with the inverter and the communication module sends a message to the

inverter to transition from the grid-following mode to the grid-forming mode when the processing unit controls the grid switch to transition from the closed state to the open state.

5. The system of claim 1, wherein the inverter monitors the electric power grid, and the inverter output transitions from the grid-following mode to the grid-forming mode when the inverter detects a power outage.

6. The system of claim 1, wherein the inverter monitors an impedance of the auxiliary port and the inverter output transitions from the grid-following mode to the grid-forming mode when the inverter detects an impedance outside a predetermined threshold that corresponds to an open state of the grid switch.

7. The system of claim 2, wherein the processing unit is configured to detect an end of the power outage, determine when the inverter is providing the synchronous output, and control the grid switch to transition from the open state to the closed state.

8. The system of claim 1, wherein the inverter has multiple outputs, the multiple outputs of the inverter are connected to an automatic transfer switch system, and the automatic transfer switch system is connected to the auxiliary port.

9. A method for disconnecting an inverter from an electric power grid and entering islanding mode comprising:

operating the inverter and a multi-port meter in grid-following mode, wherein while operating in the grid-following mode, the inverter provides a synchronous output and the multi-port meter controls a grid switch and an auxiliary switch to connect the synchronous output of the inverter and an electric power grid to a premises load;

while operating in the grid-following mode, determining by the inverter to transition to a grid-forming mode;

communicating, from the inverter to the multi-port meter, a command to transition to the grid-forming mode;

transitioning the synchronous output to an isochronous output; and

operating the inverter and the multi-port meter in the grid-forming mode, wherein while operating in the grid-forming mode, the multi-port meter controls the grid switch and the

auxiliary switch to connect the isochronous output of the inverter to the premises load and to disconnect the multi-port meter from the electric power grid.

10. The method of claim 9, wherein determining by the inverter to transition to the grid-forming mode, comprises receiving, by the inverter a command from a remote system to transition to the grid-forming mode, detecting, by the inverter a loss of power on the electric power grid, or detecting, by the inverter an impedance outside a predetermined threshold that corresponds to an open state of the grid switch.

11. The method of claim 9, wherein the inverter provides a synchronous output by tracking a voltage, a frequency, and a phase of the electric power grid.

12. The method of claim 9, wherein in response to receiving the command to transition to the grid-forming mode from the inverter, the multi-port meter controls the grid switch to an open state.