CLAIMS:

1. A system for disaggregating electrical data from a plurality of distributed energy resource (DER) devices of a premises, the system comprising:

a multi-port electric meter comprising: (i) a grid port configured for connecting the multi-port electric meter to an electric power grid, and (ii) one or more DER circuit ports each configured for connecting the multi-port electric meter to a circuit having two or more DER devices on at least one DER circuit port;

a data collector configured to collect data from a plurality of data channels, at least one data channel comprising an electrical data channel and corresponding to a respective one of the DER circuit ports, and at least one data channel comprising a non-electrical data channel; and

a processor configured to:

input the collected data from the plurality of data channels into a classifier to classify the collected electrical data into one or more classes; and

estimating an electrical usage and/or generation value of one or more of the DER devices based on the output classification of the classifier.

2. The system of claim 1, wherein the at least one data channel comprising a non-electrical data channel comprises an environmental and/or geographical data channel.

3. The system of claim 2, wherein the collected non-electrical data comprises one or more of weather data and/or geographical location data.

4. The system of claim 1, wherein the data collector collects data in said electrical data channel at a first sampling rate, and wherein first sampling rate is between 1Hz and 1MHz.

5. The system of claim 4, wherein the processor is configured to perform said steps of inputting and estimating to provide continuous real-time or near-real-time estimation of said electrical usage and/or generation values of each said DER devices.

6. The system of claim 1, wherein the one or more classes comprise one or more of: a presence or absence of an electric vehicle charger, a presence or absence of a battery system, a presence or absence of a solar inverter, a presence or absence of an HVAC system, a presence or absence of a swimming pool pump, a presence or absence

of a water heater, a presence or absence of a dishwashers, a presence or absence of a washer or dryer, and/or a presence or absence of a freezer or refrigerator.

7. The system of claim 1, wherein the one or more classes comprise an estimated electrical usage and/or generation value of one or more of the DER devices.

8. The system of claim 1, wherein at least one data channel comprises data received from at least one of the DER devices through a communication channel.

9. The system of claim 8, wherein the data received from at least one of the DER devices through the communication channel comprises measurement data obtained by the DER device and/or data indicating an operational state of the DER device.

10. The system of claim 1, wherein the processor is located at said premises.

11. The system of claims 10, wherein the multi-port meter comprises a housing, and wherein the processor and the data collector are provided in said housing.

12. The system of claim 1, wherein the processor is further configured to generate a control signal based on a classification output of said classifier, and to transmit said control signal to one or more of said DER devices.

13. The system of claim 12, wherein the control signal comprises instructions to turn one or more of said DER devices on or off, or to set the device to a predetermined electrical usage or generation value.

14. The system of claim 1, wherein the processor is further configured to transmit the output classification result of the classifier and/or the estimated electrical usage and/or generation value of one or more of the DER devices to a provider of a power network supplying the premises.

15. A multi-port electric meter for disaggregating electrical data from a plurality of distributed energy resource (DER) devices of a premises, the multi-port meter comprising:

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

one or more DER circuit ports each configured for connecting the multi-port electric meter to a circuit having two or more DER devices on at least one DER circuit port;

a data collector configured to collect data from a plurality of data channels, at least one data channel comprising an electrical data channel and corresponding to a respective one of the plurality DER circuit ports, and at least one data channel comprising a non-electrical data channel; and

a processor configured to:

input the collected data from the plurality of data channels into a classifier to classify the collected electrical data into one or more classes; and

estimating an electrical usage and/or generation value of one or more of the DER devices based on the output classification of the classifier.