CLAIMS

What is claimed is:

1. A method of identifying an anomaly in a resource distribution system, comprising:

providing topology information for at least a portion of a power distribution system, wherein the topology information includes geographic location information for a plurality of collection points and a plurality of power assets within the power distribution system;

receiving power parameter data from the collection points via a communications network, wherein the power parameter data corresponds to data collected by the collection points over a plurality of intervals; and

processing the power parameter data by:

processing the power parameter data received from a first collection point to determine whether the power parameter data received from the first collection point includes a first predetermined characteristic that corresponds to a first anomaly within a first set of intervals;

selecting a second collection point when the power parameter data received from the first collection point includes the first predetermined characteristic;

determining whether the power parameter data received from the second collection point correlates to the power parameter data received from the first collection point;

using the topology information to determine a geographic region that includes a geographic location for the first collection point and a geographic location for the second collection point when the power parameter data received from the second collection point correlates to the power parameter data received from the first collection point;

deploying an unmanned aerial vehicle (UAV) to the geographic region;

receiving inspection data from the UAV, wherein the inspection data includes images of a subset of the power assets of the power distribution system; and

identifying, based on the first anomaly and the inspection data, a first resource and a first geographic sub-region,

wherein the topology information includes relative location information for the collection points and the power assets in the resource distribution system, and wherein selecting a second collection point comprises:

identifying a common power asset located upstream of the first collection point;

identifying a subset of the collection points located downstream of the common power asset; and

selecting the second collection point from the subset of the collection points.

2. The method of claim 1, wherein the inspection data includes power parameter data received from a third collection point within the geographic region received by the UAV.

3. The method of claim 1, wherein the geographic region includes a geographic location of the common power asset.

4. The method of claim 1, wherein the power parameter data is regularly received from the collection points.

5. The method of claim 1, wherein the first predetermined characteristic corresponds to a voltage outside a predetermined range of voltages for a predetermined number of intervals.

6. The method of claim 1, wherein the first resource is a replacement transformer and the first geographic sub-region includes a geographic location of a failed transformer.

7. A method of responding to an outage in a resource distribution system, comprising:

providing topology information for at least a portion of a power distribution system, wherein the topology information includes geographic location information for a plurality of collection points and a plurality of power assets within the power distribution system;

receiving power parameter data from the collection points via a communications network, wherein the power parameter data received from a first collection point includes a characteristic indicative of an outage;

processing the power parameter data by:

identifying a second collection point in response to receiving the power parameter data indicative of an outage from a first collection point, wherein the first and the second collection points have a common upstream power asset; and

comparing the power parameter data for the first collection point with the power parameter data for the second collection points to determine whether the power parameter data received from the first collection point correlates to the power parameter data received from the second collection point;

using the topology information to determine a geographic region that includes a geographic location for the first collection point, a geographic location for the second collection point, and a geographic location for the common upstream power asset when the power parameter data received from the first collection point correlates to the power parameter data received from the second collection point;

deploying an unmanned aerial vehicle (UAV) to the geographic region;

receiving inspection data from the UAV, wherein the inspection data includes images of a subset of the power assets of the power distribution system, including the common upstream power asset; and

identifying a first replacement resource and a first geographic sub-region based in part on the power parameter data for the first and second collection points and the inspection data,

wherein the topology information includes relative location information for the collection points and the power assets in the resource distribution system, and wherein selecting a second collection point comprises:

identifying a common power asset located upstream of the first collection point;

identifying a subset of the collection points located downstream of the common power asset; and

selecting the second collection point from the subset of the collection points.

8. The method of claim 7, wherein the inspection data includes power parameter data received from a third collection point within the geographic region received by the UAV.

9. The method of claim 7, wherein the first replacement resource is a replacement transformer and the first geographic sub-region includes a geographic location of a failed transformer.

10. A system for identifying an anomaly in a resource distribution system comprising:

a headend system configured for:

storing topology information for the resource distribution system;

receiving power parameter data from a plurality of collection points distributed within a resource distribution system;

analyzing the power parameter data received from the collection points to identify a set of the collection points, wherein there is a correlation in the power parameter data for the set of the collection points and the power parameter data for the set of the collection points corresponds to an anomaly;

determining a geographic region that includes geographic locations for the collection points in the set of the collection points using the topology information; and

receiving inspection data from an unmanned aerial vehicle (UAV) deployed to the geographic region; and

the UAV configured for:

traversing the geographic region;

collecting inspection data from the geographic region; and

transmitting the inspection data to the headend system,

wherein a first resource and a first geographic sub-region are identified based on the anomaly and the inspection data,

wherein analyzing the power parameter data received from the collection points comprises:

determining that the power parameter data from a first collection point includes a first predetermined characteristic that corresponds to the anomaly;

selecting a second collection point; and

determining whether the power parameter data from the second collection point correlates to the power parameter data from the first collection point, and wherein selecting a second collection point comprises:

identifying a power asset located upstream of the first collection point;

identifying a subset of the collection points located downstream of the power asset; and

selecting the second collection point from the subset of the collection points.

11. The system of claim 10, wherein the inspection data includes power parameter data received from a collection point within the geographic region by the UAV.

12. The system of claim 10, wherein the topology information includes relative location information for the collection points and power assets in the resource distribution system, and wherein determining a geographic region further comprises:

identifying a common upstream power asset located upstream of the set of the collection points; and

including a geographic location for the common upstream power asset in the geographic region.

13. The system of claim 10, wherein the first resource is a replacement transformer and the first geographic sub-region includes a geographic location of a failed transformer.

14. The system of claim 10, wherein the power asset is a transformer, the first collection point is a meter and the second collection point is a meter.