CLAIMS

1. A power grid system comprising:

a power grid;

at least one load connected to the power grid;

a first meter configured for metering power imported from the power grid to the load;

at least one intermittent power source connected to the power grid,

a second meter configured for metering power generated by the intermittent power source; and

a consolidation unit configured for associating readings from the first and second meters such that at least a portion of the power generated by the intermittent power source is offsettable with the power imported from the power grid to the load.;

~~2. The power grid system as claimed in claim 1,~~ wherein the consolidation unit is configured to associate the readings from the first and second meters by matching ~~such that~~ respective time profiles of the power generated by the intermittent power source according to the reading of the second meter and of the power imported from the power grid to the load ~~are associated~~ according to the reading of the second meter~~with each other~~.

~~2~~3. The power grid as claimed in claim ~~1~~2, wherein one or both of the intermittent source and the load are configured to be controllable for facilitating matching the respective time profiles to each other.

~~3~~4. The power grid system as claimed in any one of the preceding claims, wherein the consolidation unit is configured to calculate a power supply cost for the load based on one or both of the associated readings from the first and second meters.

~~4~~5. The power grid system as claimed in any one of the preceding claims, further comprising at least one dispatchable power source connected to the power grid and configured such that a power injection by the dispatchable power source into the power grid is adjustable responsive to one or both of the associated readings from the first and second meters.

~~5~~6. The power grid system as claimed in any one of the preceding claims, wherein the intermittent source is directly connected to the power grid or via an intermediate grid-connected apparatus.

~~6~~7. The power grid system as claimed in any one of the preceding claims, wherein the intermittent source and the load are located at different locations relative to the power grid or substantially at a same location relative to the power grid.

78. The power grid system as claimed in any one of the preceding claims, wherein the consolidation unit is configured for deriving a histogram of a probabilistic demand of the load over one or more time bin intervals.

89. The power grid system as claimed in any one of the preceding claims, wherein the consolidation unit is configured for deriving a histogram of a probabilistic capacity of supply from the intermittent source over one or more time bin intervals.

910. The power grid system as claimed in claim 89, wherein a power injection by one or more dispatchable power sources into the power grid is adjustable as associated with the histogram of the probabilistic capacity of supply from the intermittent source over the one or more time bin intervals.

101. The power grid system as claimed in claims 89 or 910, wherein a risk profile associated with supply to the load from one or more dispatchable power sources over the power grid is modifiable as determined by observing a modified demand profile taking into account the histogram of the probabilistic capacity of supply from the intermittent source over the one or more time bin intervals.

112. The power grid system as claimed in any one of the preceding claims, wherein the consolidation unit is configured to receive external data such as location data, radiation data, wind speed data, cloud formation patterns as imaged via satellite, other meteorological information etc.

123. The power grid system as claimed in any one of the preceding claims, wherein the consolidation unit is configured to predict or refine a supply from the intermittent source to the load.

134. The power grid system as claimed in any one of the preceding claims, wherein the consolidation unit is configured to determine a look-back supply profile or profiles of the supply from the intermittent source to the load.

145. The power grid system as claimed in any one of the preceding claims, wherein the consolidation unit is configured to determine a look-back demand profile or profiles of a demand of the load.

156. A method of consolidating power injection and consumption in a power grid system, the method comprising:

metering power imported from a power grid to a load using a first meter;

metering power generated by an intermittent power source connected to the power grid using a second meter; and

associating readings from the first and second meters such that at least a portion of the power generated by the intermittent power source is offsettable with the power imported from the power grid to the load.;

~~17. The method as claimed in claim 16, comprising~~ wherein the associating the readings from the first and second meters comprises matching respective time profiles of the power generated by the intermittent power source according to the reading of the second meter and of the power imported from the power grid to the load according to the reading of the second meter~~such that respective time profiles of the power generated by the intermittent power source and of the power imported from the power grid to the load are associated with each other~~.

168. The method as claimed in claim 157, comprising controlling one or both of the intermittent source and the load for facilitating matching the respective time profiles to each other.

179. The method as claimed in any one of claims 156 ~~to~~or 1618, comprising calculating a power supply cost for the load based on one or both of the associated readings from the first and second meters.

1820. The method as claimed in any one of claims 156 to 179, further comprising adjusting a power injection by at least one dispatchable power source into the power grid responsive to one or both of the associated readings from the first and second meters.

1921. The method as claimed in any one of claims 156 to 1820, wherein the intermittent source is directly connected to the power grid or via an intermediate grid-connected apparatus.

202. The method as claimed in any one of claims 156 to 1921, wherein the intermittent source and the load are located at different locations relative to the power grid or substantially at a same location relative to the power grid.

213. The method as claimed in any one of claims 156 to 202, comprising deriving a histogram of a probabilistic demand of the load over one or more time bin intervals.

224. The method as claimed in any one of claims 156 to 213, comprising deriving a histogram of a probabilistic capacity of supply from the intermittent source over one or more time bin intervals.

235. The method as claimed in claim 224, comprising adjusting a power injection by one or more dispatchable power sources into the power grid as associated with the histogram of the probabilistic capacity of supply from the intermittent source over the one or more time bin intervals.

246. The method as claimed in claims 224 or 235, comprising modifying a risk profile associated with supply to the load from one or more dispatchable power sources over the power grid as determined by observing a modified demand profile taking into account the histogram of the probabilistic capacity of supply from the intermittent source over the one or more time bin intervals.

257. The method as claimed in any one of claims 156 to 246, comprising considering external data such as location data, radiation data, wind speed data, cloud formation patterns as imaged via satellite, other meteorological information etc.

268. The method as claimed in any one of claims 156 to 257, comprising predicting or refining a supply from the intermittent source to the load.

279. The method as claimed in any one of claims 156 to 268, comprising determining a look-back supply profile or profiles of the supply from the intermittent source to the load.

2830. The method as claimed in any one of claims 156 to 279, comprising determining a look-back demand profile or profiles of a demand of the load.

2931. A method of supplying power using the power grid system as claimed in any one of claims 1-145.

302. A method of supplying power using the method as claimed in any one of claims 156 to 2830.

CLAIMS

1. A power grid system comprising:

a power grid;

at least one load connected to the power grid;

a first meter configured for metering power imported from the power grid to the load;

at least one intermittent power source connected to the power grid,

a second meter configured for metering power generated by the intermittent power source; and

a consolidation unit configured for associating readings from the first and second meters such that at least a portion of the power generated by the intermittent power source is offsettable with the power imported from the power grid to the load;

wherein the consolidation unit is configured to associate the readings from the first and second meters by matching respective time profiles of the power generated by the intermittent power source according to the reading of the second meter and of the power imported from the power grid to the load according to the reading of the second meter.

2. The power grid as claimed in claim 1, wherein one or both of the intermittent source and the load are configured to be controllable for facilitating matching the respective time profiles to each other.

3. The power grid system as claimed in any one of the preceding claims, wherein the consolidation unit is configured to calculate a power supply cost for the load based on one or both of the associated readings from the first and second meters.

4. The power grid system as claimed in any one of the preceding claims, further comprising at least one dispatchable power source connected to the power grid and configured such that a power injection by the dispatchable power source into the power grid is adjustable responsive to one or both of the associated readings from the first and second meters.

5. The power grid system as claimed in any one of the preceding claims, wherein the intermittent source is directly connected to the power grid or via an intermediate grid-connected apparatus.

6. The power grid system as claimed in any one of the preceding claims, wherein the intermittent source and the load are located at different locations relative to the power grid or substantially at a same location relative to the power grid.

7. The power grid system as claimed in any one of the preceding claims, wherein the consolidation unit is configured for deriving a histogram of a probabilistic demand of the load over one or more time bin intervals.

8. The power grid system as claimed in any one of the preceding claims, wherein the consolidation unit is configured for deriving a histogram of a probabilistic capacity of supply from the intermittent source over one or more time bin intervals.

9. The power grid system as claimed in claim 8 wherein a power injection by one or more dispatchable power sources into the power grid is adjustable as associated with the histogram of the probabilistic capacity of supply from the intermittent source over the one or more time bin intervals.

10. The power grid system as claimed in claims 8 or 9, wherein a risk profile associated with supply to the load from one or more dispatchable power sources over the power grid is modifiable as determined by observing a modified demand profile taking into account the histogram of the probabilistic capacity of supply from the intermittent source over the one or more time bin intervals.

11. The power grid system as claimed in any one of the preceding claims, wherein the consolidation unit is configured to receive external data such as location data, radiation data, wind speed data, cloud formation patterns as imaged via satellite, other meteorological information etc.

12. The power grid system as claimed in any one of the preceding claims, wherein the consolidation unit is configured to predict or refine a supply from the intermittent source to the load.

13. The power grid system as claimed in any one of the preceding claims, wherein the consolidation unit is configured to determine a look-back supply profile or profiles of the supply from the intermittent source to the load.

14. The power grid system as claimed in any one of the preceding claims, wherein the consolidation unit is configured to determine a look-back demand profile or profiles of a demand of the load.

15. A method of consolidating power injection and consumption in a power grid system, the method comprising:

metering power imported from a power grid to a load using a first meter;

metering power generated by an intermittent power source connected to the power grid using a second meter; and

associating readings from the first and second meters such that at least a portion of the power generated by the intermittent power source is offsettable with the power imported from the power grid to the load;

wherein the associating the readings from the first and second meters comprises matching respective time profiles of the power generated by the intermittent power source according to the reading of the second meter and of the power imported from the power grid to the load according to the reading of the second meter.

16. The method as claimed in claim 15, comprising controlling one or both of the intermittent source and the load for facilitating matching the respective time profiles to each other.

17. The method as claimed in any one of claims 15 or 16, comprising calculating a power supply cost for the load based on one or both of the associated readings from the first and second meters.

18. The method as claimed in any one of claims 15 to 17, further comprising adjusting a power injection by at least one dispatchable power source into the power grid responsive to one or both of the associated readings from the first and second meters.

19. The method as claimed in any one of claims 15 to 18, wherein the intermittent source is directly connected to the power grid or via an intermediate grid-connected apparatus.

20. The method as claimed in any one of claims 15 to 19, wherein the intermittent source and the load are located at different locations relative to the power grid or substantially at a same location relative to the power grid.

21. The method as claimed in any one of claims 15 to 20, comprising deriving a histogram of a probabilistic demand of the load over one or more time bin intervals.

22. The method as claimed in any one of claims 15 to 21, comprising deriving a histogram of a probabilistic capacity of supply from the intermittent source over one or more time bin intervals.

23. The method as claimed in claim 22, comprising adjusting a power injection by one or more dispatchable power sources into the power grid as associated with the histogram of the probabilistic capacity of supply from the intermittent source over the one or more time bin intervals.

24. The method as claimed in claims 22 or 23, comprising modifying a risk profile associated with supply to the load from one or more dispatchable power sources over the power grid as determined by observing a modified demand profile taking into account the histogram of the probabilistic capacity of supply from the intermittent source over the one or more time bin intervals.

25. The method as claimed in any one of claims 15 to 24, comprising considering external data such as location data, radiation data, wind speed data, cloud formation patterns as imaged via satellite, other meteorological information etc.

26. The method as claimed in any one of claims 15 to 25, comprising predicting or refining a supply from the intermittent source to the load.

27. The method as claimed in any one of claims 15 to 26, comprising determining a look-back supply profile or profiles of the supply from the intermittent source to the load.

28. The method as claimed in any one of claims 15 to 27, comprising determining a look-back demand profile or profiles of a demand of the load.

29. A method of supplying power using the power grid system as claimed in any one of claims 1-14.

30. A method of supplying power using the method as claimed in any one of claims 15 to 28.