CLAIMS

1. A regional energy management system comprising:

a plurality of energy management devices each configured to individually manage energy used, generated, and stored in a corresponding one of a plurality of buildings; and

a regional energy integrated management device connected to the plurality of energy management devices via a network and configured to perform integrated management of the energy in the plurality of buildings, wherein

each of the energy management devices includes:

a first information generator configured to generate energy management information containing shortage information and surplus information on the energy in the building managed by the energy management device; and

a management information transmitter-receiver configured to receive the energy management information and to transmit the energy management information to the regional energy integrated management device, wherein

the regional energy integrated management device includes:

an information acquisition unit configured to acquire the energy management information from the plurality of energy management devices;

a second information generator configured to generate regional energy management information for mutually adjusting energy supply between different buildings based on the energy management information acquired by the information acquisition unit; and

an instruction transmitter configured to transmit the regional energy management information to the corresponding buildings.

2. The regional energy management system according to claim 1, wherein

~~each of the energy management devices is installed in the corresponding building and is connected to an energy generation device configured to generate electric energy by converting renewable energy into electric power, an energy storage device configured to store the energy, and a wattmeter configured to measure an electric power amount used in a loading device in the building, and~~

the first information generator generates the energy management information by using energy generation status information indicating a status of ~~the~~ energy generated by an~~the~~ energy generation device installed in the building, energy storage status information indicating a status of ~~the~~ energy stored in an~~the~~ energy storage device installed in the building~~,~~ and ~~an~~ electric energy use measured by a~~the~~ wattmeter installed in the building.

3. A regional energy integrated management device configured to manage energy used and generated in a plurality of buildings, comprising:

an information acquisition unit configured to acquire energy management information containing shortage information and surplus information on the energy in the plurality of buildings;

an information generator configured to generate regional energy management information for mutually adjusting energy supply between different buildings in a management target region based on the energy management information on the plurality of buildings acquired by the information acquisition unit; and

an instruction transmitter configured to transmit the regional energy management information to the corresponding buildings.

4. The regional energy integrated management device according to claim 3, wherein

~~the regional energy integrated management device is connected to an energy supply system configured to manage supply power in the region, and~~

the information generator acquires a demand reduction instruction when the demand reduction instruction is transmitted from an~~the~~ energy supply system configured to manage supply power in the region, and generates building-based demand reduction amount information based on the energy management information on the plurality of buildings acquired by the information acquisition unit, the building-based demand reduction amount information indicating a demand reduction amount allocated to each building from a total demand reduction amount requested by the demand reduction instruction.

5. A regional energy integrated management method using a regional energy integrated management device configured to

manage energy used and generated in a plurality of buildings, the method comprising:

an energy management information acquiring step of acquiring energy management information from each of the plurality of buildings, the energy management information containing shortage information and surplus information on the energy in the building;

a regional energy management information generating step of generating regional energy management information for mutually adjusting energy supply between different buildings in a management target region based on the energy management information on the plurality of buildings acquired in the energy management information acquiring step; and

an instruction transmitting step of transmitting the regional energy management information generated in the regional energy management information generating step to the corresponding buildings.

6. The regional energy integrated management method according to claim 5, wherein

~~the regional energy integrated management device is connected to an energy supply system configured to manage supply power in the region, and~~

the regional energy management information generating step includes: acquiring a demand reduction instruction when the demand reduction instruction is transmitted from an~~the~~ energy supply system configured to manage supply power in the region; and generating building-based demand reduction amount information based on the acquired energy

management information on the plurality of buildings, the building-based demand reduction amount information indicating a demand reduction amount allocated to each of the plurality of buildings from a total demand reduction amount requested by the demand reduction instruction.

7. An energy management device for managing energy used, generated, or stored in a building comprising:

an information generator configured to generate energy management information containing shortage information and surplus information on the energy in the building; and

a management information transmitter-receiver configured to receive the energy management information and to transmit the energy management information to an energy integrated management device configured to perform integrated management of energy in buildings including the energy in the building.

8. The energy management device according to claim 7, wherein the information generator is further configured to generate the energy management information by using at least one of energy generation status information indicating a status of energy generated by an energy generation device, energy storage status information indicating a status of energy stored in an energy storage device, and electric energy use measured by a wattmeter.

9. A non-transitory computer-readable medium including a program for causing an energy integrated management device

configured to manage energy used and generated in a plurality of buildings to execute:

an energy management information acquiring step of acquiring energy management information from each building, the energy management information containing shortage information and surplus information on the energy in each building;

an energy management information generating step of generating energy management information for mutually adjusting energy supply between different buildings in a management target region based on the energy management information on the plurality of buildings acquired in the energy management information acquiring step; and

an instruction transmitting step of transmitting the energy management information generated in the energy management information generating step to the plurality of buildings.

10. The non-transitory computer-readable medium according to claim 9, wherein

the energy management information generating step includes: acquiring a demand reduction instruction when the demand reduction instruction is transmitted from an energy supply system configured to manage supply power; and generating building-based demand reduction amount information based on the acquired energy management information on the plurality of buildings, the building-based demand reduction amount information indicating a demand reduction amount allocated to each building from a

total demand reduction amount requested by the demand reduction instruction.

11. An energy management system comprising:

a plurality of energy management devices each configured to manage energy used, generated, or stored in relation to one of a plurality of buildings; and

an energy integrated management device configured to communicate with the plurality of energy management devices and configured to perform integrated management of the energy relevant to the plurality of buildings in the region, wherein

each energy management device includes:

a first information generator configured to generate energy management information containing shortage information or surplus information on the energy in relation to the building managed by a corresponding one of the energy management devices; and

a management information transmitter configured to transmit the energy management information to the energy integrated management device, wherein the energy integrated management device includes:

an information acquisition unit configured to acquire the energy management information from at least one of the plurality of energy management devices;

a second information generator configured to generate energy management information for controlling the energy integrally managed corresponding to each of

the plurality of buildings based on the energy management information acquired by the information acquisition unit; and

an instruction transmitter configured to transmit the energy management information to the corresponding energy management device.

12. The energy management system according to claim 11, wherein

the first information generator is further configured to generate the energy management information by using at lease one of energy generation status information indicating a status of energy generated by an energy generation device, energy storage status information indicating a status of energy stored in an energy storage device, and electric energy use measured by a wattmeter.

13. An energy integrated management device for communicating with an energy management device to manage energy used, generated or stored in relation to a building, and performing integrated management of the energy in relation to buildings, comprising:

an information acquisition unit configured to acquire energy management information from the energy management device, the energy management information containing shortage information or surplus information on the energy in relation to the building;

an information generator configured to generate energy management information for controlling the integrally managed energy in association with buildings based on the

energy management information acquired by the information acquisition unit; and

an instruction transmitter configured to transmit the energy management information to the energy management device.

14. The energy integrated management device according to claim 13, wherein

the information generator is further configured to acquire a demand reduction instruction when the demand reduction instruction is transmitted from an energy supply system configured to manage supply power, and to generate building-based demand reduction amount information based on the energy management information on the building acquired by the information acquisition unit, the building-based demand reduction amount information indicating a demand reduction amount allocated to the building from a total demand reduction amount requested by the demand reduction instruction.

15. An energy integrated management method using an energy integrated management device to manage energy used, generated or stored in relation to a plurality of buildings, the method comprising:

an energy management information acquiring step of acquiring energy management information containing shortage information or surplus information on the energy in relation to a building;

an energy management information generating step of generating energy management information for controlling

the integrally managed energy in association with each of the plurality of buildings based on the energy management information acquired in the energy management information acquiring step; and

an instruction transmitting step of transmitting the energy management information generated in the energy management information generating step to an energy management device of a corresponding one of the plurality of buildings.

16. The energy integrated management method according to claim 15, wherein

the energy management information generating step includes: acquiring a demand reduction instruction when the demand reduction instruction is transmitted from an energy supply system configured to manage supply power; and generating building-based demand reduction amount information based on the acquired energy management information on the plurality of buildings, the building-based demand reduction amount information indicating a demand reduction amount allocated to each of the plurality of buildings from a total demand reduction amount requested by the demand reduction instruction.

17. An energy management device for managing energy used, generated, or stored in relation to a building comprising:

an information generator configured to generate energy management information containing shortage information or surplus information on the energy in relation to the building; and

a management information transmitter configured to transmit the energy management information to an energy integrated management device to perform integrated management of energy in buildings including the energy in the building.

18. The energy management device according to claim 17, wherein

the information generator is further configured to generate energy management information by using at least one of energy generation status information indicating a status of energy generated by an energy generation device, energy storage status information indicating a status of energy stored in an energy storage device, and electric energy use measured by a wattmeter.

19. A non-transitory computer-readable medium including a program for causing an energy integrated management device configured to manage energy used or generated in relation to a plurality of buildings to execute:

an energy management information acquiring step of acquiring energy management information containing shortage information or surplus information on the energy in relation to one of the plurality of buildings;

an energy management information generating step of generating energy management information for controlling the integrally managed energy in association with buildings based on the energy management information acquired in the energy management information acquiring step; and

an instruction transmitting step of transmitting the energy management information generated in the energy management information generating step to an energy management device configured to manage energy used, generated or stored in relation to a corresponding one of the plurality of buildings.

20. The non-transitory computer-readable medium according to claim 19, wherein

the energy management information generating step includes: acquiring a demand reduction instruction when the demand reduction instruction is transmitted from an energy supply system configured to manage supply power; and generating building-based demand reduction amount information based on the acquired energy management information on the plurality of buildings, the building-based demand reduction amount information indicating a demand reduction amount allocated to each of the plurality of buildings from a total demand reduction amount requested by the demand reduction instruction.