capacity of the electricity storage system falls below a threshold value, the power-purchase electric power is prevented from exceeding the target electric power.

SUMMARY

[0004] However, in Japanese Unexamined Patent Application Publication No. 2012-95424, an adequate opportunity to make a distributed power source of, for example, an electricity storage system (electric power storage device) with high control capability participate in services other than peak shaving is not provided.

[0005] One non-limiting and exemplary embodiment provides an electric power control method of an electric power control device for making a distributed power source of, for example, an electricity storage system with high control capability actively participate in services other than peak shaving while leveling the power-purchase electric power of a customer connected to a system power source.

[0005a] A first aspect provides an electric power control method for an electric power load and an electric power storage device disposed in a customer's electrical system, the method comprising: assigning one of a peak shaving control or an other service to at least one of time slots that are divided by a specific time unit; obtaining a consumption power of the electric power load of each of the time slots; determining power-purchase electric power according to the consumption power of each of the time slots; restricting a consumption power of the electric power load in a peak time slot, in which the consumption power of the electric power load is more than or equal to a target power-purchase electric power upper limit; and restricting the restricted consumption power of the electric power load and discharging the electric power storage device in the peak time slot, when the

restricted consumption power of the electric power load is more than or equal to the target power-purchase electric power upper limit and the peak shaving is assigned.

[0005b] A second aspect provides an electric power control device for an electric power load and an electric power storage device, the device comprising: at least one memory; and circuitry operative to: assign one of a peak shaving control or an other service to at least one of time slots that are divided by a specific time unit; obtain a consumption power of the electric power load of each of the time slots; determine power-purchase electric power according to the consumption power of each of the time slots; restrict a consumption power of the electric power load in a peak time slot, in which the consumption power of the electric power load is more than or equal to a target power-purchase electric power upper limit; and restrict the restricted consumption power of the electric power load and discharging the electric power storage device in the peak time slot, when the restricted consumption power of the electric power load is more than or equal to the target power-purchase electric power upper limit and the peak shaving is assigned.

[0006] In various embodiments, the techniques disclosed here feature an electric power control method for an electric power load and an electric power storage device including assigning one of a peak shaving control or other services to at least one of time slots that are divided by a specific time unit, obtaining a consumption power of the electric power load for each of the time slots, determining power-purchase electric power according to the consumption power, restricting a consumption power of the electric power load at one or more peak

slots where the consumption power of the electric power load is more than or equal to a target power-purchase electric power upper limit, restricting the restricted consumption power of the electric power load and discharging the electric power storage device at one or more peak slots if the restricted

WHAT IS CLAIMED IS:

1. An electric power control method for an electric power load and an electric power storage device disposed in a customer's electrical system, the method comprising:

assigning one of a peak shaving control or an other service to at least one of time slots that are divided by a specific time unit;

obtaining a consumption power of the electric power load of each of the time slots;

determining power-purchase electric power according to the consumption power of each of the time slots;

restricting a consumption power of the electric power load in a peak time slot, in which the consumption power of the electric power load is more than or equal to a target power-purchase electric power upper limit; and

restricting the restricted consumption power of the electric power load and discharging the electric power storage device in the peak time slot, when the restricted consumption power of the electric power load is more than or equal to the target power-purchase electric power upper limit and the peak shaving is assigned.

2. The electric power control method according to Claim 1, further comprising:

receiving an environmental index changing in accordance with an output of the electric power load, and

restricting the consumption power of the electric power load, when the environmental index is within a predetermined range.

3. The electric power control method according to Claim 2, further comprising discharging the electric power storage device and increasing the consumption power of the electric power load, when the environmental index is outside the predetermined range.

4. The electric power control method according to Claim 1, wherein the electric power consumption of the electric power load is increased before the peak time slot, in which the consumption power of the electric power load is more than or equal to the target power-purchase electric power upper limit.

5. The electric power control method according to Claim 1, wherein the electric power storage device is discharged within a scope in which a remaining capacity required to perform the other service, when the other service is assigned after the peak shaving in the peak time slot.

6. The electric power control method according to Claim 1, wherein the power-purchase electric power is determined after the peak time slot, and the electric power storage device is discharged after the peak time slot, when

the determined power-purchase electric power is more than or equal to the target power-purchase electric power upper limit and the peak shaving is assigned.

7. The electric power control method according to Claim 1, further comprising stopping restricting the consumption power of the electric power load after the peak time slot, in which the consumption power of the electric power load is more than or equal to the target power-purchase electric power upper limit.

8. An electric power control device for an electric power load and an electric power storage device, the electric power control device comprising:

at least one memory; and circuitry operative to:

assign one of a peak shaving control or an other service to at least one of time slots that are divided by a specific time unit;

obtain a consumption power of the electric power load of each of the time slots;

determine power-purchase electric power according to the consumption power of each of the time slots;

restrict a consumption power of the electric power load in a peak time slot, in which the consumption power of the electric power load is more than or equal
to a target power-purchase electric power upper limit; and

restrict the restricted consumption power of the electric power load and discharging the electric power storage device in the peak time slot, when the restricted consumption power of the electric power load is more than or equal to the target power-purchase electric power upper limit and the peak shaving is assigned.

9. The electric power control method according to Claim 2, wherein

the environmental index is a value that determines a degree of intensity at which an electric power restriction can be performed on the electric power load, and

the environmental index includes at least one of a temperature, a humidity, a sensible temperature, a discomfort index, a predicted mean value, an amount of solar radiation, a number of people inside a room, and a CO_2 concentration.

10. The electric power control method according to claim 1, wherein a system power source and the electric power storage device are capable of supplying electric power to the electric power load,

when the restricted consumption power of the electric power load is more than or equal to the target power-purchase electric power upper limit in the peak time slot and the peak shaving is assigned, the electric power discharged by the electric power storage device is supplied to the electric power load to reduce the electric power supplied from the system power source to the electric power load.

11. The electric power control method according to claim 2, wherein

after the environmental index is received, it is determined whether or not the environmental index is within the predetermined range,

when it is determined that the environmental index is within the predetermined range, the peak time slot is determined, and the consumption power is restricted in the determined peak time slot, when it is determined that the environmental index is within the predetermined range.