CLAIMS

What is claimed is:

1. A method for calculating carbon intensities, comprising:

acquiring basic attribute data of a power system, and acquiring an active power generation amount of a power generator set based on the basic attribute data;

acquiring an initial value of a carbon emission factor of power generation fuel of the power generator set according to a life cycle type of the power generator set, wherein the initial value of the carbon emission factor of power generation fuel is defined to indicate a carbon emission amount caused by a unit power generation amount; and

calculating a carbon intensity of the power generator set based on the active power generation amount and the initial value of the carbon emission factor of power generation fuel of the power generator set; and,

wherein acquiring the initial value of the carbon emission factor of power generation fuel of the power generator set according to the life cycle type of the power generator set comprises:

in the case that the life cycle type is false, determining an intermediate carbon emission factor of power generation fuel corresponding to the type of the power generator set using a first preset mapping relationship; and

determining the intermediate carbon emission factor of power generation fuel as the initial value of the carbon emission factor of power generation fuel corresponding to the type of the power generator set;

or

in the case that the life cycle type is true, acquiring a basic carbon emission factor of power generation fuel of the power generator set, wherein the basic carbon emission factor of power generation fuel is defined to indicate an estimate of a carbon emission amount generated by the power generator set before operation in generating power;

determining the intermediate carbon emission factor of power generation fuel corresponding to the type of the power generator set using the first preset mapping relationship; and

determining a sum of the intermediate carbon emission factor of power generation fuel and the basic carbon emission factor of power generation fuel as the initial value of the carbon emission factor of power generation fuel corresponding to the type of the power generator set; and,

wherein in the case that the input energy adopted by the power generator set comprises thermal energy, the power generator set is the thermal power generator set, and determining the

intermediate carbon emission factor of power generation fuel corresponding to the type of the power generator set according to the record of the first preset mapping relationship comprises:

determining a set of the intermediate carbon emission factors of power generation fuel corresponding to the thermal power generator set according to the record of the first preset mapping relationship, wherein the set of the intermediate carbon emission factors of power generation fuel is a set comprising n integers, n being a positive integer;

acquiring a thermal power carbon emission rating in the power system to which the thermal power generator set belongs, wherein the thermal power carbon emission rating is defined to indicate the carbon emission amount when the thermal power generator set generates a unit power; and

determining the intermediate carbon emission factor of power generation fuel corresponding to the thermal power carbon emission rating from the set of the intermediate carbon emission factors of power generation fuel according to a second preset mapping relationship, wherein the second preset mapping relationship is associated with the power system to which the thermal power generator set belongs.

2. The method according to claim 1, wherein upon calculating the carbon intensity of the power generator set, the method further comprises:

acquiring a load of the power generator set;

acquiring an quotient by dividing the load of the power generator set by the carbon intensity of the power generator set, wherein the acquired quotient is a carbon intensity factor of the power generator set, and the carbon intensity factor is defined to indicate the carbon emission amount caused by the unit power generation amount of the power generator set, and is positively correlated with the initial value of the carbon emission factor of power generation fuel.

3. The method according to claim 1 or 2, further comprising:

acquiring a temporal and spatial statistical range, wherein the temporal and spatial condition comprises a temporal range and/or a spatial range;

determining the power generator set belonging to the temporal and spatial statistical range as a target power generator set group; and

acquiring the carbon intensity corresponding to the temporal and spatial statistical range by accumulating the carbon intensities of the power generator sets in the target power generator set group.

4. The method according to claim 3, wherein accumulating the carbon intensities of the power generator sets in the target power generator set group to acquire the carbon intensity of the temporal and spatial statistical range comprises:

acquiring an equivalent load in the temporal and spatial statistical range, wherein the equivalent load is defined to indicate an external device powering the target power generator set group;

acquiring a bus carbon intensity on a power supply path of the equivalent load, wherein the bus carbon intensity is defined to indicate a sum of the carbon intensity of each line included in the bus and the carbon intensity of a transformer; and

acquiring the carbon intensity of the temporal and spatial statistical range by accumulating the carbon intensities of the power generator sets in the target power generator set group and adding the acquired sum to the bus carbon intensity.

5. An apparatus for calculating carbon intensities, comprising:

a first acquiring module, configured to acquire basic attribute data of a power system, and acquire an active power generation amount of a power generator set based on the basic attribute data;

a second acquiring module, configured to acquire an initial value of a carbon emission factor of power generation fuel of the power generator set according to a life cycle type of the power generator set, wherein the initial value of the carbon emission factor of power generation fuel is defined to indicate a carbon emission amount caused by a unit power generation amount; and

a data calculating module, configured to calculate a carbon intensity of the power generator set based on the active power generation amount and the initial value of the carbon emission factor of power generation fuel of the power generator set; and,

wherein acquiring the initial value of the carbon emission factor of power generation fuel of the power generator set according to the life cycle type of the power generator set comprises:

in the case that the life cycle type is false, determining an intermediate carbon emission factor of power generation fuel corresponding to the type of the power generator set using a first preset mapping relationship; and

determining the intermediate carbon emission factor of power generation fuel as the initial value of the carbon emission factor of power generation fuel corresponding to the type of the power generator set;

or

in the case that the life cycle type is true, acquiring a basic carbon emission factor of power generation fuel of the power generator set, wherein the basic carbon emission factor of power generation fuel is defined to indicate an estimate of a carbon emission amount generated by the power generator set before operation in generating power;

determining the intermediate carbon emission factor of power generation fuel corresponding to the type of the power generator set using the first preset mapping relationship; and

determining a sum of the intermediate carbon emission factor of power generation fuel and the basic carbon emission factor of power generation fuel as the initial value of the carbon emission factor of power generation fuel corresponding to the type of the power generator set; and,

wherein in the case that the input energy adopted by the power generator set comprises thermal energy, the power generator set is the thermal power generator set, and determining the intermediate carbon emission factor of power generation fuel corresponding to the type of the power generator set according to the record of the first preset mapping relationship comprises:

determining a set of the intermediate carbon emission factors of power generation fuel corresponding to the thermal power generator set according to the record of the first preset mapping relationship, wherein the set of the intermediate carbon emission factors of power generation fuel is a set comprising n integers, n being a positive integer;

acquiring a thermal power carbon emission rating in the power system to which the thermal power generator set belongs, wherein the thermal power carbon emission rating is defined to indicate the carbon emission amount when the thermal power generator set generates a unit power; and

determining the intermediate carbon emission factor of power generation fuel corresponding to the thermal power carbon emission rating from the set of the intermediate carbon emission factors of power generation fuel according to a second preset mapping relationship, wherein the second preset mapping relationship is associated with the power system to which the thermal power generator set belongs.

6. A terminal, comprising: a processor, a memory communicably connected to the processor, and one or more program instructions stored on the memory, wherein the processor, when loading and executing the one or more program instructions, is caused to perform the method for calculating the carbon intensities as defined in any one of claims 1 to 4.

7. A non-transitory computer-readable storage medium storing one or more program instructions thereon, wherein the one or more program instructions, when loaded and executed by a processor of a terminal, causes the terminal to perform the method for calculating the carbon intensities as defined in any one of claims 1 to 4.