CLAIMS

1. A device for providing electric vehicle information comprising:

a calculation unit configured to, in response to an electric vehicle departing from a first destination, the electric vehicle being located at a current place position different from the first destination, set a plurality of second destination ranges surrounding the first destination, determine a plurality of nodes between the first destination and a plurality of second destinations, where each node of the plurality of nodes is associated with a corresponding second destination range of the plurality of second destination ranges, and calculate a plurality of reachable locations that the electric vehicle is able to travel to reach for each of the plurality of second destinations based on a state of charge (SOC) of a battery of the electric vehicle powering the electric vehicle at the current place position, wherein the electric vehicle reaches the first destination after the current place position, and the plurality of second destination ranges is set after the electric vehicle reaches the first destination; and

a display data generation unit configured to generate display data for displaying a reachable range display screen where each of the plurality of reachable locations is visually recognizable.

2. The device for providing electric vehicle information according to claim 1,

wherein a closed curve formed by connecting each of the plurality of reachable locations with line segments or curves is displayed on the reachable range display screen.

3. The device for providing electric vehicle information according to claim 2,

wherein in a case where two reachable locations of the plurality of reachable locations have different distances with respect to the first destination, the closed curve is not a circle.

4. The device for providing electric vehicle information according to claim 1,

wherein paths from the first destination to each of the plurality of reachable locations are displayed on the reachable range display screen.

5. The device for providing electric vehicle information according to claim 4,

wherein a path from the current place position to the first destination is displayed on the

reachable range display screen.

6. The device for providing electric vehicle information according to claim 3,

wherein an inner portion of the closed curve is displayed with a color tone different from that of an outer portion of the closed curve on the reachable range display screen.

7. The device for providing electric vehicle information according to claim 1,

wherein the calculation unit is configured to determine each of the plurality of second destinations, to set the first destination as a next departure point, to perform a traveling simulation for simulating traveling of the electric vehicle from the next departure point to each of the plurality of second destinations, and to calculate each of the plurality of reachable locations as a geographic location capable of being reached in in response to the electric vehicle departing from the next departure point on a path for reaching each of the plurality of second destinations from the next departure point.

8. The device for providing electric vehicle information according to claim 7,

wherein the calculation unit is configured to calculate an SOC of the battery of the electric vehicle powering the electric vehicle at the first destination, and determines the plurality of second destinations so that distances between the first destination and the plurality of second destinations depend on the SOC of the battery of the electric vehicle powering of the electric vehicle at the first destination.

9. The device for providing electric vehicle information according to claim 7,

wherein the calculation unit is configured to perform the traveling simulation using a road network model that represents a road network using nodes indicating intersections and links indicating roads that connect the nodes, and

the calculation unit is configured to determine the plurality of second destination ranges surrounding the first destination, and to determine a node of the nodes associated with each of the plurality of second destination ranges as the corresponding second destination.

10. The device for providing electric vehicle information according to claim 9,

wherein the calculation unit calculates an SOC of the battery of the electric vehicle powering the electric vehicle at the first destination, and determines the plurality of second destination ranges so that a distance between the first destination and each of the plurality of second destination ranges depends on the SOC of the battery of the electric vehicle powering the electric vehicle at the first destination.

11. The device for providing electric vehicle information according to claim 9,

wherein in response to the node of the nodes of the road network model begin beyond the corresponding second destination range among the plurality of second destination ranges, the calculation unit is configured to adjust the size or the position of the corresponding second destination range.

12. The device for providing electric vehicle information according to claim 2,

wherein the calculation unit is configured to set the first destination as a next departure point, to determine the plurality of second destinations, to perform a traveling simulation for simulating traveling of the electric vehicle from the next departure point to each of the plurality of second destinations using a road network model that represents a road network using nodes indicating intersections and links indicating roads that connect the nodes, and to calculate the plurality of reachable locations as locations capable of being reached in a case where the electric vehicle departs from the next departure point on a path for reaching each of the plurality of second destinations from the next departure point,

in determination of the plurality of second destinations, the calculation unit is configured to set the plurality of second destination ranges surrounding the first destination, determines, with respect to a second destination range of the plurality of second destination ranges where at least one node of the road network model is associated with a second destination range of the plurality of second destination ranges, the at least one node as the second destination, to identify the second destination range in a region including the at least one node of the road network model, to determine a changed second destination range, and the calculation unit is configured to determine a virtual reachable position disposed between the second destination and a position of the second destination range in response to a determination, through the traveling simulation, that the electric vehicle is able to reach a second destination of the plurality of second

destinations determined from the changed second destination range from the next departure point based on the SOC of the battery of the electric vehicle powering the electric vehicle, and

the calculation unit is configured to determine the closed curve so that the closed curve passes through a displayed location for each of the plurality of reachable locations and the virtual reachable position.

13. The device for providing electric vehicle information according to claim 1,

wherein each of the plurality of reachable locations is calculated as a location where the SOC of the battery of the electric vehicle powering the electric vehicle becomes a first value.

14. The device for providing electric vehicle information according to claim 1,

wherein the calculation unit is configured to determine the plurality of second destinations surrounding the first destination, to set the first destination as a next departure point, to perform a traveling simulation for simulating traveling of the electric vehicle from the next departure point to each of the plurality of second destinations, and to calculate a plurality of condition reachable locations among the plurality of reachable locations, which are locations capable of being reached in response to the electric vehicle departing from the next departure point on a path for reaching each of the plurality of second destinations from the next departure point and satisfying a plurality of conditions, respectively, and

wherein a first closed curve passes through a plurality of first condition reachable locations among the plurality of condition reachable locations that satisfy a first condition of the plurality of conditions, and a second closed curve passes through a plurality of second condition reachable locations among different conditions among the plurality of condition reachable locations that satisfy a second condition of the plurality of conditions are displayed on the reachable range display screen.

15. A method for providing electric vehicle information for providing information relating to an electric vehicle, comprising:

a step of setting, in response to the electric vehicle departing from a first destination, the electric vehicle being at a current place position different from the first destination, a plurality of second destination ranges surrounding the first destination, determining a plurality of nodes

between the first destination and a plurality of second destinations, each node of the plurality of nodes is within a range of the plurality of second destination ranges, and calculating a plurality of reachable locations that the electric vehicle is able to travel to reach each of the plurality of second destinations based on a state of charge (SOC) of a battery of the electric vehicle powering the electric vehicle at the current place position, wherein the electric vehicle reaches the first destination after the current place position, and the plurality of second destination ranges is set after the electric vehicle reaches the first destination; and

a step of generating display data for displaying a reachable range display screen where each of the plurality of reachable locations is visually recognizable.

16. The method for providing electric vehicle information according to claim 15,

wherein the step of setting the plurality of reachable locations includes

a step of determining the plurality of second destinations surrounding the first destination,

a step of setting the first destination as a next departure point, and

a step of performing a traveling simulation for simulating traveling of the electric vehicle from the next departure point to each of the plurality of second destinations, and

wherein the plurality of reachable locations is calculated as locations capable of being reached in response to the electric vehicle departing from the next departure point on a path for reaching each of the plurality of second destinations from the next departure point, through the traveling simulation.

17. A non-transitory recording medium on which a program for realizing the method for providing electric vehicle information according to claim 15 is recorded.