# CLAIMS

[Claim 1]

A travel route guide device, comprising:

a travel route calculation unit configured to calculate a travel route from a current position to a destination based on current position information, destination information, and a remaining amount of power of an electric vehicle, and information on a remaining power amount recovery facility;

a region division unit configured to divide a region including the travel route calculated by the travel route calculation unit into a plurality of local regions;

a constraint condition determination unit configured to determine a constraint condition for a monitoring variable related to power consumption, for each of the local regions divided by the region division unit; and

a recalculation determination unit configured to monitor, for a traveling electric vehicle, the monitoring variable corresponding to the local region including a position of the electric vehicle, and request the travel route calculation unit to calculate the travel route when a value of the monitoring variable deviates from the constraint condition,

wherein the recalculation determination unit is configured to request the travel route calculation unit to calculate the travel route when the value of the monitoring variable varied since a time at which the electric vehicle entered the local region deviates from the constraint condition.

[Claim 2]

The travel route guide device according to claim 1,

wherein the monitoring variable is either or both of an amount of power consumption and travel time.

[Claim 3]

The travel route guide device according to claim 1 or 2,

wherein the region division unit divides a region including the travel route calculated by the travel route calculation unit into a plurality of local regions having a planar shape.

[Claim 4]

The travel route guide device according to claim 1 or 2,

wherein the region division unit divides the region so that the plurality of local regions have the same shape.

[Claim 5]

The travel route guide device according to claim 4,

wherein the region division unit divides the region so that the plurality of local regions have the same area.

[Claim 6]

The travel route guide device according to any one of claims 1 to 3,

wherein the region division unit divides a region including the travel route calculated by the travel route calculation unit into a plurality of local regions having a shape or an area according to a situation of the travel route.

[Claim 7]

The travel route guide device according to claim 6,

wherein the situation of the travel route is either or both of a shape of the travel route and a congestion situation of the travel route.

[Claim 8]

The travel route guide device according to any one of claims 1 to 7,

wherein the recalculation determination unit requests the travel route calculation unit to calculate the travel route when a position of the electric vehicle is not included in any of the local regions.

[Claim 9]

The travel route guide device according to any one of claims 1 to 8,

wherein the constraint condition determination unit determines the constraint condition based on a driving history of the electric vehicle.

[Claim 10]

A travel route guide system comprising:

a management center device configured to manage an operation of an electric vehicle, and

an on-board unit mounted in the electric vehicle,

wherein the management center device including:

a management center side reception unit configured to receive electric vehicle information including current position information, destination information, and a remaining amount of power of the electric vehicle from the on-board unit;

a travel route calculation unit configured to calculate a travel route from a current position to a destination of the electric vehicle based on the electric vehicle information received by the management center-side reception unit and information on a remaining power amount recovery facility;

a region division unit configured to divide a region including a travel route calculated by the travel route calculation unit into a plurality of local regions;

a constraint condition determination unit configured to determine a constraint condition for a monitoring variable related to power consumption for each of the local regions divided by the region division unit; and

a management center side transmission unit configured to

transmit management center processing information including the travel route calculated by the travel route calculation unit, the local regions divided by the region division unit, and the constraint condition for the monitoring variable determined by the constraint condition determination unit to the on-board unit, and

wherein the on-board unit including:

an on-board unit side transmission unit configured to transmit the electric vehicle information to the management center device;

an on-board unit side reception unit configured to receive the management center processing information from the management center device; and

a retransmission determination unit configured to monitor the monitoring variable corresponding to the local region including a position of the electric vehicle based on the management center processing information received by the on-board unit side reception unit, and request the on-board unit side transmission unit to transmit the electric vehicle information to the management center device when a value of the monitoring variable deviates from the constraint condition, and

wherein the retransmission determination unit is configured to request the travel route calculation unit to calculate the travel route when the value of the monitoring variable varied since a time at which the electric vehicle entered the local region deviates from the constraint condition.

[Claim 11]

A travel route guide system comprising:

a management center device configured to manage an operation of an electric vehicle, and

an on-board unit mounted in the electric vehicle,

wherein the travel route guide system including:

a travel route calculation unit configured to calculate a travel route from a current position to a destination based on current position information, destination information and a remaining amount of power of the electric vehicle, and information on a remaining power amount recovery facility;

a region division unit configured to divide a region including the travel route calculated by the travel route calculation unit into a plurality of local regions;

a constraint condition determination unit configured to determine a constraint condition for a monitoring variable related to power consumption, for each of the local regions divided by the region division unit; and

a recalculation determination unit configured to monitor, for a traveling electric vehicle, the monitoring variable corresponding to the local region including a position of the electric vehicle, and request the travel route calculation unit to calculate the travel route when a value of the monitoring variable deviates from the constraint condition,

wherein the travel route calculation unit, the region division unit, the

constraint condition determination unit, and the recalculation determination unit are distributed across the management center device and the on-board unit,

wherein the recalculation determination unit is configured to request the travel route calculation unit to calculate the travel route when the value of the monitoring variable varied since a time at which the electric vehicle entered the local region deviates from the constraint condition.

[Claim 12]

A travel route guide method, comprising:

a travel route calculation step of calculating a travel route from a current position to a destination based on current position information, destination information, and a remaining amount of power of an electric vehicle, and information on a remaining power amount recovery facility;

a region division step of dividing a region including the travel route calculated in the travel route calculation step into a plurality of local regions;

a constraint condition determination step of determining a constraint condition for a monitoring variable related to power consumption, for each of the local regions divided in the region division step; and

a recalculation determination step of monitoring, for a traveling electric vehicle, the monitoring variable corresponding to the local region including a position of the electric vehicle, and determining that the travel route calculation step is to be performed again when a value of the monitoring variable deviates from the constraint condition, and

wherein the recalculation determination step is configured to execute the travel route calculation step again when the value of the monitoring variable varied since a time at which the electric vehicle entered the local region deviates from the constraint condition.

[Claim 13]

A program that causes a computer of a travel route guide device to function as:

a travel route calculation unit configured to calculate a travel route from a current position to a destination based on current position information, destination information and a remaining amount of power of the electric vehicle, and information on a remaining power amount recovery facility;

a region division unit configured to divide a region including the travel route calculated by the travel route calculation means into a plurality of local regions;

a constraint condition determination unit configured to determine a constraint condition for a monitoring variable related to power consumption, for each of the local regions divided by the region division means; and

a recalculation determination unit configured to monitor, for a traveling electric vehicle, the monitoring variable corresponding to the local region including a position of the electric vehicle, and request the travel route calculation means to calculate the travel route when a value of the monitoring variable deviates from the

constraint condition,

wherein the recalculation determination unit is configured to request the travel route calculation unit to calculate the travel route when the value of the monitoring variable varied since a time at which the electric vehicle entered the local region deviates from the constraint condition.