CLAIMS

1. A hybrid vehicle comprising:

a drivetrain;

an electric motor configured to power the drivetrain;

a power supply configured to power the electric motor;

a combustion engine configured to charge the power supply and to power the drivetrain;

a cooling system;

one or more processors; and

a computer-readable medium storing instructions that, when executed by the one or more processors, cause the hybrid vehicle to perform functions comprising:

determining one or more expected operating conditions to be encountered by the hybrid vehicle;

making a first determination that a heat rejection load of the cooling system is expected to increase and become greater than a heat rejection capacity of the cooling system in response to the hybrid vehicle encountering the one or more expected operating conditions;

in response to making the first determination and prior to the hybrid vehicle encountering the expected operating conditions, operating the hybrid vehicle in a first mode wherein the combustion engine and the electric motor operate such that a charge level of the power supply increases or is maintained above a threshold charge level;

making, after operating the hybrid vehicle in the first mode, a second determination that the heat rejection load of the cooling system has become greater than the heat rejection capacity of the cooling system; and

operating, in response to making the second determination, the hybrid vehicle in a second mode wherein the combustion engine and the electric motor operate such that the charge level of the power supply decreases or is maintained below the threshold charge level.

2. The hybrid vehicle of claim 1, the functions further comprising:

receiving, from a computing device, a notification that the heat rejection load of the cooling system is expected to increase and become greater than the heat rejection capacity of

the cooling system based on expected operating conditions of the hybrid vehicle,

wherein making the first determination comprises using the received notification to make the first determination.

3. The hybrid vehicle of claim 1,

wherein making the first determination comprises determining that the heat rejection load of the cooling system is currently less than or equal to a heat rejection capacity of the cooling system, the functions further comprising:

receiving data representing a heat rejection load corresponding to current operating conditions of the hybrid vehicle, and

wherein making the first determination comprises determining that the heat rejection load represented by the received data is less than or equal to the heat rejection capacity of the cooling system.

4. The hybrid vehicle of claim 3, wherein the received data comprises data indicating one or more of a temperature currently associated with the cooling system, an air temperature currently associated with the hybrid vehicle, a traffic congestion level currently associated with the hybrid vehicle, a road grade currently associated with the hybrid vehicle, road conditions currently associated with the hybrid vehicle, or a current speed of the hybrid vehicle.

5. The hybrid vehicle of claim 3,

wherein the received data indicates a temperature currently associated with the cooling system, and

wherein determining that the heat rejection load represented by the received data is less than or equal to the heat rejection capacity of the cooling system comprises determining that the temperature indicated by the received data is less than a threshold temperature.

6. The hybrid vehicle of claim 3,

wherein the received data indicates an air temperature currently associated with the hybrid vehicle, and

wherein determining that the heat rejection load represented by the received data is less

than or equal to the heat rejection capacity of the cooling system comprises determining that the temperature indicated by the received data is less than a threshold temperature.

7. The hybrid vehicle of claim 3,

wherein the received data indicates a traffic congestion level currently associated with the hybrid vehicle, and

wherein determining that the heat rejection load represented by the received data is less than or equal to the heat rejection capacity of the cooling system comprises determining that the traffic congestion level indicated by the received data is less than a threshold traffic congestion level.

8. The hybrid vehicle of claim 3,

wherein the received data indicates a road grade currently associated with the hybrid vehicle, and

wherein determining that the heat rejection load represented by the received data is less than or equal to the heat rejection capacity of the cooling system comprises determining that the road grade indicated by the received data is less than a threshold road grade.

9. The hybrid vehicle of claim 3,

wherein the received data indicates a current speed of the hybrid vehicle, and

wherein determining that the heat rejection load represented by the received data is less than or equal to the heat rejection capacity of the cooling system comprises determining that the speed indicated by the received data is greater than or equal to a threshold speed.

10. The hybrid vehicle of claim 1, the functions further comprising:

receiving data representing a heat rejection load corresponding to expected operating conditions of the hybrid vehicle, and

wherein making the first determination comprises determining that the heat rejection load represented by the received data is expected to become greater than the heat rejection capacity of the cooling system.

11. The hybrid vehicle of claim 10, wherein the received data comprises data

indicating one or more of an expected temperature associated with the cooling system, an expected air temperature associated with the hybrid vehicle, an expected traffic congestion level associated with the hybrid vehicle, an expected road grade associated with the hybrid vehicle, expected road conditions associated with the hybrid vehicle, or an expected speed of the hybrid vehicle.

12. The hybrid vehicle of claim 10,

A) wherein the received data indicates an expected temperature associated with the cooling system, and wherein determining that the heat rejection load represented by the received data is expected to become greater than the heat rejection capacity of the cooling system comprises determining that the temperature indicated by the received data is greater than or equal to a threshold temperature; or

B) wherein the received data indicates an expected air temperature associated with the hybrid vehicle, and wherein determining that the heat rejection load represented by the received data is expected to become greater than the heat rejection capacity of the cooling system comprises determining that the temperature indicated by the received data is greater than or equal to a threshold temperature; or

C) wherein the received data indicates an expected traffic congestion level associated with the hybrid vehicle, and wherein determining that the heat rejection load represented by the received data is expected to become greater than the heat rejection capacity of the cooling system comprises determining that the traffic congestion level indicated by the received data is greater than or equal to a threshold traffic congestion level; or

D) wherein the received data indicates an expected road grade associated with the hybrid vehicle, and wherein determining that the heat rejection load represented by the received data is expected to become greater than the heat rejection capacity of the cooling system comprises determining that the road grade indicated by the received data is greater than or equal to a threshold road grade; or

E) wherein the received data indicates an expected speed associated with the hybrid vehicle, and wherein determining that the heat rejection load represented by the received data is expected to become greater than the heat rejection capacity of the cooling system comprises determining that the speed indicated by the received data is less than a threshold speed.

13. The hybrid vehicle of claim 10, the functions further comprising:

requesting heat rejection load data that corresponds with an itinerary of the hybrid vehicle,

wherein receiving the data comprises receiving the requested data.

14. The hybrid vehicle of claim 1,

wherein operating the hybrid vehicle in the first mode comprises operating the combustion engine at a throttle level that is greater than or equal to a threshold throttle level, and

wherein operating the hybrid vehicle in the second mode comprises operating the combustion engine at a throttle level that is less than the threshold throttle level.

15. The hybrid vehicle of claim 1,

wherein operating the hybrid vehicle in the first mode comprises operating the combustion engine at a substantially constant throttle level, and

wherein operating the hybrid vehicle in the second mode comprises operating the combustion engine to intermittently cycle between a first throttle level and a second throttle level that is less than the first throttle level.

16. The hybrid vehicle of claim 1, the functions further comprising:

making, after operating the hybrid vehicle in the second mode, a third determination that the heat rejection load of the cooling system has become less than or equal to the heat rejection capacity of the cooling system; and

operating, in response to making the third determination, the hybrid vehicle in the first mode.

17. The hybrid vehicle of claim 1, further comprising a user interface, the functions further comprising:

making, after operating the hybrid vehicle in the second mode, a third determination that the heat rejection load of the cooling system has become less than or equal to the heat rejection capacity of the cooling system; and

providing, via the user interface, an indication requesting that the power supply be

recharged via an external power source.

18. A method of operating a hybrid vehicle, the method comprising:

determining one or more expected operating conditions to be encountered by the hybrid vehicle;

making a first determination that a heat rejection load of a cooling system of the hybrid vehicle is expected to increase and become greater than a heat rejection capacity of the cooling system in response to the hybrid vehicle encountering on the one or more expected operating conditions;

in response to making the first determination and prior to the hybrid vehicle encountering the expected operating conditions, operating the hybrid vehicle in a first mode wherein the hybrid vehicle's combustion engine and electric motor operate such that a charge level of a power supply of the hybrid vehicle increases or is maintained above a threshold charge level;

making, after operating the hybrid vehicle in the first mode, a second determination that the heat rejection load of the cooling system has become greater than the heat rejection capacity of the cooling system; and

operating, in response to making the second determination, the hybrid vehicle in a second mode wherein the combustion engine and the electric motor operate such that the charge level of the power supply decreases or is maintained below the threshold charge level.

19. A non-transitory computer readable medium storing instructions that, when executed by one or more processors of a hybrid vehicle, cause the hybrid vehicle to perform functions comprising:

determining one or more expected operating conditions to be encountered by the hybrid vehicle;

making a first determination that a heat rejection load of a cooling system of the hybrid vehicle is expected to increase and become greater than a heat rejection capacity of the cooling system in response to the hybrid vehicle encountering the one or more expected operating conditions;

in response to making the first determination and prior to the hybrid vehicle encountering the expected operation conditions, operating the hybrid vehicle in a first mode

wherein the hybrid vehicle's combustion engine and electric motor operate such that a charge level of a power supply of the hybrid vehicle increases or is maintained above a threshold charge level;

making, after operating the hybrid vehicle in the first mode, a second determination that the heat rejection load of the cooling system has become greater than the heat rejection capacity of the cooling system; and

operating, in response to making the second determination, the hybrid vehicle in a second mode wherein the combustion engine and the electric motor operate such that the charge level of the power supply decreases or is maintained below the threshold charge level.

20. The hybrid vehicle of claim 1, wherein the heat rejection capacity of the cooling system is based on an amount of heat that the cooling system is capable of dissipating.