CLAIMS

What is claimed is:

1. A method of conserving battery power in a wireless device in communication with a wireless network, comprising:

determining an operating state of the wireless device;

determining a data traffic pattern associated with the current operating state, the data traffic pattern comprising a plurality of data uploads and downloads between the wireless device and the wireless network;

generating a plurality of wireless device connection state transition timers in accordance with preserving battery power based upon the operating state and data traffic pattern, wherein each of the plurality of wireless device connection state transition timers indicates an amount of elapsed time of data inactivity at the wireless device required before a connection state of the wireless device is changed; and

sending a wireless device connection state change request to the network, the wireless device connection state change request including at least one of the plurality of wireless device connection state transition timers, wherein when the network recognizes the wireless device connection state change request, the network issues an instruction to change the wireless device's connection state according to a requested wireless device connection state transition timer, otherwise, the network issues instructions to the wireless device to change the wireless device connection state according to a network default connection state transition timers.

2. The method as recited in claim 1, wherein the operating state comprises a current operating state and an anticipated operating state.

3. The method as recited in claim 2, wherein the anticipated operating state comprises an anticipated data traffic pattern.

4. The method as recited in any of claims 1 - 3, wherein the sending a wireless device connection state change request to the network comprises:

sending a change in a radio resource control (RRC) connection request by the wireless device to the wireless network;

causing the RRC connection state of the wireless device to change by the wireless network in response to the RRC connection request; and

sending a RRC connection change acknowledgement message by the wireless device to the wireless network, wherein the RRC connection change

acknowledgement message comprises an indication of the at least one of the plurality of wireless device connection state transition timers.

5. The method as recited in any of claims 1 - 4, wherein in response to a RadioBearerRelease message, the wireless device responds with a RadioBearerReleaseComplete message that comprises an indication of the at least one of the plurality of wireless device connection state transition timers.

6. The method as recited in any of claims 1 - 4, wherein in response to a RadioBearerReconfiguration message, the wireless device responds with a RadioBearerReconfigurationComplete message that comprises an indication of the at least one of the plurality of wireless device connection state transition timers.

7. The method as recited in any of claims 1 - 4, wherein in response to a TransportChannelReconfiguration message, the wireless device responds with a TransportReconfigurationComplete message that comprises an indication of the at least one of the plurality of wireless device connection state transition timers.

8. The method as recited in any of claims 1 - 4, wherein in response to a PhysicalChannelReconfiguration message, the wireless device responds with a PhysicalChannelReconfigurationComplete message that comprises an indication of the at least one of the plurality of wireless device connection state transition timers.

9. The method as recited in any of claims 1 - 4, wherein either a HandoverToUTRANComplete message or a CellChangedOrderFromUTranFailure message comprises an indication of the at least one of the plurality of wireless device connection state transition timers.

10. The method as recited in any of claims 1 - 4, wherein in response to a network message UTRANMobilityInformation, the wireless device responds with a UTRANMobilityInformationConfirm message that comprises an indication of the at least one of the plurality of wireless device connection state transition timers.

11. The method as recited in any of claims 1 - 4, wherein in response to any of the network messages CellUpdate and URAUpdate, the wireless device responds with a UTRANMobilityInformationConfirm message that comprises an indication of the at least one of the plurality of wireless device connection state transition timers.

12. The method as recited in any of claims 1 - 4, wherein in response to a RRC Connection Reestablishment message, the wireless device responds with a

RRCConnectionReestablishmentComplete message that comprises an indication of the at least one of the plurality of wireless device connection state transition timers.

13. The method as recited in any of claims 1 - 4, wherein in response to a RRC Connection ReConfiguration message, the wireless device responds with a RRCConnectionReconfigureationComplete message that comprises an indication of the at least one of the plurality of wireless device connection state transition timers.

14. A method of conserving battery power in a wireless device in communication with a wireless network, comprising:

determining an operating state of the wireless device;

determining a data traffic pattern associated with the current operating state, the data traffic pattern comprising a plurality of data uploads and downloads between the wireless device and the wireless network;

determining a preferred wireless device connection state for the wireless device based upon the operating state and the data traffic pattern; and

sending a wireless device connection state change request instruction (SCRI) to the network, the SCRI indicating the preferred wireless device connection state, wherein the wireless network responds by sending a state change command that causes the wireless device to transition from a current wireless connection state to the preferred wireless connection state.

15. The method as recited in claim 14, wherein when the SCRI indicates that the preferred wireless connection state is CELL_PCH or URA_PCH, the network causes the wireless device to transition to the CELL_PCH connection state or the URA_PCH connection state.

16. The method as recited in claim 14, wherein when the SCRI indicates that the preferred wireless connection state is IDLE, the network responds with a RRC_Connection_Release command that causes the wireless device to transition to the IDLE state.

17. The method as recited in claim 14, wherein when the SCRI indicates that the preferred wireless connection state is CELL_FACH, the network causes the wireless device to transition to the CELL_FACH connection state.

18. The method as recited in claim 17, the method further comprising:

when the wireless device determines an increase in data traffic, then

the wireless device determines that the preferred connection state is CELL_DCH and sends the SCRI requesting that the wireless network change the wireless device connection state from the CELL_FACH to the CELL_DCH connection state.

19. A mobile wireless device in communication with a wireless network, comprising:

a processor;

a battery; and

a wireless transceiver arranged to facilitate the communication with the wireless network, wherein the processor acts to conserve battery power by:

determining an operating state of the wireless device,

determining a data traffic pattern associated with the current operating state, the data traffic pattern comprising a plurality of data uploads and downloads between the wireless device and the wireless network,

generating a plurality of wireless device connection state transition timers in accordance with preserving battery power based upon the operating state and data traffic pattern, wherein each of the plurality of wireless device connection state transition timers indicates an amount of elapsed time of data inactivity at the wireless device required before a connection state of the wireless device is changed, and

sending a wireless device connection state change request to the network, the wireless device connection state change request including at least one of the plurality of wireless device connection state transition timers, wherein when the network recognizes the wireless device connection state change request, the network issues an instruction to update a wireless device connection state transition timer to a requested wireless device connection state transition timer, otherwise, the network issues instructions to the wireless device to update the wireless device connection state transition timer to a network default connection state transition timers.

20. The mobile wireless device as recited in claim 19, wherein the operating state comprises a current operating state and an anticipated operating state.

21. The mobile wireless device as recited in claim 20, wherein the anticipated operating state comprises an anticipated data traffic pattern.

22. The mobile wireless device as recited in claim 19, wherein the sending a wireless device connection state change request to the network comprises:

sending a change in a radio resource control (RRC) connection request by the wireless device to the wireless network;

causing the RRC connection state of the wireless device to change by the wireless network in response to the RRC connection request; and

sending a RRC connection change acknowledgement message by the wireless device to the wireless network, wherein the RRC connection change acknowledgement message comprises an indication of the at least one of the plurality of wireless device connection state transition timers.

23 A mobile wireless device in communication with a wireless network, comprising:

a processor;

a battery; and

a wireless transceiver arranged to facilitate the communication with the wireless network, wherein the processor acts to conserve battery power by:

determining an operating state of the wireless device,

determining a data traffic pattern associated with the current operating state, the data traffic pattern comprising a plurality of data uploads and downloads between the wireless device and the wireless network,

determining a preferred wireless device connection state for the wireless device based upon the operating state and the data traffic pattern, and

sending a wireless device connection state change request instruction (SCRI) to the network, the SCRI indicating the preferred wireless device connection state, wherein the wireless network responds by sending a state change command that causes the wireless device to transition from a current wireless connection state to the preferred wireless connection state.

24. The mobile wireless device as recited in claim 23, wherein when the SCRI indicates that the preferred wireless connection state is CELL_PCH or URA_PCH, the network causes the wireless device to transition to the CELL_PCH connection state or the URA_PCH connection state.

25. The mobile wireless device as recited in claim 23, wherein when the SCRI indicates that the preferred wireless connection state is IDLE, the network responds with a RRC_Connection_Release command that causes the wireless device to transition to the IDLE state.

26. The mobile wireless device as recited in claim 23, wherein when the SCRI indicates that the preferred wireless connection state is CELL_FACH, the network causes the wireless device to transition to the CELL_FACH connection state.

27. The mobile wireless device as recited in claims 26, further comprising:

when the wireless device determines an increase in data traffic, then the wireless device determines that the preferred connection state is CELL_DCH and sends the SCRI requesting that the wireless network change the wireless device connection state from the CELL_FACH to the CELL_DCH connection state.

28. A non-transitory computer program product for storing executable computer code for conserving battery power in a wireless device in communication with a wireless network, the computer program product comprising:

computer code for determining an operating state of the wireless device;

computer code for determining a data traffic pattern associated with the current operating state, the data traffic pattern comprising a plurality of data uploads and downloads between the wireless device and the wireless network;

computer code for generating a plurality of wireless device connection state transition timers in accordance with preserving battery power based upon the operating state and data traffic pattern, wherein each of the plurality of wireless device connection state transition timers indicates an amount of elapsed time of data inactivity at the wireless device required before a connection state of the wireless device is changed; and

computer code for sending a wireless device connection state change request to the network, the wireless device connection state change request including at least one of the plurality of wireless device connection state transition timers, wherein when the network recognizes the wireless device connection state change request, the network issues an instruction to update a wireless device connection state transition timer to a requested wireless device connection state transition timer, otherwise, the network issues instructions to the wireless device to update the wireless device connection state transition timer to a network default connection state transition timers.

29. The computer readable medium as recited in claim 28, wherein the operating state comprises a current operating state and an anticipated operating state.

30. The computer readable medium as recited in claim 29, wherein the anticipated operating state comprises an anticipated data traffic pattern.

31. The computer readable medium as recited in claim 28, wherein the sending a wireless device connection state change request to the network comprises:

sending a change in a radio resource control (RRC) connection request by the wireless device to the wireless network;

causing the RRC connection state of the wireless device to change by the wireless network in response to the RRC connection request; and

sending a RRC connection change acknowledgement message by the wireless device to the wireless network, wherein the RRC connection change acknowledgement message comprises an indication of the at least one of the plurality of wireless device connection state transition timers.

What is claimed is:

1. A method of conserving battery power of a wireless device in communication with a wireless network, the method comprising:

determining an operating state of the wireless device;

determining a data traffic pattern required to adequately service the operating state, the data traffic pattern comprising a plurality of data uploads and downloads between the wireless device and the wireless network;

generating a plurality of wireless device connection state transition timers in accordance with preserving battery power based upon the operating state and the data traffic pattern, wherein each of the plurality of wireless device connection state transition timers indicates an amount of elapsed time of data inactivity at the wireless device required before a connection state of the wireless device is changed; and

sending a wireless device connection state change request to the wireless network, the wireless device connection state change request including at least one of the plurality of wireless device connection state transition timers,

wherein when the wireless network recognizes the wireless device connection state change request, the wireless network issues an instruction to change the wireless device's connection state according to a requested wireless device connection state transition timer,

otherwise, the wireless network issues instructions to the wireless device to change the wireless device connection state according to a network default connection state transition timer.

2. The method as recited in claim 1, wherein the operating state comprises a current operating state and an anticipated operating state.

3. The method as recited in claim 2, wherein the anticipated operating state comprises an anticipated data traffic pattern.

4. The method as recited in any of claims 1 - 3, wherein sending the wireless device connection state change request to the wireless network comprises:

sending a change in a radio resource control (RRC) connection request by the wireless device to the wireless network;

causing a RRC connection state of the wireless device to change by the wireless network in response to the RRC connection request; and

sending a RRC connection change acknowledgement message by the wireless device to the wireless network,

wherein the RRC connection change acknowledgement message comprises an indication of the at least one of the plurality of wireless device connection state transition timers.

5. The method as recited in any of claims 1 - 4, wherein in response to a RadioBearerRelease message, the wireless device responds with a RadioBearerReleaseComplete message that comprises an indication of the at least one of the plurality of wireless device connection state transition timers.

6. The method as recited in any of claims 1 - 4, wherein in response to a RadioBearerReconfiguration message, the wireless device responds with a RadioBearerReconfigurationComplete message that comprises an indication of the at least one of the plurality of wireless device connection state transition timers.

7. The method as recited in any of claims 1 - 4, wherein in response to a TransportChannelReconfiguration message, the wireless device responds with a TransportChannelReconfigurationComplete message that comprises an indication of the at least one of the plurality of wireless device connection state transition timers.

8. The method as recited in any of claims 1 - 4, wherein in response to a PhysicalChannelReconfiguration message, the wireless device responds with a PhysicalChannelReconfigurationComplete message that comprises an indication of the at least one of the plurality of wireless device connection state transition timers.

9. The method as recited in any of claims 1 - 4, wherein either a HandoverToUTRANComplete message or a CellChangedOrderFromUTranFailure message comprises an indication of the at least one of the plurality of wireless device connection state transition timers.

10. The method as recited in any of claims 1 - 4, wherein in response to a UTRANMobilityInformation network message, the wireless device responds with a

UTRANMobilityInformationConfirm message that comprises an indication of the at least one of the plurality of wireless device connection state transition timers.

11. The method as recited in any of claims 1 - 4, wherein in response to any of a CellUpdate network message and a URAUpdate network message, the wireless device responds with a UTRANMobilityInformationConfirm message that comprises an indication of the at least one of the plurality of wireless device connection state transition timers.

12. The method as recited in any of claims 1 - 4, wherein in response to a RRC Connection Reestablishment message, the wireless device responds with a RRCConnectionReestablishmentComplete message that comprises an indication of the at least one of the plurality of wireless device connection state transition timers.

13. The method as recited in any of claims 1 - 4, wherein in response to a RRC Connection Reconfiguration message, the wireless device responds with a RRCConnectionReconfigurationComplete message that comprises an indication of the at least one of the plurality of wireless device connection state transition timers.

14. A method of conserving battery power in a wireless device in communication with a wireless network, the method comprising:

determining a current operating state and an anticipated operating state of the wireless device;

determining a data traffic pattern required to adequately service the current operating state, the data traffic pattern comprising a plurality of data uploads and downloads between the wireless device and the wireless network;

determining a preferred wireless device connection state for the wireless device based upon the current operating state, the anticipated operating state, and the data traffic pattern; and

sending a wireless device connection state change request instruction (SCRI) to the wireless network, the SCRI indicating the preferred wireless device connection state, wherein the wireless network responds by sending a state change command that causes the wireless device to transition from a current wireless device connection state to the preferred wireless device connection state.

15. The method as recited in claim 14, wherein when the SCRI indicates that the preferred wireless device connection state is CELL_PCH or URA_PCH, the wireless network causes the wireless device to transition to the CELL_PCH connection state or the URA_PCH connection state.

16. The method as recited in claim 14, wherein when the SCRI indicates that the preferred wireless device connection state is IDLE, the wireless network responds with a RRC_Connection_Release command that causes the wireless device to transition to the IDLE state.

17. The method as recited in claim 14, wherein when the SCRI indicates that the preferred wireless device connection state is CELL_FACH, the wireless network causes the wireless device to transition to the CELL_FACH connection state.

18. The method as recited in claim 17, further comprising:

in response to the wireless device determining an increase in data traffic, the wireless device determines that the preferred wireless device connection state is CELL_DCH and sends the SCRI requesting that the wireless network change the wireless device connection state from the CELL_FACH connection state to the CELL_DCH connection state.

19. A wireless device in communication with a wireless network, the wireless device comprising:

a processor;

a battery;

a wireless transceiver arranged to facilitate communication with the wireless network, the wireless transceiver in data communication with the processor; and

logic in data communication with the processor and the wireless transceiver, the logic configured to:

determining an operating state of the wireless device;

determining a data traffic pattern required to adequately service the determined operating state, the data traffic pattern comprising a plurality of data uploads and downloads between the wireless device and the wireless network;

generating a plurality of wireless device connection state transition timers in accordance with preserving battery power based upon the operating state and the data traffic pattern, wherein each of the plurality of wireless device connection state

transition timers indicates an amount of elapsed time of data inactivity at the wireless device required before a connection state of the wireless device is changed; and

sending a wireless device connection state change request to the wireless network, the wireless device connection state change request including at least one of the plurality of wireless device connection state transition timers,

wherein when the wireless network recognizes the wireless device connection state change request, the wireless network issues an instruction to update a wireless device connection state transition timer to a requested wireless device connection state transition timer, otherwise, the wireless network issues instructions to the wireless device to update the wireless device connection state transition timer to a network default connection state transition timer.

20. The wireless device as recited in claim 19, wherein the operating state comprises a current operating state and an anticipated operating state.

21. The wireless device as recited in claim 20, wherein the anticipated operating state comprises an anticipated data traffic pattern.

22. The wireless device as recited in claim 19, wherein sending the wireless device connection state change request to the wireless network comprises:

sending a change in a radio resource control (RRC) connection request by the wireless device to the wireless network;

causing a RRC connection state of the wireless device to change by the wireless network in response to the RRC connection request; and

sending a RRC connection change acknowledgement message by the wireless device to the wireless network, wherein the RRC connection change acknowledgement message comprises an indication of the at least one of the plurality of wireless device connection state transition timers.

23 A wireless device in communication with a wireless network, the wireless device comprising:

a processor;

a battery; and

a wireless transceiver arranged to facilitate communication with the wireless network, wherein the processor acts to conserve battery power by:

determining an operating state of the wireless device;

determining a data traffic pattern required to adequately service the determined operating state, the data traffic pattern comprising a plurality of data uploads and downloads between the wireless device and the wireless network;

determining a preferred wireless device connection state for the wireless device based upon the determined operating state and the determined data traffic pattern; and

sending a wireless device connection state change request instruction (SCRI) to the wireless network, the SCRI indicating the preferred wireless device connection state, wherein the wireless network responds by sending a state change command that causes the wireless device to transition from a current wireless device connection state to the preferred wireless device connection state.

24. The wireless device as recited in claim 23, wherein when the SCRI indicates that the preferred wireless device connection state is CELL_PCH or URA_PCH, the wireless network causes the wireless device to transition to the CELL_PCH connection state or the URA_PCH connection state.

25. The wireless device as recited in claim 23, wherein when the SCRI indicates that the preferred wireless device connection state is IDLE, the wireless network responds with a RRC_Connection_Release command that causes the wireless device to transition to the IDLE state.

26. The wireless device as recited in claim 23, wherein when the SCRI indicates that the preferred wireless device connection state is CELL_FACH, the wireless network causes the wireless device to transition to the CELL_FACH connection state.

27. The wireless device as recited in claim 26, wherein in response to the wireless device determining an increase in data traffic, the wireless device determines that the preferred wireless device connection state is CELL_DCH and sends the SCRI requesting that the wireless network change the wireless device connection state from the CELL_FACH connection state to the CELL_DCH connection state.

28. A non-transitory computer readable medium for storing executable computer code for conserving battery power of a wireless device in communication with a wireless network, the computer code comprising:

computer code for determining an operating state of the wireless device;

computer code for determining a data traffic pattern required to adequately service the determined operating state, the data traffic pattern comprising a plurality of data uploads and downloads between the wireless device and the wireless network;

computer code for generating a plurality of wireless device connection state transition timers in accordance with preserving battery power based upon the determined operating state and the determined data traffic pattern, wherein each of the plurality of wireless device connection state transition timers indicates an amount of elapsed time of data inactivity at the wireless device required before a connection state of the wireless device is changed; and

computer code for sending a wireless device connection state change request to the wireless network, the wireless device connection state change request including at least one of the plurality of wireless device connection state transition timers,

wherein when the wireless network recognizes the wireless device connection state change request, the wireless network issues an instruction to update a wireless device connection state transition timer to a requested wireless device connection state transition timer, otherwise, the wireless network issues instructions to the wireless device to update the wireless device connection state transition timer to a network default connection state transition timer.

29. The non-transitory computer readable medium as recited in claim 28, wherein the operating state comprises a current operating state and an anticipated operating state.

30. The non-transitory computer readable medium as recited in claim 29, wherein the anticipated operating state comprises an anticipated data traffic pattern.

31. The non-transitory computer readable medium as recited in claim 28, wherein sending the wireless device connection state change request to the wireless network comprises:

sending a change in a radio resource control (RRC) connection request by the wireless device to the wireless network;

causing a RRC connection state of the wireless device to change by the wireless network in response to the RRC connection request; and

sending a RRC connection change acknowledgement message by the wireless device to the wireless network, wherein the RRC connection change acknowledgement message comprises an indication of the at least one of the plurality of wireless device connection state transition timers.