CLAIMS

What is Claimed:

1. A wireless transmit/receive unit (WTRU), comprising:

a processor configured to:

determine a satellite coverage gap is upcoming;

transmit, to a network, a coverage gap report based on the determination of the satellite coverage gap, wherein the coverage gap report includes an indication that the WTRU has determined the satellite coverage gap is upcoming, a WTRU expected time that the WTRU will enter the satellite coverage gap, and a WTRU expected duration of the satellite coverage gap;

receive, from the network, a first message that includes a network expected time that the WTRU will enter the satellite coverage gap, and a network expected duration of the satellite coverage gap; and

in response to the first message, cancel one or more UL transmissions, suspend one or more timers, and suspend measurement reporting.

2. The WTRU of claim 1, wherein the first message further indicates a condition to resume in-coverage operation.

3. The WTRU of claim 2, wherein the processor is further configured to:

based on the condition to resume in-coverage operation being satisfied, send an UL transmission .

4. The WTRU of claim 2, wherein the processor is further configured to:

based on the condition to resume in-coverage operation being satisfied: resume one or more RRC timers and corresponding actions; or resume radio link monitoring.

5. The WTRU of claim 2, wherein the condition to resume in-coverage operation includes an absolute universal time coordinated (UTC) being reached or a target measurement being above a threshold.

6. The WTRU of claim 2, wherein:

the first message further indicates a target cell configuration, and

based on the condition to resume in-coverage operation being satisfied, the processor is further configured to apply the target cell configuration and synchronize to a target cell.

7. The WTRU of claim 6, wherein the processor is further configured to:

transmit a second message, wherein the second message is transmitted to the target cell.

8. The WTRU of claim 1, wherein the coverage gap report further includes an incoming target ID or a cell ID.

9. The WTRU of claim 1, wherein the determination that the satellite coverage gap is upcoming is based on satellite information.

10. A method associated with a wireless transmit/receive unit (WTRU), the method comprising:

determining a satellite coverage gap is upcoming;

transmitting, to a network, a coverage gap report based on the determination of the satellite coverage gap, wherein the coverage gap report includes an indication that the WTRU has determined the satellite coverage gap is upcoming, a WTRU expected time that the WTRU will enter the satellite coverage gap, and a WTRU expected duration of the satellite coverage gap;

receiving, from the network, a first message that includes a network expected time that the WTRU will enter the satellite coverage gap, and a network expected duration of the satellite coverage gap; and

in response to the first message, cancelling one or more UL transmissions, suspending one or more timers, and suspending measurement reporting.

11. The method of claim 10, the first message further indicates a condition to resume in-coverage operation.

12. The method of claim 11, further comprising:

based on the condition to resume in-coverage operation being satisfied, sending an UL transmission.

13. The method of claim 11, further comprising:

based on the condition to resume in-coverage operation being satisfied: resuming one or more RRC timers and corresponding actions; or resuming radio link monitoring.

14. The method of claim 11, wherein the condition to resume in-coverage operation includes an absolute universal time coordinated (UTC) being reached or a target measurement being above a threshold.

15. The method of claim 11, wherein the first message further indicates a target cell configuration, further comprising:

based on the condition to resume in-coverage operation being satisfied, applying the target cell configuration and synchronizing to a target cell.

16. The method of claim 15, further comprising:

transmitting a second message, wherein the second message is transmitted to the target cell.

17. The method of claim 11, wherein the coverage gap report further includes an incoming target ID or a cell ID.

18. The method of claim 11, wherein the determination that the satellite coverage gap is upcoming is based on satellite information.