CLAIMS

1. A method of encoding video data, the method comprising: partitioning a picture into a plurality of tiles, the picture being in a sequence of video pictures of the video data, the picture having a plurality of coding tree block (CTB) rows, each of the CTB rows being 1 CTB high, and each respective CTB row of the plurality of CTB rows forming a respective tile of the plurality of tiles; performing wavefront parallel processing (WPP) to generate a plurality of sub-streams, each respective sub-stream of the plurality of sub-streams including a consecutive series of encoded bits of one tile of the plurality of tiles, wherein none of the sub-bitstreams contains coded bits of more than one tile and at least some of the sub-streams include padding bits to ensure byte alignment of the sub-streams; signaling, in a bitstream, a syntax element having a particular value, the syntax element having the particular value indicating that WPP is used to encode the picture and that each respective CTB row of the plurality of CTB rows forms a respective tile of the plurality of tiles; and generating a respective coded slice network abstraction layer (NAL) unit that includes a slice header and slice data, the slice header including a number of entry offsets syntax element and a set of entry offset syntax elements, the number of entry offsets syntax element specifying the total number of entry offset syntax elements in the set of entry offset syntax elements, the slice data consisting of the total number of entry offset syntax elements plus 1 sub-streams of the plurality of sub-streams, and each respective entry offset syntax element of the plurality of entry offset syntax elements specifying a respective entry point offset in bytes.

2. The method of claim 1, wherein signaling the syntax element comprises generating a picture parameter set (PPS) that includes the syntax element.

3. The method of claim 1, wherein signaling the syntax element comprises generating a sequence parameter set (SPS) that includes the syntax element.

4. The method of claim 1, wherein performing WPP to generate the plurality of sub-streams comprises: in response to determining that a first CTB is separated from a left boundary of the picture by a single CTB, storing context variables associated with the first CTB; and entropy encoding, based at least in part on the context variables associated with the first CTB, one or more syntax elements of a second CTB, the second CTB being adjacent to the left boundary of the picture and one row of CTBs lower than the first CTB.

5. The method of claim 1, wherein the method is performed by a mobile computing device.

6. A computing device for encoding video data, the computing device comprising: a computer-readable storage medium configured to store the video data; and one or more processors configured to: partition a picture into a plurality of tiles, the picture being in a sequence of video pictures of the video data, the picture having a plurality of coding tree block (CTB) rows, each of the CTB rows being 1 CTB high, and each respective CTB row of the plurality of CTB rows forming a respective tile of the plurality of tiles; perform wavefront parallel processing (WPP) to generate a plurality of sub-streams, each respective sub-stream of the plurality of sub-streams including a consecutive series of encoded bits of one tile of the plurality of tiles, wherein none of the sub-bitstreams contains coded bits of more than one tile and at least some of the sub-streams include padding bits to ensure byte alignment of the sub-

streams; signal, in a bitstream, a syntax element having a particular value, the syntax element having the particular value indicating that WPP is used to encode the picture and that each respective CTB row of the plurality of CTB rows forms a respective tile of the plurality of tiles; and generate a respective coded slice network abstraction layer (NAL) unit that includes a slice header and slice data, the slice header including a number of entry offsets syntax element and a set of offset syntax elements, the number of entry offsets syntax element specifying the total number of offset syntax elements in the set of offset syntax elements, the slice data consisting of the total number of offset syntax elements plus 1 sub-streams of the plurality of sub-streams, and each respective entry offset syntax element of the plurality of offset syntax elements specifying a respective entry point offset in bytes.

7. The computing device of claim 6, wherein the one or more processors are configured to generate a picture parameter set (PPS) that includes the syntax element.

8. The computing device of claim 6, wherein the one or more processors are configured to generate a sequence parameter set (SPS) that includes the syntax element.

9. The computing device of claim 6, wherein the one or more processors are configured to: store, in response to determining that a first CTB is separated from a left boundary of the picture by a single CTB, context variables associated with the first CTB; and entropy encode, based at least in part on the context variables associated with the first CTB, one or more syntax elements of a second CTB, the second CTB being adjacent to the left boundary of the picture and one row of CTBs lower than the first CTB.

10. The computing device of claim 6, wherein the computing device is a mobile computing device.

11. The computing device of claim 6, wherein the computing device comprises at least one of: an integrated circuit; a microprocessor; or a wireless communication device.

12. The computing device of claim 6, further comprising a camera configured to capture the video data.

13. A computing device for encoding video data, the computing device comprising: means for partitioning a picture into a plurality of tiles, the picture being in a sequence of video pictures of the video data, the picture having a plurality of coding tree block (CTB) rows, each of the CTB rows being 1 CTB high, and each respective CTB row of the plurality of CTB rows forming a respective tile of the plurality of tiles; means for performing wavefront parallel processing (WPP) to generate a plurality of sub-streams, each respective sub-stream of the plurality of sub-streams including a consecutive series of encoded bits of one tile of the plurality of tiles, wherein none of the sub-bitstreams contains coded bits of more than one tile and at least some of the sub-streams include padding bits to ensure byte alignment of the sub-streams; signaling, in a bitstream, a syntax element having a particular value, the syntax element having the particular value indicating that WPP is used to encode the picture and that each respective CTB row of the plurality of CTB rows forms a respective tile of the plurality of tiles; and means for generating a respective coded slice network abstraction layer (NAL) unit that includes a slice header and slice data, the slice header including a number of entry offsets syntax element and a set of entry offset syntax elements, the number of entry offsets syntax element specifying the total number of entry offset syntax elements in the set of entry offset syntax elements, the slice data consisting of the total number of entry offset syntax elements plus 1 sub-streams of the plurality of

sub-streams, and each respective entry offset syntax element of the plurality of entry offset syntax elements specifying a respective entry point offset in bytes.

14. A non-transitory computer-readable storage medium that stores instructions that, when executed by one or more processors of a computing device for encoding video data, configure the computing device to: partition a picture into a plurality of tiles, the picture being in a sequence of video pictures of the video data, the picture having a plurality of coding tree block (CTB) rows, each of the CTB rows being 1 CTB high, and each respective CTB row of the plurality of CTB rows forming a respective tile of the plurality of tiles; perform wavefront parallel processing (WPP) to generate a plurality of sub-streams, each respective sub-stream of the plurality of sub-streams including a consecutive series of encoded bits of one tile of the plurality of tiles, wherein none of the sub-bitstreams contains coded bits of more than one tile and at least some of the sub-streams include padding bits to ensure byte alignment of the sub-streams; signal, in a bitstream, a syntax element having a particular value, the syntax element having the particular value indicating that WPP is used to encode the picture and that each respective CTB row of the plurality of CTB rows forms a respective tile of the plurality of tiles; and generate a respective coded slice network abstraction layer (NAL) unit that includes a slice header and slice data, the slice header including a number of entry offsets syntax element and a set of entry offset syntax elements, the number of entry offsets syntax element specifying the total number of entry offset syntax elements in the set of entry offset syntax elements, the slice data consisting of the total number of entry offset syntax elements plus 1 sub-streams of the plurality of sub-streams, and each respective entry offset syntax element of the plurality of entry offset syntax elements specifying a respective entry point offset in bytes.

15. A method of decoding video data, the method comprising: receiving a bitstream that includes a coded slice network abstraction layer (NAL) unit that includes a slice header and slice data, the slice header including a number of entry offsets syntax element and a set of offset syntax elements, the number of entry offsets syntax element specifying the total number of offset syntax elements in the set of offset syntax elements, the slice data consisting of the total number of offset syntax elements plus 1 sub-streams of a plurality of sub-streams, each respective entry offset syntax element of the plurality of offset syntax elements specifying a respective entry point offset in bytes, and each respective sub-stream of the plurality of sub-streams including a consecutive series of encoded bits of one tile of a plurality of tiles, wherein a picture of the video data is partitioned into the plurality of tiles, the picture has a plurality of coding tree block (CTB) rows, each of the CTB rows being 1 CTB high, and at least some of the sub-bitstreams include padding bits to ensure byte alignment of the sub-bitstreams; determining, based on a syntax element in the bitstream having a particular value, that the picture is encoded using wavefront parallel processing (WPP) and that each respective CTB row of the plurality of CTB rows forms a respective tile of the plurality of tiles; and decoding the picture using WPP.

16. The method of claim 15, further comprising, determining, based at least in part on the entry offset syntax elements, positions in memory of the sub-streams.

17. The method of claim 15, wherein the bitstream includes a picture parameter set (PPS) that includes the syntax element.

18. The method of claim 15, wherein the bitstream includes a sequence parameter set (SPS) that includes the syntax element.

19. The method of claim 15, wherein decoding the picture using WPP comprises: in response to determining that a first CTB is separated from a left boundary of the picture by a single CTB, storing context variables associated with the first CTB; and entropy decoding, based at least in part on the context variables associated with the first CTB, one or more syntax elements of a second CTB, the second CTB being adjacent to the left boundary of the picture and one row of CTBs lower than the first CTB.

20. The method of claim 15, wherein the method is performed by a mobile computing device.

21. A computing device for decoding video data, the computing device comprising: a computer-readable data storage medium configured to store the video data; and one or more processors configured to: receive a bitstream that includes a coded slice network abstraction layer (NAL) unit that includes a slice header and slice data, the slice header including a number of entry offsets syntax element and a set of offset syntax elements, the number of entry offsets syntax element specifying the total number of offset syntax elements in the set of offset syntax elements, the slice data consisting of the total number of offset syntax elements plus 1 sub-streams of a plurality of sub-streams, each respective entry offset syntax element of the plurality of offset syntax elements specifying a respective entry point offset in bytes, and each respective sub-stream of the plurality of sub-streams including a consecutive series of encoded bits of one tile of a plurality of tiles, wherein a picture of the video data is partitioned into the plurality of tiles, the picture has a plurality of coding tree block (CTB) rows, each of the CTB rows being 1 CTB high, and at least some of the sub-bitstreams include padding bits to ensure byte alignment of the sub-bitstreams; determine, based on a syntax element in the bitstream having a particular value, that the picture is encoded using wavefront parallel processing (WPP) and that each respective CTB row of the plurality of CTB rows forms a respective tile of the plurality of tiles; and decode the picture using WPP.

22. The computing device of claim 21, wherein the bitstream includes a picture parameter set (PPS) that includes the syntax element.

23. The computing device of claim 21, wherein the bitstream includes a sequence parameter set (SPS) that includes the syntax element.

24. The computing device of claim 21, wherein the one or more processors are configured to: store, in response to determining that a first CTB is separated from a left boundary of the picture by a single CTB, context variables associated with the first CTB; and entropy decode, based at least in part on the context variables associated with the first CTB, one or more syntax elements of a second CTB, the second CTB being adjacent to the left boundary of the picture and one row of CTBs lower than the first CTB.

25. The computing device of claim 21, wherein the computing device is a mobile computing device.

26. The computing device of claim 21, wherein the computing device comprises at least one of: an integrated circuit; a microprocessor; or a wireless communication device.

27. The computing device of claim 21, further comprising a display configured to display the decoded

video data.

28. A computing device for decoding video data, the computing device comprising: means for receiving a bitstream that includes a coded slice network abstraction layer (NAL) unit that includes a slice header and slice data, the slice header including a number of entry offsets syntax element and a set of offset syntax elements, the number of entry offsets syntax element specifying the total number of offset syntax elements in the set of offset syntax elements, the slice data consisting of the total number of offset syntax elements plus 1 sub-streams of a plurality of sub-streams, each respective entry offset syntax element of the plurality of offset syntax elements specifying a respective entry point offset in bytes, and each respective sub-stream of the plurality of sub-streams including a consecutive series of encoded bits of one tile of a plurality of tiles, wherein a picture of the video data is partitioned into the plurality of tiles, the picture has a plurality of coding tree block (CTB) rows, each of the CTB rows being 1 CTB high, and at least some of the sub-bitstreams include padding bits to ensure byte alignment of the sub-bitstreams; means for determining, based on a syntax element in the bitstream having a particular value, that the picture is encoded using wavefront parallel processing (WPP) and that each respective CTB row of the plurality of CTB rows forms a respective tile of the plurality of tiles; and means for decoding the picture using WPP.

29. A non-transitory computer-readable storage medium that stores instructions that, when executed by one or more processors of a computing device for decoding video data, configure the computing device to: receive a bitstream that includes a coded slice NAL unit that includes a slice header and slice data, the slice header including a number of entry offsets syntax element and a set of offset syntax elements, the number of entry offsets syntax element specifying the total number of offset syntax elements in the set of offset syntax elements, the slice data consisting of the total number of offset syntax elements plus 1 sub-streams of a plurality of sub-streams, each respective entry offset syntax element of the plurality of offset syntax elements specifying a respective entry point offset in bytes, and each respective sub-stream of the plurality of sub-streams including a consecutive series of encoded bits of one tile of a plurality of tiles, wherein a picture of the video data is partitioned into the plurality of tiles, the picture has a plurality of coding tree block (CTB) rows, each of the CTB rows being 1 CTB high, and at least some of the sub-bitstreams include padding bits to ensure byte alignment of the sub-bitstreams; determine, based on a syntax element in the bitstream having a particular value, that the picture is encoded using wavefront parallel processing (WPP) and that each respective CTB row of the plurality of CTB rows forms a respective tile of the plurality of tiles; and decode the picture using WPP.