CLAIMS

What is claimed is:

1. A method implemented by a video decoder and comprising:

receiving, by the video decoder, a video bitstream comprising a reference picture list (RPL) flag, wherein the RPL flag equal to a first value specifies that RPL signaling is present in a picture header (PH), and wherein the RPL flag equal to a second value specifies that RPL signaling is not present in the PH and may be present in slice headers; and

decoding, by the video decoder using the RPL flag, a coded picture to obtain a decoded picture.

2. The method of claim 1, wherein the first value is 1.

3. The method of claim 1 or 2~~any of claims 1-2~~, wherein the second value is 0.

4. The method of any one of claims 1-3, wherein the bitstream further comprises an RPL sequence parameter set (SPS) flag, wherein the RPL SPS flag specifies that RPL i is derived based on one of ref_pic_list_struct(listIdx, rplsIdx) syntax structures with listIdx equal to i in an SPS or specifies that RPL i is derived based on one of ref_pic_list_struct(listIdx, rplsIdx) syntax structures with listIdx equal to i that is directly included.

5. The method of any one of claims 1-4, wherein the bitstream further comprises an RPL index, wherein the RPL index specifies an index, into a list of ref_pic_list_struct(listIdx, rplsIdx) syntax structures with listIdx equal to i included in a sequence parameter set (SPS), of a ref_pic_list_struct(listIdx, rplsIdx) syntax structure with listIdx equal to i that is used for derivation of RPL i of a current picture.

6. The method of any one of claims 1-5, further comprising displaying the decoded picture on a display of an electronic device.

7. The method of any one of claims 1-6, wherein when non-picture level syntax elements are present in the PH, corresponding syntax elements shall not be present in any slice of the picture associated with the PH containing the syntax elements.

~~8. A video decoder comprising:~~

~~a memory configured to store instructions; and~~

~~a processor coupled to the memory and configured to execute the instructions to perform any of claims 1-7.~~

~~9. A computer program product comprising computer-executable instructions for storage on a non-transitory medium and that, when executed by a processor, cause a video decoder to perform any of claims 1-7.~~

8~~10~~. A method implemented by a video encoder and comprising:

generating a reference picture list (RPL) flag, wherein the RPL flag equal to a first value specifies that RPL signaling is present in a picture header (PH), and wherein the RPL flag equal to a second value specifies that RPL signaling is not present in the PH and may be present in slice headers;

encoding, by the video encoder, the RPL flag into a video bitstream; and

storing, by the video encoder, the video bitstream for communication toward a video decoder.

9~~11~~. The method of claim 8~~10~~, wherein the first value is 1.

10~~12~~. The method of claim 8 or 9~~any of claims 10-11~~, wherein the second value is 0.

11~~13~~. The method of any one of claims 8~~10~~-10~~2~~, further comprising generating an RPL sequence parameter set (SPS) flag, wherein the RPL SPS flag specifies that RPL i is derived based on one of ref_pic_list_struct(listIdx, rplsIdx) syntax structures with listIdx equal to i in an SPS or specifies that RPL i is derived based on one of ref_pic_list_struct(listIdx, rplsIdx) syntax structures with listIdx equal to i that is directly included.

12~~14~~. The method of any one of claims 8~~10~~-11~~13~~, further comprising generating an RPL index, wherein the RPL index specifies an index, into a list of ref_pic_list_struct(listIdx, rplsIdx) syntax structures with listIdx equal to i included in a sequence parameter set (SPS), of a ref_pic_list_struct(listIdx, rplsIdx) syntax structure with listIdx equal to i that is used for derivation of RPL i of a current picture.

13~~5~~. The method of any one of claims 8~~10~~-12~~4~~, wherein when non-picture level syntax elements are present in the PH, corresponding syntax elements shall not be present in any slice of the picture associated with the PH containing the syntax elements.

~~16. A video encoder comprising:~~
~~a memory configured to store instructions; and~~
~~a processor coupled to the memory and configured to execute the instructions to perform any of claims 10-15.~~

~~17. A computer program product comprising computer-executable instructions for storage on a non-transitory medium and that, when executed by a processor, cause a video encoder to perform any of claims 10-15.~~

~~18. A video coding system comprising:~~
~~an encoder; and~~
~~a decoder,~~
~~wherein the encoder or the decoder is configured to perform any of claims 1-7 or 10-15.~~

14~~9~~. A method implemented by a video decoder and comprising:

receiving, by the video decoder, a video bitstream comprising a sample adaptive offset (SAO) flag, wherein the SAO flag equal to a first value specifies that SAO signaling is present in a picture header (PH), and wherein the SAO flag equal to a second value specifies that SAO signaling is not present in the PH and may be present in slice headers; and

decoding, by the video decoder using the SAO flag, a coded picture to obtain a decoded picture.

1520. The method of claim 1419, further comprising displaying the decoded picture on a display of an electronic device.

1621. The method of ~~any of claims 19-20~~claim 14 or 15, wherein when non-picture level syntax elements are present in the PH, corresponding syntax elements shall not be present in any slice of the picture associated with the PH containing the syntax elements.

~~22. A video decoder comprising:~~

~~a memory configured to store instructions; and~~

~~a processor coupled to the memory and configured to execute the instructions to perform any of claims 19-21.~~

~~23. A computer program product comprising computer-executable instructions for storage on a non-transitory medium and that, when executed by a processor, cause a video decoder to perform any of claims 19-21.~~

1724. A method implemented by a video encoder and comprising:

generating a sample adaptive offset (SAO) flag, wherein the SAO flag equal to a first value specifies that SAO signaling is present in a picture header (PH), and wherein the SAO flag equal to a second value specifies that SAO signaling is not present in the PH and may be present in slice headers;

encoding, by the video encoder, the SAO flag into a video bitstream; and

storing, by the video encoder, the video bitstream for communication toward a video decoder.

1825. The method of claim 1724, wherein when non-picture level syntax elements are present in the PH, corresponding syntax elements shall not be present in any slice of the picture associated with the PH containing the syntax elements.

~~26. A video encoder comprising:~~

~~a memory configured to store instructions; and~~

~~a processor coupled to the memory and configured to execute the instructions to perform any of claims 24-25.~~

~~27. A computer program product comprising computer-executable instructions for storage on a non-transitory medium and that, when executed by a processor, cause a video encoder to perform any of claims 24-25.~~

~~28. A video coding system comprising:~~

~~an encoder; and~~

~~a decoder,~~

~~wherein the encoder or the decoder is configured to perform any of claims 19-21 or 24-25.~~

19~~29~~. A method implemented by a video decoder and comprising:

receiving, by the video decoder, a video bitstream comprising an adaptive loop filter (ALF) flag, wherein the ALF flag equal to a first value specifies that ALF signaling is present in a picture header (PH), and wherein the ALF flag equal to a second value specifies that ALF signaling is not present in the PH and may be present in slice headers; and

decoding, by the video decoder using the ALF flag, a coded picture to obtain a decoded picture.

20~~30~~. The method of claim 19~~29~~, further comprising displaying the decoded picture on a display of an electronic device.

21~~31~~. The method of claim 19 or 20~~any of claims 29-30~~, wherein when non-picture level syntax elements are present in the PH, corresponding syntax elements shall not be present in any slice of the picture associated with the PH containing the syntax elements.

2232. A video decoder comprising:

a memory configured to store instructions; and

a processor coupled to the memory and configured to execute the instructions to perform any one of claims 1-7, 14-16, 1929-2131.

233. A computer program product comprising computer-executable instructions for storage on a non-transitory medium and that, when executed by a processor, cause a video decoder to perform any one of claims 1-7, 14-16, 19-2129-31.

234. A method implemented by a video encoder and comprising:

generating an adaptive loop filter (ALF) flag, wherein the ALF flag equal to a first value specifies that ALF signaling is present in a picture header (PH), and wherein the ALF flag equal to a second value specifies that ALF signaling is not present in the PH and may be present in slice headers;

encoding, by the video encoder, the ALF flag into a video bitstream; and

storing, by the video encoder, the video bitstream for communication toward a video decoder.

235. The method of claim 234, wherein when non-picture level syntax elements are present in the PH, corresponding syntax elements shall not be present in any slice of the picture associated with the PH containing the syntax elements.

236. A video encoder comprising:

a memory configured to store instructions; and

a processor coupled to the memory and configured to execute the instructions to perform any one of claims 8-13, 17-18 and 24-2534-35.

2737. A computer program product comprising computer-executable instructions for storage on a non-transitory medium and that, when executed by a processor, cause a video encoder to perform any one of claims 8-13, 17-18 and 24-2534-35.

~~38. A video coding system comprising:~~

~~an encoder; and~~

~~a decoder,~~

~~wherein the encoder or the decoder is configured to perform any of claims 29-31 or 34-35.~~

2839. A method implemented by a video decoder and comprising:

receiving, by the video decoder, a video bitstream comprising a syntax element, wherein the syntax element specifies that information may be present or is not present in a picture header (PH) or specifies that the information may be present or is not present in slice headers; and

decoding, by the video decoder using the syntax element, a coded picture to obtain a decoded picture.

29. A computer-readable medium comprising a bitstream encoded or decoded by the method of any one of claims 1-21, 24-25 and 28.