CLAIMS:

1. A method for video decoding in a decoder, comprising:

decoding coded information of a coding unit (CU) from a coded video bitstream, the coded information indicating a last position of non-zero transform coefficients of a first coding block (CB) of the CU;

determining whether a secondary transform index is signaled in the coded information based on whether the last position of non-zero transform coefficients indicates that the first CB of the CU has only zero coefficients or only one nonzero coefficient at the last coefficient position, wherein the secondary transform index is determined to be not signaled in the coded information in response to the last position of non-zero transform coefficients indicating that the first CB of the CU has only zero coefficients or only one nonzero coefficient at the last coefficient position;

determining whether to perform ~~a~~ the secondary transform on a second CB of the CU based on whether the secondary transform index is determined to be signaled in the coded information;

responsive to the secondary transform being determined to be performed, performing the secondary transform on the second CB and reconstructing the second CB; and

responsive to the secondary transform being determined not to be performed, reconstructing the second CB without performing the secondary transform on the second CB.

~~2. The method of claim 1, wherein the determining whether the secondary transform index is signaled in the coded information based on the last position comprises:~~

~~determining whether the secondary transform index is signaled in the coded information based on whether the last position of non-zero transform coefficients indicates that the first CB of the CU has only zero coefficients or only one nonzero coefficient at the last coefficient position, wherein the secondary transform index is determined to be not signaled in the coded information in response to the last position of non-zero transform coefficients indicating that the first CB of the CU has only zero coefficients or only one nonzero coefficient at the last coefficient position.~~

~~3~~2. The method of claim 1~~ or 2~~, wherein the last position includes a horizontal component and a vertical component, and both the horizontal component and the vertical component have a value of zero.

~~4~~3. The method of claim ~~3~~2, wherein the determining whether the secondary transform index is signaled further comprises:

determining whether the horizontal component of the last position is less than a first threshold and the vertical component of the last position is less than a second threshold; and

responsive to the horizontal component being determined to be less than the first threshold and the vertical component being determined to be less than the second threshold, determining that the secondary transform index is not signaled in the coded information.

~~5~~4. The method of claim ~~3~~2, wherein the determining whether the secondary transform index is signaled further comprises:

determining whether a sum of the horizontal component and the vertical component of the last position is less than a threshold; and

responsive to the sum being determined to be less than the threshold, determining that the secondary transform index is not signaled in the coded information.

~~6~~5. The method of claim ~~3~~2, wherein the determining whether the secondary transform index is signaled further comprises:

determining whether a minimum one of (i) the horizontal component and (ii) the vertical component of the last position is less than a threshold; and

responsive to the minimum one being determined to be less than the threshold, determining that the secondary transform index is not signaled in the coded information.

~~7~~6. The method of claim ~~3~~2, wherein the determining whether the secondary transform index is signaled further comprises:

determining whether a maximum one of (i) the horizontal component and (ii) the vertical component of the last position is less than a threshold; and

responsive to the maximum one being determined to be less than the threshold, determining that the secondary transform index is not signaled in the coded information.

~~8~~7. The method of any one of claims 1-~~7~~6, wherein

the first CB is a luma block;

the last position is a last luma position for the luma block; and

the determining whether the secondary transform index is signaled further includes determining whether the secondary transform index is signaled based on the last luma position.

~~9~~8. The method of any one of claims 1-~~3~~2, wherein

the first CB is a luma block;

the last position is a last luma position for the luma block;

the CU further includes a chroma block;

the coded information further indicates a last chroma position of non-zero transform coefficients for the chroma block; and

the determining whether the secondary transform index is signaled further includes determining whether the secondary transform index is signaled based on the last luma position and the last chroma position.

~~10~~9. ~~A method for video decoding in a decoder~~The method of any one of claims 1-8, further comprising:

decoding ~~coding~~ the coded information of ~~a coding unit (~~the CU~~)~~ from ~~a~~ the coded video bitstream, the ~~coding~~ coded information indicating a size of the CU; and

determining whether ~~a~~ the secondary transform is allowed based on the size of the CU and a CU size threshold, wherein

when the size of the CU is less than or equal to the CU size threshold, the secondary transform is determined to be allowed, and when the size of the CU is larger than the CU size threshold, the secondary transform is determined not to be allowed.

~~11~~10. The method of claim ~~10~~9, wherein the CU size threshold is a maximum size of a transform unit in the CU.

11. A method for video encoding in an encoder, comprising:

obtaining coded information of a coding unit (CU),

wherein the coded information indicates a last position of non-zero transform coefficients of a first coding block (CB) of the CU, and

the last position is to determine whether a secondary transform index is signaled in the coded information, wherein the secondary transform index is determined to be not to be signaled in the coded information when the last position of non-zero transform coefficients indicates that the first CB of the CU has only zero coefficients or only one nonzero coefficient at the last coefficient position,

wherein whether the secondary transform index being determined to be signaled in the coded information indicates whether the secondary transform is to be performed on a second CB,

the secondary transform being to be performed on the second CB indicates that the secondary transform is performed on the second CB and the second CB is reconstructed, and

the secondary transform being not to be performed on the second CB indicates that the second CB is reconstructed without performing the secondary transform on the second CB; and

signaling a coded video bitstream including the coded information.

12. The method of claim 11, wherein when the secondary transform index is not signaled in the coded information, a horizontal component of the last position is less than a first threshold and a vertical component of the last position is less than a second threshold.

13. The method of claim 11, wherein when the secondary transform index is not signaled in the coded information, a sum of a horizontal component and a vertical component of the last position is less than a threshold.

14. The method of claim 11, wherein when the secondary transform index is not signaled in the coded information, a minimum one of (i) a horizontal component and (ii) a vertical component of the last position is less than a threshold.

15. The method of claim 11, wherein when the secondary transform index is not signaled in the coded information, a maximum one of (i) a horizontal component and (ii) a vertical component of the last position is less than a threshold.

16. The method of any one of claims 11-15, wherein

the coded information indicates a size of the CU; and

the size of the CU being less than or equal to a CU size threshold indicates the secondary transform is to be allowed, and the size of the CU being larger than the CU size threshold indicates the secondary transform is not to be allowed.

~~12. The method of claim 10 or 11, further comprising:~~

~~when the size of the CU is less than or equal to the CU size threshold,~~

~~determining a number of non-zero transform coefficients for at least one CB in the CU, a size of each of the at least one CB being larger than or equal to a first threshold; and~~

~~responsive to the number of non-zero transform coefficients being less than a second threshold, determining that a secondary transform index is not signaled in the coding information.~~

~~13. The method of claim 12, wherein~~

~~the coding information indicates that a color format for the CU is YUV 4:2:0;~~

~~the CU includes a luma block and two chroma blocks; and~~

~~the method further includes:~~

~~determining whether a first dimension of the luma block is 4 and a second dimension of the luma block is N, N being larger than or equal to 4; and~~

~~responsive to the first and second dimensions being determined to be 4 and N, respectively, the determining the number of non-zero transform coefficients includes determining the number of non-zero transform coefficients from only the luma block, the at least one CB being the luma block.~~

~~14. The method of claim 12, wherein~~

~~the coding information indicates that a color format for the CU is YUV 4:2:2;~~

~~the CU includes a luma block and two chroma blocks; and~~

~~the method further includes:~~

~~determining whether a size of the luma block is 4xN, N being larger than or equal to 4; and~~

~~responsive to the size of the luma block being determined to be 4xN, N and 4 being a height and a width of the luma block, respectively, the determining the number of non-zero transform coefficients includes determining the number of non-zero transform coefficients from only the luma block, the at least one CB being the luma block.~~

~~15~~17. An apparatus for video decoding, comprising processing circuitry configured to perform the method of any one of claims 1-~~9~~10.

~~16. An apparatus for video decoding, comprising processing circuitry configured to perform the method of any one of claims 10-14.~~

18. An apparatus for video encoding, comprising processing circuitry configured to perform the method of any one of claims 11-16.

~~17~~19. A non-transitory computer-readable medium storing instructions which when executed by a computer for video decoding cause the computer to perform the method of any one of claims 1-~~9~~10.

~~18. A non-transitory computer-readable medium storing instructions which when executed by a computer for video decoding cause the computer to perform the method of any one of claims 10-14.~~

20. A non-transitory computer-readable medium storing instructions which when executed by a computer for video encoding cause the computer to perform the method of any one of claims 11-16.