Principle V Summary

Decisions Affecting Resources and Natural Systems are Complex and Involve Many Factors

Decisions affecting resources and natural systems are based on a wide range of considerations and decision-making processes.

Concept A. *Students need to know the spectrum of what is considered in making decisions about resources and natural systems and how those factors influence decisions..*

Concept B. *Students need to know the process of making decisions about resources and natural systems, and how the assessment of social, economic, political, and environmental factors has changed over time.*

NGSS Standard:	Concept A	Concept B	Notes:
K-2-ETS1 Engineering Design	2	3	Concept A is a 2 because it is related to PE K-2-ETS1-1, PE K-2-ETS1-2, and PE K-2-ETS1-3, but the PEs do not make the direct connection to resources and natural systems that the concept requires.
K-ESS2 Earth's Systems	1	2	DCI ESS3.C Concept B is a 2 because it is related to DCI ESS3.C, but the DCI does not make the connection to the historical context or political process that the concept requires.
K-ESS3 Earth and Human Activity	1	2	PE ESS3-3 and DCI ESS3.C Concept B is a 2 because it is related to DCI ESS3.C, but the DCI does not make the connection to the historical context or political process that the concept requires.
K-LS1 From Molecules to Organisms: Structures and Processes	3	3	
K-PS2 Motion and Stability: Forces and Interactions	3	3	
K-PS3 Energy	3	3	
1-ESS1 Earth's Place in the Universe	3	3	
1-LS1 From Molecules to Organisms: Structures and Processes	3	3	
1-LS3 Heredity: Inheritance and Variation of Traits	3	3	
1-PS4 Waves and Their Applications in Technologies for Information Transfer	3	3	
2-ESS1 Earth's Place in the Universe	3	3	
2-ESS2 Earth's Systems	2	3	Concept A is a 2 because it is related to DCI ETS1.C, but the DCI does not make the direct connection to resources and natural systems that the concept requires.
2-LS2 Ecosystems: Interactions, Energy, and Dynamics	3	3	
2-LS4 Biological Evolution: Unity and Diversity	3	3	
2-PS1 Matter and Its Interactions	3	3	
3-5-ETS1 Engineering Design	2	2	Concept A is a 2 because it is related to DCI ETS1.B, but the DCI does not make the direct connection to resources and natural systems that the concept requires. Concept B is a 2 because it is related to PE 3-5-ETS1-1, PE 3-5-ETS1-2, and PE 3-5-ETS1-3, but the PEs do not make a direct connection to resources and natural system that the concept requires.
3-ESS2 Earth's Systems	3	3	
3-ESS3 Earth and Human Activity	2	2	Concept A is a 2 because it is related to PE 3-ESS3-1, but the PE does not make a direct connection to factors that influence decision-making that the concept requires. Concept B is a 2 because it is related to PE 3-ESS3-1, but the PE does not make a direct connection to decision-making over time that the concept requires.
3-LS1 From Molecules to Organisms: Structures and Processes	3	3	
3-LS2 Ecosystems: Interactions, Energy, and Dynamics	3	3	

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Principle V Summary *continued*

NGSS Standard:	Concept A	Concept B	Notes:
3-LS3 Heredity: Inheritance and Variation of Traits	3	3	
3-LS4 Biological Evolution: Unity and Diversity	2	2	Concept A and B are 2s because they are related to PE LS4-3, DCI LS4.D, and DCI LS2.C, but the PE and DCIs do not make the connection to decision-making and human activity that the concepts require.
3-PS2 Motion and Stability: Forces and Interactions	3	3	
4-ESS1 Earth's Place in the Universe	3	3	
4-ESS2 Earth's Systems	3	3	
4-ESS3 Earth and Human Activity	1	2	PE ESS3-1 Concept B is a 2 because it is related to PE ESS3-1, but the PE does not make the connection to change over time that the concept requires.
4-LS1 From Molecules to Organisms: Structures and Processes	3	3	
4-PS3 Energy	2	3	Concept A is a 2 because it is related to PE 4-PS3-4, but the PE does not make the connection to the natural world that the concept requires.
4-PS4 Waves and Their Applications in Technologies for Information Transfer	3	3	
5-ESS1 Earth's Place in the Universe	3	3	
5-ESS2 Earth's Systems	3	3	
5-ESS3 Earth and Human Activity	1	1	Concept A: PE ESS3-1; Concept B: DCI ESS3.C
5-LS1 From Molecules to Organisms: Structures and Processes	3	3	
5-LS2 Ecosystems: Interactions, Energy, and Dynamics	3	3	
5-PS1 Matter and Its Interactions	3	3	
5-PS2 Motion and Stability: Forces and Interactions	3	3	
5-PS3 Energy	3	3	
MS-ESS1 Earth's Place in the Universe	3	3	
MS-ESS2 Earth's Systems	3	3	
MS-LS1 From Molecules to Organisms: Structures and Processes	3	3	PE MS-ESS3-1, -2, -3, -4, -5; DCI ESS3.A, .B, .C, .D
MS-LS2 Ecosystems: Interactions, Energy, and Dynamics	1	2	PE LS2-5 Concept B is a 2 because it is related to PE LS2-5, but the PE does not make the direct connection to change over time and the political context of environmental decision-making that the concept requires.
MS-LS3 Heredity: Inheritance and Variation of Traits	3	3	
MS-LS4 Biological Evolution: Unity and Diversity	2	3	Concept A is a 2 because it is related to PE LS4-5, but the PE does not make the connection to decision-making that the concept requires.
MS-PS1 Matter and Its Interactions	3	3	
MS-PS2 Motion and Stability: Forces and Interactions	3	3	
MS-PS3 Energy	3	3	

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Principle V Summary *continued*

NGSS Standard:	Concept A	Concept B	Notes:
MS-PS4 Waves and Their Applications in Technologies for Information Transfer	3	3	
MS-ETS1 Engineering Design	1	2	PE MS-ETS1-1, and Crosscutting Concept "Influence of Science, Engineering, and Technology on Society and Natural World" Concept B is a 2 because it is related to the PE MS-ETS1-1, but the PE does not make the connection to change over time and the political context of environmental decision-making that the concept requires.
HS-ESS1 Earth's Place in the Universe	3	3	
HS-ESS2 Earth's Systems	1	2	PE ESS2-2 and Crosscutting Concept "Influence of Science, Engineering, Technology and Science on Society and the Natural World" Concept B is a 2 because it is related to PE ESS2-2, but the PE does not make the connection to the political context of environmental decision-making that the concept requires.
HS-ESS3 Earth and Human Activity	1	2	PE ESS3-1 and DCI ESS3.C and Crosscutting Concept "Influence of Science, Engineering, Technology and Science on Society and the Natural World" Concept B is a 2 because it is related to PE ESS3-1 and DCI ESS3.C, but the PE and DCI do not make the connection to change over time and the political context of environmental decision-making that the concept requires.
HS-LS1 From Molecules to Organisms: Structures and Processes	3	3	
HS-LS2 Ecosystems: Interactions, Energy, and Dynamics	1	2	PE LS2-7, DCI ETS1.B, DCI LS4.D and Science and Engineering Practice "Constructing Explanations and Design Solutions" Concept B is a 2 because it is related to PE LS2-7, DCI ETS1.B, and DCI LS4.D, but the PE and DCIs do not make the connection to change over time that the concept requires.
HS-LS3 Heredity: Inheritance and Variation of Traits	3	3	
HS-LS4 Biological Evolution: Unity and Diversity	1	2	PE LS4-5, -6 Concept B is a 2 because it is related to PE LS4-5 and PE LS4-6, but the PEs do not make the connection to change over time and the political context of environmental decision-making that the concept requires.
HS-PS1 Matter and Its Interactions	3	3	
HS-PS2 Motion and Stability: Forces and Interactions	3	3	
HS-PS3 Energy	2	3	Concept A is a 2 because it is related to PE PS3-3, but the PE does not make the connection to change over time and the political context of environmental decision-making that the concept requires.
HS-PS4 Waves and Their Applications in Technologies for Information Transfer	3	3	
HS-ETS 1 Engineering Design	1	2	PE ETS1-3, DCI ETS1.A, and the Crosscutting Concept "Influence of Science, Engineering, Technology and Science on Society and the Natural World" Concept B is a 2 because it is related to PE ETS1-3 and DCI ETS1.A, but the PE and DCI do not make the connection to the historical or political context of environmental decision-making that the concept requires.

Key

1 — The language (or explicit intent) of the NGSS standard is a direct or near direct match with the EP&C

2 — The EP&C could naturally and effectively be addressed as part of this NGSS standard, but the NGSS language is not explicitly a match to the EP&C

3 — There is no substantive match, explicit or otherwise, between the EP&C and the NGSS standard

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