

California’s Next Generation Science Standards (NGSS) for K-12
Grade Eight
Integrated Course
Standards arranged by Disciplinary Core Ideas

MS-ESS3 Earth and Human Activity

<p>MS-ESS3 Earth and Human Activity</p> <p>Students who demonstrate understanding can:</p> <p>MS-ESS3-4. Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth’s systems. [Clarification Statement: Examples of evidence include grade-appropriate databases on human populations and the rates of consumption of food and natural resources (such as freshwater, mineral, and energy). Examples of impacts can include changes to the appearance, composition, and structure of Earth’s systems as well as the rates at which they change. The consequences of increases in human populations and consumption of natural resources are described by science, but science does not make the decisions for the actions society takes.]</p> <p>The performance expectations above were developed using the following elements from the NRC document <i>A Framework for K-12 Science Education</i>:</p>	<table border="1"> <tr> <td data-bbox="722 132 1096 798"> <p>Science and Engineering Practices</p> <p>Engaging in Argument from Evidence</p> <p>Engaging in argument from evidence in 6–8 builds on K–5 experiences and progresses to constructing a convincing argument that supports or refutes claims for either explanations or solutions about the natural and designed world(s).</p> <ul style="list-style-type: none"> Construct an oral and written argument supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon or a solution to a problem. (MS-ESS3-4) </td> <td data-bbox="722 798 1096 1417"> <p>Disciplinary Core Ideas</p> <p>ESS3.C: Human Impacts on Earth Systems</p> <ul style="list-style-type: none"> Typically as human populations and per-capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise. (MS-ESS3-4) </td> <td data-bbox="722 1417 1383 2051"> <p>Crosscutting Concepts</p> <p>Cause and Effect</p> <ul style="list-style-type: none"> Cause and effect relationships may be used to predict phenomena in natural or designed systems. (MS-ESS3-4) <p>-----</p> <p>Connections to Engineering, Technology, and Applications of Science</p> <p>Influence of Science, Engineering, and Technology on Society and the Natural World</p> <ul style="list-style-type: none"> All human activity draws on natural resources and has both short and long-term consequences, positive as well as negative, for the health of people and the </td> </tr> </table>	<p>Science and Engineering Practices</p> <p>Engaging in Argument from Evidence</p> <p>Engaging in argument from evidence in 6–8 builds on K–5 experiences and progresses to constructing a convincing argument that supports or refutes claims for either explanations or solutions about the natural and designed world(s).</p> <ul style="list-style-type: none"> Construct an oral and written argument supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon or a solution to a problem. (MS-ESS3-4) 	<p>Disciplinary Core Ideas</p> <p>ESS3.C: Human Impacts on Earth Systems</p> <ul style="list-style-type: none"> Typically as human populations and per-capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise. (MS-ESS3-4) 	<p>Crosscutting Concepts</p> <p>Cause and Effect</p> <ul style="list-style-type: none"> Cause and effect relationships may be used to predict phenomena in natural or designed systems. (MS-ESS3-4) <p>-----</p> <p>Connections to Engineering, Technology, and Applications of Science</p> <p>Influence of Science, Engineering, and Technology on Society and the Natural World</p> <ul style="list-style-type: none"> All human activity draws on natural resources and has both short and long-term consequences, positive as well as negative, for the health of people and the
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		<p>natural environment. (MS-ESS3-4)</p> <p align="center">----- Connections to Nature of Science</p> <p>Science Addresses Questions About the Natural and Material World</p> <ul style="list-style-type: none"> ▪ Science knowledge can describe consequences of actions but does not necessarily prescribe the decisions that society takes. (MS-ESS3-4)
<p><i>Connections to other DCIs in this grade-band:</i> MS.LS2.A (MS-ESS3-4); MS.LS2.C (MS-ESS3-4); MS.LS4.D (MS-ESS3-4)</p> <p><i>Articulation of DCIs across grade-bands:</i> 3.LS2.C (MS-ESS3-4); 3.LS4.D (MS-ESS3-4); 5.ESS3.C (MS-ESS3-4); HS.LS2.A (MS-ESS3-4); HS.LS2.C (MS-ESS3-4); HS.LS4.C (MS-ESS3-4); HS.LS4.D (MS-ESS3-4); HS.ESS2.E (MS-ESS3-4); HS.ESS3.A (MS-ESS3-4); HS.ESS3.C (MS-ESS3-4);</p>		
<p><i>Common Core State Standards Connections:</i> ELA/Literacy –</p>		
RST.6-8.1	Cite specific textual evidence to support analysis of science and technical texts. (MS-ESS3-4)	
WHST.6-8.1	Write arguments focused on discipline content. (MS-ESS3-4)	
WHST.6-8.9	Draw evidence from informational texts to support analysis, reflection, and research. (MS-ESS3-4)	
<i>Mathematics –</i>		
6.RP.A.1	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. (MS-ESS3-4)	
7.RP.A.2	Recognize and represent proportional relationships between quantities. (MS-ESS3-4)	
6.EE.B.6	Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set. (MS-ESS3-4)	
7.EE.B.4	Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. (MS-ESS3-4)	

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