WRITTEN ARGUMENT RUBRIC
EVALUATE LESSON 6

Food and Agriculture Center for Science Education

Part 2 Task Rubric			
INFO-H4: Evaluate the validity and reliability of and/or synthesize multiple claims, methods, and/or designs **that appear in** scientific and technical texts or **media reports, verifying the data when possible.** **ESS3.A-H2:** All forms of energy production and other **resource extraction have associated economic, social, environmental, and geopolitical costs and risks as well as benefits.** New technologies and social regulations can change the balance of these factors. **SYS-H2: When investigating or describing a system, the boundaries and initial conditions of the system need to be defined and their inputs and outputs analyzed and described using models.**			
	Emerging	Developing	Proficient
Sample Student Response	I think media claim 1 is accurate. It says that the dairy production can lead to water pollution. I think that is true because we read that the dairy industry does make water pollution due to fertilizers and manure.	I think media claim 1 is accurate. It says that dairy production can lead to water pollution. One of the economic benefits of the dairy system is that it is made up of dairy cows raised to produce milk that is processed into dairy products for consumers. But one of the environmental costs that this system produces that is an unintended consequence of its design is excess manure. This manure can contribute to runoff that eventually finds its way into water supplies.	I think media claim 1 is accurate. It says that dairy production can lead to water pollution. One of the economic benefits of the dairy system is that it is made up of dairy cows raised to produce milk that is processed into dairy products for consumers. But one of the environmental costs that this system produces that is an unintended consequence of its design is excess manure. This manure can contribute to runoff that eventually finds its way into water supplies. The article, "A Review of Potential Public Health Impacts Associated with the Global Dairy Sector," states that "Livestock production may also be the single largest sectoral source of water pollution. Major sources of water pollution from dairy farms include animal wastes, pharmaceutical residues (e.g., antibiotics and hormones), fertilizers and pesticides used for growing feed crops, and sediment from eroded pastures."
How to Achieve This Level	Student completes 0-1 out of 4 Look Fors	Student completes 2-3 out of 4 Look Fors	Student completes 4 out of 4 Look Fors

Part 2 Look Fors	Prompts to Support Students in Improving on Look Fors
Student evaluates the claim and states if the claim is accurate or inaccurate.	What specific evidence from the module did you use to determine the accuracy of the claim?
Student describes relevant dairy system inputs, outputs, and/or boundaries.	What dairy system inputs, outputs, and/or boundaries does your response include?
Student explains one cost and benefit of the system that is relevant to supporting or refuting of the media claim and names if these are economic, social, environmental, or geopolitical.	What economic, social, environmental, or geopolitical costs or benefits did you include?
Student cites direct evidence from the module to verify how they are supporting or refuting the claim. Evidence can come from: ● Student models ● Other resources in the module (texts, data sets, etc.)	In your response, highlight direct evidence you used from the module. Use a different color for each source.

Part 3 Task Rubric

ARG-H4: Construct, use, **and**/or **present an oral and written argument** or counter-arguments **based on data and evidence.**

ESS3.A-H2: All forms of energy production and other **resource extraction have associated economic, social, environmental, and geopolitical costs and risks as well as benefits.** New technologies and social regulations can change the balance of these factors.

SYS-H1: Systems can be designed to do specific tasks.

	Emerging	Developing	Proficient
Sample Student Response	I think the dairy system is beneficial for people. The dairy system is made up of dairy cows that are raised to produce milk that is processed into dairy products for consumers. This benefit seems to be more important than the downsides, like pollution.	I think the dairy system is mostly beneficial for people. The dairy system is made up of dairy cows raised to produce milk that is processed into dairy products for consumers who depend on agricultural products such as dairy for food. However, the dairy system also has costs such as pollution, impacts on worker health, and chemical pollution. Overall, the benefits might outweigh the downsides.	I think the dairy system is mostly beneficial for people. The dairy system is made up of dairy cows raised to produce milk that is processed into dairy products for consumers who depend on agricultural products such as dairy for food. The dairy system was designed to make a lot of products for little cost, but doing so has resulted in downsides that extend beyond the boundary of the design of the system, such as an environmental cost like pollution, social impacts such as health problems for workers, and environmental impacts like chemical pollution. The article, "A Review of Potential Public Health Impacts Associated with the Global Dairy Sector," states that "Livestock production may also be the single largest sectoral source of water pollution. Major sources of water pollution from dairy farms include animal wastes, pharmaceutical residues (e.g., antibiotics and hormones), fertilizers and pesticides used for growing feed crops, and sediment from eroded pastures." Overall, the benefits to society might outweigh the downsides.
How to Achieve This Level	Student completes 0-1 out of 4 Look Fors	Student completes 2-3 out of 4 Look Fors	Student completes 4 out of 4 Look Fors

Part 3 Look Fors	Prompts to Support Students in Improving on Look Fors
Student makes a claim about the overall positive or negative effects of the dairy system on the environment.	Was the claim you made about the effects of the dairy system on the environment positive, negative, or somewhere in between?
Student describes the task(s) that the dairy system was designed for and unanticipated consequences of the system design.	What task was the dairy system designed for and how did you include that? What consequences occur as a result of that system design?
Student explains the costs and benefits of the dairy system overall, including economic, social, environmental, and/or geopolitical costs and benefits.	What economic, social, environmental, or geopolitical costs or benefits did you include?
Student cites one piece of direct evidence from the unit in support of their claim. Evidence can be taken from: ● Student models ● Other resources in the module (texts, data sets, etc.)	What specific evidence from the module did you use to determine the accuracy of the claim? In your argument, highlight the direct evidence you used from the module. Use a different color for each source.

To Support Students in Revising Their Tasks Based on Peer or Teacher Feedback

- Prior to submitting their work, hold a peer-feedback session using a protocol such as Tell-Ask-Give or with norms such as SPARK. Then have students revise their work based on the peer feedback.
- After submitting their work and receiving feedback and a grade, hold a session for students to norm on the features of high-quality work. Choose three samples of student work (one Emerging, one Developing, and one Proficient), anonymize them, and distribute them to students. Ask students to analyze the three samples of work and annotate what features of the work are high-quality examples of the Look Fors and what features are not. Share out the features of high-quality work that students identified and ask them to point to specific examples in the work samples. Build a class list of features of high-quality work. Then, allow students time to revise their work based on the list they generated and resubmit it for a revised grade.