

# CLEAN Video Review Form - 1st review

## RC Initial Review - Video

This review is part of the review cycle of elementary materials in 2019/2020/strong>

### Scientific Accuracy

Is an attribution provided that represents a credible source such as a university or government agency?

- yes  
 no

Video is free of scientifically out-of-date material.

- 4 definitely  
 3 somewhat  
 2 a little  
 1 no

Does the video present valid/accurate and grade-level appropriate concepts, models, and skills?

- 4 definitely  
 3 somewhat  
 2 a little  
 1 no

Are references given or experts cited?

- 4 definitely  
 3 somewhat  
 2 a little  
 1 no  
 not applicable

Does the video avoid scientifically unsubstantiated bias?

- yes  
 no

Draft Science Annotation - please include strengths and concerns (content to be used for catalog record):

Overall Rating of Scientific Accuracy

- Meets highest scientific standards, up-to-date e.g. IPCC 5th report  
 Scientifically sound but does not meet highest standards  
 Minor scientific short-comings that can be addressed in annotations  
 Has major scientific short-comings or even conveys misconceptions

Can't answer this

### Pedagogic effectiveness

Is the video free from material that might interfere with effective use by a wide range of learners (e.g. negative stereotypes or insensitive treatment of sensitive subjects)

- 4 yes  
 1 no  
 can not answer

Is the video engaging and motivating for students?

- 4 definitely  
 3 somewhat  
 2 a little  
 1 no

Does the video provide a vehicle for asking questions or seeking further information?

- 4 definitely  
 3 somewhat  
 2 a little  
 1 no  
 not applicable

Is any pedagogic scaffolding provided along with the video (e.g. a teacher's guide)?

- yes  
 no

**Draft Pedagogy Annotation** - please include strengths and concerns (content to be used for catalog record):

**Overall Rating of Pedagogic Effectiveness**

- Pedagogically very effective and carefully designed  
 Pedagogic design is good and resource is useful as a learning tool  
 Pedagogical design does meet basic standards but has considerable shortcomings  
 Poor pedagogical design, not recommended as a learning tool  
 Can't answer this

### Technical quality

Is the video free of distracting or off-topic advertising?

- yes  
 no

Does the video present the concept and content clearly?

- Definitely  
 Somewhat  
 Little  
 No

The video is high quality and has sufficient resolution and clarity.

- 4 definitely  
 3 somewhat  
 2 a little  
 1 no

What is the length of the video (in min)?

Draft annotation about Technical Quality - please include strengths and concerns (content to be used for catalog record):

Overall Rating of Technical Quality

- Technically robust and adequate for use in typical educational environment
- Technically good, minor shortcomings in technical aspects when used in typical educational environment
- Technically weak, minor problems when used in typical educational environment
- Technically weak, major problems when used in typical educational environment
- Not Applicable
- Can't answer this

Teaching Tips

Teaching Tips (content will be used for catalog record):

If the resource is part of a larger collection and there is a relevant parent URL please copy the URL here (format [URL]- content will be used for catalog record):

Essential Principles of Climate and Energy Literacy

Select the primary principle(s) that are addressed by the resource.

- GP Humans can take actions to reduce climate change and its impacts.
- GP a Climate science improves informed policy and decision-making
- GP b Reducing human vulnerability to and impacts on climate requires multi-disciplinary, integrated understanding
- GP c Climate change affects global/national security
- GP d Greenhouse gas reduction and carbon dioxide sequestration to mitigate climate change
- GP e Strategies to reduce greenhouse gas emission (energy conservation, renewable energies, change in energy use)
- GP f Strategies of human adaptation to climate change
- GP g Actions taken by different levels of society can mitigate climate change and increase preparedness for current and future generations
  
- 1 The Sun is the primary source of energy for Earth's climate system
  - 1a Sunlight warms the planet
  - 1 b Earth's Energy balance
  - 1 c Axial tilt of Earth governs incoming sunlight and seasonality
  - 1 d Milankovitch/orbital cycle
  - 1 e Solar variability has no significant impact on Earth's current warming
  
- 2 Climate is regulated by complex interactions among components of the Earth system
  - 2 a World's climate definition
  - 2 b Ocean as climate control, oceanic conveyor belt; abrupt changes in thermohaline circulation
  - 2 c Greenhouse effect
  - 2 d Biogeochemical cycles of greenhouse gases / Carbon cycle
  - 2 e Role of aerosols in climate system
  - 2 f Equilibrium and feedback loops in climate system

- 3 Life on Earth depends on, is shaped by, and affects climate
- 3 a Climate's role in habitats ranges and adaptation of species to climate changes
- 3 b The Greenhouse effect supports the water cycle and makes life possible
- 3 c Climate impacts ecosystems and past species extinctions
- 3 d Holocene is unusually stable – human infrastructure vulnerable to change
- 3 e Biosphere drives the global carbon cycle
  
- 4 Climate varies over space and time through both natural and man-made processes
- 4 a Definition of climate and climatic regions
- 4 b Climate is not the same thing as weather – defining difference
- 4 c Climate change vs. climate variability and patterns
- 4 d Changes in climate is normal but varies over times/ space
- 4 e Global warming and especially arctic warming is recorded in natural geological and historic records
- 4 f Evidence is that human impacts are playing an increasing role in climate change
- 4 g Natural processes of CO2 removal from atmosphere is slow; Long residence time of some GHG
  
- 5 Our understanding of the climate system is improved through observations, theoretical studies, and modeling
- 5 a Climate system is subject to the same physical laws as the rest of the Universe
- 5 b Observations are the foundation for understanding the climate system
- 5 c Observations, experiments, and theory are used to construct and refine computer models
- 5 d Meteorology and climatology are related but different sciences, and their processes are modeled and forecast differently
- 5 e Climate models are robust enough to be used for guiding decision and actions as response to climate change
  
- 6 Human activities are impacting the climate system
- 6 a Global warming is "very likely" caused by human greenhouse gas emission
- 6 b Increased GHG concentrations in atmosphere will remain high for centuries and affect future climate
- 6 c Human activities have increased GHG levels and altered global climate patterns
- 6 d Evidence shows that human-caused global warming have impacted ecosystem resulting in reduced biodiversity and ecological resilience
- 6 e Negative impacts of global warming outweigh positive
  
- 7 Climate change will have consequences for the Earth system and human lives
- 7 a Sea level rise and resulting impacts is due to melting ice and thermal expansion and increases the risk
- 7 b Effects of climate change on water cycle and freshwater availability
- 7 c Increased extreme weather events due to climate change
- 7 d Increased acidity of oceans and negative impacts on food chain due to increasing carbon dioxide levels
- 7 e Ecosystems on land and in the ocean have been and will continue to be disturbed by climate change
- 7 f Human health and well-being will be affected to different degrees from the impacts from climate change

#### Essential Principles and Fundamental Concepts for Energy Education

- 1. Energy is a physical quantity that follows precise natural laws.
- 1.1 Energy is a quantity that is transferred from system to system.
- 1.2 The energy of a system or object that results in its temperature is called thermal energy.
- 1.3 Energy is neither created nor destroyed
- 1.4 Energy available to do useful work decreases as it is transferred from system to system.
- 1.5 Energy comes in different forms and can be divided into categories.
- 1.6 Chemical and nuclear reactions involve transfer and transformation of energy.
- 1.7 Many different units are used to quantify energy.
- 1.8 Power is a measure of energy transfer rate.
  
- 2. Physical processes on Earth are the result of energy flow
- 2.1 Earth is constantly changing as energy flows through the system.
- 2.2 Sunlight, gravitational potential, decay of radioactive isotopes, and rotation of the Earth are the major sources of energy driving physical processes on Earth.
- 2.3 Earth's weather and climate are mostly driven by energy from the Sun.
- 2.4 Water plays a major role in the storage and transfer of energy in the Earth system.
- 2.5 Movement of matter between reservoirs is driven by Earth's internal and external sources of energy.

- 2.6 Greenhouse gases affect energy flow through the Earth system.
- 2.7 The effects of changes in Earth's energy system are often not immediately apparent.
- 3. Biological processes depend on energy flow
  - 3.1 The Sun is the major source of energy for organisms and the ecosystems of which they are a part.
  - 3.2 Food is a biofuel used by organisms to acquire energy for internal living processes.
  - 3.3 Energy available to do useful work decreases as it is transferred from organism to organism.
  - 3.4 Energy flows through food webs in one direction, from producers to consumers and decomposers.
  - 3.5 Ecosystems are affected by changes in the availability of energy and matter.
  - 3.6 Humans are part of Earth's ecosystems and influence energy flow through these systems.
- 4. Various sources of energy are used to power human activities
  - 4.1 Humans transfer and transform energy from the environment into forms useful for human endeavors.
  - 4.2 Human use of energy is subject to limits and constraints.
  - 4.3 Fossil and biofuels are organic matter that contain energy captured from sunlight.
  - 4.4 Humans transport energy from place to place.
  - 4.5 Humans generate electricity in multiple ways.
  - 4.6 Humans intentionally store energy for later use in a number of different ways.
  - 4.7 Different sources of energy and the different ways energy can be transformed, transported, and stored each have different benefits and drawbacks.
- 5. Energy decisions are influenced by several factors
  - 5.1 Decisions concerning the use of energy resources are made at many levels.
  - 5.2 Energy infrastructure has inertia.
  - 5.3 Energy decisions can be made using a systems-based approach.
  - 5.4 Energy decisions are influenced by economic factors.
  - 5.5 Energy decisions are influenced by political factors.
  - 5.6 Energy decisions are influenced by environmental factors.
  - 5.7 Energy decisions are influenced by social factors.
- 6. Human use of energy
  - 6.1 Conservation of energy has two very different meanings.
  - 6.2 One way to manage energy resources is through conservation.
  - 6.3 Human demand for energy is increasing.
  - 6.4 Earth has limited energy resources.
  - 6.5 Social and technological innovation affects the amount of energy used by human society.
  - 6.6 Behavior and design affect the amount of energy used by human society.
  - 6.7 Products and services carry with them embedded energy.
  - 6.8 Amount of energy used can be calculated and monitored.
- 7. Energy affects quality of life The quality of life of individuals and societies is affected by energy choices
  - 7.1 Economic security is impacted by energy choices.
  - 7.2 National security is impacted by energy choices.
  - 7.3 Environmental quality is impacted by energy choices.
  - 7.4 Increasing demand for and limited supplies of fossil fuels affects quality of life.
  - 7.5 Access to energy resources affects quality of life.
  - 7.6 Some populations are more vulnerable to impacts of energy choices than others.

**Audience Level**

Please select the grade level for which this video is most appropriate (in your judgement) Check all that apply.

- Primary (K-2)
- Intermediate (3-5)
- Middle (6-8)
- High School (9-12)
- College Lower (13-14)
- College Upper (15-16)
- Graduate or Professional

**Informal Education (museums, park displays)**

**Grade level notes (content will be used for catalog record):**



**Overall Rating of Relevance to CLEAN**

- High Priority (Resource likely to be included in CLEAN collection of excellent resources)**
- Medium Priority (Resource meets basic CLEAN standards)**
- Low Priority (Resource meets basic CLEAN standards but is of lower priority)**
- Hold for Later Review (Keep in pool for another review at later stage)**
- Excellent but Incomplete (Excellent and relevant but needs improved activity sheet)**
- Do Not Include (Resource doesn't meet basic CLEAN standards)**
- Review in process (not yet complete)**
- Unvetted (Review not yet complete)**

**Other Reviewer Comments (for internal use only - not used for catalog record)**

