

A FILM BY CHRISTI COOPER

YOUTH V GOV

BARRELMARKER PRODUCTIONS & VULCAN PRODUCTIONS PRESENT "YOUTH V. GOV" WRITTEN BY JOHN JENNINGS BOYD PRODUCED BY LYMAN SMITH & TONY HALE
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About Journeys in Film

Journeys in Film is a 501(c)(3) nonprofit organization that amplifies the storytelling power of film to educate the most visually literate generation in history. We believe that teaching with film has the power to help educate our next generation with a richer understanding of the diverse and complex world in which we live.

We transform entertainment media into educational media by designing and publishing cost-free, educational resources for teachers to accompany carefully chosen feature films and documentaries while meeting mandated standards in all core subjects. Selected films are used as springboards for lesson plans in subjects like math, science, language arts, social studies, and more. Our resources support various learning styles, promote literacy, transport students around the globe, and foster learning that meets core academic objectives.

In addition to general subject areas, Journeys in Film's programs engage students in meaningful examinations of human rights, poverty and hunger, stereotyping and racism, environmental issues, global health, immigration, and gender roles. Our teaching methods are successful in broadening perspectives, teaching for global competency, encouraging empathy, and building new paradigms for best practices in education. We seek to inspire educators, school administrators, community members, and home-schooling parents to capture the imagination and curiosity of their students by using our innovative curriculum.

We also develop discussion guides for films that don't necessarily lend themselves to academic standards but cover topics and themes that are valuable for classroom discussions and in other settings, such as after-school clubs, community screenings, and college classes.

Why use this program?

In an age when literacy means familiarity with images as much as text and a screen has become a new kind of page, 21st-century students are more connected to media than any previous generation. This offers educators unprecedented opportunities to engage students in learning about a variety of subjects and issues of global significance.

Films, television, documentaries, and other media platforms can provide an immediate, immersive window to a better understanding of the world and matters affecting all of us.

We teach our students literature that originated from all around the world, but we tend to forget that what often spurs the imagination is both visual and auditory. Films evoke emotion and can liven up the classroom, bringing energy to a course. We believe in the power of films to open our minds, inspire us to learn more, provide a bridge to better understanding the key issues of 21st-century concern, and compel us to make a difference.

When properly used, films can be a powerful educational tool in developing critical thinking skills and exposure to different perspectives. Students travel through these characters and their stories: They drink tea with an Iranian family in *Children of Heaven*, play soccer in a Tibetan monastery in *The Cup*, find themselves in the conflict between urban grandson and rural grandmother in South Korea in *The Way Home*, and watch the ways modernity challenges Maori traditions in New Zealand in *Whale Rider*. Journeys in Film brings outstanding and socially relevant documentaries to the classroom that teach about a broad range of social issues in real-life settings, such as famine-stricken and war-torn Somalia, a maximum-security prison in Alabama, and a World War II concentration camp near Prague.

They explore complex and important topics like race and gender. Students tour an African school with a Nobel Prize-winning teenager in *He Named Me Malala* and experience the transformative power of music in *The Music of Strangers: Yo-Yo Ma & the Silk Road Ensemble* and *Landfill Harmonic*.

Our hope is that this generation of youth will contribute to the betterment of humankind through kindness and understanding, together with scientific knowledge, to help solve some of the world's most pressing issues.

Our goal is to create relevant and engaging curricula and programming around media that encourages cross-cultural understanding, empathy, and knowledge of the people and environments around the world. We aim to prepare today's youth to live and work as globally informed, media-literate, and competent citizens.

A Letter from Levi

I'm excited to see that you are engaging with *YOUTH v. GOV* and hope that using this guide will help you better understand climate change and why it matters so much to young people like me. Maybe this will inspire you to take action on things that are important to you.

Many people think that climate change is an adult problem that kids and youth either don't understand or can't affect, but that is not true at all. While climate change is a complex issue, it affects everyone on the planet, so it is very important to learn about. Throughout the course of history, youth have fought for what is important to them by coming together, taking action, and getting adults to lend their support. Climate change disproportionately affects young people because we will see more negative effects throughout our lifetimes than previous generations. That means it is even more important that we connect with one another to fight for our future and for future generations.

For over 50 years, the government has known about climate change. Their actions have violated our constitutional rights to life, liberty, and property, as well as failed to protect essential public trust resources. Scientists agree that climate change is catastrophic and will eventually get to the point of no return. It affects everyone in so many ways, including droughts, fires, hurricanes and other extreme weather; flooding and sea level rise; negative effects on health; and social and cultural impacts. You'll see these in the film and learn more about them.

The U.S. government has a long history of supporting the fossil fuel industry. We have developed a reliance on fossil fuels, even though they cause great damage to our planet. Moving away from that reliance is the only way to make lasting change. This is one of the reasons why we chose to go through the court system to ask the courts to recognize and protect our constitutional rights and tell the government to end the reliance on fossil fuels and move to clean energy instead. This is both technically and economically feasible. Despite having the best scientists and legal team on our side, navigating the court system is both time consuming and challenging, with lots of ups and downs along the way.

In my lifetime, I have seen the effects of climate change, such as sea level rise, flooding, and damage to my local beaches. I've had to evacuate my home due to hurricanes. We even chose to move off the island I grew up on to try and escape some of these impacts. My friends in the film have also experienced different effects of climate change as have so many people around the world. Maybe climate change has even affected your own life and the lives of people in your community.

Adults don't always listen to kids, but being involved in this case helped me see the importance of speaking up and using my voice. Being educated on what you care about will help you convince others to support you and help build connections. It is important to use your voice to fight for what matters to you. I hope this film and guide help empower you to take action.



Levi
@connectwithlevi

Introducing *YOUTH v. GOV*

Any student who has taken a course on United States history has heard Thomas Jefferson's words about our inalienable rights to life, liberty, and the pursuit of happiness. What makes them inalienable? Jefferson believed they are part of our very nature as human beings. Today, we are facing a climate crisis that scientists and government leaders have known was coming for a long time; it is only now, in an age of growing and more frequent wildfires, droughts, stronger hurricanes, and rising sea level, that many Americans and others have become aware of the dangers. Some are still in denial, but their numbers are inevitably shrinking as conditions worsen.

The Constitution of the United States includes the Bill of Rights and other amendments that delineate and protect the rights of citizens. If citizens perceive that their rights are being violated by the government, they have the ability to bring a constitutional case to the courts to protect those rights, suing local, state, or even the federal government if necessary, alleging that their constitutionally protected rights are threatened or abridged. (The well-known case of *Brown v. Board of Education* is an example.) *Juliana v. United States* is the first constitutional case pertaining to climate change to win a favorable ruling, and it was brought by a group of youths who contend that the Constitution guarantees an unenumerated fundamental right to a "stable climate system."

Young people are particularly aware of this accelerating emergency, both because they are disproportionately harmed by the climate crisis and because the changes in climate will become ever more pronounced in their lifetimes. Young people around the world have stepped forward to demand that adults — from government leaders to oil and gas company executives — stop their actions

that make the climate crisis worse. We see images of Greta Thunberg and others of her generation leading protests and speaking out. And even before this youth climate movement began, a group of 21 youths decided to use the law to protect their constitutional rights, in essence challenging the ways that the U.S. federal government has supported policies that, while perhaps useful to certain industries like fossil fuels in the short term, spell climate disaster for all. Coming from ten different states around the country and representing different ethnicities, geographical diversity, and social groups, these young people initiated a lawsuit with the help of the nonprofit legal organization Our Children's Trust. *Juliana v. United States* was filed in 2015, and in the year 2023, it is still making its way through the court system. Today Our Children's Trust continues to assist young people in U.S. states and in countries around the world who are also trying to stop actions taken by their governments that actively make the climate crisis worse and lead to even further climate degradation.

In the documentary *YOUTH v. GOV*, your students will learn how young people like themselves have taken a stand against climate change and persisted in the fight to protect their legal right to a safe climate for years. They will meet the individual students involved and get to know their stories. They will learn more about their constitutional rights and the American judicial system. They will also discover more about the alarming changes in the environment that are already causing significant harm to young people across the United States and around the world, affecting all our lives until both legal and scientific recourses are finally implemented.



“Climate anxiety” is very real, and, combined with the COVID-19 pandemic, young people are suffering from depression, anxiety, and, for some, even suicidal ideation at an alarming rate. Sharing this documentary with your students will help them understand that there are known solutions to address the climate crisis — and ways that they as young people can fight the sense of helplessness and engage in collective action to make a better world. Our Children’s Trust and their young clients in *YOUTH v. GOV* show there is active hope for a better world.

Film Credits

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Fossil Fuels and the Environment

Enduring Understandings

- Fossil fuels cause climate change because their extraction, transport, and combustion release greenhouse gases that trap heat.
- A hotter planet experiences changes in precipitation and weather events with adverse outcomes for human health and the environment.
- Pollution from extraction, transport, and combustion of fossil fuels causes additional adverse health outcomes for human health and the environment.

Essential Questions

- How do fossil fuel emissions heat up the planet?
- How does a hotter planet cause different climate changes and extreme weather events?
- How do these events impact human health and the environment?
- How does fossil fuel pollution impact human health and environment?

Notes to the Teacher

In the documentary *YOUTH v. GOV*, the plaintiffs experience firsthand the effects of a warming planet on their homes and communities. From hurricanes to forest fires, it is clear that climate change is a present threat that is already causing young people significant harm — and it will only grow for future generations. In this lesson, students will learn exactly how fossil fuels cause climate change, which in turn exacerbates natural disasters of all kinds. They will read from the primary sources that scientists submit to U.S. policy makers, such as the latest National Climate Assessment (NCA), and they will also refer to resources from energy authorities, such as the Energy Information Agency (EIA), to learn more about the exact pollution and emission impacts that fossil fuel resources cause as compared to renewable energy sources. Finally, the students will take the role of decision makers, designing an energy system using the Generate board game. This game affords students an interactive opportunity to evaluate why the grid exists in its present form and how it may be redesigned after considering the effects of pollution and greenhouse gas emissions.

The activities in this lesson have been designed for use as individual modules or as tiered instruction with each new lesson component building upon the last. A review of the activities prior to delivery is important to determine how much class time you wish to dedicate to each one and to plan appropriately for materials acquisition. While the suggested lesson duration is between two and five one-hour periods, the activities can easily be modified based on time available or the place where the lesson can best be integrated in the course curriculum. In addition to examining the causes of climate change as they relate to our energy system, the components of this lesson incorporate elements from *YOUTH v. GOV* to humanize the science presented and allow the students to connect with the people they have seen on the screen.

This lesson assumes students have some background on the fundamentals of climate change, basic infrastructure, and environmental justice. See the included Additional Resources section if review material is needed.

In Part 1, students will read portions of the National Climate Assessment report and answer questions. Depending on the maturity and ability of your students, you may assign this for homework or independent work; give it as a classroom assignment and circulate to help students who are struggling with it; or read it aloud in class and discuss it with your students, helping them answer the questions as you proceed. They will use both graphs and text to learn about various factors causing climate change.

When the Paris Agreement is discussed, it is important to state that the *Juliana* plaintiffs and their scientific experts, as well as the Intergovernmental Panel on Climate Change (IPCC), contend that the goals of the Paris Agreement are not sufficient to protect them and their futures. The scientific consensus is clear that we must limit carbon dioxide in our atmosphere to less than 350 parts per million (ppm) and limit global warming to less than an average of 1.0°C above pre-industrial temperatures. At the date of publication of this lesson (early 2023), CO₂ is at 419 ppm and rising. Temperatures have already risen 1.1–1.3°C. The Paris Agreement allows even more heating than we already have, of 1.5–2.0°C, which is dangerous for young people. (No scientist, including the IPCC consensus, has ever said that the Paris Agreement or other goals are safe.)

Part 2 continues readings from the National Climate Assessment report, again from Chapter 2. In small groups or pairs, the students will read about one particular climate change topic and prepare a one-minute presentation to the class on the topic. Then they will research on their own, finding three articles to read and summarize. You may have each student read one article and summarize it, or have all students in the group read the same articles. To differentiate for students who have more difficulty, consider just assigning one article for the group. (The research activity in Part 2 presents a good opportunity to discuss media literacy and how students should source accurate information.)

In Part 3, students are introduced to the Energy Information Administration website, and they research how to characterize the impacts of various sources of energy on the environment. An answer sheet is provided on **Teacher Resource 1**. They also read and summarize an article about a particular health impact on humans caused by pollution, such as heat stress, forest fire particulates (PM_{2.5}), or nitrogen oxides or carbon monoxide from fossil fuel combustion in cars and stoves. The activities on **Handout 3** can be completed in groups or individually at the teacher's discretion.

NOTE: Climate science is always getting better, with new updates on the changes that are happening. Teachers should look for the most up-to-date NCA or IPCC summary to provide to their students.

There are several Extension Activities that your students may enjoy as well. Here are some additional resources that may be of help to you as you prepare for this lesson:

Additional Resources

Energy Production and Use:

Switch (2012 film)

https://www.youtube.com/watch?v=RvaE0PFna84&ab_channel=SwitchEnergyAlliance

Energy Information Agency

<https://www.eia.gov/energyexplained/>

Who Killed the Electric Car? (2006 documentary)

<https://www.whokilledtheelectriccar.com/>

Environmental Justice:

The Solutions Project

<https://thesolutionsproject.org/>

NRDC The Environmental Justice Movement History

<https://www.nrdc.org/stories/environmental-justice-movement>

White House Environmental Justice & the Justice40 Initiative

<https://www.whitehouse.gov/environmentaljustice/justice40/>

Climate Change:

EPA Climate Change

<https://www.epa.gov/climate-change>

UN Climate Change

<https://www.un.org/en/climatechange/what-is-climate-change>

ClimateTown (YouTube Channel)

<https://www.youtube.com/c/ClimateTown/videos>

Best Available Climate Science (350 ppm) by Our Children's Trust

<https://www.ourchildrenstrust.org/the-science>

How to Talk to Kids About Climate Change

<https://www.npr.org/2019/10/22/772266241/how-to-talk-to-your-kids-about-climate-change>

Common Core Standards addressed by this lesson

History/Social Studies

CCSS.ELA-LITERACY.RH.9-10.1

Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.

CCSS.ELA-LITERACY.RH.9-10.2

Determine the central ideas or information of a primary or secondary source; provide an accurate summary of how key events or ideas develop over the course of the text.

CCSS.ELA-LITERACY.RH.9-10.3

Analyze in detail a series of events described in a text; determine whether earlier events caused later ones or simply preceded them.

CCSS.ELA-LITERACY.RH.9-10.4

Determine the meaning of words and phrases as they are used in a text, including vocabulary describing political, social, or economic aspects of history/social science.

CCSS.ELA-LITERACY.RH.9-10.5

Analyze how a text uses structure to emphasize key points or advance an explanation or analysis.

CCSS.ELA-LITERACY.RH.9-10.8

Assess the extent to which the reasoning and evidence in a text support the author's claims.

Science and Technical Subjects

CCSS.ELA-LITERACY.RST.9-10.1

Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.

CCSS.ELA-LITERACY.RST.9-10.2

Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.

CCSS.ELA-LITERACY.RST.9-10.8

Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.



CCSS.ELA-LITERACY.RST.9-10.9

Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.

Writing

CCSS.ELA-LITERACY.WHST.9-10.1

Write arguments focused on discipline-specific content.

CCSS.ELA-LITERACY.WHST.9-10.5

Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.

CCSS.ELA-LITERACY.WHST.9-10.6

Use technology, including the internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.

CCSS.ELA-LITERACY.WHST.9-10.7

Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

CCSS.ELA-LITERACY.WHST.9-10.8

Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.

CCSS.ELA-LITERACY.WHST.9-10.9

Draw evidence from informational texts to support analysis, reflection, and research.

Alignment to Next Generation Science Standards for High School

Engineering, Technology, and Applications of Science

HS-ETS1-1

Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

HS-ETS1-2

Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

HS-ETS1-3

Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

HS-ETS1-4

Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.

Human Impacts on Earth Systems

HS-ESS3-1

Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity. [Clarification Statement: Examples of key natural resources include access to fresh water (such as rivers, lakes, and groundwater), regions of fertile soil such as river deltas, and high concentrations of minerals and fossil fuels.]

HS-ESS3-2

Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios. [Clarification Statement: Emphasis is on the conservation, recycling, and reuse of resources (such as minerals and metals) where possible, and on minimizing impacts where it is not. Examples include developing best practice for mining (for coal, tar sands, and oil shales), and pumping (for petroleum and natural gas). Science knowledge indicates what can happen in natural systems, not what should happen.]

HS-ESS3-3

Create a computational simulation to illustrate the relationship among management of natural resources, the sustainability of human populations, and biodiversity. [Clarification Statement: Examples of factors that affect the management of natural resources include costs of resource extraction and waste-management, per-capita consumption, and the development of new technologies. Examples of factors that affect human sustainability include levels of conservation and urban planning.] [Assessment Boundary: assessment for computational simulations is limited to using provided multiparameter programs or constructing simplified spreadsheet calculations.]

HS-ESS3-4

Evaluate or refine a technological solution that reduces impacts of human activities on natural systems. [Clarification Statement: Examples of data on the impacts of human activities could include the quantities and types of pollutants released, changes to biomass and species diversity, or areal changes in land surface use (such as for urban development, agriculture and livestock, or surface mining). Examples for limiting future impacts could range from local efforts (such as reducing, reusing, and recycling resources) to large-scale geoengineering design solutions (such as altering global temperatures by making large changes to the atmosphere or ocean)].

Duration of Lesson

2–5 one-hour lessons

Assessments

Completion of **Handout 1: Climate 101**
 Completion of **Handout 2: Energy Table**
 Completion of **Generate board game**
 Student presentations
 Group discussion

Materials Needed

Writing utensils
 Computers with internet access for research
 Important websites:

- <https://nca2018.globalchange.gov/>
- <https://www.eia.gov/>
- <https://www.epa.gov/air-research/air-quality-and-energy-choice-stem-activities-educators>

Handout 1: Climate 101

Handout 2: Climate Impacts

Handout 3: Energy Pollution: Its Impacts on Human Health and the Environment

Teacher Resource 1: Energy Pollution Table (Answer Sheet)

Optional: Generate board game and cards (laminated if possible) from <https://www.epa.gov/climate-research/generate-game-energy-choices>

Procedure

Part 1: Climate 101: A Climate Overview

1. Tell students that they are going to read the latest report from scientists on climate change in the United States. Distribute copies of **Handout 1: Climate 101** and review it so that students understand the information they are to look for.

2. Provide computer access to the NCA Summary for policy makers, available at <https://nca2018.globalchange.gov/chapter/1/>. Have them read the Introduction to Chapter 1 on their own and answer the first four questions on the handout. (See Notes to the Teacher, above, for various ways you can approach this based on the ability and background of your class.)

3. Repeat this process. Have the students read Key Message 1, Chapter 2, available at <https://nca2018.globalchange.gov/chapter/2#key-message-1> and then answer the remaining five questions. This activity can be completed as a homework assignment if you prefer to save class time. You may wish to refer students to <https://www.ourchildrenstrust.org/the-science> as a useful resource.

Part 2: Climate Impacts

1. Once students have completed the reading and answered the questions from **Handout 1**, split the class into seven groups. Distribute copies of **Handout 2: Climate Impacts**. Assign one of the seven Climate Impact Topics to each group and have them circle the assigned topic on their sheet.

2. Allow the students adequate time to read about their assigned climate impact in NCA chapter 2, available at <https://nca2018.globalchange.gov/chapter/2/>. Then, have the students present to the class and report out one-minute summaries of their assigned impact to the class, emphasizing both (1) what impacts have already occurred and (2) what impacts are expected to occur in the future.

3. Have the students use computers to complete the next three activities, which involve identifying and summarizing related articles about climate change impacts. This portion of the activity can be done independently or in groups at the teacher's discretion. If necessary, include a discussion of media literacy and how students should source accurate information before giving time for students to research.

4. If desired, have students report to the class orally about some interesting aspects of the readings they found.

Part 3: Energy Pollution and Human Health Impacts

1. Explain to students that they are going to evaluate the pros and cons of the energy sources used in the United States to generate power. Explain that the Energy Information Agency is a non-partisan, reliable government authority that provides data on pollution from energy sources.

2. Distribute **Handout 3: Energy Pollution: Its Impacts on Human Health and the Environment**. The activities in **Handout 3** can be completed in groups or individually at the teacher's discretion. [Note: If you have distributed the handout electronically, have students click on the links provided in the table to learn more about each energy source's pollution and environmental impacts. If they are working from a printed handout, you will find a list of these websites on the second page of **Teacher Resource 1**. They are set up so that you can run a few copies and cut the links apart to give to students.]

3. Have the students write brief notes in the first four empty columns in the table, summarizing what they've learned for each category of pollution (air, water, etc.) In some cases, the columns may not be applicable to certain energy sources; students should be able to evaluate when this is the case.

4. When students have completed Step 3, have them use search engines beyond the EIA website to find information on "Famous Disasters" for each energy source.

5. Hold a class discussion to share results so that students can check that they have the correct information. Clarify for students when necessary.

6. Tell the students they are now going to evaluate some energy pollution impacts on human health. Point out that this section will focus on pollution-related impacts for humans living near energy sites, which is different from the effects that emissions cause on climate change.

7. Have the students independently select one of the three human health topics, and then have the students use

a search engine to find a recent article on that topic from a reputable source. Have them summarize that article in a report to be completed on the last page of **Handout 3**.

8. To extend this lesson further, have the students present their articles to the class in one-minute summaries or lengthier PowerPoint presentations if desired.

Extension Activities

1. One useful activity would be for students to research and present a report on the costs of continuing on our current fossil fuel-based energy path, particularly the cost of NOT transitioning to clean energy. The cost of mitigation and damage control is so much greater than that of making the transition. Wind and solar energy are now the cheapest forms of energy in the world and cost less than fossil fuel energy. Recent events to study would be the costs in lives and property of recent severe hurricanes, the fires (e.g., the 2020 Oregon forest fires) and agricultural losses that occurred because of the Western drought, and the inundation of coastal properties, including cities, due to the melting of glaciers and ice sheets and the thermal expansion of the ocean with the attendant rise in sea level.

2. Have students identify a particular extreme weather event caused or made worse by climate change, which has negatively affected their own community or state, such as drought or hurricane. Have them invite a government official to class to discuss what steps might be taken to mitigate damages in the future and what such steps would cost.

3. The U.S. Environmental Protection Agency has produced several excellent STEM activities that will help students continue learning about fossil fuels and the environment. They can be found at <https://www.epa.gov/air-research/air-quality-and-energy-choice-stem-activities-educators>.

- a. The first is instructions on how to build your own particulate matter sensor to teach students how air pollution, especially the presence of particulate matter, affects us. It includes a student handout and discussion questions. The EPA website also mentions that MIT scientists developed a particulate matter sensor for middle school students to

build; instructions with illustrations can be found at <https://edgerton-dev.mit.edu/sites/default/files/2021-07/Arduino%20Particle%20Meter.pdf>.

- b. The EPA also has a board game called Generate to help students grapple with the complexities of our energy challenges by creating their own energy grid. The game asks students to consider what type of energy generation to build to fill the grid, as well as the costs (financial and otherwise) involved in providing electricity. It examines impacts on the environment, including how different mixes of sources of electricity can affect emissions of carbon dioxide (CO₂), air pollution, and water use. Present the provided EPA PowerPoint, available at <https://www.epa.gov/climate-research/generate-game-energy-choices>, to explain the rules of the game and answer any questions students have.

Split the students into groups of five and six and distribute a Generate board game grid and card set to each student group. You may wish to arranging desks into “islands” to facilitate the best access to each gameboard. Refer to the instructions provided at the U.S. EPA site to lead the game, keeping track of each group’s score by using the Excel sheet provided at the website: <https://www.epa.gov/climate-research/generate-game-energy-choices>.

The game features several rounds and scenarios to choose from, although the basic version of the game is sufficient to teach the fundamental concepts. At the conclusion of the game, ask the students what they learned, and encourage them to reflect on why our energy grid used fossil fuel sources at first (because they were initially cheaper and more dependable) and why the energy grid may benefit from switching to renewables (climate change impacts and pollution.) If time allows, ask the students to consider what they learned from the Generate board game as it relates to the documentary *YOUTH v. GOV*.



Handout 1

Climate 101

The plaintiffs in the film *YOUTH v. GOV* cite the National Climate Assessment (NCA) as evidence in their case that global warming is real and harmful to human health and the environment. In this activity, you will read portions of the NCA yourself and answer questions for each section. Go to the National Climate Assessment website at <https://nca2018.globalchange.gov/chapter/1/>. Read carefully and ask questions if you don't understand.

A. First, read the Introduction to Chapter 1. Then answer the following questions:

1. Identify your region in Figure 1.1. Have you witnessed the described impact to your region? Do you think the proposed action adequately addresses the impact?
2. The reading suggests that risks from climate change are often highest for those that are already vulnerable, including low-income communities, some communities of color, children, and the elderly. Why do you think this is? Consider your region if possible.
3. Now look at Figure 1.2, which shows several potential indicators of climate change. Select the three indicators that global warming is occurring that are the most compelling to you. Use information from the text in addition to the figure.
4. Does the behavior of any of the indicators in Figure 1.2 surprise you? Explain what you expected versus what you observed in the figure.

- B. Next, read “Key Message (KM) 1: Observed Changes in Global Climate” from NCA’s “Chapter 2: Our Changing Climate” at <https://nca2018.globalchange.gov/chapter/2/>. [Note: You must click on the “Read More” link under the first paragraph to read the full message.]
5. In your own words, explain how greenhouse gases warm the Earth.
6. What is the effect of aerosols on global temperature? Compare them to the effect of greenhouse gases using Figure 2.1.
7. On a scale from 1 to 10 (1 = the least, 10 = the most), how certain do the authors seem to be that humans, rather than natural variability, are driving global warming? Explain your answer using the text and Figure 2.1.
8. Scroll down to Figure 2.2. Which of the three scenarios do our current emissions appear to be approaching? How does this scenario compare with the scenario that is compatible with the Paris Agreement target (green line), keeping in mind that climate experts in the *Juliana* case, along with the IPCC, argue that even the Paris Agreement targets are too high and unsafe for protecting youth from climate chaos?
9. What did you learn after reading this portion of NCA that you did not know before?



Handout 2

Climate Impacts

- A. Before you begin, please highlight or circle the portion of NCA Chapter 2 assigned to your group in the list below. Then find your assigned reading by using the sections index at the right of the screen.

Reading assignments by topic and corresponding sections in NCA Chapter 2:

- KM 3: Ocean Changes
- KM 4: Sea Level Rise
- KM 5: Temperature
- KM 6: Precipitation
- KM 7: Arctic
- KM 8: Severe Storms (Hurricanes)
- KM 9: Coastal Flooding

Begin reading and taking notes on your assigned section. When you have finished, plan a one-minute summary of the assigned topic to the class in which you cover:

- 1) what impacts have already occurred, and
- 2) what impacts are expected to occur in the future

Present your report to the class, following your teacher's directions.

- B. Research your assigned topic on the internet. Choose one recent article from a reputable source that highlights the critical environmental issue detailed in your section. Please provide the title and source of your article, as well as a brief summary in the space below.

Article title:

Author:

Source:

Article summary:

- C. In the film, plaintiffs Jacob Lebel and Kelsey Juliana suffered from forest fires that increased in frequency due to climate change. Find a recent article discussing the relationship between climate change and forest fires and summarize it here.

Article title:

Author:

Source:

Article summary:

- D. In the film, plaintiff Jaime Butler shared that 1,000 Navajo community horses died because of drought due to climate change. Identify an animal species that is at risk because of climate change and explain exactly how climate change is adversely affecting the species.

Article title:

Author:

Source:

Article summary:

Handout 3

Energy Pollution: Its Impacts on Human Health and the Environment

A. Energy Pollution Table

The U.S. Energy Information Administration (EIA) is a trusted energy agency. Go to the EIA home page at <https://www.eia.gov/>. Read each energy source profile and characterize its environmental impacts in the chart below.

[illegible]

B. Human Health and Energy Pollution

In the movie, plaintiff Jayden Foytlin suffered from health complications after contaminated water flooded her home in Rayne, Louisiana, and many of the plaintiffs struggle with asthma related to increased forest fires and smoke in their communities (e.g., Isaac Vergun testified to this during his deposition). Find a recent article discussing the relationship between global warming, pollutants, and human health impacts and summarize it below:

- Heat stress and heat strokes in young athletes
- Low birth weight babies
- Increase in Lyme disease
- Asthma and increased lung disease from fine particulate matter in the air (PM2.5)
- Increased transmission of malaria

Article title:

Author:

Source:

Article summary:



Teacher Resource

Energy Pollution Table (Answer Sheet)

Source	Does it produce GHG?	Does it produce air pollution?	Does it pollute the water?	Does it produce radioactive pollution?	Has it caused a famous disaster?
Petroleum and Gasoline	Yes, carbon dioxide	Yes, particulate matter, carbon monoxide, etc.	Yes, contaminated water, oil spills, marine habitat destruction	No	<i>Exxon Valdez</i> 1989, Deepwater Horizon 2010, etc.
Natural Gas	Yes, carbon dioxide and methane	Yes, from flaring, hydrogen sulfide, carbon monoxide, etc.	Yes, contaminated water, wastewater spills and leaks	No	New London Explosion, Hutchinson Explosion
Coal	Yes, carbon dioxide	Yes, smog and haze, particulate matter, fly ash, various oxides	Yes, runoff water, acid rain, etc.	No	Aberfan Mine avalanche, various international mine explosions
Nuclear	No, none after construction	No	Yes, contaminated wastewater	Yes, spent reactor fuel and nuclear parts	Chernobyl, Three Mile Island, Fukushima
Solar	No	No	No, but some water used for cleaning	No	N/A
Wind	No	No, but some bird impacts	No	No	N/A
Hydropower	Possibly carbon dioxide and methane, depending on site-specific factors	No, but dams and generators may.	No, but may affect water temperature, silt load, water chemistry	No	2121 Rishiganga Hydroelectric Project flash flood in Himalayas

Links for accessing information for chart:

Petroleum Link:

<https://www.eia.gov/energyexplained/oil-and-petroleum-products/oil-and-the-environment.php>

Gasoline Link:

<https://www.eia.gov/energyexplained/gasoline/gasoline-and-the-environment.php>

Natural Gas Link:

<https://www.eia.gov/energyexplained/natural-gas/natural-gas-and-the-environment.php>

Coal Link:

<https://www.eia.gov/energyexplained/coal/coal-and-the-environment.php>

Nuclear Link:

<https://www.eia.gov/energyexplained/nuclear/nuclear-power-and-the-environment.php>

Solar Link:

<https://www.eia.gov/energyexplained/solar/solar-energy-and-the-environment.php>

Wind Link:

<https://www.eia.gov/energyexplained/wind/wind-energy-and-the-environment.php>

Hydropower Link:

<https://www.eia.gov/energyexplained/hydropower/hydropower-and-the-environment.php>

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