

From Hinkley to Flint: To What Extent Should Government Intervene in the Market for Clean Drinking Water?



Schaefer, Harry. Thermal pollution, Kanawha River, West Virginia, USA (1974)

Supporting Questions

1. To what extent is clean drinking water a public and private good?
2. What are economic externalities and how can government correct them?
3. What are the costs and benefits of utilities operating with monopoly market power?

Fundamental Economics

From Hinkley to Flint: To What Extent Should Government Intervene in the Market for Clean Drinking Water?

<p>Connection to Connecting Theme/Enduing Understandings</p>	<p>Production, Distribution and Consumption – People have wants that often exceed the limited resources available to them. Students will gather and analyze data, as well as use critical thinking skills to determine how best to deal with scarcity of resources.</p>
<p>GSE for Social Studies</p>	<p>SSEF5 Describe the roles of government in the United States economy.</p> <p>a. Explain why government provides public goods and services, redistributes income, protects property rights, and resolves market failures.</p> <p>b. Explain the effects on consumers and producers caused by government regulation and deregulation.</p> <p>SSEMI3 Explain the organization and role of business and analyze the four types of market structures in the U.S. economy.</p> <p>b. Identify the basic characteristics of monopoly, oligopoly, monopolistic competition, and pure (perfect) competition with regards to number of sellers, barriers to entry, price control, and product differentiation.</p>
<p>Connection to Literacy Standards for Social Studies and Social Studies Matrices</p>	<p>Information Processing Skills</p> <ol style="list-style-type: none"> 1. compare similarities and differences 3. identify issues and/or problems and alternative solutions 11. draw conclusions and make generalizations 14. formulate appropriate research questions 15. determine adequacy and/or relevancy of information 16. check for consistency of information <p>Literacy Standards</p> <p>L9-10RHSS1: Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.</p> <p>L9-10RHSS4: 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.</p> <p>L9-10RHSS6: Compare the point of view of two or more authors for how they treat the same or similar topics, including which details they include and emphasize in their respective accounts.</p> <p>L9-10RHSS9: Compare and contrast treatments of the same topic in several primary and secondary sources.</p> <p>L9-10WHST1: Write arguments focused on discipline-specific content.</p> <ol style="list-style-type: none"> a. Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence. <p>L9-10WHST2: Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.</p> <ol style="list-style-type: none"> a. Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension



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Supporting Question 1	Supporting Question 2	Supporting Question 3
To what extent is clean drinking water a public or private good??	What are economic externalities and how can government correct them?	What are the costs and benefits of utilities operating with monopoly market power?
Sample Instructional Activity	Sample Instructional Activity	Sample Instructional Activity
Make the Connection Sources on a Continuum	4 Corners Debate	Organize your Thoughts Writing Relay
Featured Sources	Featured Sources	Featured Sources
<p>Document 1 “Krugman on Flint Michigan: But Public Water Supplies Aren’t a Public Good”</p> <p>Document 2 “Dirty Water” Infographic</p> <p>Document 3 “Water 21st Century Challenges” Infographic</p> <p>Document 4 “Bridging the Water Infrastructure Gap” infographic and “The Price of Water: 2015” Infographic</p> <p>Document 7 “Michigan’s Great Stink”</p>	<p>Document 5 “Erin Brockovich on Hinkley, California” Video</p> <p>Document 8 “Toxic plume spreads, PG&E faces 2nd Hinkley suit” Map</p> <p>Document 9 “15 Years after <i>Erin Brockovich</i>, Town Still Fearful of Polluted Water.” LA Times article by Paloma Esquivel</p>	<p>Document 6 “Lead-Laced Water In Flint: A Step-By-Step Look At The Makings Of A Crisis”</p> <p>Document 10 “In Flint’s Aftermath, Water Will Run By New Rules”</p>

Summative Performance Task	<p>PRODUCT PRESENTATION Community Water Proposal</p> <p>Presentations must include a visual aid as well as a handout.</p>
Taking Informed Action	<p>Consider participating in water testing at your school, and/or in your community.</p>



The Context: What is a public good?

Students should be able to explain why government provides public goods. They should be able to explain the types of government goods and services provided at the local, state, and national levels. They must be able to describe the advantages and disadvantages associated with goods and services provided by the government and the role of government transfer payments in a market economy.

Public goods are only produced in economies that lean toward a market system when the private market is unable or unwilling to produce the goods. These public goods are paid by using tax dollars or other sources of government revenue. There are two main characteristics of purely public goods. They include “shared consumption” goods also known as “non-rival” goods. This means the consumption of the good by one person does not diminish the satisfaction enjoyed by another consumer who consumes the exact same good. For example, a public interstate highway can be used by any licensed driver without decreasing the benefits another driver enjoys by driving the same road. A non-example would be an ice cream cone which most people are unlikely to enjoy sharing with another person and two people cannot consume the same lick of ice cream. The other characteristic is non-exclusion. Non-exclusion means that it is difficult or impossible to keep a person who is unwilling to pay from enjoying the benefits of the public good. For example, national defense is provided for everyone who resides in a country regardless of whether they pay to be protected. (They become a “free-rider,” enjoying the benefit of a good without incurring the cost of it.) A non-example would be an ice cream cone because a person can be required to pay before receiving the ice cream cone.

Market Failures occur when the private market is unable to produce goods and services in a way that the marginal benefit to society from the production of the good is

equal to or greater than the marginal cost to society for producing the good. Market failures include externalities and market power. Externalities can be both positive and negative. They occur when a third party other than the consumer or producer of a good is hurt or receives a

benefit from the production or consumption of that good. For example, some industries cause pollution while producing a product. If this pollution causes sickness in the community, there is a negative externality. If your roommate at college regularly plays a digital library of your

favorite artists, you enjoy benefits even though you did not purchase the songs, this is a positive externality. The government attempts to correct negative externalities like pollution through taxes or regulations on the polluting industry. This makes it more expensive to produce the good and reduces the amount of production. If the production of college education, which creates a positive externality, was left entirely to the private market, it would likely under produce graduates and would be too costly for many in society. The government attempts to correct the output and price of by providing subsidies to the institutions or their students to increase the amount of college education supplied to and consumed by the market.

Market power refers to a market failure resulting from a monopoly market structure, when there is only one seller of a good or service. Under anti-trust laws, monopolies can be prosecuted and in some cases broken up into smaller companies. Economists are divided over the dangers of market power. Many believe that market power is alright as long as prices are reasonable and new competitors are not barred from the market by unfair practices. Electric power and water systems are often government monopolies or heavily regulated private monopolies. These monopolies are allowed because the infrastructure required is costly, prices need to be affordable for citizens, and service needs to be available to society without interruption.

Level of Government	Public Goods and Services	Purpose
Local & State	Public Education	Produce productive workers for the economy
Local, State, and Federal	Courts	Mediate Disputes, prosecute criminal cases to protect public safety
Federal	National Defense	Secure the borders of the country, protect citizen safety

Documents

Document #	Source Information
Document 1	Forbes article by Tim Worstall “Krugman on Flint Michigan: But Public Water Supplies Aren’t a Public Good.” Full text at http://www.forbes.com/sites/timworstall/2016/01/25/krugman-on-flint-michigan-but-public-water-supplies-arent-a-public-good/#c0872ada8e27
Document 2	“Dirty Water” Infographic from Environmental Working Group’s National Drinking Water Database. Available at http://visual.ly/dirty-water
Document 3	“Water 21st Century Challenges” Infographic from the 2012 World Water Forum.
Document 4	“Bridging the Water Infrastructure Gap” infographic from American Society of Civil Engineers. More information at http://www.asce.org/water_and_wastewater_report/ and “The Price of Water: 2015” Infographic from Circle of Blue available here http://www.circleofblue.org/2015/world/price-of-water-2015-up-6-percent-in-30-major-u-s-cities-41-percent-rise-since-2010/
Document 5	Erin Brockovich video on Hinkley, California available at http://www.brockovich.com/portfolio/hinkley-california/
Document 6	NPR Article by Merrit Kennedy, “Lead-Laced Water In Flint: A Step-By-Step Look At The Makings Of A Crisis” Full text at http://www.npr.org/sections/thetwo-way/2016/04/20/465545378/lead-laced-water-in-flint-a-step-by-step-look-at-the-makings-of-a-crisis
Document 7	New York Times article by Paul Krugman “Michigan’s Great Stink.” Full text available at http://www.nytimes.com/2016/01/25/opinion/michigans-great-stink.html?_r=0
Document 8	Map from San Francisco Chronicle Map “Toxic Plume spreads, PG&E faces 2 nd Hinkley suit” July 25, 2013. Full article at http://www.sfgate.com/science/article/Toxic-plume-spreads-PG-amp-E-faces-2nd-Hinkley-4688046.php
Document 9	LA Times article by Paloma Esquivel “15 Years after <i>Erin Brockovich</i> , Town Still Fearful of Polluted Water.” Full text available at http://www.latimes.com/local/california/
Document 10	Governing Magazine article by Daniel Vock “In Flint’s Aftermath, Water Will Run By New Rules.” Full text available at http://www.governing.com/topics/transportation-infrastructure/gov-flint-water-epa-rules.html

Document 1

Forbes article by Tim Worstall “Krugman On Flint Michigan: But Public Water Supplies Aren’t A Public Good.” January 25, 2016

This is really a quite alarming thing for an eminent economist to be saying, as Krugman does today: The statement that drinking water supplies are a public good. They’re not, I know they’re not, you should know they’re not and Paul Krugman definitely knows that they’re not.

At which point of course it’s necessary to delineate what an economist actually means by a “public good.” It’s not something which is good for the public (which clean drinking water definitely is) nor a good that should be supplied to the public (which clean water definitely is). A public good is something that is non-rivalrous and non-excludable. That is, if I’m able to enjoy a supply of something that doesn’t diminish the amount of that same thing that someone else is able to enjoy or consume. And secondly, that there’s no real way to exclude people from being able to enjoy that. Obviously, neither of these are true about the supply of lead free drinking water. Don’t pay your water bills and you’ll quickly find out how quickly your supply can be excluded, and my drinking the water really does mean that you don’t have access to that particular portion of water: not until it’s been back through the treatment plant at least.

It probably is true that the absence of pandemic disease through the existence of a decent sanitation system is a public good. But drinking water is not, not by the economists’ definition.

The importance of getting this right is that there’s a very strong argument for government intervention into the provision of public goods. If something is a public good then it’s very difficult to make a profit from it. This means that private markets will undersupply it, or at least potentially will. So, intervention to get the amount we think would be societally useful is often a good idea. Please do note that I’m not banging an ideological drum here; this just is the simple economics of the matter. People often say that vaccination is a public good; it isn’t. It’s the end result of a successful vaccination program that is, the herd immunity. Enough people are now protected against the disease, whatever it is, that it cannot gain a foothold in the society. Thus those who cannot have the vaccination (the very young, people with certain immune disorders, etc.) are still protected from getting the disease: simply because no one else has it to pass on to them. Note though that it is the herd immunity that is the public good; thus we have alternative methods of producing it. It could be that the government just pays for all vaccinations, as my native UK does. Or it could be that the government insists that, say, children attending public schools must have been vaccinated, which is what many States in the US do.

There are other solutions to the public goods problem. Even Adam Smith thought that basic literacy and numeracy for all amounted to a public good; thus tax based financing of elementary schools at least is a good idea. Invention and innovation are both public goods; we institute patents and copyrights so that they are excludable and thus profitable, thus boosting their supply.

This is all vastly important. Firstly, that we properly identify what is a public good so as to bring into play those arguments for government action. Secondly, that we actually study the good in question to see which of the varied actions government should take.

Krugman’s argument leaps over these two vital distinctions:

There should, however, be much less debate about spending on what Econ 101 calls public goods—things that benefit everyone and can’t be provided by the private sector. Yes, we can differ over exactly how big a military we need or how dense and well-maintained the road network should be, but you wouldn’t expect controversy about spending enough to provide key public goods like basic education or safe drinking water.

Drinking water is not a public good, and even that definition of a public good does not require that government spend a certain amount of money. Drinking water in France (and in my native England, even if not all of Britain) is supplied by private, profit-making companies. It just isn’t a matter of how much government money has spent even after we clear up the misconception of what a public good is.

Please don’t get me wrong here: the provision of clean drinking water is at the heart of civilization itself, and I don’t think anyone should be deprived of it because of poverty, political manipulation nor even bureaucratic incompetence (what I fear is the actual problem here). However, it is not a public good and thus the argument that government must spend more upon it does not apply, nor do any of the other public goods arguments.

This has a bigger impact upon economic debate than you might think. Because it is true that one answer, not the only one nor always even the best one, to the provision of a public good is that government, through taxation, should provide it. The military, yes, basic education as Adam Smith said, the road network (well, turnpikes and toll roads do in fact work) and drinking water simply isn’t one. And as with vaccines and patents, there are certainly other ways of ensuring the provision of some public goods other than tax and spend. With drinking water, as with the experience of other countries, the private sector (as long as granted some governmental

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privileges, such as rights of way) can provide the goods to the public just fine. Thus we always need to look at people who are using this argument. It's not enough to just say, "Public good, tax finance it, D'Oh!" We need to first ascertain whether it is a public good and then secondly work out whether tax finance is the best option or whether one of the other solutions would work better.

All of this is not a discussion of the state of the water supply in Flint, Michigan. Rather, it's a discussion of a piece of economics that Paul Krugman absolutely does know but for some reason chose not to share with us today. There are all sorts of reasons why we might have a tax financed drinking water supply. Efficiency, equity, simple practicality, but that it's a public good just isn't one of them.

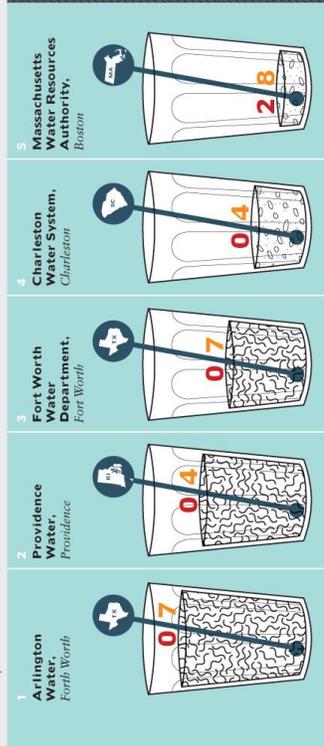
Document 2

“Dirty Water” Infographic from the Environmental Working Group’s National Drinking Water Database.

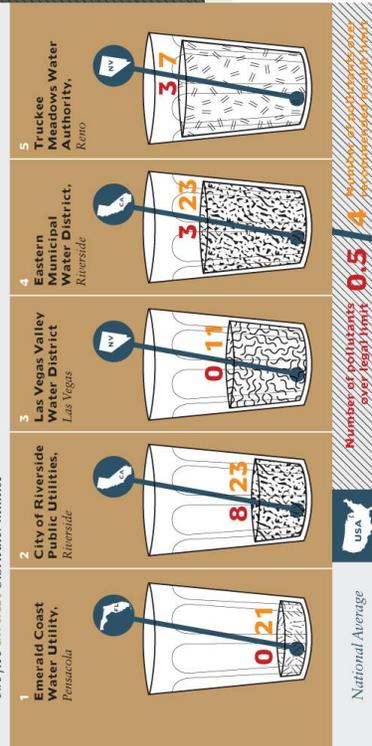
Even though water comes out of the faucet looking clean and clear, there is a good chance it has some pretty nasty stuff in it. A new study has cataloged all the pollutants and chemicals that appear in our tap water, and they include things like arsenic and fuel additives. Many of these pollutants are known carcinogens, and some are so toxic that the EPA has recommended a safe dose. **This is a look at the five most and least polluted water systems in America** (in cities with more than 100,000 population), based on the total number of pollutants found in the water, and how often those pollutants were found during continued testing.

Dirty Water

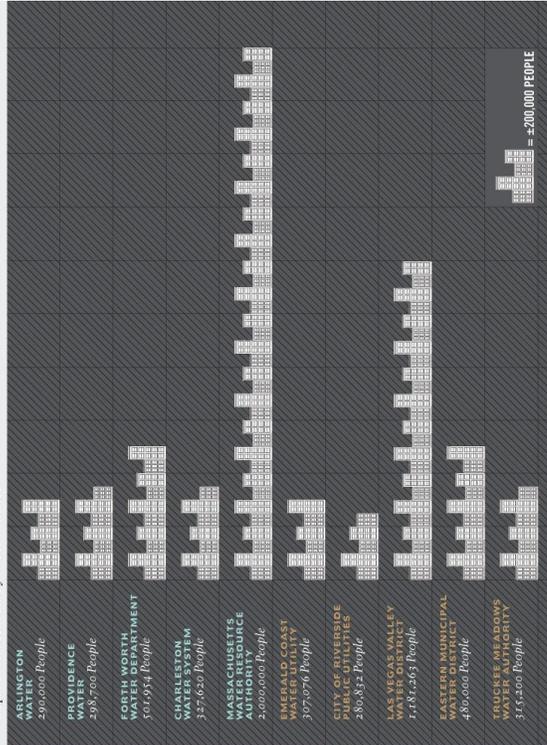
The five cleanest U.S. water utilities.



The five dirtiest U.S. water utilities.



Population served by these utilities



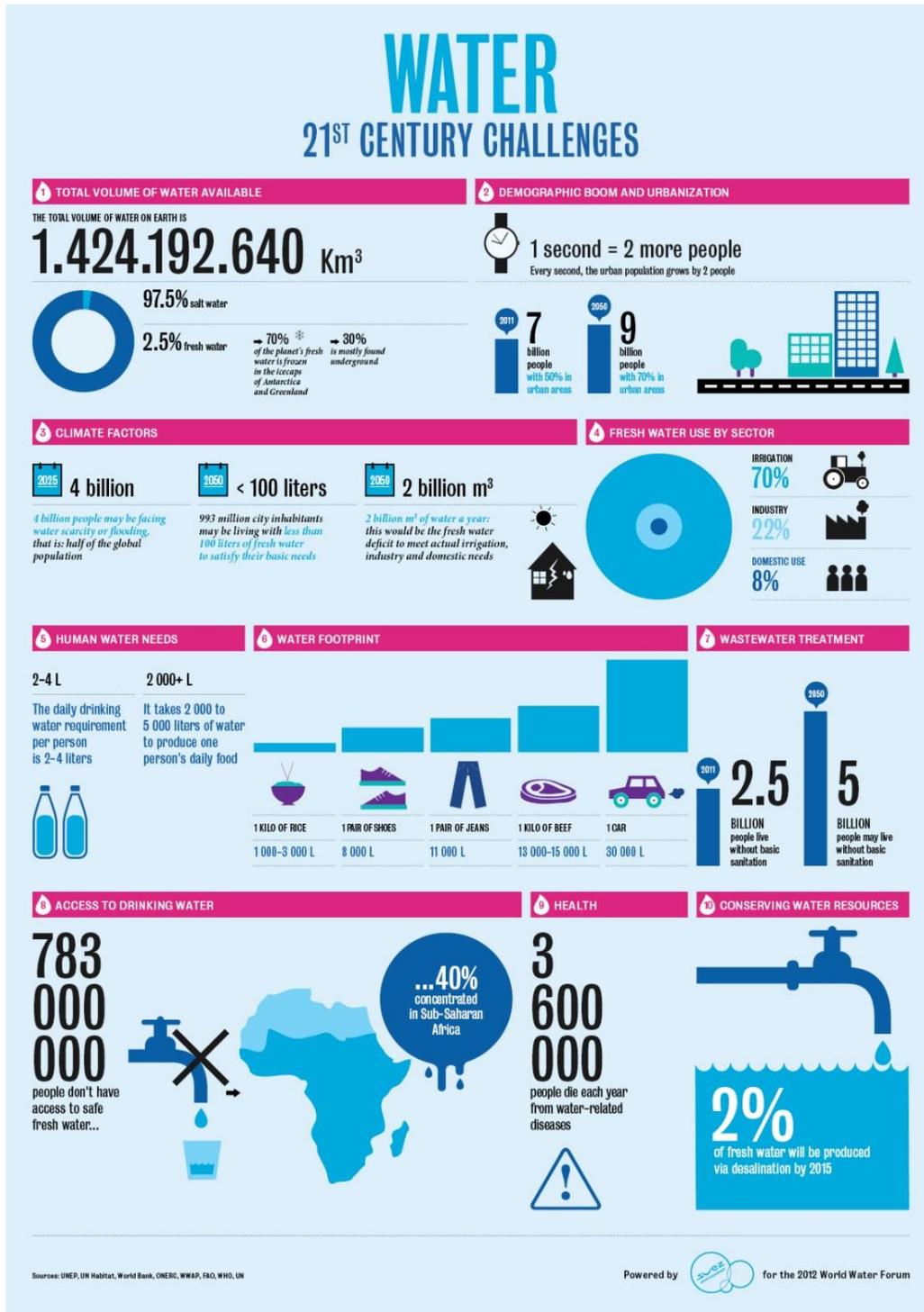
Pollutant of largest concern



SOURCE: Environmental Working Group's National Drinking Water Database

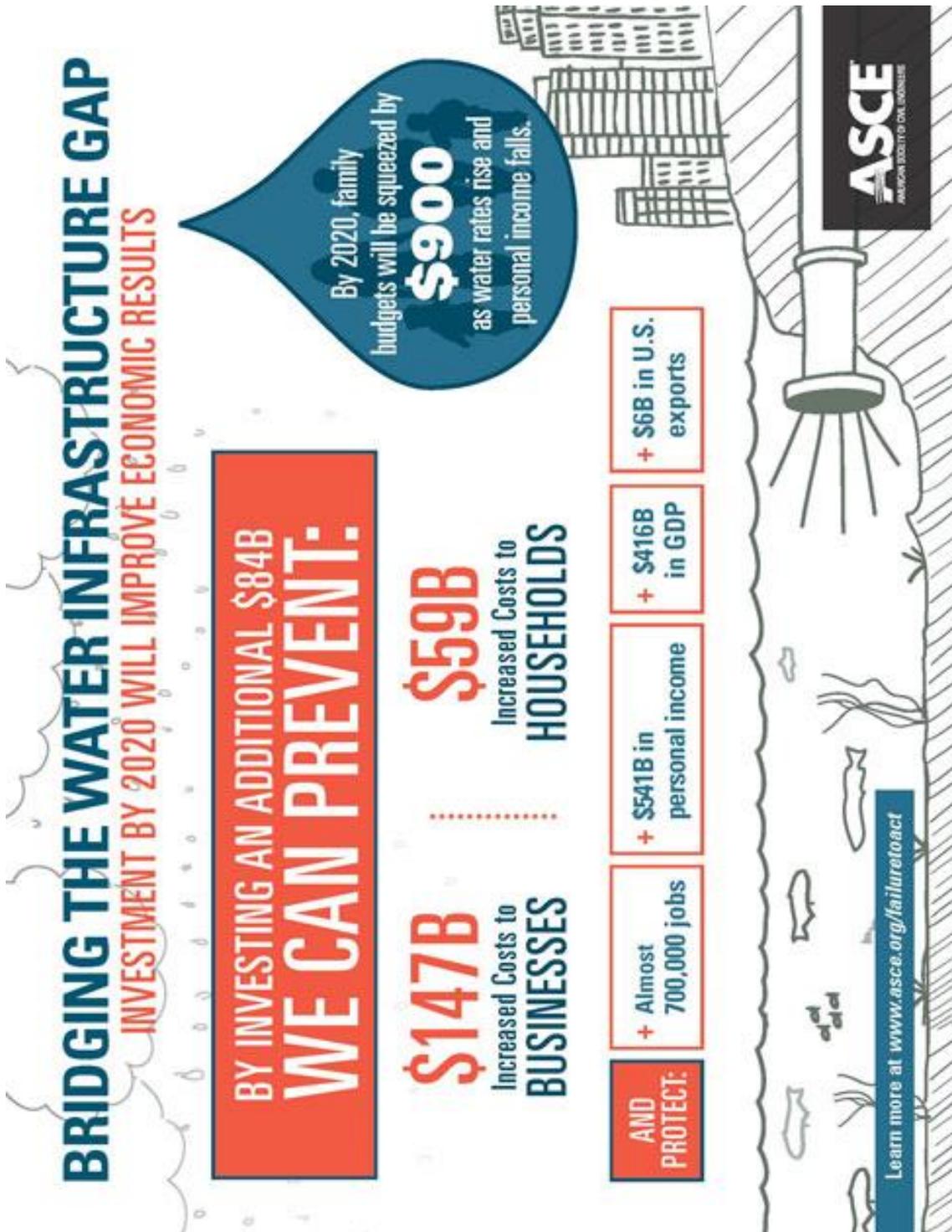
Document 3

“Water 21st Century Challenges” Infographic from the 2012 World Water Forum.



Document 4

“Bridging the Water Infrastructure Gap” Infographic from the Environmental Working Group’s National Drinking Water Database and “The Price of Water: 2015” Infographic from Circle of Blue.



Document 5

Erin Brockovich video “Hinkley, California.”

<http://www.brockovich.com/portfolio/hinkley-california/>

Despite some 600 people who were the original Hinkley litigants featured in the movie, “Erin Brockovich,” moving out of the community following settlement in 1996, the contamination still remains.

Roberta Walker, depicted in the movie as the housewife sick from toxic chromium still lives in Hinkley. Following receipt of her portion of the historic \$333-million settlement, Roberta bought a new home, four miles from the toxic contamination and learnt in 2012, that the pollution was seeping into their groundwater.

Erin and her team have returned to the town and again are working with the community.



Document 6

NPR article by Merrit Kennedy “Lead-Laced Water In Flint: A Step-By-Step Look At The Makings Of A Crisis” April 20, 2016.

Lead seepage into the drinking water in Flint, Mich., has caused a massive public health crisis and prompted President Obama to declare a federal state of emergency there.

The problem began when the city switched its water supply in 2014. Almost immediately, residents of Flint — a majority-black city where [40 percent of people](#) live in poverty — started complaining about the quality of the water. City and state officials denied for months that there was a serious problem.

By that time, supply pipes had sustained major corrosion and lead was leaching into the water. The city switched back to its original water supply late last year, but it was too late to reverse the damage to the pipes.

High blood lead levels are especially harmful to children and pregnant women, and can cause "learning disabilities, behavioral problems and mental retardation," the [World Health Organization says](#).

Here's how the crisis unfolded:

June 2012-April 2013: Flint Looks For Cheaper Water

Flint officials explore whether the city can save money by switching from its current provider, the Detroit Water and Sewerage Department (DWSD). City and state officials weigh an alternative: Flint could build its own pipeline to connect to the Karegnondi Water Authority (KWA). That option was projected to save the region \$200 million over 25 years, according to City Council meeting minutes.

On April 16, Flint Emergency Manager Ed Kurtz tells the state treasurer that the city is going to join the KWA. A day later, Detroit's water system tells Kurtz it is terminating service to the city effective a year later, in April 2014.

April 25, 2014: Switch To The Flint River

Until Flint's pipeline connecting to the KWA is operational, the city needs an interim source of water and turns to the Flint River, which was also its main water source until the 1960s.

Flint River water starts flowing to the city on April 25.

In a press release, the city characterized it as a temporary switch and aimed to ease resident concerns about the water quality. [Here's an excerpt](#):

"Even with a proven track record of providing perfectly good water for Flint, there still remains lingering uncertainty about the quality of the water. In an effort to dispel myths and promote the truth about the Flint River and its viability as a residential water resource, there have been numerous studies and tests conducted on its water by several independent organizations. ... Michael Prysby of the Michigan DEQ Office of Drinking Water verified that 'the quality of the water being put out meets all of our drinking water standards and Flint water is safe to drink.'

...

"It's regular, good, pure drinking water, and it's right in our backyard," said Mayor [Dayne] Walling, "this is the first step in the right direction for Flint, and we take this monumental step forward in controlling the future of our community's most precious resource."

Officials did not immediately treat the Flint River water to ensure it didn't cause corrosion in the pipes — instead, they took [what Michigan Radio characterized as a "wait-and-see" approach](#).

May: Residents Complain

Some Flint residents complain about the smell and color of the new water, which is 70 percent harder than its previous water source, [according to MLive](#).

August: E. coli And Total Coliform Bacteria Detected

E. coli and total coliform bacteria are detected in Flint's water, prompting multiple advisories for residents to boil their water.

[An informational document](#) from Michigan's Department of Environmental Quality (MDEQ) says the city addressed the problem by increasing chlorine levels in the water.

Oct. 13: General Motors Stops Using Flint River water

General Motors says it will stop using Flint River water, fearing corrosion in its machines. "Because of all the metal ... you don't want the higher chlorine water (to result in) corrosion," GM spokesman Tom Wickham [tells MLive](#). "We noticed it some time ago (and) the discussions have been going on for some time."

Jan. 2, 2015: Disinfection Byproducts Detected

Flint is [found to be in violation](#) of the Safe Drinking Water Act because of the level of total trihalomethanes, or TTHM, in the water. TTHM are disinfection byproducts that occur when chlorine interacts with organic matter in the water. Some types are possible carcinogens for humans, [the CDC says](#).

In response, the state starts buying bottled water for its employees at government offices. This continues even after TTHM levels returned to compliance with the Safe Drinking Water Act in September 2015, [MLive reported](#).

Feb. 25: Tests Show High Lead Levels In Home

A city test "reveals high lead content in the water of a Flint resident's home." [As Michigan Radio reported](#), the water at Lee Anne Walters' home "turns up with a lead content of 104 parts per billion. Fifteen parts per billion is the [Environmental Protection Agency]'s limit for lead in drinking water."

In April, Walters says her child was diagnosed with lead poisoning. An independent test done by Virginia Tech researchers [finds lead levels at 13,200 ppb](#) — water is considered hazardous waste at 5,000 ppb.

April: State Agency Notifies EPA That Flint Did Not Implement Corrosion Controls

The EPA [says it was notified](#) by the MDEQ on or about April 24 "that the City did not have corrosion control treatment in place at the Flint Water Treatment Plant."

July 13: 'Anyone Who Is Concerned About Lead ... Can Relax'

A [leaked internal memo](#) from the EPA expresses concern about lead levels, including the level at Lee Anne Walters' home. The ACLU picks up the report.

Michigan Radio [reaches out to](#) the MDEQ for comment about the memo, and spokesman Brad Wurfel says, "Let me start here — anyone who is concerned about lead in the drinking water in Flint can relax."

He adds that he hasn't seen the memo, but that preliminary tests show the Walters test was an "outlier." Wurfel tells Michigan Radio, "It does not look like there is any broad problem with the water supply freeing up lead as it goes to homes."

Aug. 20: Lead-Level Samples Excluded From Report

The MDEQ dropped two samples from its initial report on lead levels from the city, which put the result within federally mandated levels.

"If the state had just dropped one high sample, Flint still would have been over the federal action level," [Michigan Radio reports](#). "But dropping two samples put them below the action level."

Officials said the two samples did not meet federal criteria — because one of the samples had a water filter and another came from a business rather than a home, Michigan Radio reports.

September: Virginia Tech Team Finds 'Serious' Lead Levels In Flint

[A team from Virginia Tech](#) tests hundreds of homes for lead in Flint, and says that "preliminary tests show 'serious' levels of lead in city water."

"The levels that we have seen in Flint are some of the worst that I have seen in more than 25 years working in the field," Dr. Marc Edwards, a member of the Virginia Tech team, [tells Michigan Radio](#).

Officials such as MDEQ spokesman Brad Wurfel dismiss the Virginia Tech results. He [tells Michigan Radio](#): "I don't know how they're getting the results they're getting. ... I know that it doesn't match with any of the other surveillance in the area."

In an email to MLive journalist Ron Fonger, Wurfel says:

"It's scientifically probable a research team that specializes in looking for lead in water could have found it in Flint when the city was on its old water supply. We won't know that, because they've only just arrived in town and quickly proven the theory they set out to prove, and while the state appreciates academic participation in this discussion, offering broad, dire public health advice based on some quick testing could be seen as fanning political flames irresponsibly. Residents of Flint concerned about the health of their community don't need more of that."

[In a September interview with NPR](#), Edwards says: "Flint is the only city in America that I'm aware of that does not have a corrosion control plan."

Sept. 24: Study Finds Elevated Lead Levels In Children

[A study from the local Hurley Medical Center](#) found that 2.1 percent of children age 5 and under had elevated blood lead levels prior to the switch to Flint River water, compared to 4.0 percent after the switch. A spokeswoman for the Michigan Department of Health and Human Services said the elevated lead level results may be a [result of seasonal changes](#), rather than the change in the water source.

Carlos Osorio/AP

Sept. 25: City Lead Advisory

[Flint issues a lead advisory to residents](#). "While the City is in full compliance with the Federal Safe Drinking Water Act, this information is being shared as part of a public awareness campaign to ensure that everyone takes note that no level of lead is considered safe," it reads.

That same day, Gov. Snyder's chief of staff, Dennis Muchmore, [writes in an email](#) that the MDEQ and Department of Community Health "feel that some in Flint are taking the very sensitive issue of children's exposure to lead and trying to turn it into a political football claiming the departments are underestimating the impacts on the population and particularly trying to shift responsibility to the state."

Oct. 2: Water Filters And Testing

An action plan [released by Snyder](#) says the city and state will provide free filters and water testing for Flint residents, among other things.

Oct. 16: Switch Back To Detroit Water Supply

Flint switches back to the Detroit water supplier, [which is now called the Great Lakes Water Authority](#). The governor's office said in press briefing notes that the Detroit water "will be easier to manage. It comes from a more stable source than the river, it is fully optimized for corrosion control, and it is clear that residents of Flint have more confidence in this water source."

Oct. 18: State Regulator Cites Confusion About Federal Protocol

[In an email to a Detroit News reporter](#), MDEQ Director Dan Wyant discusses why there were no corrosion controls in place when the city started using Flint River water. He seems to chalk up the lack of corrosion controls to a misunderstanding:

"What has become clear in recent weeks is that the staff believed they were handling the situation in accordance with the proper protocol for a water provider using a new source, but the federal Lead and Copper rule has a particular provision for communities over 50,000 people; that the system operator must continue treating with full corrosion control even as they test the water.

"What the staff did would have been the proper protocol for a community under 50,000 people. None of the DEQ staff in this division had ever worked on a water source switch for a community over 50,000 people — it's uncommon for big communities to switch sources.

"It's increasingly clear there was confusion here, but it also is increasingly that DEQ staff believed they were using the proper federal protocol here and they were not."

Wyant adds that lime had been added to the water but provided "insufficient corrosion control."

[A December email](#) from Snyder's communications director, Meegan Holland, also said that Flint never tested the impact of the Flint River water on the distribution system.

Dec. 14: Mayor Declares State Of Emergency

Flint Mayor Karen Weaver declares a state of emergency over the elevated lead levels in the city's water. "I am requesting that all things be done necessary to address this state of emergency declaration, effective immediately," [Weaver tells the City Council, according to MLive](#).

Weaver, who vowed to fix the water crisis, beat out incumbent Dayne Walling in an election the previous month.

Dec. 29: State Regulation Officials Resign

MDEQ Director Dan Wyant and spokesperson Brad Wurfel resign, [MLive reports](#). This comes a day after the Flint Water Advisory Task Force, created by the governor, releases a preliminary report on the crisis and concludes that primary responsibility rests with the MDEQ.

The report says that in the agency's interactions with the public about their concerns, its response "was often one of aggressive dismissal, belittlement, and attempts to discredit these efforts and the individuals involved."

Jan. 2016: Snyder and Obama Declare State Of Emergency

Michigan Gov. Rick Snyder [declares a state of emergency](#) in Genesee County due to the lead in Flint's drinking water.

President Obama declared a state of emergency less than two weeks later. The move "means FEMA is authorized to provide equipment and resources to the people affected. Federal funding will help cover the cost of providing water, water filters and other items," [as we reported](#).

Jan. 21: EPA Issues Emergency Order

The EPA issues an emergency order to take action on the Flint water crisis. "EPA has determined that the City of Flint's and the State of Michigan's responses to the drinking water crisis in Flint have been inadequate and that these failures continue," [the emergency order reads](#).

Feb 3: Testimony From Flint Officials And Experts

The House Committee on Oversight and Government Reform [hears testimony from several Flint officials and experts](#).

But much attention has focused on who *wasn't* testifying at the hearing: Gov. Snyder and city emergency managers who presided over the change in Flint's water supply.

Feb. 17: Gov. Snyder Testifies

Snyder, along with EPA Administrator Gina McCarthy, testifies before the House Committee on Oversight and Government Reform.

"Let me be blunt," the governor says in his opening statement. "This was a failure of government at all levels. Local, state and federal officials — we all failed the families of Flint."

March 21: 'Next Steps' For Flint

Snyder [outlines state agencies' goals](#) in addressing the Flint crisis.

The action plan includes providing professional support for children under 6 with elevated lead levels, replacing water fixtures in public facilities, replacing the city's 8,000 lead service lines, and increasing resources for schools.

March 23: Independent Probe Pins Blame On State Officials

Supporting its preliminary conclusion, the task force charged with investigating the causes of the Flint water crisis [says in its final report that the MDEQ bears primary responsibility](#).

Task force member Chris Kolb tells reporters:

"From a regulatory standpoint, to a protection of human health and the environment standpoint, they missed the boat completely. And it is extremely troublesome to me that an agency whose primary role, once again, is to protect human health and the environment came to these decisions, and they never backed off these decisions, no matter how many red flags they saw."

Others are also to blame, the report says, including the state's Department of Health and Human Services, the city's emergency managers and the governor.

April 12: Researchers Say Flint's Water Is Still Unsafe

Despite improved lead levels in Flint's water, it remains unsafe to drink without a filter, according to results [released from Virginia Tech researchers](#). (Though Gov. Snyder later [pledged to drink filtered Flint water](#) for 30 days.)

That's partially because residents have been using very little of the tainted water. [As the Two-Way has reported](#), "in an unfortunate cycle, the water additives that would 're-scale' corroded pipes in the water system, thereby preventing lead from leaching into the water, are not reaching the pipes because people in Flint don't want to pay for contaminated water that they can't use."

[MLive reports](#) that in December, Flint began adding phosphates to the water that would "rebuild the protective coating inside transmission lines."

April 20: Criminal Charges Filed Against 3 Officials

Michigan's attorney general, Bill Schuette, announces that three people will face charges — the first criminal charges leveled against officials over the lead crisis.

Stephen Busch and Michael Prysby are state officials at the MDEQ. City employee Michael Glasgow is Flint's water quality supervisor. As [the Two-Way reported](#), the three "face felony charges including misconduct, neglect of duty and conspiracy to tamper with evidence. They've also been charged with violating Michigan's Safe Drinking Water Act."

June 22: Lawsuit Filed Against 2 Corporations

Schuette announced that his office is suing two companies involved in Flint's crisis, and he says the damages could reach hundreds of millions of dollars.

Veolia, a French company, was hired by the city as a water-quality consultant in 2015. Texas-based firm Lockwood, Andrews & Newnam was originally hired in 2011 and helped to operate the water treatment plant using the Flint River. The civil lawsuit accuses both firms of negligence and public nuisance, and also accused Veolia of fraud.

"In Flint, Veolia and LAN were hired to do a job and failed miserably," Schuette told reporters at a news conference. "They failed miserably in their job — basically botched it, didn't stop the water in Flint from being poisoned. They made it worse, that's what they did."

July 29: Criminal Charges Filed Against 6 Officials

Schuette [announced criminal charges](#) against six more current and former state employees, bringing the total number of people charged to nine.

Liane Shekter-Smith is the former director of the drinking water and municipal assistance office within the MDEQ. She and two subordinates, Adam Rosenthal and Patrick Cook, allegedly misled officials about Flint's water treatment plant, which was not in compliance with lead and copper rules.

The other three people charged are current or former employees of the Michigan Department of Health and Human Services. The director of the child health unit, Nancy Peeler, her subordinate, Robert Scott, and a state epidemiologist Corinne Miller allegedly failed to release a report that showed unsafe lead levels in the blood of Flint children.

All six are charged with misconduct in office, conspiracy, and willful neglect of duty. Rosenthal is also charged with tampering with evidence, for allegedly requesting water tests that did not show elevated lead..

Document 7

New York Times article by Paul Krugman “Michigan’s Great Stink” January 25, 2016

In the 1850s, London, the world’s largest city, still didn’t have a sewer system. Waste simply flowed into the Thames, which was as disgusting as you might imagine. But conservatives, including the magazine *The Economist* and the prime minister, opposed any effort to remedy the situation. After all, such an effort would involve increased government spending and, they insisted, infringe on personal liberty and local control.

It took the Great Stink of 1858, when the stench made the Houses of Parliament unusable, to produce action.

But that’s all ancient history. Modern politicians, no matter how conservative, understand that public health is an essential government role. Right? No, wrong — as illustrated by the disaster in Flint, Mich.

What we know so far is that in 2014 the city’s emergency manager — appointed by Rick Snyder, the state’s Republican governor — decided to switch to an unsafe water source, with lead contamination and more, in order to save money. And it’s becoming increasingly clear that state officials knew that they were damaging public health, putting children in particular at risk, even as they stonewalled both residents and health experts.

This story — America in the 21st century, and you can trust neither the water nor what officials say about it — would be a horrifying outrage even if it were an accident or an isolated instance of bad policy. But it isn’t. On the contrary, the nightmare in Flint reflects the resurgence in American politics of exactly the same attitudes that led to London’s Great Stink more than a century and a half ago.

Let’s back up a bit, and talk about the role of government in an advanced society.

In the modern world, much government spending goes to social insurance programs — things like Social Security, Medicare and so on, that are supposed to protect citizens from the misfortunes of life. Such spending is the subject of fierce political debate, and understandably so. Liberals want to help the poor and unlucky, conservatives want to let people keep their hard-earned income, and there’s no right answer to this debate, because it’s a question of values.

There should, however, be much less debate about spending on what Econ 101 calls public goods — things that benefit everyone and can’t be provided by the private sector. Yes, we can differ over exactly how big a military we need or how dense and well-maintained the road network should be, but you wouldn’t expect controversy about spending enough to provide key public goods like basic education or safe drinking water.

Yet a funny thing has happened as hard-line conservatives have taken over many U.S. state governments. Or actually, it’s not funny at all. Not surprisingly, they have sought to cut social insurance spending on the poor. In fact, many state governments dislike spending on the poor so much that they are rejecting a Medicaid expansion that wouldn’t cost them anything, because it’s federally financed. But what we also see is extreme penny pinching on public goods.

It’s easy to come up with examples. Kansas, which made headlines with its failed strategy of cutting taxes in the expectation of an economic miracle, has tried to close the resulting budget gap largely with cuts in education. North Carolina has also imposed drastic cuts on schools. And in New Jersey, Chris Christie famously canceled a desperately needed rail tunnel under the Hudson.

Nor are we talking only about a handful of cases. Public construction spending as a share of national income has fallen sharply in recent years, reflecting cutbacks by state and local governments that are ever less interested in providing public goods for the future. And this includes sharp cuts in spending on water supply.

So are we just talking about the effects of ideology? Didn’t Flint find itself in the cross hairs of austerity because it’s a poor, mostly African-American city? Yes, that’s definitely part of what happened — it would be hard to imagine something similar happening to Grosse Pointe.

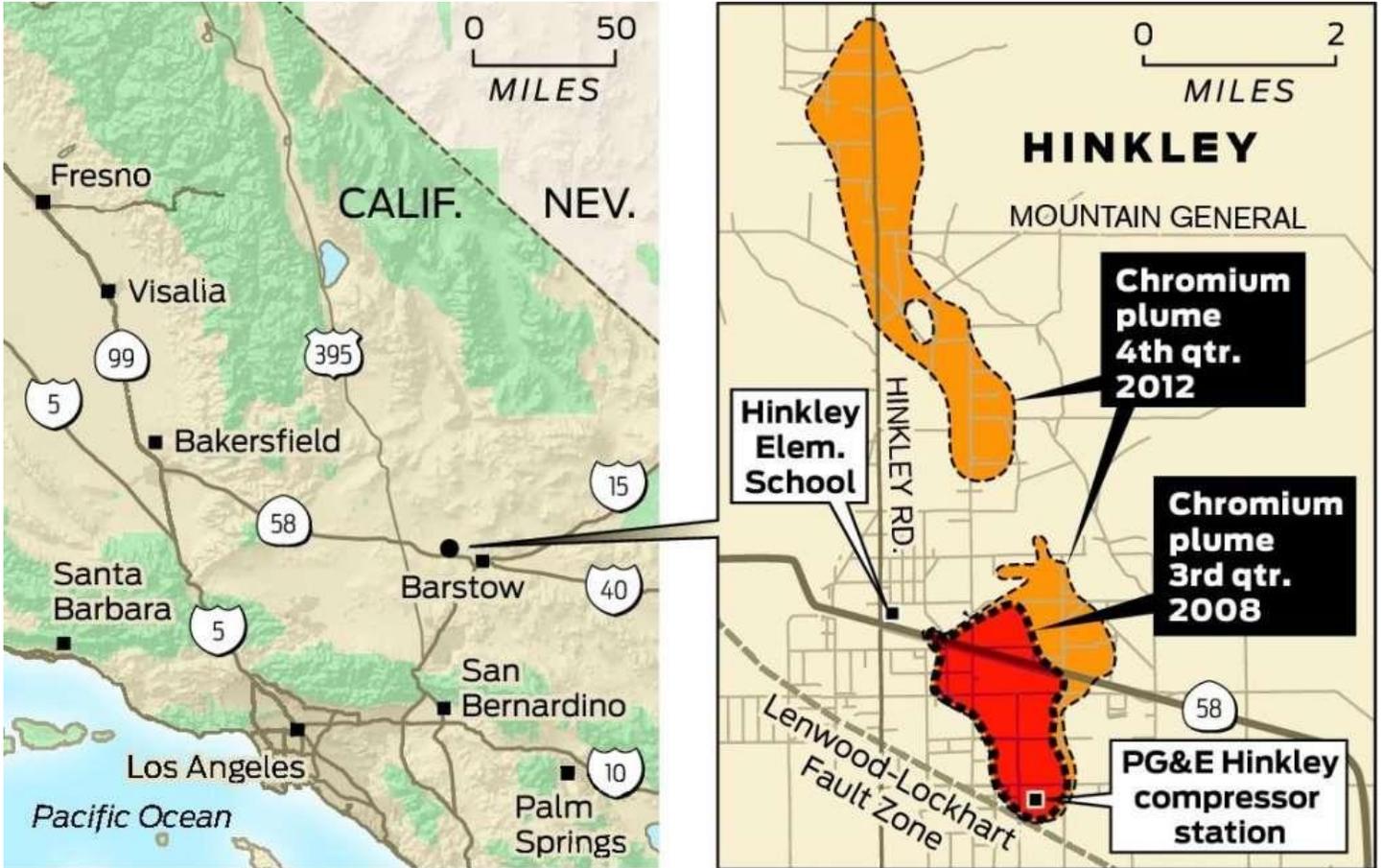
But these really aren’t separate stories. What we see in Flint is an all too typically American situation of (literally) poisonous interaction between ideology and race, in which small-government extremists are empowered by the sense of too many voters that good government is simply a giveaway to Those People.

Now what? Mr. Snyder has finally expressed some contrition, although he’s still withholding much of the information we need to fully understand what happened. And meanwhile we are, inevitably, being told that we shouldn’t make the poisoning of Flint a partisan issue.

But you can’t understand what happened in Flint, and what will happen in many other places if current trends continue, without understanding the ideology that made the disaster possible.

Document 8

Map from San Francisco Chronicle Map “Toxic Plume spreads, PG&E faces 2nd Hinkley suit” July 25, 2013



Source: Lahontan Regional Water Quality Control Board

John Blanchard / The Chronicle

Document 9

LA Times article by Paloma Esquivel “15 Years after *Erin Brockovich*, Town Still Fearful of Polluted Water” April 12, 2015

Maneuvering his pickup through this Mojave Desert town, resident Daron Banks pointed at empty lot after empty lot. "Last time I was here there was a home right here. There was a home here, there was a home here," he said, making his way down the bumpy road in the place made famous by the 2000 film "Erin Brockovich."

Fifteen years after the film showed triumphant residents winning a \$333-million settlement with Pacific Gas & Electric Co. for contaminating its water — and nearly 20 years after the settlement itself — Hinkley is emptying out, and those who stay still struggle to find resolution.

For residents, questions remain about the safety of the water, just how much contamination PG&E caused and how to fix it. This year, a final cleanup plan is moving toward approval. Last month, a long-awaited, five-year study to determine how much contamination PG&E may be responsible for finally got underway.

"At some point in the next few years we're going to get some closure," Banks said.

Hinkley was a small farming community in the 1990s when residents learned that groundwater was polluted with chromium 6, a cancer-causing heavy metal. It had seeped into the water after being dumped into unlined ponds at the utility company's compressor station in the 1950s and '60s. Since then, hundreds of residents have left. Property values dropped because of the stigma surrounding the town, and PG&E launched a buyout program.

Roberta Walker, a plaintiff in the original lawsuit and Banks' mother-in-law, said that at the time of the settlement, residents like her believed the plume of contamination was limited to a well-defined area around the compressor station. But in 2009, PG&E "let it get away from them and it started migrating toward other properties," said Lisa Dernbach, a senior engineering geologist specialist with the Lahontan Regional Water Quality Control Board, the state agency overseeing the cleanup. That resulted in a \$3.6-million fine against the company in 2012, she said.

Jeff Smith, a PG&E spokesman, said what looked like growth of the plume was actually the result of additional testing in areas that had previously gone unexamined. Dernbach said the migration happened after the utility changed pumping in some extraction wells. More recently, the contamination plume appears to have shrunk. Kevin Sullivan, director of chromium remediation for PG&E, said a system installed in 2007 to treat the contamination with injections of ethanol has reduced the chromium by 40%.

Starting in 2010, PG&E offered to either provide clean water or buy properties of residents whose wells tested positive for chromium. Smith said that when the program was announced, there was a high level of anxiety in the community and many residents wanted to sell their properties rather than take the water. The company, he said, wants to see Hinkley thrive.

"I think sometimes it's misconstrued that PG&E wanted to come in and purchase a tremendous amount of land in Hinkley and that was just not the original intent," he said. Between 2010 and October 2014, when the program was formally discontinued, PG&E purchased about 300 properties, he said. With residents leaving, the

school could no longer be sustained. It shut down two years ago. The owner of the property that houses the town's post office and only market recently approached PG&E asking to sell and the utility agreed to buy, Smith said. The post office closed last month and the market will soon follow, an employee said.

As residents leave, the cleanup has progressed and technologies have improved. About 250 acres of alfalfa and other grasses now dot the town where some properties once stood and are used to help convert chromium 6 into the micronutrient chromium 3. But despite the progress, many residents still worry about how much chromium 6 will remain in the water. PG&E is required to clean up to the levels at which chromium 6 naturally occurs in the groundwater — a number known as the background level.

A study commissioned by PG&E a few years ago said chromium 6 naturally occurred in Hinkley groundwater at levels of 3.1 parts per billion.

"Anything above 3.1 provided a lot of anxiety to the people in Hinkley," said Dernbach, of the water control board.

Last year, the state set a safe drinking water standard of 10 parts per billion. Although levels of chromium 6 nearest to the compressor station — where no residents remain — exceed that by large numbers, PG&E's testing in domestic wells elsewhere in the community shows chromium 6 levels below 10 parts per billion, most often between 0 and 5, Sullivan said. Smith, the PG&E spokesman, said the state-designated level has helped ease some residents' concerns.

But others say they are disturbed that chromium 6 is showing up in their wells at all. Some say neighbors and family members have suffered ailments they believe were caused by the contamination, leading them to believe that even low chromium levels are dangerous.

The safe drinking water standard adopted by the state — which is hundreds of times greater than a nonenforceable public health goal set by the state Environmental Protection Agency — has been criticized as too high by some environmental groups. For years, residents questioned whether the study commissioned by PG&E putting the background level at 3.1 parts per billion was even accurate.

Banks solicited help from John Izbicki, a U.S. Geological Survey research hydrologist who has studied naturally occurring chromium 6 in the Mojave Desert. With pressure from residents, PG&E acknowledged that its earlier study was lacking. It is paying for a five-year study led by Izbicki that is expected to conclusively determine the background level. At a community meeting this month, fewer than a dozen residents gathered in the Hinkley Community Center to hear Izbicki describe his upcoming study.

Izbicki said water samples would be sent to Germany, Nevada, Virginia, Northern California and other places for testing. Some of it would be handled in the same USGS labs that do testing for NASA. When he was done, the meeting's facilitator asked longtime resident McHenry Cooke, 81, if he would "trust the data." "I haven't reviewed it all," he said skeptically. As the meeting wrapped up, John Turner, who volunteers to keep the community center open, said he felt optimistic about the town's future. For years, community meetings have been filled with negativity, he said, but this one was productive.

He hopes PG&E will play a role in helping to rebuild the community so residents can move forward. "It's time," he said.

Document 10

Governing Magazine article by Daniel Vock “In Flint’s Aftermath, Water Will Run by New Rules.” September 2016

For years, Denver Water, like many other drinking water utilities, would refer its customers concerned about the lead content in their water to state-approved labs that could collect and analyze samples from the homeowners’ faucets. This summer, Denver Water made the process much easier: Now if a resident is concerned, the agency will send out a testing kit, analyze the water in its own labs and report the results back to the customer -- all for free. More than 100 homeowners used the new service in its first month. Perhaps this should have been done earlier. But it wouldn’t be happening now had it not been for Flint, Mich. The Flint water crisis, which exposed adults and children to dangerous levels of lead in their drinking water, is reverberating throughout the country.

The Denver agency, which serves 1.4 million people in the city and nearby communities, has also started automatically replacing lead service lines as it finds them in its normal maintenance work. The service lines, which connect water mains under streets to individual buildings, are the main source of lead contamination in water systems.

Lead in drinking water has been an issue for decades. Thirty years ago, Congress banned the use of plumbing that contained lead after research showed that any exposure to it can be dangerous, particularly to pregnant women and children. It can damage the brain, red blood cells and kidneys, and can cause lifelong developmental problems.

The disaster in Flint reminded the country, though, that lead pipes are still in operation in many water systems. There are approximately 7.3 million lead service lines throughout the U.S. that connect water mains to buildings. And service lines aren’t the only source of lead in water. Lead can leach into the water supply from old plumbing fixtures and drinking fountains. Galvanized steel pipes, which were used frequently for service lines before the 1960s, can also cause lead poisoning. While national attention has focused on Flint, dangerous lead levels have surfaced, among other places, in schools in Newark, N.J., and Portland, Ore.; state homes for the disabled in Texas; and even the drinking fountains in the U.S. Capitol.

The reason why stories like those are not more common -- with so many lead pipes still in use -- is that water utilities treat their water with chemicals that form a protective layer on the surface of lead pipes. The chemical barrier prevents lead from leaching into the water. In fact, the federal government required drinking water systems to use that approach when the U.S. Environmental Protection Agency (EPA) issued the regulations known as the Lead and Copper Rule in 1991. The rule requires drinking water utilities to take water samples from high-risk homes or buildings every six months. If 10 percent of those samples contain more than 15 parts per billion of lead, the utility must take steps to address it, including the use of anticorrosive chemicals.

The testing violations in Flint were particularly egregious, and three officials from the city and Michigan’s Department of Environmental Quality face criminal charges for the apparent deception. But environmental and health activists have long complained that the EPA’s testing protocol is too lax and ambiguous.

As news of the Flint water crisis spread, it became clear that utilities weren’t all conducting their tests the same way. Some, as in Flint, recommended pre-flushing. Others told customers to remove aerators before collecting the sample. Most wanted samples of the water that first came out of the faucet; some asked for samples after the water changed temperature. “One thing that the water utility industry wants is specific instructions on how we

do things,” says Scott Potter, the director of the Nashville Metro Water Service and the president of the Association of Metropolitan Water Agencies. “If you have specificity, then the entire industry is doing it one way -- the way scientists say is the best way -- and we can all trust the data.”

Activists say it’s not just the rules that matter, but the way they are enforced. They hope the EPA and the state agencies charged with administering its rules will become more aggressive in making sure they’re followed. “Flint is an extreme example of governmental indifference and callousness,” says Eric Olson, the director of the health program at the Natural Resources Defense Council. “But I do believe it highlights a more systemic problem with a lack of attention to and, frankly, political will for enforcement and for stepping in and insisting on compliance.”

Only 11.2 percent of the 8,000 violations of the Lead and Copper Rule throughout the country resulted in any sort of enforcement action in 2015, according to Olson’s analysis of EPA data. Even in those cases, which mostly involved small water systems, regulators operated with a soft touch, typically just prodding the utilities to fix their systems. It’s the regulatory equivalent of being let off at a traffic stop with a written warning. Regulators sought or assessed penalties in only 3 percent of the reported violations. There is also evidence that suggests states are underreporting violations. Flint isn’t even included in the list of Michigan water systems that broke the rule in 2015. Only government regulators, not individual residents, can start the enforcement process, so if the regulators fail to do their jobs, nothing happens. “There is,” Olson says, “no cop on the beat.”

The list of thorny issues goes on, but it’s clear that an increasing number of communities are interested in getting rid of lead service lines, whether the EPA ends up requiring it or not. There is a growing consensus in the water industry, too. Even the American Water Works Association, which once blocked EPA regulations making it easier to replace the private portion of service lines, now supports the goal of taking out the lead service lines. To share their expertise with localities, major water industry groups have joined with environmental and public health groups to form an organization called the Lead Service Line Replacement Collaborative.

And ultimately, there is the question of opportunity cost. How wise is it to prioritize lead pipe replacement over other water system needs? Water utilities have many other pressing concerns, such as removing other harmful, corrosive chemicals from drinking water or just trying to maintain and improve decrepit infrastructure. “If you spend \$300 million on lead service lines,” says VanDe Hei of the Association of Metropolitan Water Agencies, “what are you not doing? What are you not doing that has perhaps more risk?”

The Hook

Water Testing in Your Community

Description – Share the following information with the whole class, allow for a few minutes of small group discussion.

Over the weekend, you receive the following email:

“Dear Homeowner,

We have completed a comprehensive evaluation of drinking water sources in your neighborhood. Preliminary results indicate that the drinking water in your home contains traces of lead higher than the Environmental Protection Agency (EPA) acceptable limit level of 15 parts per billion (ppb).”

In small groups, discuss how you will respond.

Sample Instructional Activities/Assessments

Make the Connection

Description – Select 10 terms from the lesson/course/unit. Student will use 2 or more terms from the list to construct sentences. Assign a different number of connections (sentences) to students based on their ability level. Difficulty increases with the expected number of connections (5-7 for struggling readers, 7-10 for general level). For high achieving students, assign a fewer number of connections (5-6), but require 3 terms for each connection.

Sample Vocab List: Public Good, Private Good, Invest, Market Failure, Income, Externality, Monopoly, Consumption, Equity, Market Power

US History Example

Vocab List: New England Colonies, tobacco, Southern Colonies, cash crops, transatlantic trade

Connections:

1. Tobacco is a cash crop.
2. The southern colonies grew cash crops like tobacco to make money

<p style="color: #003366; margin: 0;">GSE Standards and Elements</p>	<p>SSEF5 Describe the roles of government in the United States economy.</p> <p>a. Explain why government provides public goods and services, redistributes income, protects property rights, and resolves market failures.</p> <p>b. Explain the effects on consumers and producers caused by government regulation and deregulation.</p> <p>SSEMI3 Explain the organization and role of business and analyze the four types of market structures in the U.S. economy.</p> <p>b. Identify the basic characteristics of monopoly, oligopoly, monopolistic competition, and pure (perfect) competition with regards to number of sellers, barriers to entry, price control, and product differentiation.</p>
<p style="color: #003366; margin: 0;">Literacy Standards Social Studies Matrices Enduring Understanding(s)</p>	<p>Information Processing Skills</p> <p>1. compare similarities and differences</p> <p>Literacy Standards</p> <p>L9-10RHSS4: 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.</p>

Sample Instructional Activities/Assessments

Sources on a Continuum

Description – Read the five sources and get into six groups. Discuss whether the documents support clean drinking water as a mostly public or mostly private good. On three different blank pieces of paper, write “Water is a mostly _____ good,” “Most Important,” and “Least Important.” Using masking tape, create a continuum on the wall between “Most Important” and “Least Important” with the sources posted in order between the signs based on how well they support your position on water. Post the “Water is...” sign above your continuum and put Public or Private in the blank. Number the continuums from 1-6. Use sticky notes to highlight key points on the sources that led to your decision. Use a gallery walk to visit other continuums and discuss differences. Each student should receive a ballot and vote for the most convincing continuum and describe why they were persuaded by it. Collect the ballots and tally the votes. Identify argument receiving the most votes and ask students to describe how that argument might influence future policies regarding the market for clean drinking water. ***This activity’s handouts are attached below.***

Document 1 “Krugman on Flint Michigan: But Public Water Supplies Aren’t a Public Good”

Document 2 “Dirty Water” Infographic

Document 3 “Water 21st Century Challenges” Infographic

Document 4 “Bridging the Water Infrastructure Gap” infographic and “The Price of Water: 2015” Infographic

Document 7 “Michigan’s Great Stink”

GSE Standards and Elements	<p>SSEF5 Describe the roles of government in the United States economy.</p> <p>a. Explain why government provides public goods and services, redistributes income, protects property rights, and resolves market failures.</p> <p>b. Explain the effects on consumers and producers caused by government regulation and deregulation.</p> <p>SSEMI3 Explain the organization and role of business and analyze the four types of market structures in the U.S. economy.</p> <p>b. Identify the basic characteristics of monopoly, oligopoly, monopolistic competition, and pure (perfect) competition with regards to number of sellers, barriers to entry, price control, and product differentiation.</p>
<p>Literacy Standards</p> <p>Social Studies Matrices</p> <p>Enduring Understanding(s)</p>	<p>Literacy Standards</p> <p>L9-10RHSS6: Compare the point of view of two or more authors for how they treat the same or similar topics, including which details they include and emphasize in their respective accounts.</p> <p>L9-10RHSS9: Compare and contrast treatments of the same topic in several primary and secondary sources.</p>

Group # _____

**Water is
mostly a**

Good.

**Most
Important**



Least

Important Document 1

“Krugman on
Flint Michigan:
But Public Water
Supplies Aren’t a
Public Good”

Document 2

“Dirty Water”

Infographic

Document 3

“Water 21st Century Challenges” Infographic

Document 4

“Bridging the Water Infrastructure Gap” infographic and “The Price of Water: 2015” Infographic

Document 7

“Michigan’s Great Stink”

Sources on a Continuum: Student Ballot

1. Which continuum makes the best argument for water being a mostly private or a mostly public good? Circle the number associated with the continuum you chose:

1 2 3 4 5 6

2. Using the main points identified by the continuum you chose in #1, synthesize them into a one-paragraph argument supporting the group's assertion about water being mostly private or mostly public.

Sources on a Continuum: Student Ballot

1. Which continuum makes the best argument for water being a mostly private or a mostly public good? Circle the number associated with the continuum you chose:

1 2 3 4 5 6

2. Using the main points identified by the continuum you chose in #1, synthesize them into a one-paragraph argument supporting the group's assertion about water being mostly private or mostly public.

Sample Instructional Activities/Assessments

4 Corners Debate

Description – Assign an option/position to each corner of the room: public good, private good, not sure-leaning public good, and not sure-leaning private good.

For round 1 of the debate, give students 3 minutes to discuss with each other why they chose that option. After 2 minutes instruct the corners that they should choose 1 member to give a 60 second speech as to why their corner is the correct corner, or why they are in the not sure corner.

After the round has concluded, students may switch corners, but they must explain in detail why they switched.

For round 2 of the debate, give students another 3 minutes to create an argument that will persuade others to come to their corner. They must choose a different speaker, and be sure to support their argument with evidence from their research.

After the round has concluded, students may switch corners, but they must explain in detail why they switched.

For round 2 of the debate, give students another 3 minutes to create an argument that addresses the counterarguments discussed so far. They must choose a different speaker, and be sure to support their argument with evidence from their research and other speakers.

After the round has concluded, all students must choose either the public or private goods corner, and if they change corners, briefly describe why they switched.

Why the 4 Corners Debate?

- Students need to hear other ideas and counterarguments.
- Provides students the opportunity to communicate their own ideas.
- Creates an environment where it is safe to change your mind before its on paper.
- Allows them to build arguments and counterarguments based on justification.

GSE Standards and Elements	<p>SSEF5 Describe the roles of government in the United States economy.</p> <p>a. Explain why government provides public goods and services, redistributes income, protects property rights, and resolves market failures.</p> <p>b. Explain the effects on consumers and producers caused by government regulation and deregulation.</p> <p>SSEM13 Explain the organization and role of business and analyze the four types of market structures in the U.S. economy.</p> <p>b. Identify the basic characteristics of monopoly, oligopoly, monopolistic competition, and pure (perfect) competition with regards to number of sellers, barriers to entry, price control, and product differentiation.</p>
Literacy Standards Social Studies Matrices Enduring Understanding(s)	<p>Information Processing Skills</p> <p>11. draw conclusions and make generalizations</p> <p>15. determine adequacy and/or relevancy of information</p> <p>16. check for consistency of information</p>

Sample Instructional Activities/Assessments

Writing Relay

Description – Select a diverse (in terms of rigor and purpose) set of 3 prompts that relate to the lesson. Put students in groups of 3 (or 2 if you have an odd number). Each student in the group receives a different prompt, and 3 minutes to read the prompt and respond in any of the following ways:

- bullet/brainstorm things you know
- write your thoughts in full sentences OR in paragraph form
- create a graphic organizer
- illustrate what you are thinking about the prompt

After 3 minutes, pass the prompt clockwise. Give students 4 minutes to read the new prompt, the last person's response and to respond to the new prompt in any of the following ways:

- leave constructive comments about the previous response
- continue writing what they started
- respond to the new prompt in your own way (any of the ways from round 1)

After 4 minutes, pass the prompt clockwise. Repeat the step above.

After 4 minutes, return the prompt to its owner and allow them at least 1 minute to read and 1 minute to discuss with the group.

Relay Topics

1. How would your household be different if water was a private good?
2. How should government correct negative externalities?
3. What are the costs and benefits of utilities operating with monopoly market power?

<p>GSE Standards and Elements</p>	<p>SSEF5 Describe the roles of government in the United States economy.</p> <p>a. Explain why government provides public goods and services, redistributes income, protects property rights, and resolves market failures.</p> <p>b. Explain the effects on consumers and producers caused by government regulation and deregulation.</p> <p>SSEMI3 Explain the organization and role of business and analyze the four types of market structures in the U.S. economy.</p> <p>b. Identify the basic characteristics of monopoly, oligopoly, monopolistic competition, and pure (perfect) competition with regards to number of sellers, barriers to entry, price control, and product differentiation.</p>
<p>Literacy Standards Social Studies Matrices Enduring Understanding(s)</p>	<p>Literacy Standards</p> <p>L9-10WHST2: Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.</p> <p>a. Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension</p>

Sample Summative Activities/Assessments

Community Water Proposal

Description – Students should research their own drinking water supplier including: is/are the provider(s) public or private, how are water rates are determined, what are the current rates, what changes in rates have occurred over the last few years, are subsidies available for lower income residents, has the community encountered any problems related to water quality from the supplier, is there any competition in the market, is the provider investing in new infrastructure or technology, etc. Based on their research, students should choose to write a recommendation to the community and the provider arguing for one of the following proposals:

1. The water provider in my area (should or should not) be run by the government. (private vs. public good)
2. Water in my area is (too cheap or too expensive) and government should take steps to change the pricing structure. (private vs. public good, market power, regulation)
3. Water in my area is (safe or not safe) and government should take steps to ensure the future safety of the water supply. (externalities, regulation)
4. There should be (greater or less) competition within the market for drinking water in my area. (market power, regulation)

Presentations should include a visual aid (PPT, Prezi, Emaze, etc) as well as a handout. Both aspects of the presentation should *include relevant graphs, maps, charts, and other relevant visuals*

<p>GSE Standards and Elements</p>	<p>SSEF5 Describe the roles of government in the United States economy. a. Explain why government provides public goods and services, redistributes income, protects property rights, and resolves market failures.</p>
<p>Literacy Standards Social Studies Matrices Enduring Understanding(s)</p>	<p>Information Processing Skills 3. identify issues and/or problems and alternative solutions 14. formulate appropriate research questions</p> <p>Literacy Standards L9-10RHSS1: Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information. L9-10WHST1: Write arguments focused on discipline-specific content. a. Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence.</p>

Taking Informed Action

Water Testing in Your Community

Description – Students can take informed action by testing the water in their schools and/or communities. Here are some ideas:

Ideas for Water Testing Kits

- Some utilities have started offering free lead testing kits to their customers. For example, DC Water offers this voluntary testing option and information is available at https://www.dewater.com/lead/voluntary_testing.cfm.
- Students and their parents can contact their own water utility to find out if free test kits are available.
- Teachers with school funds available could order test kits from suppliers who cater to science classes such as <http://www.sciencefaircenterwater.com/SFCWaterIntroTxt1.html>.