FAMILIES — HOME WATER USE

In the City Council meeting, you will be role-playing families that live in homes in California City.

You use water for drinking, making food, bathing, washing clothes and dishes, flushing toilets, and watering lawns and gardens.

Note: because each stakeholder information card asks students to engage in similar thinking, only the first stakeholder information card is annotated.
WATER WISE CALIFORNIA CITY — WATER STAKEHOLDER INFORMATION CARD (CONTINUED)

This pie chart shows the amount of water used in California City by different stakeholders.

How much does your group use?

Do you think it is a lot?

Compare the amount your group uses to other groups.

Successfully completing this prompt requires that students can read the pie chart below, an important skill associated with the SEP analyzing and interpreting data. This provides a scaffold for later use of the practice in service of making comparisons and claims about stakeholder water use and appropriate interventions.

Successfully responding to this prompt requires that students can read the pie chart—again, an important skill associated with the SEP analyzing and interpreting data, and scaffolding to support more appropriate SEP engagement later in the task.
The pie chart below shows the ways water is used inside or outside of homes.

Describe two ways families use the most water at home

________________________________________________________________________

________________________________________________________________________

Describe two ways families use the least amount of water at home

________________________________________________________________________

________________________________________________________________________

Did any of the data surprise you?

________________________________________________________________________

________________________________________________________________________

Similar to above, this provides an opportunity for scaffolded data analysis.

SEPs

This is another opportunity to allow students to bring their ideas to the task, including connections to their prior experiences and home life (e.g., how they think of water use at home). This also begins to elicit some reasoning—a scaffold for sense-making later in the task.

EQUITY  SENSE-MAKING
WATER WISE CALIFORNIA CITY — WATER STAKEHOLDER INFORMATION CARD (CONTINUED)

The graph below shows how water use in homes since 1960.

The graph below shows how water use in homes since 1960.

How has the amount of water use in homes changed from 1960 to 2010?

Why do you think the amount of water in homes decreased from 2000 to 2010?

Can you think of some of the ways that families could reduce their water use? Use the data above to help you decide.

This stakeholder card gives students multiple data sets to analyze and synthesize, promoting a sophisticated use of the SEPs analyzing and interpreting data as well as obtaining, evaluating, and communicating information throughout the group and individual tasks.

Successfully responding to this question requires that students can read the graph, connecting to similar SEPs as above. It also asks students to identify a pattern, providing an opportunity for students to develop the CCC element “patterns can be used as evidence to support explanations” throughout the task. It should be noted that this is an opportunity to develop, not assess, this CCC.

Successfully responding to this task requires students to connect their ideas to the patterns that they see across multiple graphs, supporting reasoning about the pattern.

Successfully responding to this task requires students to connect their ideas to the patterns that they see across multiple graphs, supporting reasoning about the pattern.
FARMER — AGRICULTURE WATER USE

In the City Council meeting, you will be role-playing farmers in California City.

You use water for irrigation, which means watering crops to help them grow. You also use water for livestock, including dairy cows, beef cattle, sheep, pigs, chickens and turkeys. Farming is very important in California City! California grows nearly half of the fruits, nuts, and vegetables grown in the United States.

This pie chart shows the amount of water used in California City by different stakeholders.

---

How much does your group use?

__________________________________________________________

Do you think it is a lot?

__________________________________________________________

Compare the amount your group uses to other groups.

__________________________________________________________
Farmers in California City use three methods of watering their crops:

1. The **drip method** drips water slowly into the soil around the plant’s roots.
2. The **sprinkler method** sprays water over the tops of plants.
3. The **flood method** floods the field all at one time.

Using the chart below, compare the three different methods.

<table>
<thead>
<tr>
<th></th>
<th>Drip Method</th>
<th>Sprinkler Method</th>
<th>Flood Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount of water used</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Water lost (evaporates from soil)</td>
<td>10-20%</td>
<td>40-80%</td>
<td>50-70%</td>
</tr>
<tr>
<td>Types of water that can be used</td>
<td>Fresh water or Salt water</td>
<td>Fresh water</td>
<td>Fresh water</td>
</tr>
<tr>
<td>Disease and Weeds</td>
<td>Few</td>
<td>Many</td>
<td>Many</td>
</tr>
</tbody>
</table>

Which method uses the least amount of water?

Which uses the most water?

Which do you think is the best solution?

The graph below shows how much water farmers have used since 1950.

How has the amount of water used by farmers changed from 1950 to 2010?

Why do you think the amount of water used by farmers has decreased since 1980?

Can you think of some of the ways that farmers might could reduce their water use? Use all the data above to help you decide.
POWER PLANT OPERATOR – THERMOELECTRIC POWER WATER USE

In the City Council meeting, you will be role-playing power plant operators in California City.

You use water to make electricity in the California City power plant. All of the electricity for California City comes from the power plant.

This pie chart shows the amount of water used in California City by different stakeholders.

How much does your group use?

Do you think it is a lot?

Compare the amount your group uses to other groups.
WATER WISE CALIFORNIA CITY —
WATER STAKEHOLDER INFORMATION CARD (CONTINUED)

Water is used to cool the equipment in the power plant. Different types of power plants use water differently. California City has a power plant that burns coal as a fuel.

How much water is needed to keep a coal power plant cooled?

Which type of fuel uses the least amount of water?

Which type of fuel uses the most amount of water?

The graph below shows how much water power plants have used since 1950.

How has the amount of water used in power plants changed from 1950 to 2010?

Why do you think the amount of water used by power plants has decreased since 1980?

Can you think of some of the ways that power plants might reduce water use? Use the data above to help you decide.
FACTORIES OWNER – INDUSTRIAL WATER USE

In the City Council meeting, you will be role-playing farmers in California City.

In the City Council meeting, you will be role-playing factory owners in California City.

You use water to make different types of products. These factories provide many jobs for people who live within the city.

This pie chart shows the amount of water used in California City by different stakeholders.

How much does your group use?

Do you think it is a lot?

Compare the amount your group uses to other groups.
Factories use water for making, processing, washing, cooling, or transporting a product. Using the chart below, compare how much water is needed to make different products.

Which product uses the most amount of water?

The least amount of water?

Were there any that surprised you?

<table>
<thead>
<tr>
<th>Product</th>
<th>Gallons of water used to make</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car</td>
<td>80,000</td>
</tr>
<tr>
<td>Cotton t-shirt</td>
<td>700</td>
</tr>
<tr>
<td>Jeans</td>
<td>2000</td>
</tr>
<tr>
<td>Gallon of gas</td>
<td>2.5</td>
</tr>
<tr>
<td>Disposable diaper</td>
<td>144</td>
</tr>
<tr>
<td>Car tires</td>
<td>2100</td>
</tr>
<tr>
<td>2 pounds of paper</td>
<td>800</td>
</tr>
<tr>
<td>Smartphone</td>
<td>240</td>
</tr>
</tbody>
</table>

The graph below shows how much water factories have used since 1985.

How has the amount of water used in factories changed from 1985 to 2010?

How do you think factories can reduce the amount of water they need to use? Use the data above to help you decide.
FISH FARMER — AQUACULTURE WATER USE

In the City Council meeting, you will be role-playing fish farmer in California City.

You use water to make fish ponds, where you grow fish for food. You are a farmer of fish! The fish is eaten by many in California City and other places in California. You also provide jobs for people in California City.

This pie chart shows the amount of water used in California City by different stakeholders.

How much does your group use?

____________________________________

Do you think it is a lot?

____________________________________

Compare the amount your group uses to other groups.

____________________________________
Fish is a very important source of food for many people in the world. The graph below shows the amount of fish captured in the wild and grown in aquaculture 1950–2010.

How has the amount of fish captured in the wild changed since 1950?

How has the amount of fish that come from aquaculture changed since 1950?

The graph below shows how much water has been used by aquaculture since 1985.

How has the amount of water used in aquaculture changed from 1985 to 2010?

Why do you think the amount of water used for aquaculture has increased since 1985? Use the data above to help you decide.

At present, most fish farms harvest fish by draining the ponds of water and collecting the fish. To grow more fish, they need to refill the ponds with new water.

How do you think fish farms can reduce the amount of water they need to use? Use the harvest method described above to help you decide what to change.