



ACTIVITY 5

# Scenario Planning

CARD-BASED INVESTIGATION

Imagination can jump-start  
planning for the future.



# 5 : SCENARIO PLANNING

## GUIDING QUESTION

How does imagining the future inform current energy decisions?

## INTRODUCTION

Making decisions about things that will impact the future can be challenging because of uncertainty. There are often factors with many possible outcomes, such as how much money you will have or how healthy you will be. Imagining and considering a range of possibilities in the future is an important tool to inform the decisions we make today.

In this activity, you will imagine possible futures by considering specific uncertainties and using that information to help make a decision. This process is called **scenario planning**, a technique that informs decision-making by imagining how uncertain factors might affect possible futures. Your class will play the role of a team of consultants invited to make a recommendation to the Vanwick City Council on what possible future outcomes they should consider as they plan.

CONCEPTUAL  
TOOLS



## PROCEDURE

### PART A: IMAGINING THE FUTURE

- 1 With your group, read the following scenario.

*Part of developing a detailed energy plan for the future of Vanwick includes thinking about what might happen in the future. For example, it's likely the demand for electricity will increase with electrification because more things will be running off of electricity, such as heating systems. By imagining what could happen and how likely those possible scenarios might happen, the City Council hopes to make better decisions for the future.*

- 2 Your teacher will provide your group with a set of 4 cards, 1 card per person. Read your card, which describes possibilities for two factors in the future.
- 3 Using the information on the cards, imagine what life would be like in Vanwick 50 years in the future if the two factors on the card happen as described. Choose one of the following activities to creatively communicate what you imagine this possible future would be like for a typical Vanwick citizen.
  - Write a fictional story about the future.
  - Draw a picture or label a diagram.
  - Write a future news article.

Make sure to add a title to your story, picture, or article.

- 4 In your group, share your story, picture, or article from the future of Vanwick. In the boxes on Student Sheet 5.1, "Scenario Planning," record notes that summarize each of the four possible futures.
- 5 Use completed Student Sheet 5.1 to compare the four stories. Discuss how the two factors are related to the boxes and how they inform the stories that were made in Step 3.

If you need an introduction to the concept of electrification, you will find a Science Review at the end of this activity.

### MATERIALS LIST

FOR EACH GROUP  
OF FOUR STUDENTS

SET OF 4 SCENARIO  
PLANNING CARDS

FOR EACH STUDENT

STUDENT SHEET 5.1  
"Scenario Planning"

## PART B: CONSIDERING THE OUTCOMES

- 6 In your group, describe the outcomes that could possibly result from the futures you envisioned in Part A. Then, evaluate how likely it is that such an outcome will happen. Make a table such as the one that follows. Complete the table together as you discuss one another's ideas.

**TABLE 5.1**  
Possible outcomes

CARD #	TITLE	POSSIBLE OUTCOME(S)	LIKELIHOOD IT COULD HAPPEN (1 high—4 low)
1			
2			
3			
4			

- 7 Select the best-case possible outcomes and the worst-case possible outcomes from the table.
- 8 In your group, think of ways the City Council could prepare for best and worst possible futures. Your recommendation should include:
- how they could avoid the worst possible future,
  - how they could make the best possible future more likely to happen, and
  - how they could prepare for the possibility that the worst possible future will come about, since our limited control makes the future uncertain.
- 9 With the class, share your story, picture, or article about a possible future and your recommendations for preparing for the best and worst possible outcomes. Discuss how those recommendations may be similar or different to those from another group.
- 10 As a class, decide what you—a group of consultants—recommend to the City Council. Your recommendation(s) to the Vanwick City Council on behalf of these possible futures should include:
- decisions or actions that can be taken now during Vanwick's energy transition to support a positive future, despite the uncertainty of it.
  - The trade-offs that will need to be made to follow your recommendation. A **trade-off** is when a desirable outcome is given up to gain another desirable outcome.

## BUILD UNDERSTANDING

- ① Pick the future scenario that came up in your class discussion that you found the most interesting.
  - a Identify the two factors involved in the scenario planning and why they were interesting to you.
  - b Describe how Vanwick citizens would be impacted if this possible future happens.
  - c Decide what the City Council should do to increase or decrease the likelihood that this future will happen (if anything).
  - d Decide how the City Council can best prepare for this possible future.
- ② Think about Activity 2 when facts were supported with credible sources. How do you think having accurate facts could support scenario planning?
- ③ If you are planning for the future, do you think it is more important to plan for an unlikely outcome that is catastrophic or a more likely outcome that is hurtful but not catastrophic? Explain why.

### KEY SCIENTIFIC TERMS

scenario planning  
trade-off

## SCIENCE REVIEW

### Electrification

When envisioning the future of energy with fewer greenhouse gas emissions, one possibility is an increase in electrification. Electrification is the process of replacing technologies that include burning fossil fuels with energy generation and electrical devices that do not. An example of this is an electric car's battery charged at a home that gets its electricity from a local natural gas plant. That electricity was generated at the plant by burning fossil fuels, transmitted, and then distributed to the end user who plugged in their car. While the electric car in this example does reduce the amount of greenhouse gas emissions compared to a combustion-engine vehicle, the system is not free of greenhouse gas emissions. Electrification, in this example, would mean that the electric car gets its electrical power from another generation method that does not release greenhouse gases, such as solar panels. Electrification means replacing parts of the system to eliminate fossil fuel burning, whether that be the generation, the end-user device, or both. This and another everyday example follow.

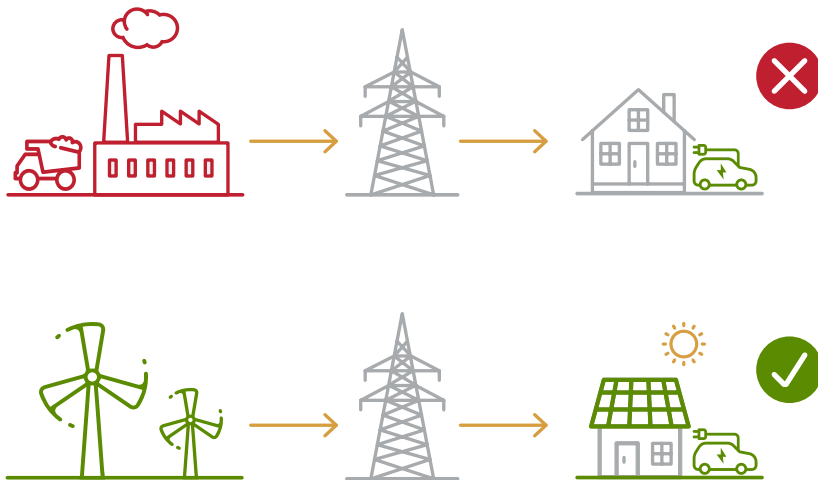


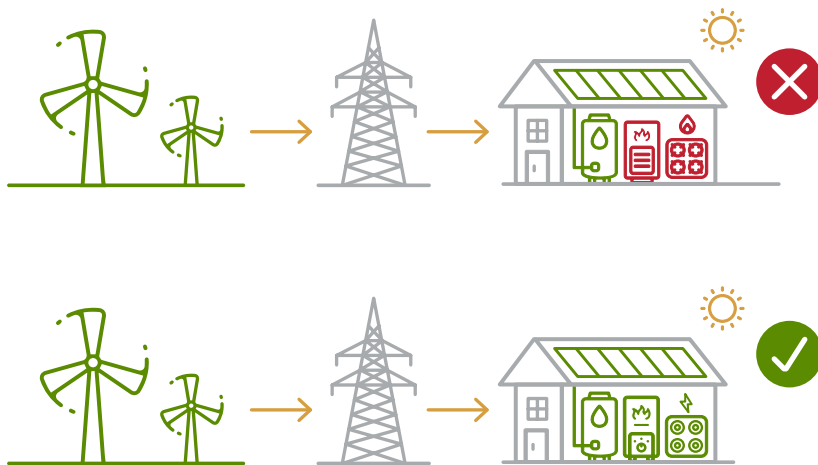
FIGURE 5.1

**EV setup (not electrified)**

fossil fuels  
electric vehicle

**EV setup (electrified)**

wind energy  
solar panels  
electric vehicle



**FIGURE 5.2**

**House (not electrified)**

- wind energy
- solar panels
- electric water heater
- furnace
- natural gas stove

**House (electrified)**

- wind energy
- solar panels
- electric water heater
- heat pump
- electric stove

Electrification has an important outcome to consider for the future. Even if the overall demand for energy stays the same, electrification will cause electrical energy consumption overall to increase. This is because more devices—such as cars, stoves, and heaters that traditionally run on fossil fuels—will need to draw electrical power instead. For electrification to work, more electrical power needs to be generated, along with a more robust grid infrastructure to transmit and distribute it. Current estimations for the possible future where everything is electrified is that most communities will need twice as much electrical power than they are currently generating. However, the total amount of energy that communities will use, if demand doesn't change, will fall by about 20% because there are fewer energy losses. This is due to more efficient energy transformations in a renewable system and not needing to put energy into capturing the resources.