

### Student Discussion Worksheet

**Directions:** Skim the *Science News Explores* article "[Explainer: CO<sub>2</sub> and other greenhouse gases](#)" and answer the first set of questions. Then, read the *Science News* article "[It's possible to reach net-zero carbon emissions. Here's how](#)" and answer the remaining questions as instructed by your teacher. A version of the *Science News* article, "The road to net-zero," appears in the January 28, 2023 issue.

#### Reviewing greenhouse gases

1. Name at least three greenhouse gases. Where do they come from?
  
2. What effect do greenhouse gases have on the Earth? Why does the article compare greenhouse gases to a blanket or a window of a greenhouse? Come up with your own metaphor to describe the effect of greenhouse gases in the atmosphere.
  
3. How do human activities impact the atmosphere's concentration of greenhouse gases? What effect does that impact have on climate and weather?
  
4. With your partner, draw a simple diagram depicting the relationship between Earth's temperature and the concentration of greenhouse gases in the atmosphere. Make sure that your diagram includes various sources of greenhouse gases. Your diagram should also indicate how human activities impact the natural cycle and concentration of greenhouse gases in the atmosphere over time.

#### Achieving net-zero

1. Before reading the *Science News* article, discuss with a partner what you think the term "net-zero" means.
  
2. After reading the *Science News* article, discuss what "net-zero" means in the context of the article. Then, look at the graph titled "Carbon dioxide emissions by sector in one net-zero scenario," and discuss how changes in each of the sources of carbon dioxide could help achieve net-zero emissions by 2050.

3. If you are reading the article in print, check out the at-home and industrial milestones shown below the graph. Discuss which milestone would impact you and your local economy the most. What might be some benefits and challenges of the change?

4. The article states that “the key to a decarbonized future lies in producing vast amounts of new electricity from sources that emit little to none of the gases.” Discuss this statement with your partner and draw a diagram to help explain why it’s true.

