A FEW DEGREES MATTER

Climate change is already noticeable in Minnesota. Animal and plant habitats are shifting, weather patterns are changing, and severe storms and droughts are becoming more common. Minnesota has warmed an average of 1 degree Fahrenheit during the past century according to the Minnesota Pollution Control Agency. Precipitation has increased by 20 percent since 1990, especially in southern Minnesota. If temperature readings and precipitation continue to increase within the next century, Minnesota might soon feel and look more like Missouri. In this activity, participants will create a visual representation of climate change impacts in Minnesota.

Outcome

Participants will increase their understanding of how climate change is affecting Minnesota and make a visual representation of how to make changes to address it.

Audience

Youth (ages 9+), adults

Time

30 - 60 minutes

Concepts

- Climate change affects Minnesota.
- People's activities contribute to climate change.
- There are things we can do to reduce our contribution to climate change.

Supplies

- Large sticky notes or half-sheets of paper and tape (4 or 5 per participant)
- Markers, crayons or colored pencils
- A board or large sheet of paper/newspaper
- Calculator *(optional)*
- Minnesota Environmental Quality Board's report "Minnesota and Climate Change: Our Tomorrow Starts Today" ***www.eqb.state.mn.us/content/climate-change*** *(optional)*

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Preparation

Collect a poster board or large sheet of paper/ newspaper. Put large sticky notes (or half-sheets of paper) at each participant's place around a table or on the floor.

Procedure

- Discuss the terms climate change, global warming and greenhouse gases using information found in "Background Information" without talking about concrete effects of climate change or what individuals should change.

Part one:

- Ask participants to draw or write one way that climate change may negatively affect people, animals or nature in Minnesota on their sticky note or piece of paper. Younger participants may benefit from acting out, making a collage of or coloring in examples of the effects of climate change in Minnesota.
- Have participants post and describe their ideas one-by-one on the board or large piece of paper. Ask what some of the common ideas were. Correct inaccuracies. See information in "Background Information" for examples of the impacts of climate change in Minnesota.

Part two:

- Ask participants to draw or write ideas they have about how people can make changes to slow down the rate of climate change (one idea per post-it note).
- Have participants post and describe their ideas one-by-one on the board or large piece of paper, covering up the ways climate change will affect Minnesota. Ask what some of the common ideas were. Correct inaccuracies. Accurate examples include:
  - Drive less. Walk, ride a bike, carpool or take public transit instead of driving.
  - Plan your errands so you can take care of them in one trip to reduce the overall miles you drive.
  - Do a home energy audit to determine where energy is being wasted (e.g. drafty windows and doors).
  - Seal air leaks around windows and doors and add insulation to your home.
  - Turn down your thermostat in the winter and up in the summer, and install a programmable thermostat.
  - Install energy efficient lighting such as LEDs and compact fluorescents.
  - Purchase energy efficient appliances and electronics by looking for the ENERGY STAR label.
  - Don't keep your refrigerator or freezer too cold. Recommended temperatures are 30 to 40 degrees Fahrenheit for the fresh food compartment of the refrigerator and five degrees Fahrenheit for the freezer section. If you have a separate freezer for long-term storage, it should be kept at zero degrees Fahrenheit. Don't keep the refrigerator or freezer door open for a long time.
  - Switch to a low-flow showerhead. Take shorter showers.
  - Wash clothes in cold water. Line-dry clothing instead of using the dryer.
  - Reduce, reuse and recycle. Teach your organization, classroom, school or workplace about the 3 R's.
  - Purchase foods grown locally to reduce the distance food travels. Eat foods that are in season for our region. Support local, sustainable and organic farmers by purchasing their products directly through farmer's markets, community supported agriculture farms (CSAs), food co-ops, natural foods stores and local grocers.
  - Purchase renewable energy. Many utility providers offer customers an option to purchase renewable energy, usually for an additional charge. Or learn about home installation or renewable energy, such as solar water heaters.
  - Turn off the water while brushing teeth.
  - Take shorter showers.
  - Unplug game consoles, phone chargers, and other electronics when you are done using them.

Part three:

- Have participants commit to taking one or a few actions. Share and discuss progress in a follow-up meeting if possible.
- The wall or mural of energy-saving ideas could be left up as a reminder of what is possible. Have participants choose actions they will commit to do.

Discussion questions

- What did you learn that was new?
- How do you feel about the issues we talked about today?
- Why should we care about climate change?
- Looking at all of our ideas, what will you commit to do?
- Why doesn't everyone make the changes they could?
- Does climate change affect other parts of the country or world differently than Minnesota? (Yes, one example is that rising sea levels will affect coastal communities.)
- What did you learn that you want to share with someone else? Who will you share it with?
- What do you want to do about this issue?
- What do you want to learn more about?

Additional activity ideas

Take the Minnesota Energy Challenge (Minnesota Energy Challenge)

- Visit *www.mnenergychallenge.org* to calculate your carbon footprint and identify actions you can take to reduce it. When you commit to simple changes, the online system tells you how much carbon dioxide and money you will save. Youth can take the challenge with their families, school or classroom. Teams can compete with other families, classrooms or schools.
- The website also has free, online toolkits for communities and educators to involve groups in taking the challenge together and tracking your changes.

What defines Minnesota's biomes?

Credit: Climate Generation: A Will Steger Legacy

- Have participants research different biomes in Minnesota (prairie grassland, tallgrass aspen parkland, deciduous forest, coniferous forest) and expected shifts that may occur in Minnesota's biomes from climate change.
- Using tape, make the shape of the map of Minnesota on the floor (or use chalk if you are outside). Give each student a label of an animal or plant in Minnesota.
- Have the students arrange themselves on the map in the appropriate biome where the animal or plant belongs. Discuss effects climate change will have on animals and plants in each biome of Minnesota.
- Ask students why certain animals and vegetation are native to certain biomes in Minnesota (example: spruce trees in coniferous forest or coyote in prairie grassland) and have a discussion about climate influencing biomes.
- For more information, visit *www.willstegerfoundation.org/curricula-resources*.

Learn more about climate change

- Youth can visit websites like *www.epa.gov/climatechange/kids/index.html* for kid-friendly information on what climate change is and how kids can make a difference (or visit the library to look up information) and create a project or campaign to educate others.

What does the future look like?

- Older youth can research green technologies (e.g. wind, solar, geothermal, changing automobiles) and discuss/present how these technologies may influence lifestyles and jobs in the future.

Calculate your carbon footprint

- A carbon footprint is the amount of carbon dioxide that an individual, household, or business puts into the atmosphere every year. There are many resources available to help calculate a personal carbon footprint. Join the Minnesota Energy Challenge at *www.mnenergychallenge.org* or use the EPA's Personal Emissions Calculator at *www.epa.gov/climatechange/emissions/ind_calculator.html*. Ask youth to investigate their family's or organization's carbon footprint and to make suggestions for improvement.

Resources

- Minnesota Environmental Quality Board's report "Minnesota and Climate Change: Our Tomorrow Starts Today" *www.eqb.state.mn.us/content/climate-change*
- MPCA "Adapting to Climate Change" *www.pca.state.mn.us/news/adapting-climate-change*