Community Energy Ambassadors

Training Guide

Introduction and Goal Setting

Our goal with the Community Energy Ambassadors program is to provide you with the information you need to be more comfortable and confident as you engage with your community on clean energy. You don't have to be an expert in clean energy; you just need to be curious and open to learning more. As you walk alongside your community on its clean energy journey, CERTs will be here to support you with shared resources, updated opportunities, and guidance whenever you need it.

This guide is for your use. It is designed to help you get the most out of the Community Energy Ambassadors CERTification process as you go through it. It contains quizzes on the material, questions for reflection (or discussion, if you are part of a cohort), and links to additional resources if you want to dive deeper into a specific topic.

A Note on Advocacy

CERTs' Community Energy Ambassadors program is not for political advocacy: it is to help communities navigate clean energy opportunities. CERTs does not weigh in on political or policy questions. When you are representing CERTs' Community Energy Ambassadors, you may not lobby or do other types of political advocacy.

Please reach out to CERTs if you have questions.

Your Goals

What's Your Why?

People come into the clean energy space for a lot of different reasons. They might want to reduce pollution, improve health, increase local self-reliance, or improve resilience in their communities. They might want to help people in their communities reduce their *energy burden* (how much of their income they spend on energy). Or they might just enjoy clean energy technology.

So, why are you here?

Take a few moments to reflect on what's most important to you when it comes to clean energy. You can share your thoughts in the space below.

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Setting Goals

Now, keeping in mind what's important to you, what would you like to accomplish through this program over the next…

3 months?

12 months?

3 years?

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Training Videos

You can access the videos and slides at the direct links or at the Community Energy Ambassadors Training Checklist: z.umn.edu/CEAChecklist

1. Community Engagement

Video link: youtu.be/j_PQ0h8OMxQ

Quiz

1. What is community engagement?

2. What is a community?

3. What are the 3 C's of community engagement?

4. What are the 5 pillars of community engagement?

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Reflection Questions

What are a few things that stood out to you as you watched the video?

What questions came to mind? What aspects of this topic would you like to learn more about?

Communities can be defined in many different ways: shared geography, culture, religion, interests, and lived experience, among others. What are some of the communities you belong to or regularly connect with?

Choose one specific community. Based on the information presented in the video and slides, think through the following questions:

- Who would you want to engage around clean energy?
- Why would you want to engage with them specifically?
- What characteristics of the community would you need to consider when deciding on an engagement approach?
- What are some possible ways that you might engage community members?

Learn more:

- Community Engagement Resource Center: z.umn.edu/akuj

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2. Paying for Your Project

Video link: youtu.be/tHnbLI17mN4

Quiz

1. How do you start on a clean energy project?
    A. Repairs or pre-weatherization
    B. Get quotes from contractors
    C. Energy efficiency - contact your utility
    D. Look at grants or rebates

2. What are some potential sources of funding for clean energy projects?

3. What does PACE stand for? What is it?

Reflection Questions

What are a few things that stood out to you as you watched the video?

What questions came to mind? What aspects of this topic would you like to learn more about?

Choose a clean energy technology you might want to install in your home or community. With that project idea in mind, consider the process for getting clean energy projects done, shown in the graphic below.

Project process

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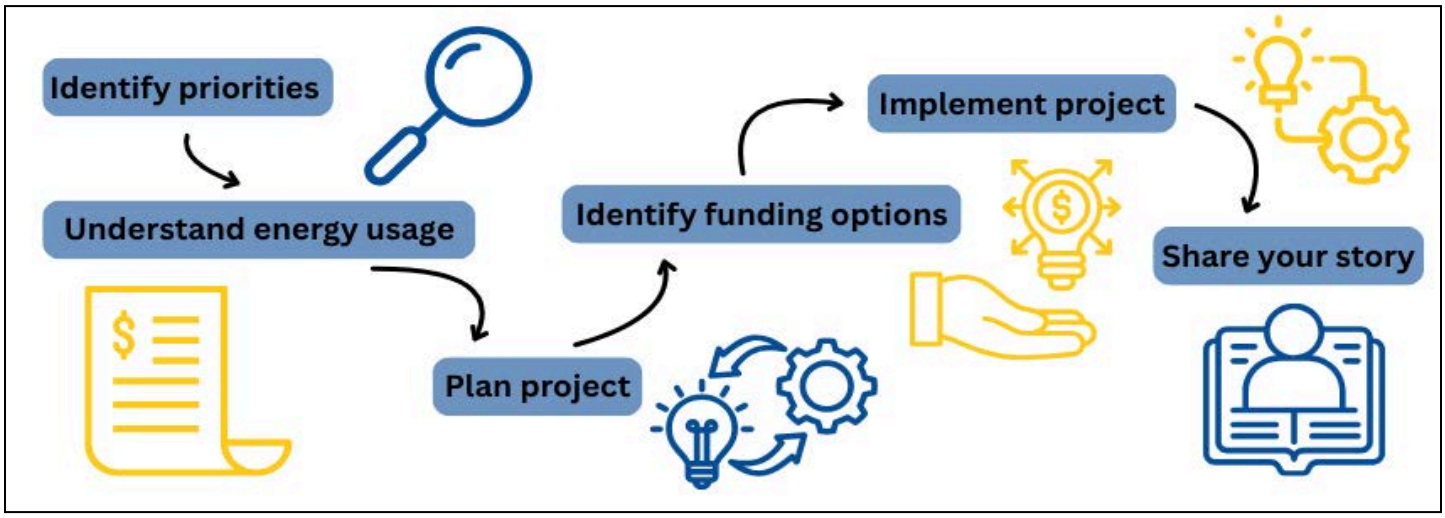

- What parts of the process do you feel most comfortable with? Least comfortable? Are there specific topics where you would like more information?

- Are there specific barriers that you see for implementing the project? How might they be overcome?

Learn more

- Pay for Your Projects web page: z.umn.edu/Pay4Projects

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3. Home Energy Efficiency

Video link: youtu.be/R8DjvlOea2A

Quiz

1. What are some questions you should ask when you are trying to improve your home energy efficiency?

2. How many kWh does an average Minnesota household use per month?

3. What percentage does heating and air-conditioning make up for in a Minnesota home's energy usage?

4. If you have a forced air heating system, how often should you change your furnace filter?

5. What temperature should you keep your water heater set at?

6. How much energy does a typical old refrigerator use?
   A. 450 kWh
   B. 1,700 kWh
   C. 300 kWh
   D. 2,000 kWh

7. When thinking about window efficiency, which is a better U-factor, 0.30 or 1.20?

8. What is a CERTs resource for home energy efficiency?

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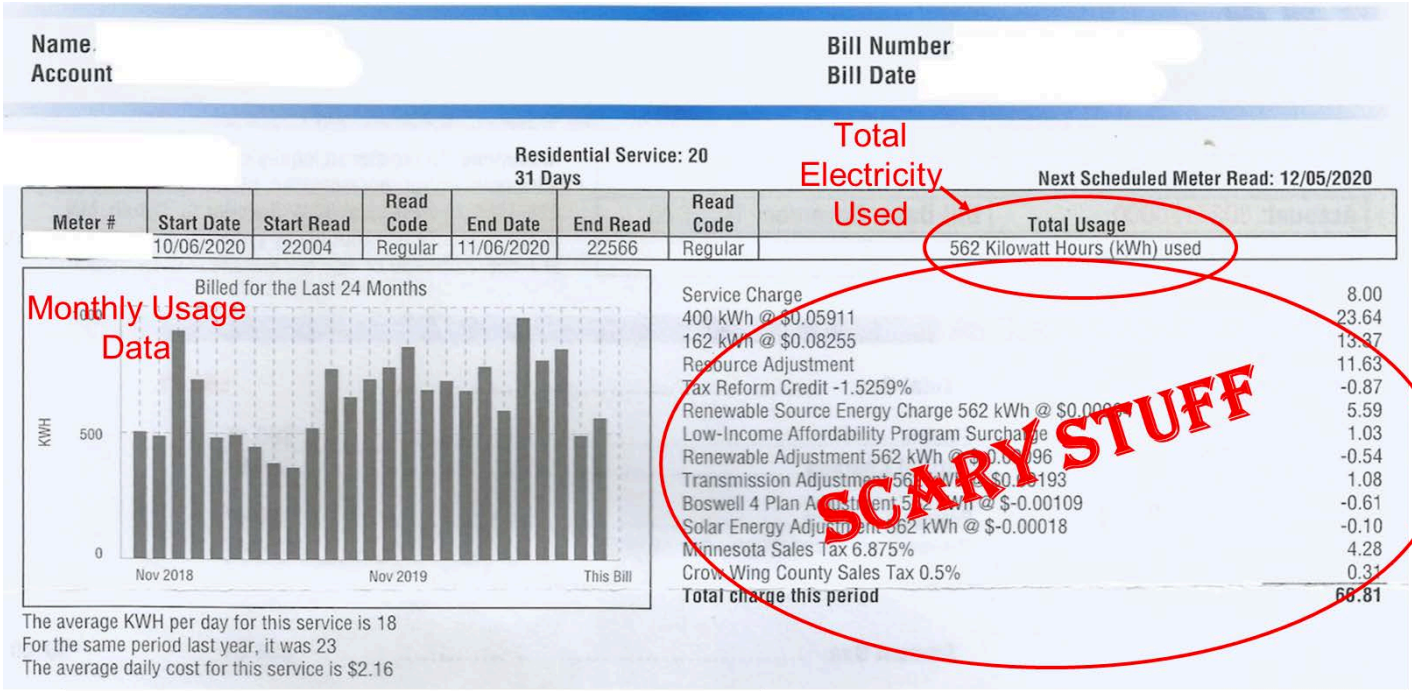
Reflection Questions

What are a few things that stood out to you as you watched the video?

What questions came to mind? What aspects of this topic would you like to learn more about?

Take a look at this sample electricity bill, then look at your own home energy bills.



Demystifying the Scary Stuff

- **Service charge** (or customer charge): a flat monthly fee that you pay every month for access to energy
- **Energy charge**: cost of the electricity or gas you used; billed by kilowatt-hour (kWh) for electricity or therms for natural gas
- **Riders**: charges for specific aspect of your utility service, such as cost of fuel
- **Taxes:** state and local sales taxes

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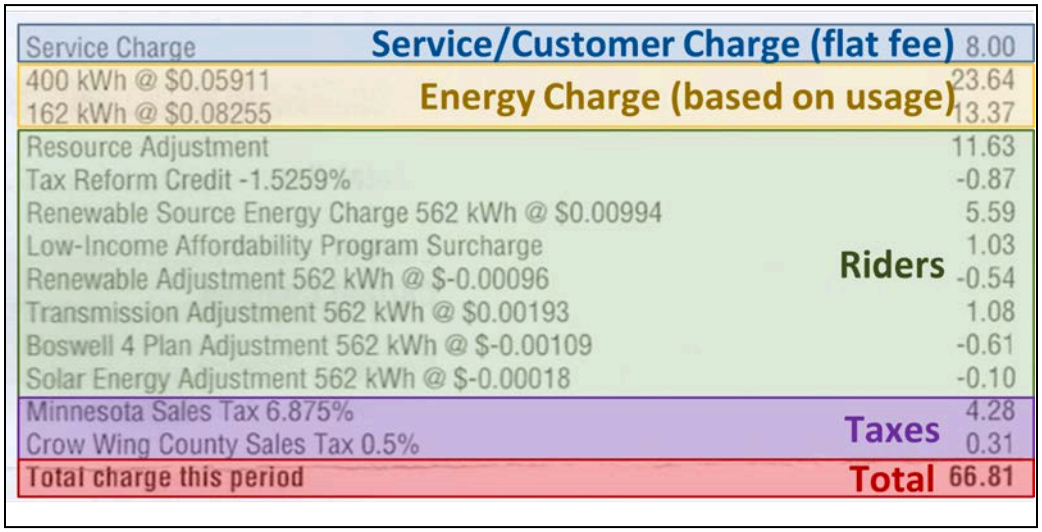

- Can you identify the different types of charges? Which charges are fixed? Which charges are based on how much energy you use?

- During which months is your electricity consumption the highest? Lowest? What about your gas or propane consumption? What does that tell you about some of your best opportunities for saving energy?

Learn more:

Saving Energy at Home: z.umn.edu/HomeEnergy

Energy Audits & Assessment: z.umn.edu/EnergyAudit
Includes do-it-yourself energy assessment resources.

Time to take Post-Training Survey #1: z.umn.edu/CEAChecklist

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4. Heat Pumps for Homes

Video link: youtu.be/OETxpiNrZrk

Quiz

1. How many hours a year do we typically spend heating and cooling our homes?

2. What are the two basic options for an air source heat pump system step-up?

3. Which system set-up would work best in a home that has radiators or electric baseboard heat?

4. What are the two main categories of a heat pump compressor? Which one is considered a cold-climate heat pump, and at what temperature does it efficiently heat down to?

5. Do you need a secondary heating system when you have an air source heat pump?
    A. Yes
    B. No

6. What percentage of energy savings would you see if you switched from an electric resistance heating system (baseboard heat) to a cold-climate air source heat pump?
    A. 30%
    B. 10%
    C. 50%
    D. 55%

7. Can a ground source (geothermal) heat pump meet 100% of heating and cooling needs for homes in Minnesota?
    A. Yes
    B. No

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Reflection Questions

What are a few things that stood out to you as you watched the video?

What questions came to mind? What aspects of this topic would you like to learn more about?

Are there homes in your community that might benefit from an air source heat pump? What kinds of strategies might you use to share information about ASHPs?

Learn more:

CERTs Heat Pump page: z.umn.edu/ASHP

MN Air Source Heat Pump Collaborative: mnashp.org/

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5. How to Speak Solar

Video link: youtu.be/2TndQw7mbKM

Quiz

1. What are the Photovoltaic (PV) building blocks?

2. What is the most common PV panel?

3. Which PV panel will also absorb sunlight reflected from below?

4. What type of current does a solar cell produce?
    A. Alternating current (AC)
    B. Direct current (DC)

5. What do inverters do?

6. What is the difference between a string inverter and a micro-inverter?

7. How many kilowatt-hours does a 20 kW solar array produce if it operates for 3 hours?
    A. 60 kWh
    B. 50 kWh
    C. 20 kWh
    D. 6 kWh

8. What do you need added to your solar system if you want power when there is a power outage?

9. What is net metering?

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10. Ideally, how many installers should you get bids from?
    A. 2
    B. 3
    C. 5
    D. 1

Reflection Questions

What are a few things that stood out to you as you watched the video?

What questions came to mind? What aspects of this topic would you like to learn more about?

Consider your home. Is solar a good fit? Why or why not?

If you don't currently have solar, how would you go about getting solar on your home or business? If you have already installed solar, what are some lessons learned that you would share with others?

Learn more:

CERTs' solar energy page: z.umn.edu/SolarTool

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6. EV 101 & EVs for Greater Minnesota

Video link: youtu.be/ReXtw5Kzy70

Quiz

1. Which sector contributes the most to greenhouse gas emissions in Minnesota?
    A. Transportation
    B. Electricity Generation
    C. Agriculture, Forestry, and Land Use

2. On average, what percent of charging is completed at home?
    A. 30%
    B. 60%
    C. 90%

3. All electric vehicles require less maintenance than a conventional vehicle?
    A. True
    B. False

4. EVs cost less to operate than gas-powered cars
    A. True
    B. False

5. What fuel sources does a battery electric vehicle use?
    A. Gas engine
    B. Electric motor
    C. Plug-in charge

6. What fuel sources does a plug-in hybrid electric vehicle use?
    A. Gas engine
    B. Electric motor
    C. Plug-in charge
    D. All of the above

7. What is the distance of the average person's daily round-trip commute?
    A. Less than 30 miles
    B. 40-50 miles
    C. up to 100 miles

8. True or False? Electric vehicles are less expensive to own and operate than conventional internal combustion engines.
    A. True
    B. False

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9. True or False? A level 1 charger is like plugging into a standard, 120-volt outlet and does not require special equipment or installation-this type of charging is also known as trickle charging.
    A. True
    B. False

10. True or False? Electric vehicles produce fewer emissions than conventional internal combustion vehicles.
    A. True
    B. False

11. What's the difference between a plug-in hybrid and a battery electric vehicle?
    A. There is no difference
    B. A plug-in hybrid only accepts AC power, while a battery electric vehicle accepts AC and DC power
    C. A plug-in hybrid can be powered by either the battery or the gasoline engine. A pure electric vehicle is powered only by the battery

12. Electric vehicles can only be used as commuter vehicles because of their limited range.
    A. True
    B. False

13. An EV only needs one of the following maintenance jobs done. Which is it?
    A. Oil change
    B. Belt replacement
    C. New spark plugs
    D. Brake pad inspections

14. Which of the following is NOT a kind of DCFC plug?
    A. J1772
    B. CHAdeMO
    C. SSA/CCS
    D. Supercharger

15. True or False: A hydrogen fuel cell vehicle is a type of electric vehicle.
    A. True
    B. False

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Reflection Questions

What are a few things that stood out to you as you watched the video?

What questions came to mind? What aspects of this topic would you like to learn more about?

Think about your household's travel habits. On a typical day, how far do you usually travel? How often do you usually take longer trips. Look at the PlugShare map: z.umn.edu/ag7p. Is there charging available in the areas you typically travel? Do you have multiple cars in your household? Would a PHEV or a BEV be a better fit for you?

Think about your community. What do you think are the biggest barriers to EV adoption? What might be some strategies for overcoming those barriers?

Learn more:

CERTs Electric Vehicle page: z.umn.edu/CERTsEV

Drive Electric Minnesota: z.umn.edu/akul

Time to take Post-Training Survey #2: z.umn.edu/CEAChecklist

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Community Energy Ambassador Project

This project will give you space to explore what it's like to be a Community Energy Ambassador. With opportunities to meet with CERTs staff and reflect on your experiences, the project will launch your community energy ambassadorship!

Project Steps

1. **Brainstorm ideas for a project and submit a brief project proposal.** If your idea is still half-baked, that's okay!
2. **Meet with CERTs staff to discuss your project idea.**
3. **Put your project into action.**
4. **Share the highlights and learnings in a (very) brief project report.**
5. **Become CERTified!** We'll reach out to you with your CERTification award!

If you have questions, please contact ambassadors@cleanenergyresourceteams.org at any time in the process.

Project Ideas

You may be wondering, "So what do I do?" Projects can vary – as long as they involve you engaging with your community about clean energy. Here are a few ideas to spark inspiration:

- Write an article for your neighborhood association or another community group newsletter.
- Share information about different clean energy rebates and programs at a community event.
- Talk to a friend or family member about clean energy and help them access funding for a project.
- Schedule an energy audit of your home and invite others to watch and learn about the process.
- Share your experience taking on an energy-savings project in a written story or short video.
- Present information about a clean energy topic to a community group.
- Host a discussion about clean energy incentives at a community center or public space.
- Put on a performance (puppet show, creative movement, short play) about clean energy.
- Create a handout about clean energy funding opportunities, and distribute it in your community.

An Important Reminder

CERTs' Community Energy Ambassadors program is not for political advocacy: it is to help communities navigate clean energy opportunities. CERTs does not weigh in on political or policy questions. When you are representing CERTs' Community Energy Ambassadors, you may not lobby or do other types of political advocacy. Please reach out to CERTs if you have questions.

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Designing Your Project

Here are some questions to ask yourself as you design your project:

Clean energy interest: *What aspect of clean energy am I most excited about?*

Audience: *In my community, who do I want to share that information with? Who might benefit the most from learning about it and moving forward on a project?*

Strategy: *What are some ways I might reach the audience I've identified about my clean energy topic?*

Skills: *What are the engagement skills that I already have? Are there engagement skills that I want to develop further?*

Partners: *Are there other individuals or organizations who would make good partners on my project?*

Support: *Is there any assistance I would need to complete my project?*

Project Proposal

After you work out your project idea, use the Project Proposal Form to submit your proposal to CERTs. A staff member will reach out to you to help you get started: z.umn.edu/CEAChecklist

Project Report

Once your project is complete use the Project Report Form to let us know: z.umn.edu/CEAChecklist

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CERTified? Now What?

Your clean energy journey doesn't stop here. As a Community Energy Ambassador, you're part of a growing network of Minnesotans helping their communities access clean energy opportunities. Through the Ambassadors program, you can continue to:

- **Learn** about clean energy technologies and programs, as well as engagement practices.
- **Connect** with other Ambassadors, with CERTs staff, and, most importantly, with your community.
- **Get projects done**! It starts with imagining what's possible and building community around the idea. Then you identify resources and do the project. Finally, you tell your story, because that helps others imagine their own clean energy projects!

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You'll receive invitations to webinars and other learning opportunities, as well as to virtual and in-person networking events. We'll share new informational resources and emerging clean energy opportunities.

We encourage you to continue to engage your community on clean energy. By now you know there are lots of opportunities for clean energy projects for residents, businesses, schools, local governments, and other organizations. Here are some possible ways to engage:

- Present to community groups about clean energy opportunities.
- Share clean energy stories and opportunities in your networks.
- Share clean energy information at a community event.
- Host an Ambassadors networking event with CERTs.
- Work with a group of youth on an energy efficiency outreach project.
- Connect CERTs staff to potential clean energy projects in your community that could use a little extra assistance.

Remember, you are not alone! CERTs is here to support communities through the process of identifying and implementing community-based clean energy projects. That means we are here to support Ambassadors too – we encourage you to reach out with questions anytime! You can reach the Ambassadors program staff at ambassadors@cleanenergyresourceteams.org, or you can always reach out to your local Regional Coordinator.

Twice a year – in April and October – we will send out a brief survey asking you to share a little about what you've been doing as a Community Energy Ambassador. Please complete the survey when you get it so we know about all of the great work that CERTified Ambassadors are doing!

"But wait," you say, "I want to share what I'm doing right away!" That's an option too. Use this reporting form (z.umn.edu/akuo) anytime you'd like to share your Ambassador work with us.

Once again, congratulations, and thank you for becoming a CERTified Community Energy Ambassador!

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Quiz Answers

Community Engagement

1. What is community engagement?
   Answer: seeks out and facilitates the involvement of those potentially affected by or interested in a decision

2. What is a community?
   Answer: Community is a broad term used to define groups of people.

3. What are the 3 C's of community engagement?
   Answer: Communication, collaboration, and connection

4. What are the 5 pillars of community engagement?
   Answer:
   - Know your audience
   - Why before what
   - Build trust
   - Look for gaps
   - Continue 2-way dialogue

Pay for Your Project

1. What do you start with on a clean energy project?
   A. Repairs or pre-weatherization
   B. Get quotes from contractors
   C. Energy efficiency
   D. Look at grants or rebates
   Answer: C - Energy efficiency: contact your utility to find out what kind of programs might be helpful in assessing your home or other building.

2. What are some potential sources of funding for clean energy projects?
   Answer: Grants and cost share programs, state and federal incentives, utility rebates

3. What does PACE stand for?
   Answer: Property Assessed Clean Energy

Home Energy Efficiency

1. What are some questions you should ask when you are trying to improve your home energy efficiency?
   Answer: What is my home energy use? When is it highest? What kind of improvements can I make to increase my home's energy efficiency?

2. How many kWh does an average Minnesota household use per month?
   Answer: 800 kWh

3. What percentage does heating and air-conditioning make up for in a Minnesota home's energy usage?
   Answer: 55%

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4. If you have a forced air heating system, how often should you change your furnace filter?
   Answer: Monthly

5. What temperature should you keep your water heater at?
   Answer: 120 F

6. How much energy does a typical old refrigerator use?
   E. 450 kWh
   F. 1,700 kWh
   G. 300 kWh
   H. 2,000 kWh
   Answer: B

7. True or false: When thinking about window efficiency, which is a better U-factor, 0.30 or 1.20?
   Answer: Lower is better (.30 or less)

8. What is a CERTs resource for home energy efficiency?
   Answer: Home Energy Guide

Heat Pumps for Homes

1. How many hours a year do we typically spend heating and cooling our homes?
   Answer: 300 hours of cooling needs and 2,000 hours of heating needs

2. What are the two basic options for an air source heat pump system step-up?
   Answer: Ductless (minisplit) and central (ducted)

3. Which system set-up would work best in a home that has radiators or electric baseboard heat?
   Answer: Ductless or minisplit

4. What are the two main categories of a heat pump compressor? Which one is considered a cold-climate heat pump, and at what temperature does it efficiently heat down to?
   Answer: Standard and variable speed. Variable speed is considered a cold-climate heat pump and can heat efficiently down to 5 degrees.

5. Do you need a secondary heating system when you have an air source heat pump?
   C. Yes
   D. No
   Answer: A - Yes

6. What percentage of energy savings would you see if you switched from an electric resistance heating system (baseboard heat) to a cold-climate air source heat pump?
   E. 30%
   F. 10%
   G. 50%
   H. 55%
   Answer: D - 55%

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7. Can a groundsource (geothermal) heat pump meet 100% of heating and cooling needs for homes in Minnesota?
    C. Yes
    D. No
    Answer: A - Yes

How to Speak Solar

1. What are the Photovoltaic (PV) building blocks?
    Answer: Cell, module (or panel), array

2. What is the most common PV panel?
    Answer: Monocrystalline

3. Which PV panel will also absorb sunlight reflected from below?
    Answer: Bifacial

4. What type of current does a solar cell produce?
    C. Alternating current (AC)
    D. Direct current (DC)
    Answer: B - Direct current (DC)

5. What do inverters do?
    Answer: Convert DC to AC

6. What is the difference between a string inverter and a micro-inverter?
    Answer: A string inverter is attached to multiple panels, while a micro-inverter is attached to each solar panel.

7. How many kilowatt-hours does a 20 kW solar array produce if it operates for 3 hours?
    E. 60 kWh
    F. 50 kWh
    G. 20 kWh
    H. 6 kWh
    Answer: A - 60 kWh

8. What do you need added to your solar system if you want power when there is a power outage?
    Answer: Battery storage

9. What is net metering?
    Answer: Compensation from your utility for extra electricity that you produce

10. Ideally, how many installers should you get bids from?
    E. 2
    F. 3
    G. 5
    H. 1
    Answer: B - 3

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EV 101 and EVs in Greater Minnesota

1. Which sector contributes the most to greenhouse gas emissions in Minnesota?
    A. Transportation
    B. Electricity Generation
    C. Agriculture, Forestry, and Land Use

    Answer: A - Transportation

2. What percent of charging is completed at home?
    A. 30%
    B. 60%
    C. 90%

    Answer: C - 90%

3. All electric vehicles require less maintenance than a conventional vehicle?
    A. True
    B. False

    Answer: A - True

4. EVs cost less to operate than gas-powered cars
    A. True
    B. False

    Answer: A - True

5. What fuel sources does a battery electric vehicle use?
    A. Gas engine
    B. Electric motor
    C. Plug-in charge

    Answer: B and C - Electric motor and Plug-in charge

6. What fuel sources does a plug-in hybrid electric vehicle use?
    A. Gas engine
    B. Electric motor
    C. Plug-in charge
    D. All of the above

    Answer: D - All of the above

7. What is the distance of the average person's daily round-trip commute?
    A. Less than 30 miles
    B. 40-50 miles
    C. up to 100 miles

    Answer: A

8. True or False? Electric vehicles are less expensive to own and operate than conventional internal combustion engines.
    A. True
    B. False

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Answer: A - True

9. True or False? A level 1 charger is like plugging into a standard, 120-volt outlet and does not require special equipment or installation-this type of charging is also known as trickle charging.
    A. True
    B. False

    Answer: A - True

10. True or False? Electric vehicles produce fewer emissions than conventional vehicles.
    A. True
    B. False

    Answer: A - True

11. What's the difference between a plug-in hybrid and a battery electric vehicle?
    A. There is no difference
    B. A plug-in hybrid only accepts AC power, while a battery electric vehicle accepts AC and DC power
    C. A plug-in hybrid can be powered by either the battery or the gasoline engine. A pure electric vehicle is powered only by the battery

    Answer: C

12. Electric vehicles can only be used as commuter vehicles because of their limited range.
    A. True
    B. False

    Answer: B

13. An EV only needs one of the following maintenance jobs done, which is it?
    A. Oil change
    B. Belt replacement
    C. New spark plugs
    D. Brake pad inspections

    Answer: D - Brake pad inspections

14. Which of the following is NOT a kind of DCFC plug?
    A. J1772
    B. CHAdeMO
    C. SSA/CCS
    D. Supercharger

    Answer: A

15. True or False: A hydrogen fuel cell vehicle is a type of electric vehicle.
    A. True
    B. False

    Answer: True

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