INDIANA CURRENT ISSUE ORAL PRESENTATION 2024

Renewable Energy for a Sustainable Future

Background

Energy touches every aspect of our lives. It lights our homes, transports our food, cleans our water, fuels our cars, enables us to communicate with family and friends, and so much more. The environmental, economic, and social outcomes of our energy choices will shape the future of our communities. Governmental policies, industry, and public opinion are shifting to embrace a sustainable future that includes renewable energy.

The term “clean energy transition” refers to society’s shift from fossil-based systems of energy production and consumption — including oil, natural gas and coal — to renewable energy sources, which are more sustainable.

Renewable energy is energy that comes from natural sources that replenish themselves. Examples include solar energy, wind energy and hydropower. There are many benefits to renewable energy sources. They:

- Regenerate perpetually and aren’t depleted.
- Help reduce emissions of CO2 and other pollutant gases, thus helping to fight climate change.
- Reduce dependence on energy imports.
- Provide sustainable opportunities for local economic growth and jobs.

Indiana’s electricity comes from a mix of in-state and out-of-state electricity generation. In 2022, 52% of the states energy was generated from coal and 33% from natural gas. Renewable resources, primarily wind, supplied 12% of the state's total electricity net generation in 2022. More than 2% of Indiana's total net generation came from other gases used to fuel power generation at industrial facilities. Petroleum liquids and other energy sources fueled the rest of the state's total net generation.

In 2022, Indiana ranked 13th in the nation in total electricity sales, but the state was 5th in electricity sales to the industrial sector, which accounted for 43% of Indiana's electricity consumption, The residential sector, where 3 in 10 households use electricity as their primary energy source for home heating, accounted for 34% of state power use. The commercial sector consumed 23%. In part because of the retirement of several large coal-fired power plants, Indiana consumers used more electricity than in-state generators supplied in every year since 2012. In 2021, 16% of Indiana's electricity supply came from other states.

Although Indiana's legislature created a voluntary clean energy portfolio standard in 2011, as of 2021, no Indiana utility had chosen to participate. If an electric utility elects to participate, it agrees to acquire 10% of the electricity it sells from clean energy sources by 2025. In return, the utility receives financial incentives. However, Indiana

utilities must offer net metering to all customer-sited renewable generating facilities with less than 1 megawatt of capacity unless net metering exceeds 1% of a utility's most recent peak summer load.

Making the transition to more sustainable renewable energy requires all levels of participation, from utilities and grid planners to individuals. Decisions about sustainable energy are not made only by politicians and corporations. Individuals can choose what energy practices to support and can advocate for the transition to renewables. Local, state, and federal policies and incentives can help give renewable energy technologies a boost, including tax credits for renewable energy installations and electric vehicle purchases.

Oral Presentation

Your team has been hired to assess the energy use of your community and to recommend a plan to the county commission, city council or other governing body to significantly increase renewable energy use in your community over the next decade.

Actions may include:

- Developing a wind farm on community-owned land
- Developing low-impact hydropower, such as adding a turbine to an irrigation canal
- Developing large-scale solar project on community-leased land
- Promoting installation of solar photovoltaic (PV) systems on multiple business and home rooftops
- Promoting energy efficiency
- Promoting electric vehicle usage
- Developing other renewable energy sources
- A combination of the above. Your task is to research and present your recommendations to the governing body.

Presentation Elements

Your presentation should include the following elements:

- A definition of what you are considering your community. Is it your city, town, neighborhood or other?
- An overview of the current energy picture in your community.
- Details of and reasoning for your group’s recommended plan for increasing renewable energy use in your community.
- Steps for carrying out your recommended plan.
- The benefits your recommended plan will provide the community and beyond, including environmental, economic, and social benefits.
- Challenges your recommended plan would pose to the community and how you would overcome those challenges.

What to Consider

As you develop your recommendations, consider the following.

1. Determining the current energy situation in your community:

- What are your community's primary uses and what characteristics affect its energy needs? For example: Is it urban or rural? Are the homes large or small? Do residents drive long or short distances? What are the main businesses or industries?
- Take a close look at your community and decide what is/are the types of energy being utilized in your community.
- Once you have determined the fuel/energy type you will need to categorize it as one of the following:
    1. Traditional non-renewable (petroleum, coal, natural gas)
    2. Renewable (solar, wind, hydroelectric)
    3. Other (nuclear, geothermal, plant-based products, other)
- Is there a strong source of fuel that is located there that will be primarily used for the next decade will the community be using the same fuel/energy?
- What proportion of its current energy usage is from traditional sources and what proportion is from renewable sources?
- What challenges does your community face in significantly increasing renewable energy?
- Who is currently involved in promoting renewable energy in your community? Who else could you enlist?

2. Comparing the different options:

- How much renewable energy would each option deliver? What other benefits would it provide?
- What is the projected monetary cost of each option? How cost-efficient is it?
- What are the environmental costs and benefits of each option?
- What are the social costs and benefits of each option?
- How would local land use and employment be affected by each option?
- By continuing to use non-renewable resources, are there technologies that will allow for better and cleaner collection and use?

3. Assessing the potential impact of your recommendations:

- What outcomes do you project from your recommendations?
- Are your recommendations feasible, practical, and cost-effective?
- How do your recommendations support the underserved populations in your community or other communities (Energy Justice)?
- What challenges do you foresee in implementing your recommendations, and how could your community overcome these challenges/downfalls/ hazards?

Now that you know what your community mostly uses as an energy source and whether it will also be the main energy source for the next decade, where do you see your community getting the energy needed for the future?

- By continuing to use non-renewable resources, are there technologies that will allow for better and cleaner collection and use?
- Will structures for renewable resources hold up over time or will replacement be needed and at what cost?
- What are the pros and cons of other energy sources if they could be used in the community in the following decade?

Remember, the issue is for a sustainable future and as future leaders in your community, you need to consider what you have, what you need, and how to get there to sustain energy in your community in the future.

Be sure to include how this will affect Aquatic environments in your community, Forested environments in your community, Land use and impact of the Soils in your community, and the Wildlife that lives in all the specialized environments in your community.

Key Items: that might help to give your presentation a professional, well thought out plan if well incorporated and utilized to its best advantage (in no specific order):

- A Plan – (who, what, where, when and why)
- Map(s) of the community
- Landscape/photos of the fuel/energy source
- History of energy in the community (good, bad, ugly)
- Listing of the businesses/organizations and individuals you discussed/gathered information from for your project.
- Past, current, and future of energy source's locations in the community – perhaps even utilize a timeline showing progression.
- Goals and Objectives to be met.
- Is it practical, affordable?
- Will it have social or cultural impacts?

Possible resources

Energy demand, sources will change with Indiana's climate - Purdue University News

https://www.purdue.edu/newsroom/releases/2019/Q1/energy-demand,-sources-will-change-with-indianas-climate.html

The Long View: Indiana's Energy Outlook

https://www.ibrc.indiana.edu/ibr/2015/outlook/longview.html

Indiana Profile (eia.gov)

https://www.eai.gov/state/print.php?sid=IN

U.S. Energy Information Administration - EIA - Independent Statistics and Analysis

https://www.eia.gov/state/analysis.php?sid=IN

Cost comparisons of Energy Sources: Renewable Energy Sources: Cost Comparison (renewable-energysources.com)

https://www.renewable-energysources.com

U.S. Department of Energy, 2015 – 5 minutes

https://youtu.be/9Wub1_Dk_Ok

Learning Objectives of the 2024 NCF Envirothon Current issue https://envirothon.org/wp-content/uploads/2023/09/2024-Current-Issue-Part-A.pdf

Your local Natural Resource Professionals

USDA/NRCS/SWCD

County Extension office

Municipal Utilities Companies