

2024 Wisconsin Envirothon

Current Issue Team Presentation Scenario

Renewable Energy for a Sustainable Future

The Team Presentation Competition

The team presentation segment contains twice as many points as the individual testing stations. All teams must use a power point presentation, with no limit on slides but no animation or linking to videos allowed. No other props, costumes, or digital displays are allowed. All members of the team must verbally participate in the oral presentation. Your team will have ten minutes to present accompanied by three to five minutes of judges' questions. You may cite outside reference materials and sources. The score sheet and rubric to be used by the judges are attached.

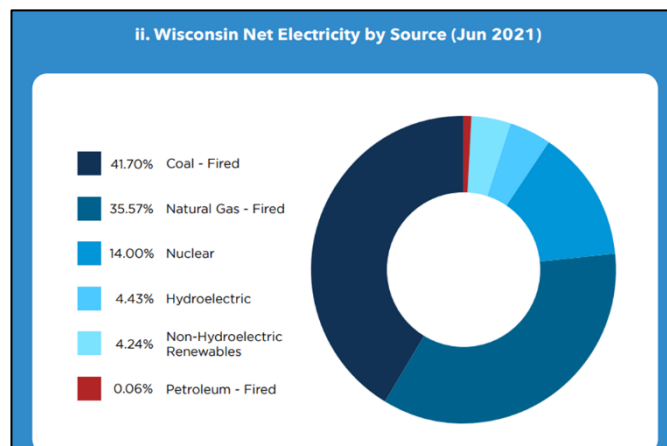
The Scenario

Background

The majority of Wisconsin's energy needs are currently provided by coal and methane ("natural") gas from fossil fuels. Burning fossil fuels to make electricity emits greenhouse gasses and other air pollutants that warm the planet and create local air pollution that can lead to asthma, heart problems, cancer and other health harms. Fossil fuels are also finite - there are only so many of them, and we don't have any to mine or drill here in Wisconsin. Wisconsin spends \$12 billion every year to import fossil fuels from out of state. Renewable resources like solar and wind are replenishable and available in Wisconsin, and don't emit greenhouse gasses or air pollution.

Wisconsin, and all of the state's major electricity utilities, have a goal to transition to 100% carbon-free electricity by 2050.

The electricity that people all across Wisconsin use today is generated from the following sources.



A recent analysis, Wisconsin's Roadmap to Net-Zero, showed that to get to net-zero in our electricity, buildings, transportation, and industry, Wisconsin needs to build a lot more solar and wind projects - about 3 or 4 big solar projects every year, and 1 or 2 large wind projects. The sun isn't always shining (like at night!) and the wind isn't always blowing, so we need other ways to provide energy during those times. Being able to store energy for when we need it later with technology like batteries can help make sure everyone has the energy they need to be safe and comfortable.

A typical home rooftop solar system size is about 6 kilowatts (kW). Larger solar farms might range from 50-300 megawatts (MW) and wind farms are often in the 100-600 megawatt range. (1 megawatt = 1,000 kilowatts)

According to Wisconsin state law, the owners of large renewable energy projects (>50 MW) pay the hosting community \$4000 per MW every year for hosting the projects. \$2,333 per MW goes to the county and \$1,667 per MW goes to the town or towns hosting the project. For a 300 MW project, that's \$1.2 million every year to the local governments, lasting for the lifetime of the project (typically about 25 years).

Your Task

Overview

A Wisconsin county is committed to the state's 100% clean energy goals. They currently have a 600-megawatt (MW) coal plant retiring and would like to replace the energy needs with renewable sources. Many community members are excited about renewable energy and the money large projects can provide, while others are unsure about reliability and how it might change the look of the landscape.

The Ask

Your team is hired by the county to present ideas to meet these energy needs. They'd like to hear what the community leaders should approve, as well as opportunities for local residents and businesses. They'd also like your team to help with a communications plan to respond to local concerns to ensure the community members are supportive of your proposed renewable projects.

Questions to consider:

- What mix of renewable energy should be built to add up to 600 MW? Should it be all one kind, or multiple? Should it be large-scale, small-scale, or both?
- Where in the community should the renewable energy infrastructure be built? What might some limiting factors be for different options?
- How can you make sure the new energy sources will reliably meet energy needs?
- What financial benefits will the community gain from large-scale renewable energy projects? How would you suggest spending those funds to ensure community buy-in?
- What are some tradeoffs when considering large-scale renewable energy projects? How can these tradeoffs be justified?
- What are the environmental benefits or harms from replacing coal with renewable energy, and who is most impacted by them?
- What are the economic benefits or harms from replacing coal with renewable energy, and who is most impacted by them?
- What are the different ways anyone in the community can support renewable energy?

Your Objective

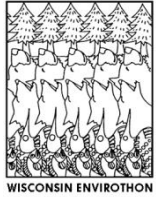
Your team will present a plan to replace fossil fuel energy with renewable energy throughout the community and provide a communications plan to support your proposal.

Additional resources located at:

- Wisconsin Energy Statistics:
https://maps.psc.wi.gov/portal/apps/experiencebuilder/experience/?id=fb6e6305e53e437eaa958f91246ec007&page=page_13
- U.S. Energy Information Administration (EIA)'s definitions of renewable energy:
<https://www.eia.gov/energyexplained/renewable-sources/>
 - Solar explained: <https://www.eia.gov/energyexplained/solar/where-solar-is-found.php>
 - Wind explained: <https://www.eia.gov/energyexplained/wind/where-wind-power-is-harnessed.php>
- Executive Order #38: <https://evers.wi.gov/Documents/EO%20038%20Clean%20Energy.pdf>
- WI Clean Energy Plan: <https://osce.wi.gov/pages/cleanenergyplan.aspx>
- Wisconsin Initiative on Climate Change Impacts (WICCI): <https://wicci.wisc.edu/>
- Wisconsin's Roadmap to Net-Zero by 2050 report: <https://www.cleanwisconsin.org/our-work/wisconsins-roadmap-to-net-zero-by-2050/#:~:text=There%20is%20a%20pathway%20for,atmosphere%20than%20can%20be%20removed.>
- Corn ethanol vs. solar land use comparison report: <https://www.cleanwisconsin.org/more-energy-on-less-land-analysis-reveals-solar-farms-produce-100-times-more-energy-per-acre-than-corn-ethanol/>

Envirothon Current Issue Resources

<https://envirothon.org/the-competition/current-competition/>



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Team Presentation Evaluation Rubric

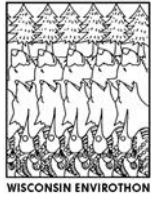
		5=excellent	4=very good	3=good	2=adequate	1=inadequate
Application of Data	Understanding of environmental and resource management challenge	The team clearly, concisely and thoroughly conveyed a solid understanding of all of the learning objectives outlined in the advisor handbook relevant to the environmental and resource management aspects of this scenario.	The team clearly and concisely conveyed a thorough understanding of all relevant learning objectives.	The team clearly, concisely and thoroughly conveyed a thorough understanding of most of the relevant learning objectives.	The team clearly, concisely and thoroughly conveyed only some of the relevant learning objectives.	The team's presentation was missing many relevant learning objectives.
	Understanding of technical issues related to topic	The team clearly, concisely and thoroughly conveyed a solid understanding of the technical issues related to the problem. Natural resource benefits of solution presented were covered and well understood.	The team clearly, concisely and thoroughly conveyed an understanding of the issues related to the problem and an appropriate solution was provided.	The team clearly, concisely and thoroughly conveyed an understanding of the issues related to the problem and attempted to provide a solution.	The team clearly, concisely and thoroughly conveyed only some understanding of the issues related to the problem.	The team's presentation lacked an understanding of the issues related to the problem.
	Understanding of the planning process affecting stakeholders and relevant parties	The team clearly, concisely and thoroughly conveyed an understanding of the planning process, stakeholders and relevant political issues related to the problem. The team identified parties affected in the scenario and considered the concerns of all these parties.	The team clearly, concisely and thoroughly conveyed an understanding of the planning process, stakeholders and relevant political issues related to the problem. The team attempted to identify and consider the concerns of all relevant parties.	The team clearly, concisely and thoroughly conveyed an understanding of the planning process, stakeholders and relevant political issues related to the problem. The team identified and considered some of the concerns of relevant parties.	The team conveyed only a basic understanding of planning, stakeholders and relevant political issues related to the problem.	The team's presentation did not convey an understanding of planning, stakeholders and relevant political issues related to the problem.
	Conclusion & recommendation support, definition and conviction	Ideas, statements, predictions, conclusions and recommendations were clear and logical, supported by data, were convincing to the audience, and expected results were comprehensible.	Conclusions and recommendations were supported by data, clearly defined and were convincing to the audience.	Conclusions and recommendations were supported by data and clearly defined.	Conclusions and recommendations were supported by data.	No data was used or data was presented in an unclear fashion.
	Ability to respond to questions	Audience questions after the presentation were answered logically and fully. The team demonstrated a collaborative effort to answer questions when possible.	Audience questions after the presentation were answered sufficiently, but not always fully, and the team attempted to use a collaborative effort to answer.	Audience questions after the presentation were answered sufficiently, but not always fully, OR some team members tended to dominate the response.	Audience questions after presentation were answered, but not always correctly, logically or fully, OR some team members clearly dominated the response.	Audience questions after presentation were answered inadequately, OR some team members clearly dominated the response.

		5=excellent	4=very good	3=good	2=adequate	1=inadequate
Quality of Presentation	Organization	The team demonstrated an understanding of the level of complexity of the scenario and successfully reduced the complexity for the audience by structuring the presentation in a way that facilitated the audience's understanding of concepts. Questions from panel resulted from a thought-provoking presentation and did not result from a need to clarify components of the presentation.	The presentation was logically organized so that only a few minor clarifications were necessary after the presentation OR the audience comprehension could have been aided by slight reorganization.	Most of the presentation was logically organized, but some key clarifications were necessary after the presentation.	Only some of the presentation was logically organized, and so many key clarifications were necessary after the presentation.	The presentation was not logically organized and did not facilitate the audience's comprehension.
	Participant enhancement of presentation	The presentation mechanics allowed the team's points to be very effectively conveyed because they satisfied these key criteria: the rate, flow and clarity of delivery by each speaker was appropriate; each speaker's voice was loud enough to be heard by all judges; each speaker spoke to the audience in a narrative style, avoiding distracting mannerisms; transitions between speakers were smooth and helped audience follow the presentation.	The presentation mechanics satisfied all but one or two of the key criteria.	The presentation mechanics satisfied most of the key criteria.	The presentation mechanics satisfied only some of the key criteria.	The presentation mechanics satisfied very few of the key criteria.
	Visuals	The PowerPoint slides accompanying the oral narrative were necessary and very effectively conveyed the research because they satisfied these criteria: 1. Content was relevant; 2. Overall appearance was pleasing to the eye but did not distract from the content; 3. Font and figure sizes were adequate; 4. Visuals were filled with just enough information to be informative without looking overcrowded; 5. Figures were clearly labeled, had titles.	The slides used satisfied all but one of the key criteria.	The slides used satisfied most of the key criteria.	The slides used satisfied only some of the key criteria.	The slides used were unnecessary or satisfied very few of the key criteria.
Timing and Participation	Team participation	Effective teamwork contributed to the success of the presentation because it met these criteria: 1. Each team member's contribution to the presentation was equivalent; 2. Each team member contributed answers to questions asked after the presentation to the best of their ability; 3. Teammates were respectful of each speaker and did not interrupt them.	Teamwork was largely effective; 2 of the 3 criteria were fully met.	Teamwork was somewhat effective; 1 of the 3 criteria was fully met.	Teamwork was not effective because none of the three criteria was fully met.	No teamwork was evident.
	Use of time	Team made effective use of time throughout the presentation.	The team mostly made effective use of time during the presentation.	The team made adequate use of time during the presentation.	The team made fairly effective use of time during the presentation.	The team did not make effective use of time during the presentation or overall.

Team Name _____

Start time _____

End time _____



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Team Presentation Evaluation Form

Judges – Please provide brief written evaluation to supplement your scoring.

(Scale for scoring: high score = outstanding; low score = poor)

PART 1 – APPLICATION OF DATA

- | | | | | | |
|--|---|---|---|---|---|
| 1. Team demonstrated a solid understanding of the environmental and resource management challenge. | 5 | 4 | 3 | 2 | 1 |
| 2. Team demonstrated a solid understanding of the technical issues related to the topic. | 5 | 4 | 3 | 2 | 1 |
| 3. Team demonstrated a solid understanding of the planning process, affected stakeholders and relevant parties to the topic. | 5 | 4 | 3 | 2 | 1 |
| 4. Conclusions drawn and recommendations given were supported by data and clearly defined and convincing to the audience. | 5 | 4 | 3 | 2 | 1 |
| 5. Team responded to questions about the content of its presentation in an accurate, concise, and logical manner. | 5 | 4 | 3 | 2 | 1 |

PART 2 – QUALITY OF PRESENTATION

- | | | | | | |
|---|---|---|---|---|---|
| 1. Presentation was well organized. Main points were clearly stated and supported. Presentation included a clear introduction and strong conclusion. | 5 | 4 | 3 | 2 | 1 |
| 2. Participants used appropriate volume, eye contact, gestures, voice inflection, and pace. Participants also avoided distracting mannerisms and exhibited originality and professionalism during the presentation and question period. | 5 | 4 | 3 | 2 | 1 |
| 3. Team made a good use of PowerPoint slides to present information in support of the presentation. PowerPoint slides met standards and were appealing, concise, and appropriate to support the presentation. | 5 | 4 | 3 | 2 | 1 |

PART 3 – TIMING AND PARTICIPATION

- | | | | | | |
|---|---|---|---|---|---|
| 1. All team members participated orally in the presentation with smooth transitions. (Each team member gets 1 point for equal participation). | 5 | 4 | 3 | 2 | 1 |
| 2. Team made effective use of the allotted time. | 5 | 4 | 3 | 2 | 1 |

JUDGE'S COMMENTS: _____

FINAL SCORE: _____ out of 50 points.

JUDGE'S NUMBER (1-4): _____