Earth Science

Activity 16: Write an Opinion Essay

Topic 31: What about that Wind!

General Instructions:

- Use a computer to complete your essay/document.
- Write a "five-part" 250-400 word essay in a single 40-minute session.
- Include an introduction, three key supporting paragraphs, and a conclusion.
- Correct spelling, punctuation, and grammar errors prior to completing work.
- Submit or share your final document with your instructor.

Suggestions and Tips:

1. Read the background and context provided to familiarize yourself with the subject area.
2. Select either A or B as the basis for your thesis.
3. Plan the essay prior to writing it.
4. Make the essay organized. Avoid placing multiple points in one paragraph.
5. Use only Times New Roman font 12 with double-spacing to format your document.
6. Discuss only one perspective in each of the body paragraphs.
7. Conclude with a summary.
8. In the summary, rephrase the introduction and thesis. Emphasize key supporting rationale.

Background and Context:

Wind turbine performance can be significantly reduced when the surface integrity of the turbine blades is compromised.[1]

- **In Nordic climates** ice can form on the blades. Repeated ice accretion can affect the entire rotor leading to potentially dangerous situations.
- **In warmer climates**, a humid wind is good for increased air density. But, these support large populations of insects. Insect collisions with the blades can foul blade surfaces leading to a marked increase in skin drag, reducing power production by as much as 50%.
- **In arid regions** where there is no threat from ice or insects, high winds can carry soil particles eroded from the ground (abrasive particles). This type of wind "*sand-blasts*" the blade surfaces, reducing its aerodynamic efficiency.

Position A: Improved public-awareness and education about the difficulties in maintaining a wind-farm should be required before moving forward with any publicly funded wind-farm project.

Position B: Sufficient information is easily accessible to the public regarding positives and negatives associated with wind farming. No additional public-awareness or education should be required.

[1] Dalili, N. (November 2007). "*A review of surface engineering issues critical to wind turbine performance*." Retrieved from https://www.sciencedirect.com.