Renewable Energy for a Sustainable Future

In our modern world, energy touches almost every aspect of our lives. It lights our homes, transports our food, fuels our vehicles, powers the machines that produce our goods and services, and so much more. The production and use of energy is deeply entwined with our economy, political and social issues, and the environment. Outcomes of our choices concerning energy now will shape the future of our planet. Governmental policies, industry, and public opinion are shifting to embrace a sustainable future that includes renewable energy.

Decisions about sustainable energy, however, are not just made by politicians and large corporations. Individuals can choose what energy practices to support and can advocate for the transition to renewable fuels. New energy innovations are constantly transforming this emerging field with technological developments in energy sources, production methods, and delivery. However, there are many challenges facing the transition from traditional fossil fuels to renewables which include the environmental, economic, and social impacts of energy consumption and how individuals can affect change in their communities.

Iowa Envirothon 2024 Oral Presentation Scenario:

You are a decision-maker in a dynamic, growing, family-owned agricultural business operation just outside the town of Goodacre, a small rural community set in the gently rolling hills 30 minutes from one of Iowa's largest metropolitan areas. Presently, the operation and site consist of the following:

- A 1000-acre grain operation that produces corn and soybeans using conventional tillage methods. All corn produced is dried and stored using a continuous flow propane gas dryer and grain bins equipped with electric aeration fans with a capacity of storing 100,000 bushels. All grain is transported and marketed within 50 miles of the farming operation using a diesel semi-trailer truck and grain trailer owned by the agricultural business operation.
- Presently, a 60' X 120' pole-type machine shed is utilized for machinery storage with plans to update the east end with a concrete pad and enclose it for a climate-controlled shop area.
- Plans are in the works to add an additional small business enterprise. This plan includes constructing a new 60' X 60' building for a metal welding repair and fabrication business.
- Adjacent to the farmstead is an odd-shaped 60-acre tract that is owned by the operation, but is not suitable for row crop production and includes 15 acres of mixed hardwood forest. It is presently rented to a neighbor for grazing a stock cow herd.

- The farmstead is located on 5 acres and presently includes a large sprawling one-story home with an aging forced air heating and air conditioning system.
- You plan to build an additional new home at the farmstead for your growing family.

Additional information:

- The electrical grid for the area is provided by the MidAmerican Energy Company.
- Your operation has an excellent relationship with local lenders.
- There is a mix of production agriculture operations and new non-farm acreages in the area.

Operation goals:

- Maximize income and profitability from the farm business operations.
- Utilize sustainable agricultural practices and operations.
- Reduce energy consumption AND energy costs by using renewable energy sources.
- Embrace new technologies where feasible.
- Maintain positive relationships with all neighbors.

Considerations:

- What renewable energy sources and energy saving practices could be incorporated into this agricultural business operation?
- How do the renewable energy sources and energy saving practices you have selected work?
- What are the economic costs to incorporate these renewable energy sources and energy saving practices?
- What cost savings are associated with any energy saving practices and renewable energy changes that you plan to incorporate into your operation?
- What economic incentive programs are available through governmental agencies or energy companies that could be utilized by your agribusiness?
- How could renewable energy sources generate income for this operation?
- What are the potential social and environmental impacts of planned incorporated renewable energy sources and energy saving practices?
- How does your energy plan make an impact towards a more sustainable future for your agricultural business operation as well as the planet?