

Renewable Energy Curriculum

National Farmers Union

In the 1960s, the concepts of recycling and renewable energy first took root across the American culture, although the seeds were planted much earlier. Today, “green” is a household word and a philosophy embraced by individuals, industries, and businesses, as well as city, county, state, and federal governments. These renewable energy lessons have been prepared by National Farmers Union, a grassroots organization whose 300,000 member families have understood the value of green for generations. Farmers Union members historically have supported the development of renewable fuels and sustainable living.

It is worth noting that during the Great Depression (1930s), World War II (1940s), and the Energy Crisis (1970s), shortages and economics forced Americans to look at reducing their energy use, finding renewable sources of energy, and recycling materials to get the most mileage out of natural resources. Renewable fuels are nothing new. Rural farms used wind power to pump water for livestock. Mills used water and wind to grind wheat into flour. These sources of power predated by hundreds of years the use of coal and oil as significant sources of energy. The lessons in this curriculum review how energy is produced, how it is used, and encourages participants to discover for themselves how renewable fuels have a role in local and global energy policies.

Potential sources of participants for these courses will include student organizations, student government, Boy Scouts, FFA, 4-H, service clubs such as Kiwanis or Rotary, civic improvement organizations, and even employees within the renewable energy industry.

These courses may be held in cooperation with local public schools or colleges, especially ones that support community learning initiatives. The course may also be held in community rooms, libraries, and other facilities that are open for educational venues.

Sponsors may cover the cost for materials and snacks, and may also offer classroom facilities. Sponsors may include county or state Farmers Union organizations (go to www.nfu.org/about-nfu/in-the-states to learn more). Other potential sponsors may include electric utility cooperatives or companies, renewable energy companies, associations and organizations promoting green technology, and universities whose coursework focuses on renewable energy.

These lessons are designed to be interchangeable based on your actual audience. Lessons for Grades 9-12 can easily be used for college students or adults. Likewise, the college or adult lessons may apply to students in grades 9-12, depending on your specific focus area and audience. These courses are designed for a nominal class size of 20 participants. However, the courses will work for as few as six to more than 30 students with appropriate adjustments in the overall running times.

Lessons for which classroom instruction is normal (Grades 9-12) are based on traditional classroom lecture combined with activities, demonstrations, discussions, and worksheets. Lessons for college students incorporate activities that will not be achieved in one session. These lessons require coordinating and conducting research projects, along with taking further action on the outcomes. Adult lessons take into account the different approach to learning that adults are comfortable with after having lived in the real world. These lessons address critical thinking and consensus building activities, with specific attention being given to the difference between facts and feelings in framing discussions regarding renewable energy.

All of these lessons are designed for the overall population. Some students will be much more knowledgeable about

the current state of renewable energy, others may be much less familiar with terms or concepts. You will need to adjust your presentation accordingly. For example, students who live in rural farm states will have much different perceptions of transportation than those who live in large cities and are familiar with public transportation. Statistics used in these lessons are changing constantly due to countless variables and will have changed each and every time you hold any of these courses. Consider that the annual percentage of U.S. electricity derived from coal is trending downward. Scientists continually are revising the level of carbon dioxide in the atmosphere and its sources due to the use newer equipment and more sophisticated computer programs, not to mention ongoing revisions to the input values and assumptions. Comparative energy costs are in flux as hydraulic fracturing to release new sources of crude oil and natural gas becomes more widespread. More wind turbines are going on line, yet changes in federal incentive policies can quickly affect the overall growth.

Finally, not everyone supports renewable energy, green technology or the scientific findings that support climate change. Regardless of how people feel about this topic, the fact is individuals, companies, and governments increasingly are using green technology. Due to public policies and consumer demand, renewable fuels are providing more of the heat, electricity, and fuel that contribute to America's high standard of living. Your students may argue fine points of facts and figures, or apply their own interpretations or biases to the topics and activities in these lessons. Yet no one can argue that fossil fuels are limited in their recoverable supply and that using fossil fuels have environmental and economic costs that often have not immediately obvious.

You will find additional PDF documents at the National Farmers Union Website to support your research and preparation for conducting any of these courses. These documents include a list of resources, the history of energy, and a glossary of terms.