

## THE RENEWABLE ENERGY FESTIVAL



### Introduction For Teachers:

The **Renewable Energy Festival thematic unit** is a steppingstone to the next unit in the series of three on this website, *Designing a Futuristic and Realistic Community/Village*. **The Renewable Energy Festival** can be small (one classroom) or large (the school and the community or several schools and communities). Depending on the teacher's objective, the festival can be a year long, a semester, or a month long project. This unit is flexible and designed to be modified. Ideally, with the teacher as a guide or mentor, high school students will be given the responsibility to organize and manage the festival (See Student Activity Page 1.1).

### 1. Overview:

The objective of this unit is to inspire a school or community wide event, a **Renewable Energy Festival** with a specific theme: Celebrating the Future of Sustainable Energy in Our Community! With modification or expansion, the lessons can be made suitable for all grade levels. This unit follows *The Importance of Clean Energy in Our Villages and Communities Thematic Unit* which can be found on this website. While it is not required to complete the lessons in the above-mentioned unit, the information and resources may be helpful and provide a foundation for The Renewable Energy Festival. Students need to understand the theme well enough to make their exhibits, to prepare their speeches and to express the theme in art, music, math, and poetry.

**Special Note:** The Student Activity Pages have been formatted in the font GARAMOND. Suvir Mirchandani, a middle school student, 14 yr. old discovered GARAMOND uses far less ink than more traditional and popular fonts: (<http://www.cnn.com/2014/03/27/living/student-money-saving-typeface-garamond-schools/>).

“Interested in applying computer science to **promote environmental sustainability**, Suvir decided he was going to figure out if there was a better way to minimize the constant flurry of paper and ink.”

Our use of this font keeps in the spirit of this unit, while paying tribute to students who are inspired to follow their own line of thinking and make valuable contributions to the world they live in.

## 2. Roles of Students and Teacher:

This student-centered unit provides teachers with the opportunity to encourage students to do much of the research themselves. Students will develop their own opinions about what might work and what might not in their communities.

Students' thoughtful opinions will be the foundations for their festival involvement, demonstrations, and projects.

Teachers can let the students' creative ideas about renewable energy in their community take the lead. The teacher's role is to guide students with suggestions that point them into possible directions to take their work. The more invested the students become in their own work, the more potential they can demonstrate. Teachers can then document and evaluate sincere progress of students based on their own efforts.

As students reveal their understanding through activities and projects in the festival, they will acquire more inspiration from the community's response. Experiencing their own successes motivates the students. They can surprise everyone with their new potential! Teachers can help to extend student motivation out to the community at large by inspiring further action towards sustainability and discovering local renewable energy resources.

## 3. Lesson Plans in This Unit:

**Grades 6-12:** There are Student Activity Pages including texts that follow each lesson. Each student can keep these chronologically ordered in a 3-ring binder, to be returned to throughout the unit. As their work accumulates, they will see how their thinking changes. As their thinking changes, they will be able to choose a project to stick with and exhibit for the Renewable Energy Fair. At the end of the unit, each student will have produced a book or portfolio that is a combined Journal and Guide!

**Grades K-5:** The teacher can use the Student Activity Pages as preparation to help structure and teach the younger grades, selecting material that is both useful and appropriate.

## 4. The Emphasis is on Festival:

The festival is a celebration and a showcase of student made models, exhibits, and projects *that could lead the community toward sustainability in the future*. Suggested festival activities include:

- Exhibits of various forms of renewable energy
- Student keynote address
- Guest speakers
- Panel discussions
- Debates
- Entertainment, music, dance
- Art exhibits

- Refreshments, and more.

The festival idea provides the opportunity for the students to connect their heritage and cultural values to **new energy technologies**.

### **5. Energies Classified as Renewable:**

This unit keeps consistent with the *Importance of Clean Energy in Our Villages and Communities* (as it appears on this website) where the following are classified as renewable:

- Biomass
- Hydroelectric
- Geothermal
- Solar
- Ocean Tides, Waves, and River Currents
- Wind

This unit also includes an introduction to Hydrogen and Fuel Cells for high school students.

### **6. Energies Classified as Non-Renewable:**

- Coal
- Natural Gas
- Petroleum
- Nuclear Fission

### **7. Teacher Resources and Background Energy Content:**

Please visit: <http://www1.eere.energy.gov/education/pdfs/lesson297.pdf>

Scan the first few pages. For a quick, specific review helpful in teaching this unit, see:

- How is electricity made? Pg.9
- Why is it important not to waste energy (Law of Conservation of Energy)? Pgs. 9-10
- How can we save energy? Pg.10

For a good overview on Renewable Energy, please visit: <http://www.nrel.gov/>