**RENEWABLE ENERGY SOURCES PROJECT**

**Name: Date:**

Your group will be presenting on a current alternative renewable energy source. You will become the teachers and experts on these topics and will be responsible for making sure your fellow classmates know and understand the topic. (There’s a quiz at the end so you have to make sure everyone completely understands your topic!) We will focus on the following topics:

* Biomass
* Wind Energy
* Hydroelectric Energy
* Geothermal Energy
* Hydrogen
* Solar Power

**Here is what you must create for your project:**

* **At least a 5 minute presentation (Google slide or similar format)**
  + You may include a video to assist you but it can’t be longer than 2 minutes
  + I have included an overview of the topics you MUST include in your presentation but you can definitely include more information.
  + You should also include current events, news stories or magazine articles that are relevant to your topic. Be sure to include graphs, diagrams, pictures and drawings of your alternative energy.
  + Share with me before presentation
* **A set of guided notes for your presentation (like the ones I give you in class)**
  + You should print one out for each person in the class
* **5 quiz questions**
  + Your questions can be multiple choice or short answer
  + Must include a key!
  + Share with me through google

Topic Outlines:

Biomass

* What does “Biomass” mean? How is Biomass being used today as a substitute for gasoline to run cars, trucks or buses? (Use the words: Potential Energy and Kinetic Energy).
* What are some different ways Biomass is being used to heat homes today?

* How is Biomass being used today to create electricity?
* Name and explain 3 advantages/disadvantages in using Biomass compared to using Fossil Fuels or other alternative energies (specifically include environmental issues that can happen).
* What can be done to encourage the use of Biomass Energy in the future so we don’t use up the world’s fossil fuel supply?

Geothermal

* Where does geothermal energy come from?
* How can geothermal energy be used to create electricity?
* How can geothermal energy be used directly to heat homes and factories?
* What is a “heat pump”?
* Name and explain 3 advantages and disadvantages in using geothermal energy compared to using fossil fuels and other alternative energies. (Specifically include environmental issues that can happen).
* What are some locations in the U.S. and around the world that use geothermal energy? What is being done to encourage the use of geothermal energy for our country and around the world in the future?

Hydroelectric

* What is a good definition of hydroelectric power?
* How does “moving water” get turned into electrical energy? Explain each part of the dam from the moving water to production of electricity.
* Name and explain 3 advantages/disadvantages of getting electricity from hydroelectric power and how it compares to using fossil fuels or alternative energies. (specifically include environmental issues that can happen
* Where are some good locations in the U.S. and around the world that use hydroelectric power to create electricity?
* Can anything else be done to use the power of moving water to create electricity? (Tidal Power)

Hydrogen

* What does using hydrogen as a fuel source mean? How is it combined to create an energy source?
* Explain where hydrogen is found. What are sources of hydrogen found on Earth?
* Name and explain 3 advantages/disadvantages of using hydrogen as a fuel source and how it compares to using fossil fuels and other alternative energies (specifically include environmental issues that can happen.
* What industries around the world use hydrogen as a fuel source today?
* What is a fuel cell? How does it work? (include diagram)
* How is science using algae to produce a new source of hydrogen?

Solar Power

* What is a good definition of solar energy?
* How does a solar cell make electricity? What is it made of? What does “active” and “passive” solar mean and how do they work?
* Name and explain 3 advantages/disadvantages about solar energy to heat or produce electricity compared to using fossil fuels or other alternatives (specifically include environmental issues that can happen.
* Where are some solar cells, active, and passive solar energy being used in the U.S.? What is being done to encourage the use of solar energy in our country and around the world?

Wind Energy

* Where does wind energy come from? What is a good definition of wind energy?
* How does wind energy get turned into electrical energy? Name 2-3 different designs of wind turbines and explain how they are different and how they are alike
* Name and explain 3 advantages/disadvantages of getting electricity from wind energy compared to using fossil fuels or other alternative energies (specifically include environmental issues that can happen.
* Where are some locations in the U.S. and around the world that use wind energy to create electricity? What is being done to encourage the use of wind turbines to create more electricity for our country in the future?

**ALTERNATIVE ENERGY PROJECT RUBRIC**

Names: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Topic: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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|  | **Advanced** | **Proficient** | **Unsatisfactory** |
| **Presentation** | -Includes ALL assigned topics indicated by handout  - Topics are covered in detail and explained thoroughly enough so that all students can understand  - Presentation demonstrates a thorough knowledge of topics  - A picture/diagram of the energy source and how it works is included  - **Guided notes are included (5 pts)**  ***20 points possible*** | Includes most of the elements from advanced level, but missing some thoroughness or topics | Includes some of the elements from advanced level, but missing most topics or topics covered very superficially |
| **Research and Data** | - Current research/article or case study is included  - How energy is used with data is presented  ***5 points possible*** | Includes most of the elements from advanced level, but missing some thoroughness or diagrams | Includes some of the elements from advanced level, but missing most or all diagrams, data, or examples |
| **Advantages/**  **Disadvantages** | -Advantages and disadvantages are presented thoroughly and discussed fully  ***5 points possible*** | Includes most of the elements from advanced level, but either misses some points of information or does not cover topics thoroughly | Includes some of the elements from advanced level, but is missing key topics and is not thorough |
| **Future Possibilities** | - Future possibilities of the energy source are discussed  - Marketing possibilities discussed  - Governmental requirements and regulations discussed  ***5 points possible*** | Includes most of the elements from advanced level, but either misses some points of information or does not cover topics thoroughly | Includes most of the elements from advanced level, but either misses some points of information or does not cover topics thoroughly |
| **Quiz Questions** | ***-*** Quiz questions cover topic thoroughly  - Quiz questions accurately and thoroughly assessed student understanding of material  - Includes key  ***5 points possible*** | Includes most of the elements from advanced level but either does not thoroughly assess student understanding or cover all topics | Includes most of the elements from advanced level but does not thoroughly assess student understanding or cover all topics |
| **Creativity/ Cohesion** | -Presentation and other materials are creative and interesting  - All materials are cohesive and fit well together  ***5 points possible*** | Some elements are creative or there is some disconnect between elements.  *3 points possible* | Very little creativity used and elements are very separate from one another  *1 point possible* |
| **Group Score** | Group member actively contributes to all elements of the project and turns in all assigned components  ***5 points possible*** |  |  |
| **TOTAL** |  |  | **/50** |