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| Unit Title: | Introduction to Renewables |  | Grade: | 8-12 |

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| Learning Styles: | All students have different learning styles, and we are using a mixture, based on seven recognized learning styles: Visual, Aural, Verbal, Physical, Logical, Social and Solitary. We believe this module incorporates different learning styles and that vicarious learning on the part of a student is critical for growth. Learning styles in this module include:  •Visual: Pictures and images used  •Verbal: Words to help convey meaning  •Social: Students should discuss |
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| Unit Description: | This unit provides a general overview and a foundation for understanding Renewable Energies. The unit is broken down into three separate areas: Basic Heat Transfer, Basic Electricity, and Introduction to Renewable concepts. |
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| Instructional Objectives: | The curriculum is designed to achieve the following objectives for each Individual area.  Basic Heat Transfer:   1. Energy and Conservation 2. Energy: Potential and Kinetic 3. First and Second Law of Thermodynamics 4. Temperature, Latent and Sensible heat 5. Conduction, Convection, Radiation   Basic Electricity:   1. Basic atom structure 2. Key terms and definitions 3. Basic circuit analysis and recognition of differences 4. Basic notations and conversions   Basic Renewable Energy   1. Renewables vs. Non-Renewables 2. Direct and Indirect Uses 3. Understand basic terminology for renewable energy 4. Gain a core-level knowledge of different forms of renewable energy 5. Generates interest |
| Estimated Time: | 8-12 hours depending on students |
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| Teaching Strategies: | Lecture: Present materials in a structured manner.  Active Learning: Promote active learning and critical thinking in discussion. Seek from students in discussion real-life applicability for the use of renewable energy resources and the concepts provided. |
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| Assessments: | At the end of each power point have the students answer questions based on the power point. At the end of the module create an assessment combining the three power points which the student can demonstrate basic knowledge of the subject. The assessment should be based upon discussions and power points. |
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| Instructional Outcomes: | The outcomes for this unit include:  1. The student will recognize basic modes of heat transfer.  2. The student will define laws of thermodynamics.  3. The student will define temperature.  4. The student will define key electrical terms.  5. The student will discuss the relationship between key terms in electricity.  6. The student will identify different electrical circuits.  7. The student will define a renewable source.  8. The student will explain direct and indirect uses of solar.  9. The student will discuss the different renewables presented.  10. The student will discuss applications of renewables. |

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