

Introduction to Alternative Energy Sources: Unit Level Learning Objectives

Unit One: Conventional Energy resources and Economic Impact

At the completion of this unit the student will be able to:

1. Explain the current Energy demand and it's environmental and economic impact
2. Describe typical residential energy load requirements
3. Calculate/estimate their own Energy consumption and Expense

Unit Two: Passive Solar Design

At the completion of this unit the student will be able to:

1. Describe the following principles of Passive Solar Design (PM-D3)
 - a. Site Location/Orientation
 - b. Design
 - c. Insulation
 - d. Thermal Mass/Radiant Heat
 - e. Glazing Considerations.
 - f. Shading/cooling

Unit Three: Solar Energy Principles

At the completion of this unit the student will be able to:

1. Explain the principles of Photovoltaic Energy (PM-D3)
2. List the benefits and drawbacks of Photovoltaic Energy
3. List basic equipment of residential Photovoltaic Energy systems (PM-D3)
4. Describe installation considerations for new and retrofit homes (PM-D3)
5. Explain Puget Power's Energy Buy-back program
6. Describe principles of the two types solar hot water systems (PM-D3)

Unit Four: Wind Energy Principles

At the completion of this unit the student will be able to:

1. Explain basic principles of Wind generate energy (PM-D3)
2. List pros and cons of a Residential Wind generating system.
3. Describe installation considerations for wind generating system

Unit Five: Geothermal Principles and Systems

At the completion of this unit the student will be able to:

1. Describe the principles of a Geo Thermal heating and cooling system (PM-D3)
2. Compare cost of a Geo Thermal system to a High efficiency heat pump system

Unit Six: Net Zero Home Principles and Practice

At the completion of this unit the student will be able to:

1. Define what Net Zero Home means
2. List various systems and components of a Net Zero Home
3. Find two examples of actual Net Zero Homes within 50 miles of class and list systems used to save/generate energy

Unit Seven: Career Opportunities in Residential Alternative Energy

At the completion of this unit the student will be able to:

1. List at least 3 career opportunities in Residential Alternative energy and training required to be employed. (PM-D12)