

# Sustainable Energy: an unbiased Review of Options

Presented by Brian Sowerby



Learn how to teach your students good and interesting lessons about sustainable energy and climate change from a balanced and unbiased perspective.

Format: Face to Face

Audience: Secondary Teachers of Science and Geography

## Description

Hi there. My name is Brian Sowerby, a former CSIRO Chief Research Scientist. I have created this course to provide you with teaching tools that can be used to engage students in up-to-date learning on how to provide energy in the future while minimising environmental damage. The course provides a balanced and unbiased overview of the various options. The focus of the course is on providing information on the various technologies and on conducting a realistic evaluation of these technologies. The course has strong links to various parts of the high school syllabus, particularly in Science, Earth and Environmental Science, Physics and Geography. The course firstly looks at motivations for changing our energy production and use followed by an assessment of our energy demands now and in the future. To meet these demands renewable technologies are evaluated as well as coal or gas with carbon sequestration, nuclear and geothermal. A wide range of teaching resources is provided.

## **Additional notes about this format**



## Occurrences

There are no occurrences of this format in Australia (ACT) at this time.

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## Sessions

### Motivations for Change.

**30 minutes**

In the first session you will learn about motivations for changing our energy production and use. These motivations include finite resources, energy security and climate change. World energy reserves will be reviewed and climate data and climate models will be discussed.

## **Energy Consumption**

**45 minutes**

In this session you will be introduced to a methodology that can be used to express our energy consumption in simple units that are easy to understand and compare. Our energy consumption includes transport (cars, planes, freight, etc); heating and cooling; lighting; information systems and other gadgets; food and manufacturing.

## **Renewable Energy Technologies**

**1 hour and 30 minutes**

In this session you will learn about renewable technologies including wind, solar photovoltaic, solar thermal, energy storage, biomass combustion and fuel, hydroelectric, geothermal, wave and tide. Their potential to provide significant energy in the future will be realistically evaluated.

## **Coal, Gas and Nuclear**

**1 hour**

In this session we will examine whether coal or gas with carbon capture and storage is a viable option to meet our future energy demands. As well we will evaluate nuclear as an alternative.

## **Future Energy Plans**

**30 minutes**

In this session we will consider a range of possible energy plans for the future (up to 2050) and evaluate the costs of implementing these plans.

## **Resources for Teachers**

**45 minutes**

In the final session you will be provided with a range of teaching resources that are available for use in the classroom including a full set of PowerPoint slides from this course and a range of video and website links. In addition you will be asked to share your ideas on how creating lesson plans on sustainable energy.

## About the team



### **Brian Sowerby**

#### **Creator**

Brian Sowerby recently retired as Chief Research Scientist and Program Manager (Instrumentation and Control) with CSIRO Minerals. He obtained a BSc (Hons 1) from the University of NSW and a PhD in physics from the Australian National University. Following two years post-doctoral work in Canada, Brian has carried out research and development in Australia on the application of on-line analysis techniques in the mineral, energy and security industries. His work led to the commercialisation of a number of on-line analysis instruments and he has received many awards for this work including the prestigious Australia Prize in 1992.



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Please note, by submitting this enrolment form you are confirming that you have been given financial approval by your employer to attend this course. Cancellation advice should be given in writing 7 days before the commencement of this course.

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Product: Sustainable Energy: an unbiased Review of Options

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