

# The resource

## Getting started

### Contents of the Home Energy Project

The Home Energy Project contains everything you need to make this program work in your classroom.

It includes:

- a **teacher's resource** that consists of teacher's background information, activities and assignments, as well as contact details and other useful resources
- a **Home Energy Project CD** containing an electronic version of this booklet, as well as the Origin Energy efficiency website and energy efficiency calculator
- **three posters**, to help generate awareness of the project in your school.

### Teacher's resource

The teacher's resource is divided into three parts, making it easier and more flexible to use.

1. **Calculate\*** – students estimate their current household energy use and how much energy they could save.
2. **Conserve** – students conduct a household energy saving experiment.
3. **Communicate** – students tell their energy saving stories to their school and/or community.

\* Calculate is a complete unit for junior science. Teachers can complete this section and be confident that students have achieved an appropriate level of curriculum objectives. Alternatively, greater results can be achieved by then completing one or both of the Conserve and Communicate sections.

### Activities and assignments

Each of the three parts has a number of activities and assignments. You will find everything you need listed at the top of the activity or assignment sheet. Schools are welcome to duplicate the sheets for their own use.

Activity sheets	Assignment sheets
Activities are designed to be completed within one lesson (approximately 50 minutes).	Assignment are to be completed outside of class.

### Experimental laboratory work

Prior to or during the use of the resource in your classroom, it may be useful for students to carry out experimental laboratory work to assist their understanding of the concepts of energy. Many school science textbooks will provide simple experiments which demonstrate the transfer of energy such as light, sound, heat or movement.

The following are some specific activities that can be found on the Department of Education and Training Victoria curriculum@work CD, under the Science Key Learning Area, Physical Science strand levels 3–6.

#### Level 3

SCPS0301 Energy and its uses

Learning activity 1: Energy

(useful after completing Activity 1)

Students are introduced to electricity as a form of energy.

Learning activity 2: Simple circuits

(useful before Activity 2)

Students become aware that batteries can provide electricity for a variety of uses.

Learning activity 3: Energy changes

(useful after completing Activity 1)

Students are introduced to the concept that energy can be changed from one form to another.

#### Level 4

SCPS0401 Energy and its uses

Learning activity 1: Energy

(useful after completing Activity 1)

Reviews key concepts about forms of energy and energy transformations.

Learning activity 4: Energy Transformation

(useful before Activity 3)

Students investigate the energy transformations and transfers occurring in household appliances

#### Level 5

SCPS0501 Transmission and reflection of heat, light and sound

Learning activity 8: Heat transfer

(useful after completing Activity 1)

Use the terms 'conduction', 'convection', 'radiation' and 'absorption' to describe heating and cooling effects.

# The resource

## Getting started

### Level 6

SCPS0602 Circuitry: electronic and electromagnetic devices  
Extension activity 9.1: Household appliances  
(useful before Activity 7)

Students familiarise themselves with household electrical appliances and obtain a reading for current, power and voltage.

For further information regarding the curriculum@work CD, visit [www.sofweb.vic.edu.au/catw/](http://www.sofweb.vic.edu.au/catw/) or email [curriculumatwork@edumail.vic.gov.au](mailto:curriculumatwork@edumail.vic.gov.au).

### Calculate

In Calculate, students learn how energy is used in their household. Using the energy efficiency calculator, students can quickly calculate the energy used in every room of their house.

Across five activities and assignments, students estimate the energy savings achieved by making changes such as taking shorter showers or watching a little less TV.

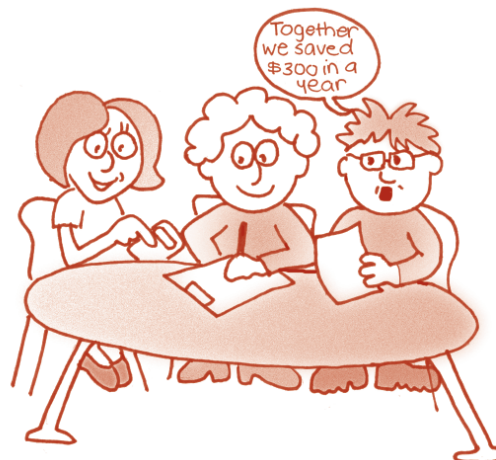
While every household will be different, the energy savings could be up to 25 per cent, saving tonnes of greenhouse gas emissions and tens of dollars in household bills.

<b>Calculate</b>	Students study their household energy use and calculate energy savings that could be achieved.
<b>Activities / Assignments</b>	There are five sections consisting of five activities and five assignments.  <b>Section 1</b> Energy: The global picture  <b>Section 2</b> Energy @ Home: Your total energy bill  <b>Section 3</b> Energy @ Home: How energy is used  <b>Section 4</b> Everyday savings @ Home  <b>Section 5</b> Everybody's energy savings
<b>Class time required</b>	Five class-length activities plus five take-home assignments.

### Conserve

In Conserve, students conduct an energy saving experiment in their household. This is a fun way to put energy saving theory into practice. It's a model science project, with students collecting data about their energy usage over a control week and an experimental week.

By recording their energy saving actions, students will discover how much energy they actually saved.



The activities guide students through the experiment, which will involve members of their household in energy saving actions and record keeping. Finally, students combine the class results to show how much they saved as a group.

<b>Conserve</b>	Students conduct an energy saving experiment in their house.
<b>Activities / Assignments</b>	There are four sections consisting of eight activities and six assignments.  <b>Section 6</b> Getting ready  <b>Section 7</b> Record normal energy use  <b>Section 8</b> Save and record energy  <b>Section 9</b> Analysing results
<b>Class time required</b>	Eight class-length activities plus six take-home assignments.

# The resource

## Getting started

### Communicate

In Communicate, students tell their energy saving stories to the community. They can do this after completing Calculate by telling the story about how much *could* be saved. Alternatively, they can complete Calculate and Conserve and tell the story of how much they *actually* saved. This is an opportunity for young people to be active in their community while learning some useful communication skills, such as report writing and speech making or developing multimedia presentations.



We hope that schools will embrace Communicate and spread their energy saving ideas far and wide in their community. To encourage a special effort we have funded a participation awards scheme to reward schools that show outstanding creativity and enthusiasm in their communication (for further information, see page 12).

<b>Communicate</b>	Students tell their energy saving story to the community.
<b>Activity</b>	<p>There is one section consisting of one activity.</p> <p><b>Section 10</b> Planning your presentation</p> <p>Students develop ways of communicating their energy saving ideas to the community.</p> <p>This could involve posters or presentations, videos or theatre – the only limit is the students’ imagination and enthusiasm.</p>
<b>Class time required</b>	<p>A minimum of two 50 minute lessons.</p> <p>Some schools will adopt this as a community project.</p>

### Working solo

Not every student may be able to involve his or her household in this project, but that doesn’t need to be a barrier to participation.

Students can team up with a friend and share their results. Alternatively, the activities can be completed by an individual student recording their own energy usage.

### Turning students into scientists

As a scientist, collecting data and analysing the results are important skills to learn. Some of the activities and assignments presented in this resource require students to utilise an **energy journal** to help them gain experience in and appreciate the importance of collecting evidence. This journal is an A4 notebook dedicated to the project and provided by either the school or the student. The journal will enable students to record details of activities, additional observations or stories that may not be included in worksheets completed as part of this resource. It will be useful for providing inspiration for the Communicate activities.

It’s important to remind students to paste or stick all loose sheets of paper, including the completed activities and assignments, into their energy journal. This will ensure that information won’t get lost and that it will be available at all times.

### Sample energy team data

Some students may not be able to obtain the energy usage data required in the activities and assignments in Calculate and Conserve. As a result we have included sample data which can be utilised (see Support materials, page 87).

The sample provides a description of the members of an energy team and data which outlines the combined household use of appliances in various rooms of their home.

It also provides a list of energy saving ideas the energy team could implement. However, students can analyse the data and include additional ideas, or produce their own separate list.