

# Teacher's background information

## Conserve

**Conserve** shows students how to conduct an energy saving experiment in their home. During a control week students record normal household energy usage. Then, using their energy saving ideas, they record energy use in an experimental week. The data collected allow students to calculate precisely the impact of their energy saving ideas.

The energy efficiency calculator helps students to measure the savings in terms of dollars and greenhouse gases. The savings of each household are then combined to show the total savings of the class.

In Conserve, students will:

- use information and skills learnt in Calculate (especially the energy saving ideas developed in Assignment 4)

- practise record-keeping skills
- develop energy saving ideas
- conduct an experiment and undertake detailed analysis
- combine class results to show how much students have saved as a group.

### Activities and assignments

Conserve consists of eight class-length activities and six take-home assignments, all of which have strong connections to the curriculum framework (see pages 6–11). Each activity and assignment is numbered to correspond to the relevant section. For example, Assignment 6A can be found in Section 6.

School week	Section	Activity	Assignment	Objective
Week 1, Get ready for the experiment	Section 6, Getting ready	Activity 6A, <i>Savings in your home</i>	Assignment 6A, <i>Discuss energy saving ideas</i>	To explain Conserve and develop energy saving ideas.
		Activity 6B, <i>Principles of collecting data</i>	Assignment 6B, <i>Set up your data collection</i>	Students learn about collecting data and set up data collection devices at home.
Week 2, Control week	Section 7, Record normal energy use	Activity 7A, <i>Progress report of the control week</i>	Assignment 7A, <i>Collate control week data</i>	Students start the control week and review their progress.
		Activity 7B, <i>Preparing your team for the experimental week</i>	Assignment 7B, <i>Remind your energy team about the energy saving ideas</i>	Students prepare for the experimental week.
Week 3, Experimental week	Section 8, Save and record energy	Activity 8A, <i>Control week results</i>		Students start the experimental week and analyse their control week results.
		Activity 8B, <i>Progress report of the experimental week</i>	Assignment 8B, <i>Collate experimental week data</i>	Students report on their experimental week progress.
Week 4, Analyse the savings	Section 9, Analysing results	Activity 9A, <i>Experimental week results</i>		Students analyse the experimental week results.
		Assignment 9B, <i>Pooling class results</i>	Assignment 9B, <i>Discussions about class findings</i>	Collate individual data to calculate the overall savings for the class and present findings to energy teams.

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Some activities and assignments may require additional information, which are located in the 'Support materials' section (see page 67 onwards). These will be marked under the heading 'Students need' in the activity or assignment.

### Introducing the experiment

It is recommended that, when introducing the experiment, the following points are discussed with students.

- The importance of accurately recording energy use. Suggest that students use timers, such as clocks and watches, especially for activities such as shower time, as estimations are frequently inaccurate.
- The need to accurately record additional factors, such as temperature fluctuations and unusual events or occurrences. Ask students to think about less obvious activities, for example, in winter people may spend more time inside, in summer they might entertain more, etc. How would such activities affect the energy used and, consequently, the household bills?
- That appliances used will change depending on the season, for example, in winter households may use more energy for heating, while in the summer more energy may be used for cooling. Students who are interested in seasonal variations could explore this idea further by entering winter data to get an annual figure and then enter summer data to see if the results vary.
- Their experiences during the experiment, such as the problems they encountered, amusing stories, etc. One suggestion is to incorporate a reporting session that could be called 'Highlights from my energy journal', in which students share their experiences.

### Flexibility

It's suggested that the control and experimental weeks are conducted over two consecutive weeks. However, depending on the availability of time, you may want to extend this period.

### The energy efficiency calculator

Students will require access to computers to utilise the energy efficiency calculator. You may need to plan ahead for this.

Remind students that the energy efficiency calculator is a guide only. Although a useful tool, it does have limitations.

If students can't access a computer there is an energy summary template they can use (see Support materials, page 89). Students should complete their individual or combined energy team use on the template and, when computers are available, transfer the information to calculate the costs and CO<sub>2</sub> emissions.

Students could also take the template home to discuss the energy team's combined use.

### Energy journal

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.

### Conserve certificate

The Home Energy Project CD contains a certificate of achievement that can be downloaded. It can be presented to students at a school assembly or perhaps at an awards presentation after the completion of Activity 9B, *Pooling class results*.

### Beyond Conserve

Encourage students to think of ways they could communicate their results to others. During the experiment they may wish to take photographs, make video recordings, tape interviews or write amusing anecdotes or stories about what they have experienced during the process.

Students' results from the experiment will form the basis of their communication presentations. This is discussed in greater detail in the Communicate section.