COMMUNITY ENVIRONMENT PARK

ENERGY

Energy and You Program

(GRADES 3-6)

The following activities are offered in the CERES Energy and You Program. This program explores energy types, generation, conservation and associated issues. Content and presentation are adjusted according to age, ability and language skills. Each activity lasts approximately 50 minutes.

4 Session Program	3 Session Program	2 Session Program
Choose 4 activities 10.00 - 2.30pm	**Choose 3 activities** 10.30 - 2.00pm	**Choose 2 activities** 10.00-12.15pm or 12.30-2.45pm

ENERGY DISCOVERY (P-2)

- Designed to introduce, through discovery and play, the basics concepts of energy and what it is.
- To see, hear, touch, feel, test and explore energy forms and transformations.
- Introduce the basic relationship with energy in our everyday lives.
- Feed the chickens to raise the idea of how energy transfers through a living system.

ENERGY FLOWS (P-6)

- Feed the CERES Free-Range Chickens and consider how animals use energy.
- Play the Energy Flow game and enact what happens to the energy from the sun as it is passed along the Food Chain.
- Use 'the game' to raise & discuss issues of: food miles, growing our own food & composting/ digestion of food wastes, impacts of meat consumption, energy 'harvesting'.
- *Visit the updated Methane Digester and learn how we can recover energy from organic waste. (NB-* On request/ if time permits)

FOSSIL FUELS

- Visit the Energy Education Centre to discover how electricity is generated. Handle samples of coal and see oil and natural gas.
- Operate a model coal-fired power station and learn about energy transformations. Have a go at operating human-powered generators: ride a bike to run a television, kettle and a hair dryer.
- Investigate fossil fuel formation and discuss the problems associated with their overuse and propose viable, practical and personal solutions.

RENEWABLE ENERGY

- Participate in hands-on renewable energy activities in the Energy Park. Depending on the weather, investigate a range of photovoltaic panels, solar powered and 'multi-powered' appliances, solar thermal collectors (hot water and oven), wind power, nuclear energy and a new micro-hydro model.
- Learn about the CERES grid-interactive photovoltaic & wind power system that supplies 'zero emission' electricity to CERES and the Melbourne electricity grid.
- Introduce the concepts of how renewable energy has broad-scale potential to power 'you & society'.

Bookings - go to www.ceres.org.au and follow the step-by-step instructions
Questions - contact us via phone 9389 0144 or email: education@ceres.org.au

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ENERGY EFFICIENT HOUSING

- Explore the EcoHouse: designed as a fully functioning example of energy-efficient housing.
- Participate in a variety of hands-on activities such as appliance power & 'standby' power use, double glazing, compact fluorescent, 'eco' halogen and LED lighting, downlights, water efficient shower heads, low energy cooling, draught proofing, insulation and the embodied energy of food.
- Learn about design features of the EcoHouse such as passive solar design, solar water heating, the grid-interactive photovoltaic system and the Zero Emissions, electric vehicle when available.

CARBON AND CLIMATE

- Discuss and draw the Carbon Cycle and explore its link to how solar radiation affects the earth.
- Play the Sunbeam Game to find out how CO_2 in the atmosphere can influence global temperature.
- Test for CO_2 and discuss the impacts of human activities on atmospheric CO_2 levels and climate.
- Consider the types of human impacts and the personal changes we can make to reduce these.
- Do a 'black balloon' style test on a fossil fuelled vehicle's exhaust emissions and another CO_2 test.

FUTURE TRAVEL (5-6 only)

- Investigate and participate in non-fossil fuelled alternatives to car travel for short journeys.
- Consider the health, environmental and practical issues of our transport system. How do these factors affect our transport choices?
- Discuss and observe the 'zero emission' CERES electric car and electric bikes.
- Do a 'black balloon' style test on car exhaust emissions (if not tested in another activity).

AUSTRALIA 2030 (5 - 6 only. Australia 2050: fully redesigned & updated coming soon!)

- Make important decisions as individuals based on the lifestyle and population we want. The survey results lead to one of the twelve future social and environmental scenarios for the year 2030.
- How do your choices contribute to global warming and climate change?
- Explore which choices will have the greatest environmental and social impacts and how, considering these, we can make a real difference.

SUSTAINABLE BUILDING DESIGN (5 - 6 only)

- Investigate the principles of Environmentally Sustainable Building Design.
- Assess the recently built Van Raay Centre at CERES with a variety of activities designed to test the effectiveness, comfort and environmental performance of the building.
- Do a group drawing to re-create the building's design and highlight the principles that apply to any building, anywhere in the world.
- Can the building be improved?
- Observe other buildings to consider the sustainability of their design. Begin to recognise the (in)appropriateness of design of other buildings where we live, work, play and visit.

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ECOLOGICAL FOOTPRINTS (5 – 6 only)

- Based on your current lifestyle, discover how much air, land and water (our biosphere) you use in your daily life by doing your very own Ecological Footprint.
- Consider your demands on the planet for food, transport, shelter, goods and services and absorption of wastes.
- How does Australia's average ecological footprint compare with other nations? What can each of us do to reduce it?

FUTURE SPARK- HUMAN POWERED CLASSROOM (5-6 only)

- Explore energy concepts of power, Watts, joules etc and how these relate to appliance energy use.
- Everybody rides the human powered bikes that generate 'grid-feed' electricity while monitoring individual power outputs and total group energy production.
- Can the group produce enough electricity to run common appliances like lights, kettle, music and run a microwave oven long enough to cook some popcorn for a re-energising snack?
- Compare the human powered energy output with that of a fossil fuelled vehicle. How far could you ride with the equivalent energy that a car uses to drive you to school???