



CLIMATE CHANGE PROGRAM

(YEARS 7-10)

The following activities are offered in the CERES Climate Change Program. This program explores energy generation, conservation and associated issues. Content and presentation are adjusted according to age, ability and language skills with each activity lasting approximately 50 minutes.

Full Day program	3/4 Day program	Half Day program
Choose FOUR activities 10.00 - 2.30pm	Choose THREE activities 10.30 - 2.00pm	Choose TWO activities 10.00-12.15pm or 12.30-2.45pm

FOSSIL FUELS

- Visit the Energy Education Centre and discover how electricity is made. Handle samples of coal, operate a model coal-fired power station and learn about energy transfers and transformations. Have a go at operating human-powered generators, ride a bike to run a television and a hair dryer.
- Investigate fossil fuel formation, problems and challenges associated with its overuse and explore 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 street lights, solar hot water, multi-powered appliances, solar thermal collectors, wind power, nuclear energy and a micro-hydro model.
- Learn about the CERES grid-interactive renewable energy system that supplies 'zero emissions' electricity to CERES and the Melbourne electricity grid.
- Consider & discuss the challenge and potential of implementing broad scale renewable technologies.

ENERGY EFFICIENT HOUSING

- Visit the EcoHouse, a fully functional example of energy-efficient housing design and features.
- Participate in a variety of hands-on activities focusing on appliance power & 'stand-by' power use, double glazing, compact fluorescent and LED lighting, downlights, insulation, water efficient shower heads, draught proofing and the embodied energy of materials and food.
- Learn about features of the EcoHouse such as passive solar design, solar water heating, the grid-interactive photovoltaic system and the CERES Zero Emissions, electric vehicle when available.

AUSTRALIA 2030 TRAIL

- 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 decisions 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.



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ECOLOGICAL FOOTPRINTS

- Is it possible to balance the 8 sectors of the economy using nature as a foundation? Discover how precariously the Global Economy perches on the environment.
- Measure sustainability by calculating your ecological footprint. Consider your demands on the planet for food, transport, shelter, goods and services and absorption of wastes we produce.
- How does Australia's average ecological footprint compare with other nations? What can each of us do to reduce it?

SUSTAINABLE BUILDING DESIGN

- 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 assess the (un)suitability of design of other buildings where we live, work, play and visit.

FUTURE TRAVEL (This is a new 'kick the tyres & pop the hood' look at EV's available at Ceres)

- Investigate Electric Vehicles (EV's), cars and bikes, as future transport options available now.
- Learn about the technical reality of EV's, pro's and con's, history, issues, emissions, myths, batteries
- Visit Australia's only dedicated EV Solar Charging Station to highlight Zero Emissions transport.
- Teachers/ adult assistants may get to conduct a supervised test ride or drive when appropriate
- Do 'black balloon' style testing on a fossil fuelled vehicle's exhaust emissions (if not otherwise done).

CO₂ MONITORING (7 - 8 only)

- Test how CO₂ concentrations vary in the atmosphere. Use a CO₂ meter to measure CO₂ levels in air samples and compare the findings with global trends.
- Explore our personal ability to reduce greenhouse gas emissions.
- Introduce the potentials and issues associated with Carbon Offsetting and Sequestration.
- Do 'black balloon' style testing on vehicle exhaust emissions and discuss links to the carbon cycle.

CO₂ MONITORING & MITIGATION (9 - 10 only)

- Test how CO₂ concentrations vary in the atmosphere. Use a CO₂ meter to measure CO₂ levels in air samples and compare the findings with global trends.
- Explore and propose various strategies that can be used to mitigate, stabilise and reduce atmospheric carbon levels such as Energy Efficiency, Transport, Land Clearing, Carbon Taxes or Trading, Agriculture, Fugitive Emissions, Aluminium Refining and Renewable Energy.
- Consider how these compare to a 'business as usual' scenario.
- Do 'black balloon' style testing on vehicle exhaust emissions and discuss links to the carbon cycle.

CERES Excursion Programs ~ Education for Sustainability

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