

2023 SCHOOL'S HANDBOOK PART A

ENERGY BREAKTHROUGH

22-26 NOVEMBER 2023 | MARYBOROUGH, VICTORIA

POWERED BY IMAGINATION

THE PREMIER SCIENCE, TECHNOLOGY, ENGINEERING AND MATHS, ACTIVE LEARNING PROGRAM

A PARTNERSHIP BETWEEN



eb.org.au



VERSION 2023.01

Changes for 2023 are highlighted and underlined in blue throughout this Handbook.

Areas that the Energy Breakthrough organisers wish to emphasise are highlighted in bold type.

Program Partners



Hall of Fame

Norm Rasmussen

Inducted 2014

Bob Osborne OAM

Inducted 2017

Ian Rogerson

Inducted 2018

Bruce Reiffel

Inducted 2018

Judy Parker

Inducted 2018

Tricia Walsh

Inducted 2018

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YouTube www.youtube.com/energybreakthrough

Twitter www.twitter.com/ebmaryborough

VISITOR INFORMATION, TOURISM AND ACCOMMODATION

Central Goldfields Visitor Information Centre

Phone: 1800 356 511

Email: visitorinfo@cgoldshire.vic.gov.au

Website: www.visitmaryborough.com.au

Welcome to the 2023 Energy Breakthrough!

Dear student, teacher, parent or supporter,

We thank you for downloading this Schools Handbook for the 2023 Energy Breakthrough (EB). Please note that this should be ready in conjunction with the specific 'Handbook' for each category.

The 2022 Energy Breakthrough event was more epic than most: 100kmh+ winds, thunderstorms, 77 school campsites relocated (twice), an electrical fire, and a temporary total site evacuation!

We all got through it: thanks to schools like yours who pulled together, were willing to be flexible, commit to a plan and follow the directions of an amazing team of EB volunteers and officials.

Right now, in 2023, some of our Energy Breakthrough schools are facing fresh challenges. There is loss of momentum caused by COVID-19, the impact of a number of key STEM teaching staff changing schools or retiring, and the introduction of new Time In Lieu arrangements.

Nevertheless, we are raring to continue this exciting schools' program that began in 1991 and has been challenging and changing the lives of young people ever since.

Some key points for 2023 that we wish to highlight:

- **We are go:** The program and event will definitely be held in 2023 and EVERY school team that wishes to participate will be able to participate.
- **Entries:** Given we now have capacity in the program, there is no longer a need for Team Managers' to enter *immediately* as entries open.
Instead, we will be holding an application period from 20th March to the end of Term 1 for schools to submit their entries at their own pace. These entries will then be reviewed and schools advised early in Term 2.
Overall, we hope this change of process is a relief to all Team Managers.
- **Schedule may change:** COVID-19 pandemic has had a significant impact on the number of schools participating in our program, as a result the event schedule may change, too. We will know more once we have received and reviewed our 2023 entries.
- **School-based-teams only:** We are no longer accepting entries from non-school-based teams. Only school-based teams or teams from educational institutions will be accepted in 2023.
- **Expanded Video Display & Presentation option:** More schools will be able to submit a Video Display & Presentation prior to the event.
- **Robotics:** Following a successful demonstration event in 2022, our new Robotics event will be a fully-fledged part of the EB program in 2023.
- **Caravan Park:** In a change from previous years, schools wishing to stay in the caravan will need to pay all fees directly to the Caravan Park. This will not be subsidised by the Energy Breakthrough in 2023.
- **Power Reduction Aims:** We are aiming to reduce our school's reliance on mains electricity in their campsites and in pit lane at our event. Our aim is to be free of mains electricity for camping by our November 2025 event.

Support Available

We have an experienced and dedicated team of coordinators ready to support schools like yours on their journey from now until they reach Maryborough in November. This can be done through phone calls, emails, face-to-face visits, 'Test and Tune' Days and workshops.

My own story is that in 1995 I came and watched my older brother participate in the Energy Breakthrough and I was hooked. I helped start the program at my own high school and competed four times myself in Maryborough and at several other events, too.


I believe in the Energy Breakthrough program.

I believe it has the power to change the lives of young people in profound ways.

I hear the stories that tell me this is true.

I believe it can still draw together the school communities of students, teachers, staff and parents around an epic challenge.

Good luck as you embark on your journey for an 'Energy Breakthrough'!

A handwritten signature in black ink, appearing to read 'Nigel Preston', with a stylized flourish at the end.

Nigel Preston

Education Team Leader

Energy Breakthrough

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1. About the Energy Breakthrough



“I drive a Porsche 928. Enjoy it tremendously.

But I can see huge changes coming, with growing awareness of social and environmental responsibilities. We can’t keep on having inefficient cars.

**I don’t believe the world can go on consuming fuel recklessly. Wasting fuel.
Not just because of diminishing reserves but what it is doing to the planet.
Spewing out pollution.**

**Vehicles have to be far more sensible in payload, much lighter,
retain passenger comfort because you do need that, and be much safer.**

It needs another breakthrough ...”

~ Ralph Sarich, Wheels Magazine, February 1991

2. Program Overview

The Energy Breakthrough is a joint initiative of the Country Education Project (CEP) and the Central Goldfields Shire Council (CGSC).

Since 1991, the Energy Breakthrough provides opportunities for students, teachers, parents and local industry to work together to design and construct a vehicle, a machine or innovation in technology that will represent an ‘energy breakthrough’.

The program encourages participants to examine and use the latest technology while considering its impact on the environment and the way people live locally and globally.

The Energy Breakthrough isn’t just a once-a-year event.

School groups work throughout the year to design, build and test vehicles or machines within detailed specifications. It requires a team effort and an across-the-curriculum approach. These groups then bring their vehicles and machines to Maryborough in the Central Goldfields Shire, Victoria for a huge celebration in which they can demonstrate and trial them in action.

3. Program Elements

There are three program elements unique to the Energy Breakthrough:

1/ Display & Presentation

A presentation to a judging panel for all team members to demonstrate their knowledge and understanding of their entry. There are options in some categories to submit a video prior to the event.

2/ Design & Construction

An formal conversation assessing the student's understanding of the vehicle and the concepts involved in its design and construction.

3/ Trials

Thousands of students ranging in age from nine to 19 push, pedal and pilot carts, human powered vehicles and energy efficient vehicles in dynamic tests that can last just a few minutes or as long as 24 hours.

"Each year we get to watch kids surprise us in what they achieve in terms of fitness, self confidence and drive. We quite often see couch-potatoes develop in to active and engaged kids waiting to improve and be involved."

Without fail the Energy Breakthrough changes kids for the better every year."

~ Roger Byron, White Hills PS, Team Manager

4. Aims and Learning Outcomes

The Program aims to ...

- Provide an excellent technology project for students from Prep to VCE level
- Encourage young people to explore solutions to environmental and transport issues
- Provide an opportunity for schools and communities to work and learn together
- Provide an opportunity for women and girls to participate in what has traditionally been a 'male' dominated area of the curriculum
- Be a fun program with real world challenges
- Offer students opportunities to explore and address vehicle design, driving skills and vehicle and passenger safety issues.

The Energy Breakthrough encourages and supports learning that ...

- Is fun and engaging.
- Is student focused.
- Involves hands-on activities
- Requires active problem solving – on 'real life' issues (authentic).
- Is collaborative – builds teamwork skills.
- Creates links with the community.
- Requires students to act on their learning.
- Involves celebration.
- Values and requires different skills, knowledge, (inter-disciplinary).

5. Child Safety

The Energy Breakthrough is committed to the care, safety and wellbeing of all children and young people attending our event. We work in partnership with schools to keep participants safe from harm, including all forms of abuse in our environment, on site and online.

Our practices take into account relevant legislative requirements within the state of Victoria, including the specific requirements of the Victorian Child Safe Standards as set out in Ministerial Order No. 870.

You can view the Central Goldfields Shire Council's Child Safe Policy at:

<https://www.centralgoldfields.vic.gov.au/Council/Policies-Plans-Strategies-and-Documents/Council-Policies>

6. Safety and insurance

All Team Managers must ensure they fulfil all Victorian Education Department requirements (including insurance), as you would for all school excursions.

This includes the completion of Working with Children Checks and, or police checks of ALL attending parents and volunteers, as per the requirements of the Working with Children Act.

Please see: <https://service.vic.gov.au/services/working-with-children>

Excursion staff

Excursion staff must be approved by the principal or school council (as outlined in Excursions – [Planning and Approvals](#)) and may include:

- teachers employed by the Department or school council
- other adults on a volunteer or paid basis such as:
- parents or carers
- education support class officers
- community members
- trainee teachers
- campsite staff
- specialist instructors for excursion activities.

Important: school students cannot be used as excursion staff.

Excursion staff who will provide supervision of students and who are not registered teachers must have a Working with Children Check.

Please see:

<https://www2.education.vic.gov.au/pal/excursions/guidance/approvals>

Please note: While every precaution is taken to make the event as safe as possible (including scrutineering vehicle checks, safety equipment first-aid facilities and on-going safety checks), no responsibility can be taken for teams.

7. Timeline of Key Events

13th March:	Schools' Handbook Released
20th March:	Applications to enter open online at 12noon
Terms 2 – 4:	Schools prepare their entries.
End of Term 2 - June: Entries close.	

Start of Term 4

2nd October:	Forms for Camping, Pit Requests, Student / Rider Details, Arrival Times all OPEN
13th October:	Forms for Camping, Pit Requests and Arrival Times all CLOSED
1st November:	Event Manual Released (Event details and schedules).
21st November:	Forms for Student / Rider details CLOSED
<u>22 – 26 November</u>	<u>Event in Maryborough!</u>
December:	Feedback and Evaluation.

8. Entries

Categories

The Energy Breakthrough has a series of categories designed to cater for different levels of technology application and understanding.

The categories of participation are:

1. Robotics
2. Junkyard Challenge
3. Pushcarts
4. Human Powered Vehicles (HPV)
 - a. Primary
 - b. Secondary
 - c. TRYathlon
5. Energy Efficient Vehicles (EEV)

Classes

Within the five categories, teams are entered into classes based upon the participating students' school year level, gender and school size.

CLASS	YEAR LEVEL	TEAM SIZE	GENDER REQUIREMENTS	SCHOOL SIZE
A	Years 1 - 6	Min 4 – Max 10	At least 50% female.	N/a
A1*	Years 1 - 6	Min 6 – Max 10	At least 50% female.	Schools with an enrolment of 200 or less
A2*	Years 1 - 6	Min 6 – Max 10	At least 50% female.	Schools with an enrolment of more than 200.
B	Years 7 – 10	Min 6 – Max 8	At least 50% female.	N/a
B1	Years 7 - 8	Min 6 – Max 8	At least 50% female.	N/a
B2	Years 7 - 10	Min 6 – Max 8	At least 50% female.	N/a
C	Years 7 - 12	Min 6 – Max 8	At least 50% female.	N/a
All Female	Years 7 - 12	Min 6 – Max 8	Female only	N/a
Open	Up to Year 12	Min 6 – Max 8	No gender requirements.	N/a

* The classification for schools entering the A1 and A2 classes will include the TOTAL school enrolment, not the Primary component of a school. This classification will be made by the organisers using information published on each school's website and the MySchools website.

Categories, Classes and Quotas

CATEGORY	CLASS	CLASS QUOTA	CAT. QUOTA
Robotics	A (Primary) B (Secondary)	20	20
Junkyard Challenge	A (Primary) B (Secondary)	15	15
Pushcarts	A1	30	80
	A2	50	
HPV Primary	HPV A1	20	90
	HPV A2	65	
	New Schools	5	
HPV Secondary	HPV All Female	10	102
	HPV B1	15	
	HPV B2	30	
	HPV C	20	
	HPV Open	22	
	New Schools & Interstate Schools	5	
HPV TRYathlon	TRY A	30	70
	TRY B/C	15	
	TRY All Female	10	
	TRY Open	15	
Energy Efficient Vehicles (EEVs)	Hybrid 1 B/C: Pedal power plus electric	10	30
	Hybrid 1 Open: Pedal power plus electric	10	
	Electric Only	10	

Team composition

- All entries are to be team entries and must consist of current school students.
- The program is for young people enrolled in a school or young people enrolled in a secondary school certificate/program and under 20 years of age as of 31 December.
- [Only school-based teams or teams representing educational institutions will be permitted to enter.](#)

Category caps, changes and waitlists:

- A maximum of three entries per school will be accepted in any category where there is capacity.
- Junkyard Challenge and Robotics events have no 'per school' entry limits.
- Multi-campus schools may apply to organisers for special consideration for additional entries.
- Teams registered in the HPV B or C classes who request a transfer to the HPV Open class will incur a 50-lap penalty in the trial.
- Teams registered in the Tryathlon A or B/C class who request a transfer to the Tryathlon Open class will incur a 15-lap penalty in the endurance trial.
- Only one entry per school will be accepted in the HPV Open and Tryathlon Open classes.
- Schools that have an existing entry in the HPV Open or Tryathlon Open classes will not be able to enter additional teams into this class.
- Schools who won their class overall in the event previous, will be entitled to a guaranteed place for the following year. Team Managers will receive an email to advise of the process. If the team accepts the entry an invoice will be issued. (If the previous overall winner of a class does not want their automatic entry, this WILL NOT pass onto the second placed team.)
- Correspondence regarding the status of entries on a waiting list will be made directly to a Team Manager only.

Entry Process

Entries will only be received through the online EB Team Managers Portal via the Energy Breakthrough website: www.eb.org.au

- New Team Managers are encouraged to sign-up to our online EB Team Managers Portal at any time to create an account.
- Existing Team Managers are encouraged to sign-in again before entries open to ensure they remember their username and password and that their contact details are correct.

Entry Fees

<u>\$50.00</u>	each Robotics entry.
<u>\$50.00</u>	each Junkyard Challenge entry.
<u>\$400.00</u>	each Pushcart entry.
<u>\$700.00</u>	each Human Powered Vehicle (HPV) entry (including TRYathlon).
<u>\$700.00</u>	each Energy Efficient Vehicle (EEV) entry.

Entry Payment Details and Refunds

- All entry fees are GST inclusive.
- Entry fees include access to on-site facilities, activities, entertainment, planning and administrative expenses.
- Entries are initially filled on a first come, first served basis, with an emphasis on all schools that wish to participate having the opportunity to participate.
- Only online entries are accepted.
- Payment must be received with 14 days from date of invoice.
- A team's entry in the event will not be confirmed until payment is received.
- Invoices can be paid by Electronic Funds Transfer (EFT) or Cheque. Details for payment are included on the Invoice.
- Team Managers will be notified by email when a payment has been processed.
- If, after 14 days, payment has not been received, the team's entry will be dropped onto the 'Waiting List'.
- No refunds are provided except for teams who are placed on a Waiting List and are not offered a place in the event.

Entry Open and Closing Dates

Entries are only accepted via our online EB Team Managers Portal (<https://my.eb.org.au/>)

Team Managers are encouraged to register and/or check log on details **BEFORE** the entry opening times.

CATEGORY	APPLICATIONS OPEN	ENTRIES CLOSE
HPV Primary Pushcarts	<u>12noon Monday 20 March</u>	Friday 30 June <u>(Last day Term 2, Victoria)</u>
HPV Secondary EEVs HPV TRYathlon		
Robotics Junkyard Challenge		
	<u>12noon Monday 20 March</u>	<u>Friday 15 September</u> <u>(Last day Term 3, Victoria)</u>

9. Assessment

Overview

The Energy Breakthrough is unique in that all teams must compete across three areas of assessment: Design and Construction, Display and Presentation and Trials.

All sections must be attempted by all teams, and points are awarded in the following sections:

Human Powered Vehicles (HPV) (Primary and Secondary) and Energy Efficient Vehicle (EEV) teams

SECTION	SCORE
Design & Construction	25%
Display and Presentation	25%
Endurance trial	50%
Total	100%

HPV TRYathlon

SECTION	SCORE
Design & Construction	20%
Display and Presentation	20%
Time Trial	15%
Obstacle	15%
Endurance trial	30%
Total	100%

Pushcarts

SECTION	SCORE
Design & Construction	30%
Display and Presentation (Pre-Event)	30%
Endurance trial	15%
Time Trial	15%
Sprint	10%
Total	100%

NOTE: Junkyard Challenge and Robotics complete a Trial activity only.

10. Design and Construction

Purpose

The focus of the Design and Construction is to assess the student's **understanding** of the vehicle and the **concepts** involved in its design and construction.

*Note: A one point improvement in this assessment area can equate to an additional **20 laps** on track in the trial elements, based on historic records.*

Format

At a scheduled time, each team of students will be asked a series of questions by two or three judges.

These questions are framed in an informal 'workshop-style' discussion, where students can point to various aspects of their vehicle to explain the design and construction concepts to the judges.

The students and judges typically stand around the vehicle during this assessment, which typically takes between 20 mins – 25 mins per team.

About the Judges

The judges are all volunteers who are typically:

1. a community representative,
2. a person with an interest in education, technology, and / or engineering, or
3. a past participant of the Energy Breakthrough.

Criteria

As part of the Design and Construction assessment, teams will be scored against the following criteria:

- **Effort and input**
 - This is based on issues such as whether the vehicle bought, made from new, modified from the previous year and to what extent the students were involved in the various aspects of design and construction.
 - It is understood that the levels of student involvement in the technical and practical activities related to the design and construction of an entry will vary with age.
 - Teams can show design drawings and models to demonstrate work undertaken by students.
 - Teams who have simply purchased a recumbent bicycle (complete or in kit form) and carried out basic modifications, will not score as well as teams who have built a vehicle from scratch.
 - Consideration will be given to teams who have 'Inherited' a vehicle from previous teams, but who have improved the design and/or construction in some way.
- **Innovation and Quality**
 - How effective/clever the design concepts are,
 - the materials used,
 - construction methods,
 - types of gears, brakes and steering.
- **Understanding**

- discuss and explain design and construction processes,
- key design concepts,
- the materials,
- components & running set-up.
- **Safety: Design and Understanding**
 - show all rider safety equipment, including each person's gloves, helmets and glasses,
 - discuss the use of restraints,
 - roll bars,
 - rider protection,
 - visibility.
- **Practicality, Stability & On-road Performance**
 - vehicle reliability,
 - handling,
 - lighting.
- **Driver Training and Skills Development**
 - presentation of licences for each team member,
 - skills covered in driver training including driving at night, in the wet, etc.
- **Understanding of Environmental Issues**
 - the relationship between transport and issues including greenhouse, air pollution, electric vehicles, and the importance of renewable energy, etc.
- **Vehicle Weight**
 - Weight is an important factor in efficiency.
 - HPV's and EEV's will be weighed and scored based on their weight compared to other teams.

11. Display and Presentation

Purpose

The purpose of the Display and Presentation is for team members to demonstrate their **knowledge** and **understanding** of their entry and the **story** of their journey throughout the year to the Energy Breakthrough.

This aspect represents 25% of a team's total score in HPV Primary, HPV Secondary and EEV classes. This aspect represents 30% of a team's total score in Pushcarts and 20% in HPV TRYathlon

*Note: A one point improvement in this assessment area can equate to an additional **20 laps** on track in the trial elements, based on historic records.*

Two options for Submission (A and B)

Following two COVID-19 disrupted years, the Energy Breakthrough offered a new option for secondary schools in 2022 through a video presentation submitted prior to the event.

This new option is a chance to **reinforce the educational aspect** of the program by preparing and submitting a Display & Presentation Video Prior to the Event.

The aim of both the video and the in-person presentations will be to showcase and emphasise the school's journey over many months leading up to the Energy Breakthrough.

OPTION A: In-Person At Event

Duration: 20 minutes, plus 5 – 10 minutes of Q&A

- Each team will be required to present for a maximum of 20 minutes to a panel of judges.
- This will be followed by 5 - 10 minutes of questions from the judges.
- [Option A is NOT available to Pushcart teams.](#)

[OPTION B: Video Pre-Event – HPV Secondary, EEV and TRYathlon](#)

[Duration: 10 minutes, plus up to 5 minutes of Q&A](#)

- [Only available to Human Powered Vehicles Secondary, Energy Efficient Vehicle teams, and HPV TRYathlon.](#)
- [Each team Human Powered Vehicles Secondary, Energy Efficient Vehicle teams, and HPV TRYathlon selecting this option will be required to submit a video of a maximum of 10 minutes.](#)
- [This will be followed by impromptu questions asked by teachers with questions set by the Energy Breakthrough team.](#)

[OPTION B: Video Pre-Event - Pushcarts](#)

[Duration: Up to 4 minutes](#)

- [Each Pushcart team will be required to submit a video of a maximum of 4 minutes in length.](#)
- [Please see the Pushcarts Handbook for specific requirements.](#)

Notes:

- Both options still represent the same percentage of the team's total score.
- All teams must complete either OPTION A **OR** OPTION B (not both).
- Schools completing OPTION B will **not** be scheduled to present 'in-person' at the event.
- Junkyard Challenge and Robotics do not complete the Display & Presentation.
- The general information regarding the purpose, criteria and aspects of assessment will remain the same. However, the Video Pre-Event Presentation will be created digitally **throughout the year** and submitted prior to the event.

Specific Information - Option A: In-Person At Event

Space:

Each team is provided an approximately 4 metre by 4 metre space to present within, with one wall to affix display materials.

Schedule:

A specific time for each team to complete their Display & Presentation will be published prior to the event. Each team is allocated time to set up their display prior to their time.

Event schedules will require teams to have arrived and be available from 12 noon on the day of the assessment. Late arrivals will be accepted only by negotiation.

Specific Information - Option B: Video Pre-Event

Video Format

The video is to have all students participating and sharing of the student's work in the visual display.

Students are encouraged to utilise any media skills they have but it is important to understand that it is **criteria of Display and Presentation** that will be assessed and not their **media skills**.

Impromptu Questions

The impromptu questions will be supplied by the Education Planning Group, but asked by the teacher and recorded at the end of the video submission.

The questions will be sent to the teacher via email [early in term 4](#), once an expression of interest from the school has been received.

It is expected – based on an honesty policy - that students will NOT have seen the questions before hand.

In the case that there are two teams, then there will be two separate sets of questions provided.

Submission

Details and processes for uploading video submissions will be provided to participating schools.

The Energy Breakthrough team will work with schools to ensure that technology is not a barrier to participation for schools.

Publication

The top three video presentations will be published on the Energy Breakthrough website. Permission will be sought from the relevant schools prior to publication.

Deadline:

[All video submissions are to be uploaded by 5.00pm on Friday 3rd November.](#)

General Information (Covers both Options A & B)

Technology Use & Distractions

Schools are encouraged to be innovative in their presentations. However, care needs to be taken to ensure that 'distractions' do not overtake the real purpose, that is, 'students demonstrating their understandings'.

To reduce interference from nearby panels, no public address or small music (CD) systems will be allowed [at In-person at Event Presentations](#) without prior approval of the Display & Presentation Coordinator.

About the Judges

The judging panel are all volunteers who typically consists of three members:

4. a community representative,
5. a young person with an interest in education and/ or technology, and
6. an education/teacher representative.

These judges will ask the questions of team members following their formal presentation.

Participation

All registered team members are required to participate equally in the presentation. Teams may choose to include up to two (2) additional students (i.e. support crew) to join their registered team members in their presentations. However, the presentation roles must still be shared equally by all participating team members.

Criteria

The assessment covers both in person oral report, visual display and video aspects.

Judges are asked to look for evidence of:

- Student involvement.
- Levels of participation.
- Team work and enthusiasm.
- Individual contributions.
- Understanding of the project.

It is understood that the levels of student involvement in the technical and practical activities related to the design and building of an entry will vary with age.

The Option video display will be specifically judged with an emphasis on:

- Extent of coverage of the journey for the team throughout the year
- Demonstration of the students in action
- Vehicle development
- working with the community (eg sponsors)
- the variety of Information
- demonstration of the criteria as listed in the Oral report

Note: the video presentation should NOT be simply a Presentation that would have been delivered at the event.

Oral Report

The oral report will be assessed according to:

This oral report should relate to the development of the team entry, including ideas that did not work and why.

Presentation Style:

- The introduction and outline of the presentation;
- awareness of the audience;
- style of presentation (reading from notes or reciting);
- clarity of language;
- use of materials,
- diagrams and models covered.

Team Work:

- The effectiveness of leader's role; sharing of knowledge and responsibility in the team;
- acknowledgment of individual team members' role;
- team attitude and enthusiasm, and
- the extent to which the presentation reflects the students' own work.

Knowledge and Understanding:

- Knowledge of the aims and values of the Energy Breakthrough;
- team planning;
- preparation and training, and
- technical aspects of the development of the vehicle.

Development of a Story:

The "story" of the team and the entry throughout the year, including:

- the challenges;
- the preparations;
- the school and community's involvement, and
- the students' achievements.

Visual

The visual display should include photos, videos, models, prototypes etc to explain the involvement of students, school, community and/or industry in the program and the development of their entry.

The visual display will be judged according to:

Layout and Organisation:

The range of visual media and written text depicting:

- vehicle development;
- the arrangement of items;
- the variety of information presented, and
- the acknowledgment of sponsorship/financial support received.

Quality of Display:

The effective use of the following to convey messages:

- diagrams and drawings,
- models,
- photos,
- text, etc

12. Trials and Specifications

Each category has a specific 'Handbook' that covers the vehicle, cart or creations specification and trials details.

Vehicle Safety: Scrutineering

- All entries must complete scrutineering, which entails a safety inspection to ensure the vehicles are safe and meet all the relevant design specifications.
- These checks ensure that the vehicle is safe for the occupant, other teams and spectators.
- Where entries do not comply with specifications, or are considered unsafe, scrutineers will provide assistance and/or direction with work required in order to comply.
- Schedules and locations for teams to complete scrutineering and other judging assessments will be published prior to the event.
- Organisers will assume that teams will have arrived in Maryborough and be available from 12 noon on the day of their assessment. Late arrivals will be accepted only by negotiation.

The Trials

In this section, the operation of each entry will be tested.

Human Powered Vehicles and Energy Efficient Vehicles

Secondary Human Powered and **Energy Efficient Vehicles** will participate in a practice session and a 24-hour trials on a street circuit in Maryborough.

Primary HPV teams will participate in a practice session and 14-hour trial on a street circuit in Maryborough. More details are available in the specific handbook for this category.

TRYathlon

Tryathlon teams will tackle a Time Trial, Obstacle Course and an Endurance Trial. More details are available in the specific handbook for this category.

Pushcarts

Pushcart teams will tackle a Sprint, Obstacle Course and an Endurance Trial. More details are available in the specific handbook for this category.

Robotics

Robotics teams will code a robot to complete an Obstacle Course, Dance Routine, and Labyrinth. More details are available in the specific handbook for this category.

Junkyard Challenge

Junkyard Challenge teams use an array of 'junk' materials to create a contraption that solves a problem within 75 minutes. More details are available in the specific handbook for this category.

13. Curriculum integration & online resources

The Energy Breakthrough is an **education** event that encourages *‘learning by doing’* and focuses on **science, technology** and the **environment**.

“Through the Energy Breakthrough, students were given responsibility for their own learning, teachers broke away from the conventional classroom practice and found that it worked, parents were more closely involved in the educational development of their child and community members contributed time, expertise, goods and money.”

~ Deakin University, Energy Breakthrough Evaluation – 1997

Schools undertake the Energy Breakthrough in a variety of ways, ranging from an out of school activity to the program being a central part of the formal curriculum. In whatever way the program is undertaken it can contribute to students’ learning in a wide range of areas.

Schools have identified the following curriculum links: technology studies, science, English, arts, environmental science, maths, accounting, computer studies and health and physical education.

14. School Team Sponsorship

Individual entries are encouraged to negotiate sponsorship with local businesses or service groups. Such support must be consistent with the health and welfare of young people and the overall objectives of the Energy Breakthrough.

As a school-based, education event, entrants are prohibited from advertising products or services not suitable for young people, including but not limited to alcohol and gambling.

There are enormous promotional opportunities for sponsors of teams and the event itself.

Entrants should ensure that sponsors receive a good return for their investment. This includes maintaining a good relationship with sponsors, generating media coverage and reporting back to the sponsors on what their funds have enabled.

If you have any doubts about the suitability of a sponsor, please [contact us](#).

15. The Event Dates and Location

The Energy Breakthrough will be held from **Wednesday 22 November to Sunday 26 November 2023** at the Lake Victoria Precinct in Maryborough, Victoria.

At Event Check-In & EB Admin Hub

The EB Admin Hub is located at the Princes Park Grandstand (near Park Road). The EB Admin Hub will be your main point of contact with officials throughout the event.

Upon arrival in Maryborough, Team Managers should report to the EB Admin Hub for Check-in, please check opening times in the schedule.

Check-in will involve:

- Welcome and update on the event,
- Confirmation of team details: team member names, support crew, team names, etc.
- Allocation of Team Manager Identification,
- Issuing of team numbers and transponders (if applicable),
- Confirmation of Marshal times,
- Confirmation of Display & Presentation, Design & Construction and Scrutineering times, and
- Emergency Procedures Briefing.

The Team Manager and all members of the team will then report to the marquee near the EB Admin Hub for registration of individual team members.

Wristbands and Identification

- Following check-in, all team managers, team members, students and support crew who are camping on site will be provided with wrist bands for identification. These wristbands are to be worn at all times and assists us in managing the camping grounds.
- All team members must be confirmed at registration to receive a non-removable wrist band for their specific category.
- Wristbands must be collected, with your team members, after check-in from the marquee in front of the Administration Centre.

16. Accommodation & Camping



Camping Areas

There are five camping areas within the event site. Please refer to the Event Map for locations. These camping areas are spread throughout the precinct on grassed areas.

Camping Area	Group
Princes Park Oval	Primary Schools only
Jubilee Oval (inside Track 1)	Secondary Schools only
Inside Track 2	Secondary and Primary Schools
EEV Campsite (inside Track 1)	EEV Teams only
Off-Site	By own arrangements.

Team Managers will be required to login to the online EB Team Managers Portal to complete your school's camping details by mid-October. On the online camping form you will select the camping area in which you prefer to camp.

Upon arrival to the event site please proceed to your preferred camping area and a camping coordinator will direct you to your site.

Camping Locations:

- Secondary HPV teams will camp on Jubilee Oval inside Track 1.
- Primary schools will camp on either Princes Park Oval or inside Track 2.
- EEV teams will camp on the Jubilee Oval inside Track 1 or near the EEV Pits.
- HPV Try-athlon teams will camp on the Hockey Field inside Track 2 or on Princes Park.

Maryborough Caravan Park

The Maryborough Caravan Park is conveniently located and available to accommodate schools on a fee-for-service basis. [In a change from previous years, all fees must be paid directly to the Caravan Park by the school and this will not be subsidised by the Energy Breakthrough in 2023.](#)

Schools wishing to camp in the Maryborough Caravan Park must make their own booking arrangements.

Contact: Maryborough Caravan Park

Ph: 03 5460 4848

W: <http://www.maryboroughcaravanpark.com.au/>

Camping Guidelines

Mains electricity reduction aim

One of the Energy Breakthrough's aims is to:

- "Encourage young people to explore solutions to environmental and transport issues"

Therefore, the Energy Breakthrough is endeavoring to reduce schools' reliance on mains electricity both in camp sites and in pit lane. Our aim is to see schools self-sufficient from mains electricity power by November 2025

A number of schools – such as James Sheehan College - are already achieving this through the use of batteries, solar and selective use of equipment throughout the event. We will endeavour to provide case study examples to support schools in achieving this aim over the next three years.

Schools will need to provide:

- Your camping equipment (tents, sleeping, non-electrical cooking facilities)
- Your own catering.
- Electrical power leads with compliant labels
- Campsite lighting.

Facilities provided include toilets, showers, drinking water and power (for lighting only).

Camping guidelines

- The Energy Breakthrough is an alcohol-free and drug-free event.
- Camp sites should be set up as soon as possible after arrival.
- Car parking is allowed on the ovals.
- No Caravans, Camper Vans, Motor Homes, Horse Floats or any other modified wheeled sleeping vehicle will be allowed on the Energy Breakthrough Event Site.
If you wish to bring one of the above, please contact the Maryborough Harness Racing Club: 5464 2451.
- Coolrooms are encouraged to assist with schools catering, however, these will need to be identified through the online camping form pre-event so that we can allocate power and an appropriate campsite for these schools.
- Schools MUST NOT use very long tent pegs or star pickets, such as those used for hire marquees, on any of the camping grounds. Pegs must be 30cm or smaller.
- All Hired Marquees must be removed off all camping sites by 5pm on the Sunday of the event. Non removal will attract a removal fee charged to the school.
- Campers must position cooking devices on outside perimeter fence of Princes Park Oval possible.
- Campers must ensure "fat drip trays", and protective sheeting is positioned underneath cooking devices to prevent heat and hot fat damage to camping surfaces on all campgrounds.
- Ample showers, water and toilet facilities are located throughout the event site.

Please consider the needs of other campers by ensuring that:

- there is adequate supervision of team members within the camping area,
- your camping area is a quiet area at all times, and
- you leave your camp site clean when you depart.

Security

- Whilst the Energy Breakthrough organisers have engaged professional security services to be on site throughout the event, teams are reminded that they are responsible for the security of their own equipment, vehicles and personal belongings during the event.
- Teams are strongly advised not to leave valuables in tents or around campsite.

Post-event – Don't Drive Tired

To ensure our travellers make it home safely, all teams are welcome to stay overnight after their event concludes. Please contact the Energy Breakthrough team for more information and to advise us of these arrangements.

Visiting friends and relatives

Friends and relatives are encouraged to contact the Central Goldfields Visitor Information Centre on 1800 356 511 or www.visitmaryborough.com.au for off-site accommodation options.

17. Special Awards

Energy Breakthrough Safety Award

Energy Breakthrough is committed to safety and it is a priority in everything we do.

This Award recognises a team that has met all the safety requirements in their design and construction processes and therefore presented a vehicle that protects their riders or other participants.

M.R. Recumbents Encouragement Award

M.R. Recumbents (and before them Greenspeed) have been supporting a school each year that overcomes a great deal of adversity in the lead up to, and during, the Energy Breakthrough.

This Award recognises a school that has overcome significant challenges to participate in the Energy Breakthrough.

Tricia Walsh Encouragement Award

A passionate and active member of Maryborough community, Tricia Walsh was a driving force in leading the Innovations in Technology category and a volunteer across various roles for over 15 years before she sadly passed away in 2012.

This is an Encouragement Award – as Tricia believed the event wasn't about winning – she preferred to encourage participation.

Judy Parker Award for the Best First Year School

Judy Parker was part of the Country Education Partnership when the Energy Breakthrough was conceived way back in 1990. She was passionate about engaging new and rural schools into the project.

This Award recognises the best performing first year school across all primary and secondary categories.

Bruce Reiffel Award for the Best Small Primary School

Bruce Reiffel was a local teacher at Maryborough Education Centre who dedicated himself to encouraging and supporting small schools enter the program. He was a tireless worker, always helping young people to build

better vehicles, prepare themselves for the event and was always willing to help the smaller schools. He understood education and he understood the 'Breakthrough'. Bruce Reiffel sadly passed away in 2005.

This Award recognises the best performing HPV team from a primary school with an enrolment of less than 200 students.

Ian Rogerson Award for the Best Display & Presentation

Ian 'Rogo' Rogerson was a lifelong educator and the first Coordinator of the Display & Presentation section of the Event.

This Award recognises the schools with the highest Display & Presentation scores across all primary and secondary categories.

McCulloch's Engineering Prize for School-Based-Built Vehicles

The McCulloch's Engineering Prize aims to encourage and reward school-based design and construction. Use of commercially or professionally designed vehicles is not allowed in this Award which is open to students in Year 7 to Year 12 entered in the HPV and EEV categories.

This Award recognises a team who has built the majority of their vehicle at school and completed at least 500km during the 24 hour trial. Teams will be invited to self-nominate themselves for consideration for this Award during Design & Construction assessment.

Power-free Camp and Pits Award

To support the event's aim of reducing reliance on mains electricity by the 2025 event, this Award recognises a team or school who has achieved a power-free and energy efficient campsite and/or pit site during the event.

18. Marshal Training and Marshal Rosters

This year we have set a goal of improving the training of corner marshals at the Energy Breakthrough. All HPV Primary, HPV Secondary, EEV and TRYathlon teams will be required to provide at least two marshals per team.

We have online training materials and information that will assist volunteers to understand their roles and responsibilities as marshals – please ensure your nominated marshals have completed the online training and they have copies of this marshal information.

It is a requirement that ALL corner marshals have completed the online training prior to the event.

What is involved?

Marshal Training Online is a three part process including:

1. [a series of instructional videos \(Watch on YouTube\):](https://www.youtube.com/watch?v=TN-WiyQgcDI)
<https://www.youtube.com/watch?v=TN-WiyQgcDI>
2. written Corner Marshal documentation (PDF)
3. an online test (consisting of multiple-choice questions)

Complete the Online Marshal Training now at: <https://www.eb.org.au/marshal-training/>

If volunteer marshals require further assistance or a detailed briefing, they can contact the office (03) 5461 0621. If you are experiencing difficulties with the marshal training online system, please email training@eb.org.au

19. PIT AREAS

- Where possible, pit numbers are the same as the team number.
- Each team in the HPV, EEV and Tryathlon endurance trials will be allocated a site in the pit area, except where schools with three entries in a category will be allocated two pits sites.
- All pit sites are numbered. Team numbers with a “3” or “4” prefix indicate where a school with three teams will use a total of two pit spaces. Eg. Team “310” shares pit space number 10 with team number 10.

Pit Locations by Pit Numbers:

Track 1:

- Pit 1A: 1-54
- Pit 1B: 55-99
- Pit 1C: 100-130

Track 2:

- Pit 2A: 1-40
- Pit 2B: 41-88

- All pit sites must be set-up as per the direction of Event Officials and changes may be required at the Officials discretion.
- All pit sites are approximately 3 m wide by 3 m deep, some are up to 6m deep.
- All teams must leave approximately 1 m clearance area in front of their pit site for rider changeovers and for other teams to have line of sight of the track and pit lane.
- There is no existing shelter in the pit areas. Teams are encouraged to erect a 3m x 3m or 3m x 6m tent, or arrange to share a tent with another team.
- During the event there is restricted access to the pit area.
- There is power existing in the pit areas Pit 1A. Teams will be required to arrange their own generators in this pit lane.
- In the case of weather weather, teams are requested to bring a tarpaulin (ideally 3m x 3m or 3m x 6m) to place over the ground around their pit area. This will reduce ground damage and also help to keep their pit areas cleaner.
- To avoid clashes with other track activities, pit areas should NOT be set up too early in the event, please check the Bump In Times in the Event Schedule for details closer to the event.
- The surface of your pit area may be hard, (i.e. concrete or asphalt) so securing tents will require water or sand filled weights rather than pegs.
- HPV A teams are required to share their pit spaces - but not tools and resources - with Tryathlon teams for their Tryathlon Practice session.
- Teams are encouraged to erect a team or school banner in their designated pit area(s) including team numbers. A banner about two by one metres would be ideal
- Closed shoes must be worn in pit lane.
- Maximum speed in the pit area is 10km/h.

20. CAR AND BUS PARKING

Cars: \$20

Buses: Free

[Payment by EFTPOS only.](#)

The following Parking rules apply:

- Volunteer parking attendants will be on hand to assist and direct drivers upon arrival.
- Please follow the instructions of the parking officials and camping coordinators.
- Buses are exempt from the parking fee and will be required to park in designated bus parking areas only as guided by the volunteer parking attendants.
- All cars parking on the event site and the four areas adjoining the site will be charged to park.
- The four off-site parking areas are:
 - Burns Street
 - Holyrood Street
 - Park Road
 - Lake Victoria Car Park Area.
- A limit of **one car per school** is allowed to park within the event site (Red Restricted Areas Car Park Pass Holder) until car parks are filled, and after this time they must park off-site. The Red Parking passes are available for collection from the EB Admin Hub and / or the Camping Coordinators.
- [No parking is permitted on the ovals.](#)
- Only buses will be permitted to park (where space is available) in the parking area at the southern end of the Track 2 Campground.
- Any **cool rooms** will need to be parked away from **any grassed areas**.
- The **Parking Pass Receipt** will issued to your car upon arrival (and after payment of the fee) must be filled in with contact details and placed on your windscreen. These receipts enable the vehicle to be parked on the site as directed.
- No vehicles are allowed to park in the **Maryborough Caravan Park**.

21. B-Alternative - Our Sustainability Partner

Energy Breakthrough is working closely with B-Alternative throughout 2022 and 2023 Maryborough events to reduce event waste, increase waste education and become a more sustainable event overall!

What is B-Alternative?

B-Alternative is a social enterprise which helps organisations and events eradicate waste by offering sustainable alternatives for the products they buy, the introduction of new systems and finding pathways to reuse and recycle waste.

How has this come about?

Made possible by the Circular Economy Councils grant funding from the Victorian Government through Sustainability Victoria, [B-Alternative](#) will be working closely with Energy Breakthrough to implement

some new and exciting practices at the event, making EB more environmentally conscious than ever before.

What will it look like?

The friendly B-Alternative staff and volunteers will be onsite throughout the event helping to make sure Energy Breakthrough has the smallest environmental impact as possible.



ENERGY BREAKTHROUGH SITE - KEY

- | | | | | | |
|--|--------------------------|--|---------------------------|--|-------------------------|
| | First Aid | | Accessible Toilet | | Trackside |
| | Assembly Area | | Showers | | Stage |
| | Camping Area | | Wrist Banding Station | | Marquee 1 |
| | Food & Refreshments | | Recharge Station | | Marquee 2 |
| | Drinking Water | | Masseur | | Marquee 3 |
| | Toilets | | Pushcart Changeover Point | | Marquee 4 |
| | Parking Area | | Event Operations Centre | | Exhibitors (EB Central) |
| | Road Closed | | Bridge | | One way traffic only |
| | Gate (numbered) | | Walking track only | | |
| | Marshal Point (numbered) | | | | |
| | Start/Finish | | | | |

eb.org.au



Energy Breakthrough
is a non-smoking event

BALLARAT/AVOCA →

Map not to scale.