



Shell Eco-Marathon Challenge

Sponsorship Guide



In 2005 and 2008, Red River College competed in the North American Solar Challenge (NASC). The College's car, the Red River Raycer, made its way across challenging terrains from Texas through to Calgary. In the 24-year history of the NASC, only two colleges ever qualified and competed.

In 2005, the Raycer placed fifth in its class and sixteenth overall. The team and the vehicle won four awards of the 10 available: the **Keep it Simple (KISS) Award**, **Best Workmanship**, **Best Mechanical**, and **Best Use of Alternate Energy** (the latter was a \$5,000 Green Award for using hybrid support vehicles in the RRC caravan).

In 2008, the Raycer placed ninth out of 15 overall and received two awards: **Best Braking** and **Esprit de corps**.

Fast forward to 2016, and the College has compiled a team of staff and students who are poised to take on a new and very exciting challenge. The team is designing and building a car to race in the Shell Eco-Marathon Challenge, taking place in Detroit in 2018. The event challenges student teams worldwide to design, build, test and drive ultra-efficient energy vehicles.

Red River College will design a vehicle to compete in the Prototype class as explained below:
(Information taken from shell.com/energy-and-innovation/shell-ecomarathon.html)

Vehicle classes and energy categories

The competition is split into two classes or categories. The Prototype class focuses on maximum efficiency, while passenger comfort takes a back seat. The UrbanConcept class encourages more practical designs. Cars are also divided by energy type:

- Internal combustion engine fuels include petrol, diesel and liquid fuel made from natural gas and ethanol.
- In the electric mobility category, vehicles are powered by hydrogen fuel cells and lithium-based batteries.

The mileage competition

Over several days, teams make as many attempts as possible to travel the furthest on the equivalent of one litre of fuel.

Cars drive a fixed number of laps around the circuit at a set speed. Organizers calculate their energy efficiency and name a winner in each class and for each energy source.

Off-track awards recognize other achievements including safety, teamwork and design.

The competition inspires the engineers of the future to turn their vision of sustainable mobility into reality, if only for a few days. It also sparks passionate debate about what could one day be possible for cars on the road.

A bit of history

The competition dates back to 1939 when Shell Oil Company employees in the U.S. made a friendly wager over who could travel furthest on the same amount of fuel. Since then, it has expanded to two more continents, and now includes many energy types and sparks passionate debate around the future of energy and mobility.

The RRC car

Although the name of the vehicle is still being determined, one thing is for sure: Red River College is entering this competition with high expectations and goals.

1. Build this car with a focus on annual participation
2. Build a car that will rival the 2016 energy efficiency record (731 km/kWh)
3. Compete in 2018
- 4. WIN the 2018 Marathon**
5. Win one of the off-track awards

The Red River College team is comprised of Mechanical Engineering Technology and Electrical Engineering Technology students, with faculty and alumni advisors built in. As the build progresses, students from other programs will join to provide their collective expertise. The design team's structure corresponds to the vehicle's systems: Body, steering, wheels and tires, motor, etc. As per the rules of the Eco-Marathon Challenge, teams are tasked with custom building their own motor controller. This will be one of the most innovative tasks required of the team as they must design, analyze and build an integrated circuit and write code for the microcontroller.

Benefits from participation:

Student impact:

1. Teamwork
2. Applied learning
3. Design work
4. Building the vehicle
5. Goal setting/project management
6. Electric vehicle technology
7. Green technology
8. Networking with industry

Staff impact:

1. Engage with students
2. Promote new technologies
3. Applied learning
4. General interest

College impact:

1. EV Technology (College research)
2. College visibility
3. Program promotion
4. Publicity (local, national, international)
5. Multiple program involvement (Mechanical Engineering Technology, Manufacturing Technology / Precision Metal Machining, Manufacturing CAD, Welding, Transportation, Electrical Engineering Technology and possibly business)



Sponsorship levels

Make a gift at one of the levels presented in support of our team, which is comprised of students, alumni and staff.

Budget and timelines

The College and the team need your support. Please consider a gift to support excellence and innovation at Red River College.

A large part of the budget is for the body and frame, with the realization that optimal material makes a competitive car. The car is being designed with carbon fibre as the top material choice due to the fact that it is light, moldable and sturdy. Forming it requires a perfectly executed mold and plug.

- A plug is used to form the body mold, which is resin/epoxy.
- Tooling and polishing a defect-free plug ensures no bumps or lumps on the finished product. A smooth outer shell is essential to aerodynamics.

Additionally, the electrical system must include a custom-made motor controller and printed circuited board with proper transistors. Competition rules state that a specialty driving suit and helmet are also required.

Sponsorship Levels	\$10,000	\$5,000	\$2,500	\$1,000	\$500
Corporate logo on Eco-car	XLarge	Large	Med	Small	Wordmark
Corporate logo on website	X	X	X		
Corporate recognition on website				X	
Corporate logo on team shirts	Large	Med	Small		
Corporate recognition on team shirts				X	
Corporate recognition on all advertising	X	X			
Corporate recognition on press release	X	X	X	X	
Photo opportunity and meet-and-greet with the team	X	X	X	X	X
Memento commemorating support	X	X	X	X	
Invitation to meet with the team when they return for a small reception	X				
Invitation to attend and speak at an in-house event at the College. Date TBD	X	X			
Team shirts	4	4	2	2	

*In-kind contributions may be considered if the build requires the gifts being donated and are needed.

2016	2017				2018	
4	1	2	3	4	1	4
Design body and components	MET TR component design	Manufacture components	Manufacture body	Assemble car components	Test and modify	Race

Testimonial:

“A project of this magnitude has the positive effect of pulling everyone together to accomplish goals, but it also provides a sense of pride in being a grad or employee of RRC. The impact to students, staff and College may be hard to quantify, but if it rivals the success of the Red River Raycer, then it is well worth the time and effort. Even after all these years, the Red River Raycer (and the awards that RRC received for this project) still resonates with students and industry.”

Bill Noakes, Chair, Mechanical/Manufacturing

Sustainability

Red River College is committed to sustainability. It's why we've been selected as one of Canada's greenest employers six years running. Sustainability is not just a buzz word for us; the practice of sustainability is inherent in all processes and procedures. For example: The College has an Endowed Chair who focuses on green building practices; we worked with numerous partners to test a zero-emissions electric battery transit bus; we partnered on an EV rapid charging station; and have won awards based on the College's commitment to sustainability management.

There has been a realization that everyone has a responsibility to be a part of a global solution. That's why Red River College staff and students push the envelope while finding ways to design and build environmentally friendly vehicles with a focus on innovation and advanced technology.

Our team decided to race a Battery-Electric Prototype because that's where they feel they will be most competitive and because they are excited to take part in the emerging technology of electric-powered vehicles that will affect future generations.

Make a Gift:

Please consider being a part of this team and helping our team meet their goals.

rrc.ca/donate

*specify Shell Eco-Challenge in the notes

To request more information or to provide a gift in another manner, please call:

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RED RIVER COLLEGE