MIT Electric Vehicle Team

Official Partner Consideration Kit

Written for all organizations considering supporting our team (in-kind or monetary) at any and all levels or values.

We thank you, kindly.

Last Updated—August 2023, Please email **l2f@mit.edu** for latest version.

Current Team Partners.

Our partners make our work possible, we thank them for their support as without them we would not be able to do the important work we do in building a cleaner future for all.

Logistics Partner.

AirFrance KLM Martinair Cargo

Solution Partner.

Doosan Mobility Innovation

Primary Partners.

Racing Partners.

Supporting Partners.

MIT Electric Vehicle Team
@ the While Rabbit Community Moto Show

Engineering for Impact, and Change.

The United Nations identified, in its Sustainable Development Goals[1], that a transition to affordable, clean energy is one of the most pressing challenges we need to address at a global level. According to Our World in Data[2] the most significant contributors to global emissions are industrialized nations which are well-equipped to fend off the effects of climate change. While, according to International Rescue[3], the most vulnerable communities to climate change are located in Africa and Southern Asia; communities which are the least equipped to defend themselves. Climate change **disproportionally affects under-served communities around the world,** and this is the **motivation we choose to ground ourselves in as a group.** This context helps us understand that working towards a zero-carbon future has lasting effects on food security, health, poverty, life-on-land, and more.

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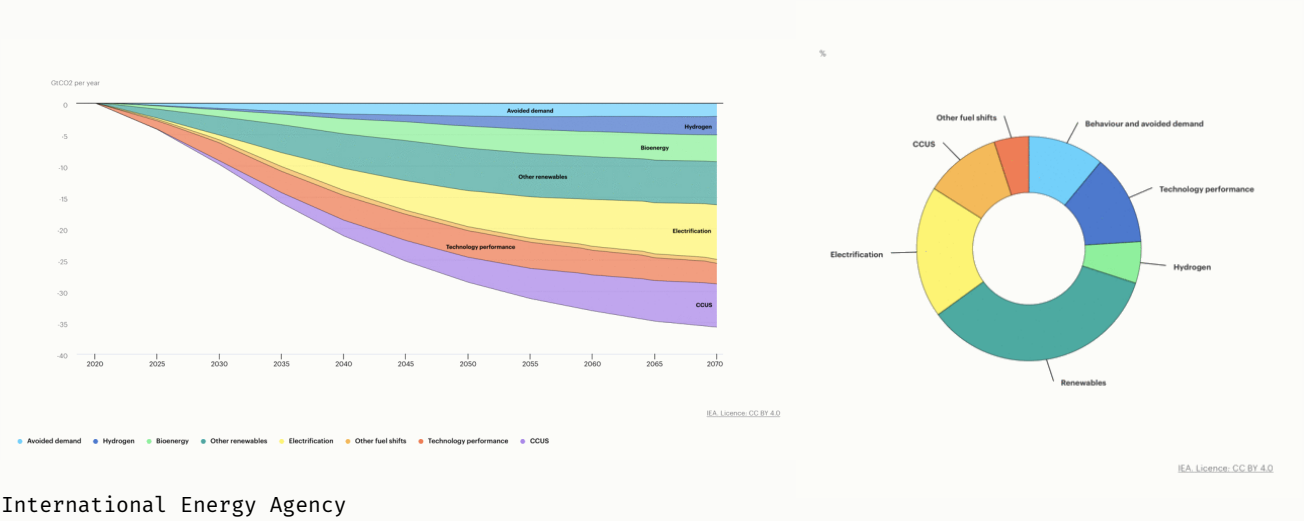
[1] United Nations Sustainable Development Goals— https://sdgs.un.org/goals
[2] Our World in Data, Emissions— https://ourworldindata.org/co2-emissions
[3] Intentional Rescue, Climate— https://www.rescue.org/article/10-countries-risk-climate-disaster

The Role of Hydrogen in the Energy Transition.

The International Energy Agency (IEA) described Hydrogen as having the potential to cumulatively reduce global emissions by 6% in their Net-Zero Emissions by 2050[4] plan. In their research, they identify that **beyond traditional uses of hydrogen in industrial applications, demand-side applications in Hydrogen are primarily in the prototype phase** with an increased need for demonstration projects that can bring Hydrogen-centered solutions into the real world. Hydrogen needs to become a key player in the global energy economy to facilitate a transition to green energy, and this is especially true in the sectors of long-distance transportation and logistics.



International Energy Agency
Role of Hydrogen in the Energy Transition

Our Team, Our Mission.

The MIT Electric Vehicle Team is a student-led team on MIT campus that focuses on the design and development of Hydrogen-powered vehicles. We have over 15 years of experience in electric vehicle design and development, and are now re-focusing our efforts to Hydrogen-powered vehicles to develop the solutions required for the energy transition. Our team is one of the only organizations that allows undergraduate students to get hands-on experience in fuel-cell and Hydrogen technologies by providing a safe environment to study complex systems.

Our team works in three key areas. The first is **Resource Development,** which involves building platforms, and tools to enable research related to the design of Fuel-Cell Electric Vehicles.

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[4] International Energy Agency, Hydrogen– https://www.iea.org/energy-system/low-emission-fuels/hydrogen

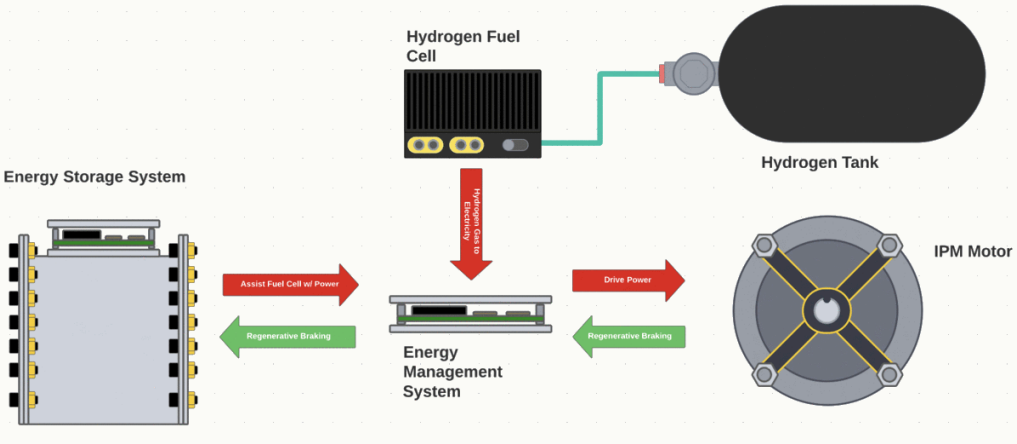
We build these platforms to enable our second goal **Education,** by providing hands-on experiences for students. But, they also serve as test-beds that allow us to develop and validate new technology for the field in a rapid fashion.

> ***By contributing to existing projects, or by creating new ones of our own, we seek to build a fully open-source, modular Fuel-Cell Electric Vehicle (FCEV) as a research platform to facilitate the development of hydrogen vehicles.***

Our final goal is **Academic Research,** we seek to review current progress on the field of FCEVs and identify gaps in vehicle engineering we can close by developing hardware, software, and simulation tools to bring these vehicles closer to reality. We use the open-source platforms we develop as test-beds to publish literature in conferences and journals with guidance from MIT Faculty and Researchers.

In the future, we hope to expand our educational goals to our local Cambridge community by providing hands-on opportunities for high school students to engage with and learn about clean energy. We want to offer the ability for anyone to learn the rigorous, detailed engineering that goes into clean energy systems **regardless of race, gender, socio-economic status, or educational background.** This is a core value of our team that reflects our commitment to Diversity-Equity and Inclusion (DEI) at MIT.

> ***Please note, we will not accept partnerships from brands that we believe do not align with our values to build a cleaner world. We actively seek to be supported by organizations making a conscious effort to produce a more equitable world for all people regardless of race or gender.***



MIT Electric Vehicle Team
Diagram of a Fuel-Cell Electric Vehicle

How does a Fuel-Cell Electric Vehicle work?

A Fuel-Cell Electric Vehicle (FCEV) works by converting Hydrogen gas (H2) into electricity. Inside a fuel-cell, H2 gas is combined with Oxygen (O2) present in the air. The reaction between H2 and O2 gas forms water, and since the reaction is a reduction-oxidation (redox) reaction it releases electrons. These electrons are captured and used to power the vehicle. The vehicle has an electric motor, and a battery which aids the fuel-cell by supplying the extra power needed during acceleration, and captures any energy produced via regenerative braking. Hydrogen has a high energy density of 120MJ/kg by weight (around 3x that of gasoline), but a low energy density by volume. This means Hydrogen must be stored in a compressed state (around 350x atmospheric pressure in the case of our vehicles). However, its high energy density when compressed means long ranges for vehicles powered by Hydrogen. A consumer can interact with a Hydrogen vehicle in a very similar way to a gas one, fill up at a station in under 5 minutes, and continue the journey.

MIT Electric Vehicle Team
Version 1 Hydrogen Bike System

A Note From our Project Lead.

“When you choose to support our team, you choose to support a group of individuals committed to building a better world. Wether that is at MIT through the MIT Hydrogen Bike project, or through the work we do afterwards in academia or industry, our students have dedicated their careers and lives to finding solutions that can help us achieve Net-Zero Emission by 2050 according to the IEA plan. Our team has a unique environment built on collaboration, trust, and the idea that good ideas can come from anywhere. And we all believe in the same, open-source research initiatives that allow the work we do to have maximum impact by allowing our designs to be accessible by all. We understand why our work is important, we focus on making it practical and functional in the real world, and above all-else we commit ourselves to the highest standards and rigor of scientific research.”

Aditya (Adi) Mehrotra
Project Lead, MIT Hydrogen Bike

Becoming an MIT EVT Partner.

Our partners make our work possible. By funding our team operations, providing necessary equipment to complete our projects, or flying us across the world to events, our partners enable incredible hands-on educational opportunities for students to conduct actual research in clean energy and make a positive difference in the world. In return, we take the time to think about how best to say thank you, and our methods to do so are outlined in the rest of this partner kit.

WORLD HYDROGEN 2024 SUMMIT & EXHIBITION

HYDROGEN AMERICAS 2023 SUMMIT & EXHIBITION

CES Consumer Technology Association

Global Exposure through International Events.

Unlike traditional student engineering teams, we don’t focus on a single race or event. Rather, we attend conferences and events around the world which provides us the opportunity to engage with experts in industry and academia, but also allows the possibility of global exposure for our partners.

At all of these events, we offer promotion for our partners in different forms depending on their financial commitments. Detailed benefits for partners are outlined in the following sections.

Partnership Benefits.

Below is a list of partnership benefits by total value of financial or in-kind commitments. Please note that in-kind commitments require proof-of-value to be considered for partnership status. Please also note that all benefits are subject to MIT use-of-name and no benefit past what is contained in this document is approved unless expressed-written consent is obtained from the MIT Institute Office of Communications.

Press releases or case studies involving our students and their work are never allowed and unsolicited requests for these will not be considered. This is an institute-level policy beyond our discretion.

Logistics/Solution Partners.

Logistics/Solution Partners are partners whose support exceeds **20000USD in-kind or monetary**, or **provide significant effort in transportation of members or equipment** to team events. Our current solution partners are Doosan Mobility Innovation, while our current logistics partners are AirFrance KLM Martinair Cargo.

Logistics/Solution Partners have the following additional benefits on top of all benefits listed in below categories.

[] Visibility in team partner kit (testimonials and web-form links).

[] Visibility in team-produced video content (mentions by name).

Primary Partners.

Primary Partners support exceeds 10000USD in-kind or monetary. Primary partners have the following additional benefits on top of all benefits listed in below categories.

[] Presentation-based updates on team activities + progress (via video or meeting).

[] Name and logo on slides for large events and conferences.

Racing Partners.

Racing Partners provide significant in-kind or monetary support for our operations in the value of 5000USD or more. Racing partners have the following additional benefits on top of all benefits listed in below categories.

[] Email-based updates on team activities + progress (on request, or annually).

[] Name and logo on the MIT Open-Source Hydrogen Bike or current race vehicle.

Supporting Partners.

Are partners that provide in-kind or monetary support for our operations in the value of 1000USD or more. Supporting partners have the following additional benefits on top of all benefits listed in below categories.

[] Name and logo on website, team apparel, and support vehicles.

[] Social media post, blog post, or similar ‘announcement’ of support.

Please note that any contribution under 1000USD can be submitted through Giving @ MIT as a tax-deductible donation that we graciously accept with thanks. Donors under 1000USD can receive email updates on the project, and can elect to have their name listed on the partners page of our website.

Recruit with Us!

If your organization is interested in recruiting our members for internships, co-ops, or full-time offers, please reach out to us directly at l2f@mit.edu, please note that **only official organization partners can elect for on-campus recruiting privileges or meet-and-greet events.** We do not offer resume books or pamphlets containing detailed information on our students or their activities for data-privacy reasons. Our students may reach out to you if they wish.

Thank you for your Consideration.

Thank you for your consideration in becoming a partner of the MIT Electric Vehicle Team. If you have any question, or would like to setup a call to discuss details of partnership, potential opportunities, or any question related to partnership, do not hesitate to reach out to us at l2f@mit.edu. We are more than open to taking the time to meet with any organization considering any level of partnership or donation to get to know you.

If you are a non-profit organization who wishes to work with us, donations are not required. Please reach out directly to l2f@mit.edu with any questions or ways we can help you achieve your mission.

Electric Vehicle Team @ MIT.