**Funding Criteria**

**A. General Rules**

1. Students, faculty, and staff are encouraged to submit requests for funding. Student-led projects require a faculty or staff sponsor in order to have funds awarded.
2. Funding can only go to university-affiliated projects from students, faculty, staff, and departments.
3. All SSC projects must make a substantial impact on students. This may be a direct impact or an impact through education and engagement. All SSC funding is 100% from student green fees, so the projects funded by the students must benefit them.
4. SSC encourages innovation and new technologies – creative projects are encouraged to apply.
5. Unless a type of expense is specifically listed below as having restrictions, SSC can generally fund it. The items referenced below should not be taken as comprehensive list.

**B. Things SSC Can Fund, On A Case-By-Case Basis**

1. SSC can fund feasibility studies and design work; however, it must work toward ultimately addressing a sustainability need on campus.
2. SSC can fund staff positions that are related to improving campus sustainability. Strong preference will be given to proposals receiving matching funding from departments and/or plans for maintaining continuity of the position after the end of the initial grant.
3. SSC can fund outreach events with a central theme of sustainability, provided their primary audience is the general campus community.
4. SSC discourages funding requests for food and prizes but will consider proposals on a case by case basis that prove significant reasoning.
5. SSC can fund repairs and improvements to existing building systems as long as it works toward the goal of improving campus sustainability; however, a preference is shown to projects utilizing new or innovative ideas.
6. SSC can provide departments with loans for projects with a distinct payback on a case by case base. Loans will require a separate memorandum of understanding between SSC and departmental leadership pledging to repay the award in full and detailing the payback plan.

**C. Things SSC Will Not Fund:**

1. SSC will not fund projects with a primary end goal of generating revenue for non-University entities.
2. SSC will not fund personal lodging, food, beverage, and other travel expenses.
3. SSC will not fund any travel expenses.
4. SSC will not fund tuition or other forms of personal financial assistance for students beyond standard student employee wages.

**Your Step 2 funding application should include this application, the supplemental budget form, and any letters of support.**

*Please submit this completed application and any relevant supporting documentation to* *Sustainability-Committee@Illinois.edu**. The Working Group Chairs will be in contact with you regarding any questions about the application. If you have any questions about the application process, please contact the Student Sustainability Committee at* *sustainability-committee@illinois.edu.*

**General & Contact Information**

**Project Name:**

**Total Amount Requested from SSC:**

**Project Topic Areas:** ☐ Land & Water ☑ Education ☑ Energy

☑ Transportation ☐ Food & Waste

**Applicant Name:** EV3

**Campus Affiliation (Unit/Department or RSO/Organization):** Illini EV Concept

**Email Address:** evconceptillini@gmail.com, dmitryi2@illinois.edu

**Check one:**

 ☐ This project is solely my own ***OR***

 ☑ This project is proposed on behalf of (name of student org., campus dept., etc.):

**Project Team Members**

|  |  |  |
| --- | --- | --- |
| **Name** | **Department** | **Email** |
| Dmitry Ilchenko | Illini EV Concept | dmitryi2@illinois.edu |
| Gia Thien-Long Do | Illini EV Concept | gsdo2@illinois.edu |
| Xavier Kelley | Illini EV Concept | xkelle2@illinois.edu |
| Ishaan Patel | Illini EV Concept | ipatel28@illinois.edu |
| Tommy Bahary | Illini EV Concept | tbahary2@illinois.edu  |
| John Crispo | Illini EV Concept | jcrispo2@illinois.edu |

**Student-Led Projects (Mandatory):**

Name of Faculty or Staff Project Advisor: Michael L Philpott
Advisor’s Email Address: mphilpot@illinois.edu

**Financial Contact *(Must be a full-time University of Illinois staff member)***

Contact Name: Mathis, Marcia M

Unit/Department: Mechanical Science and Engineering

Email Address: mmmathis@illinois.edu

 **Project Information**

*Please review the proposal materials and online content carefully. It is highly recommended you visit a working group meeting sometime during the proposal submission process.*

**Please provide a brief background of the project, its goals, and the desired outcomes:**

*You may copy and paste your Step 1 application answer if nothing has changed.*

Automobile industry is planning to switch to mostly electric vehicles by 2030-2040s. Studies have shown that electric vehicles are proven to be more environmentally friendly. Unfortunately, this is not true for all electric cars and it is very important to implement the technologies correctly in order to create an efficient vehicle. Furthermore, autonomous vehicles show potential to increase this efficiency. In order to address the issues stated, Illini EV Concept is seeking funding to design and build a highly energy efficient battery electric concept car with self driving features that aims to raise awareness of using clean energy, development of autonomous vehicles and recycle old electronics. We are planning to work on this project on a 2-year timeline.

Our plan is to:

* design new car with better aerodynamics
* build the lightest chassis our team ever made without losing any structural rigidity using carbon fiber
* develop more efficient electronics systems, including remodeling our power converters as well as tailoring motor controller efficiency
* implement braking, steering and accelerating based on the surroundings of the car

Illini EV Concept also plans to tackle the major issue of recycling of old electronics and printed circuit boards from RSOs on campus. We are planning to collect electronics and use such things as old batteries and power supplies for our test equipment Moreover, along with participating in various on-campus events such as Engineering Open House, Quad Day, Homecoming Parade and off-campus annual Shell Eco-marathon Americas competition our team will increase its presence inside and outside of UIUC by having quarterly online sessions about sustainability and electric vehicles to both students and general public.

**Where will the project be located? Are special permissions required for this project site?**

*If special permission is required for this location, please explain and submit any relevant letters of support with the application.*

The project will be located on UIUC campus. All of the work will be done in ESPL, ECE OpenLab as well as Siebel Center of Design, when it opens.

**Other than the project team, who will have a stake in the project? Please list other individuals, groups, or departments affiliated directly or indirectly by the project. This includes any entity providing funding (immediate, future, ongoing, matching, in-kind, etc.) and any entities that benefit from this project.**

*Please attach letters of commitment or support at the end of the application.*

One of our major contributors is the Engineering Design Council which provides matching funds for our team. They have agreed to provide up to $10,000 in matching funds and $5,000 as a travel stipend this year. Our competition is organized by Shell Oil Company that provides us with a $2,000 travel stipend.

**How will this project involve and/or benefit students?**

*This includes both direct and indirect impact.*

As the EV Concept build team has grown, it has expanded past being a small group of engineers to include students from many other disciplines to create a value of diversity which the team strongly identifies with. Having many minds from many backgrounds allows us to avoid oversights, spread knowledge across disciplines, and produce a better final car. The addition of autonomous vehicle features to it will make our team the first student-run organization in the US to build an autonomous vehicle from ground up. We encourage any student at the University of Illinois to join our team regardless of their experience or major, because we know it will be a mutually beneficial relationship every time. While much of the team focuses on engineering, the EV3 car will be a multidisciplinary project where our members will have an opportunity to work on: car design and aesthetics, aerodynamics, carbon fiber manufacturing, mechanical CAD, electronic circuits design and analysis, PCB design and assembly, autonomous vehicles, programming using both high and low level languages, financial accounting, social media posting, sponsors acquisition, public outreach and more.

In the end, members will receive valuable and applicable industry experience which may be difficult to achieve in a classroom environment with so few boundaries to entry.

**How will you bring awareness and publicize the project on campus? In addition to SSC, where will information about this project be reported?**

In the times of a world’s pandemic it is getting harder to publicize the projects our team does. However, EV Concept has social media channels in all popular social media networks: Facebook, LinkedIn, Instagram and YouTube and is starting utilizing them as much as possible. EV Concept is planning on having a monthly blog on Facebook, Instagram and LinkedIn of the current project of the car. We plan on posting updates on the website as well as moving it to another domain which will bring more publicity to the project, as our old website style is outdated and cannot be changed. Previously,a video about our team made by Shell EcoMarathon 2019 got a 200000 views on LinkedIn and we understand that if we repeat this success again it will help to publicize not only our team but UIUC.

# Financial Information

*In addition to the below questions, please submit the supplemental budget spreadsheet available on the Student Sustainability Committee* [*website*](http://ssc.sustainability.illinois.edu/?page_id=2087)*. Submission of both documents by the submission deadline is required for consideration of your project.*

**Have you applied for funding from SSC before? If so, for what project?**

Illini EcoConcept: Designing and Fabricating a Fuel Cell-Driven Vehicle for the Shell Eco-marathon Competition

EV Concept Car

**If this project is implemented, will you require any ongoing funding required? What is the strategy for supporting the project in order to cover replacement, operation, or renewal costs?***Please note that SSC provides funding on a case by case basis annually and should not be considered as an ongoing source of funding.*

After the project is completed our team is not going to require secondary funding for it. The amount of funding we are asking for includes operation costs, if any are applied.

**Please include any other obtained sources of funding. Have you applied for funding elsewhere?**

*Please attach any relevant letters of support as needed in a separate document.*

Our team receives other funding, but mostly in-kind donations or free manufacturing. We are receiving $10,000 of matching funds and $5,000 travel stipend from the Engineering Design Council this year. Previously our club received in-kind donations of free subscription for ClickUp, productivity and project management platform, a license for Ansys, mechanical analysis software, in-kind donations of foam from DunaGroup and free manufacturing of our suspension components by Ford. Our team is constantly working on acquiring new sponsors to enlarge the list of companies funding this project.

# Environmental, Economic, and Awareness Impacts

**How will the project improve environmental sustainability at the Urbana-Champaign campus? If applicable, how does this project fit within any of the** [**Illinois Climate Action Plan**](https://icap.sustainability.illinois.edu/) **(iCAP) goals?**

Our team believes that the future of the automobile industry lies in the continued development of autonomous energy efficient electric vehicles. Not only do electric vehicles provide a drastic increase in energy efficiency, reduce greenhouse gas emissions, and benefit the environment, but autonomous vehicles also provide a more “thoughtful” way of controlling a vehicle. Intelligent acceleration and braking minimizes energy losses, reduces long term costs, and therefore prolongs the range of a vehicle. Autonomous vehicles can streamline traffic in big cities, drastically reducing energy wasted at a standstill and therefore reduce our carbon footprint, as well.

In the scope of the project Illini EV Concept will: collaborate with other groups on campus to combine and recycle piles of unusable electronics and circuit boards. Our team has a capability of controlling the Li-Ion cells and we can reuse them for our testing battery packs via a help of a custom built Battery Management System. Our team found that a lot of consumer wearable electronics, such as vapes for example, are using Li-Ion batteries that can be reused but are thrown away everyday. Also old power supplies have a lot of valuable components, such as transformers and high-voltage capacitors, that can be reused in some of our club’s projects. Also by recycling printed circuit boards properly, 99% of precious and scarce metals can be recovered and reused in efforts to maximize sustainability and hold quarterly online sessions about sustainability and electric vehicles to both students and the general public.

**How will you monitor and evaluate the project’s progress and environmental outcomes? What short-term and long-term environmental impacts do you expect?**

*Some examples include carbon emissions, water conservation, green behavior, and reduced landfill waste.*

The progress of the project will be monitored and evaluated using ClickUp, where team leads assign members work and report the progress of the project to the platform. Our team has been using this platform for more than a year and it helped us to monitor deadlines. Environmental outcomes will be evaluated by the amount of batteries, boards and pieces of electronic equipment our team gets. EV Concept’s short-term goal is to clean the campus from excessive amounts of electronics and reuse components and if not possible collect the electronics for proper utilization after. Another small goal of the project is to save at least 200W of power while running our vehicle which will decrease the amount of consumed power of EV Concept. Our big goal with this project is to promote energy efficient and autonomous vehicles on campus emphasizing on sustainability and recycling. We feel like by showing a good example, other projects on campus will follow our footsteps and together we will minimize the amount of electronic waste on campus.

**What are your specific outreach goals? How will this project inspire change at UIUC?**

Our team plans to have quarterly online seminars about energy efficiency of vehicles, autonomous driving and sustainability in transportation for both students and the general public. We will try to get professors who are interested in those topics to give presentations during these seminars. By providing an excellent opportunity to either work on or follow development of the first fully student built energy efficient autonomous vehicle we hope to make people more aware of sustainability and better ways of utilizing resources and energy.

**If applicable, how does this project impact environmental injustice or social injustice?**