*Please submit this completed application, the supplemental budget spreadsheet, and any relevant supporting documentation by the deadline indicated in your Step 1 notification letter 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 SSC at* *Sustainability-Committee@Illinois.edu**.*

# General Information

**Project Name:** Illini Gadget Garage Campus Workshops and Pop-up Clinics

**Total Amount Requested from SSC:** $12,000

**Project Topic Area(s):** [ ] Energy [ ] Education [x] Food & Waste

 [ ] Land [ ] Water [ ] Transportation

# Contact Information

### Project Lead

Applicant Name: Joy Scrogum

Unit/Department: Illiniois Sustainable Technology Center

Email Address: jscrogum@illinois.edu

Phone Number: 217-333-8948

### Financial Contact *(Must be Full-time University of Illinois Staff Member)*

Contact Name: Laura Kohlmann

Unit/Department: Prairie Research Institute

Email Address: lkohlman@illinois.edu

Phone Number: 217-244-6990

Organization Code: 807000

### Facilities Management Contact *(If Applicable)*

Contact Name: Name of Applicant or Project Lead

Email Address: Preferred Email Address

**Primary Project Team**

|  |  |  |
| --- | --- | --- |
| **Name** | **Department** | **Email** |
| Amanda Elzbieciak | Illinois Sustainable Technology Center | Elzbiec2@illinois.edu |
| Hourly Employee | Illinois Sustainable Technology Center | TBD |
| Name | Department/Organization | Email Address |
| Name | Department/Organization | Email Address |

# Project Description

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

E-waste is a growing problem. Millions of tons of e-waste are generated each year in the United States; over half of it ends up in landfills and incinerators. Not only is this a waste of precious, finite materials, but also a waste of human resources that went into its manufacture, and a danger to human and environmental health through potential contamination of air, soil, and water due to heavy metals (e.g. lead and mercury) and other toxic substances found in electronic devices. While recycling is the better and still underutilized alternative to just throwing things away, the continued use and reuse of a product is best. After all, the most sustainable device you will ever find is the one that you already own. As consumers, we tend to ignore these facts. We are enamored by the latest and greatest technology and in our drive to possess it, we frequently find ourselves getting rid of still functioning devices because they’re older, slower, won’t hold a charge, or have cosmetic damage which makes them less desirable. The culture around technology has led us to believe that it’s easier and more economical to just replace devices rather than repair them, and that knowing how to repair them is limited to those who have received special training. The Illini Gadget Garage (IGG) was started to combat such perceptions.

The project was established in 2015 with funding from SSC to address the e-waste issue, encourage discussion of impacts of electronics throughout their product life cycles, educate about local recycling options, and foster a shift in our campus community mindset from a “throwaway society” to more a “repair and reuse” culture. We have established a permanent collaborative repair center in UI Research Park where students, staff and community members can bring their personally owned electronic devices for assistance in troubleshooting and guidance in performing minor repairs. This not only prolongs the useful life of electronic devices in the UI community, but also empowers individuals to feel capable of repairing and maintaining devices they own. Over half of the visitors who participated in repair at the Illini Gadget Garage in 2017 were students. In 2017 alone, we managed to divert almost 350 pounds of materials away from landfills; over 60 percent of which was diverted by rescuing devices through collaborative repair. In reaching out to students and the UI community we hosted a total of 50 repair pop-ups on campus throughout the year at the Undergraduate Media Commons and the Champaign-Urbana Community Fab Lab. We also offered a few workshops at our main location, such as a group teardown workshop where UI community members could actively participate in disassembling and reassembling a laptop without the stress of damaging a personal device, and a holiday lights repair workshop. In the future, we would like to offer additional workshops to encourage electronic device repair and empower individuals to be more hands on with the internal components of the devices they interact with everyday.

Thus, our team is applying for additional funding from the SCC with the following goals:

1. Hire a student hourly to assist our existing staff member with the functions essential to operating the IGG, such as but not limited to: assisting with workshops, investigating common problems and solutions of electronic devices, promoting our services, and working collaboratively to repair non-functioning electronics with a variety of individuals both at our main location and out at pop-ups in the community. During fall 2017, our project had two hourly employees to serve as repair guides, working with volunteers and clientele on collaborative repairs. One of these team members has accepted a position elsewhere, and though she will continue in a volunteer capacity as her schedule allows, two hourly staff are needed to ensure adequate service.
2. Host a series of free workshops in order to help address common problems in a way designed to result in success and a sense of accomplishment. This will foster empowerment and combat the perception that device repairs are activities only possible or conceivable for certain subsets of the population. As these workshops will involve a great deal of hands on work and attention to detail in collaborating with those new to working on electronic devices and building new skills, we will set aside a small portion of funds to compensate for our project coordinator’s time and involvement in assisting with these efforts as well. Funding the development of these workshops, to be offered to UI students at no charge, will also help the IGG’s efforts to become financially self-sustaining, since once developed and piloted as part of this grant, these programs may be offered again in subsequent semesters to a broader audience (i.e. non-students) for a registration fee.
* Soldering for Beginners
	+ This workshop will focus on building repair confidence and skills by teaching visitors the basics of soldering. Through hands on learning, they will gain an understanding of the required tools and steps necessary to solder and will be given a small item to practice upon. A workshop basic soldering was one of our most popular suggestions when polling the UI community regarding desired workshop topics via our social media platforms. We would require registration for the workshop to ensure that we have an adequate number of soldering irons and materials available for the workshop. The practice solder projects will be theirs to keep, along with a handout covering basic techniques on soldering for future reference.
* Clean Those Gizmos
	+ This workshop will focus on prolonging the life of existing devices through maintenance. Many items that come to the IGG are just in need of some minor care. From cleaning dust and debris out of laptop fans and charging ports to removing battery corrosion from forgotten devices to drying out devices that have gone through the washing machine, we want to help you get your devices in good working order again. Participants will need to register in advance of the workshop so we can gather the appropriate tools and supplies needed to disassemble the device, if needed, and clean it. We will prepare a common cleaning care guide handout for visitors to take home, as well, from the workshop.
* Group Teardown 2.0
	+ This workshop will focus on building repair confidence by allowing visitors to practice on a device without the stress of breaking something that they personally own. We’re looking to delve into an identical set of broken devices to understand how to open, repair, and close an electronic device. An added benefit is having other individuals there to collaborate with as we go through the device, doing so helps to alleviate the stress of making mistakes and provides different perspectives and approaches of how to solve problems.
1. Provide pop-up repair clinics to students, staff, and visitors to the UI campus. This will allow us to continue reaching out to the UI community by making our repair assistance available on campus via pop-ups. Twice a week we will conduct 4-hour sessions at various campus locations (e.g. Illini Union, engineering campus, libraries, etc.) to assist anyone who stops by with questions related to their devices or with physical repair of their broken electronics. As some repairs may not be able to be completed during these pop-ups sessions– due to time restraints or the need for tools which are not easily transportable – we will operate additional hours at our physical workshop in the Research Park area for follow-up appointments.

**How will the project improve the sustainability of the Illinois campus and how will the project go above and beyond campus standards?**

The Illini Gadget Garage seeks to reduce the amount of electronic waste produced by those on the University of Illinois campus as well as by the surrounding community of Champaign-Urbana. By promoting and encouraging the repair of broken and worn down electronics and empowering individuals to tinker, troubleshoot, and become more familiar with their devices, we can help keep devices in service longer and out of the waste stream. Through troubleshooting and repair, we will engage patrons in observations and discussions about how decisions made in the design phase of a product’s life cycle (e.g. durability of materials used, whether pieces are glued in place or affixed using screws or other means, modularity of design, etc.) affect the ability of a device to be repaired, upgraded, or recycled at its end-of-life. In situations where a device cannot be repaired with the tools and guidance available in our workshop, our staff will assist patrons in researching local repair businesses that could address the given issues and devices, fostering an awareness of and appreciation for local repair culture. In situations where a device is beyond repair, project staff will familiarize patrons with local electronics recycling options, along with information on the state landfill ban of various electronics, thus facilitating responsible recycling and helping members of the public understand the importance of electronics recycling. The Illini Gadget Garage also collects both single use and rechargeable batteries for recycling, as well as related “special materials” such as CDs and DVDs. Together, all of these efforts help the campus to address the iCAP goal of diverting 90% of solid waste from landfills. These efforts further introduce concepts related to the circular economy, sustainable product design, legislation and infrastructure related to repair and recycling, and how individuals, manufacturers, and other stakeholders can contribute to achievement of UN Sustainable Development Goal 12: Ensure sustainable consumption and production patterns (<http://www.un.org/sustainabledevelopment/sustainable-consumption-production/>).

**Where will the project be located? Will special permissions be required to enact the project on this site? If so, please explain and submit any relevant letters of support with the application.**

The Illini Gadget Garage’s workspace is located at 1833 South Oak St in Champaign (Research Park), but we host frequent events and pop-ups at various places in the community to reach out to students and community members. Recurring places we have held pop-ups are the Undergraduate Library Media Commons, the Champaign-Urbana-Community Fab Lab, and Champaign Public Library. As noted above, part of the proposed work plan for this grant would be to host such pop-ups regularly in various locations around campus, where rooms or other public space may be reserved for such activities. The proposed workshops outlined above will be hosted at our workspace on Oak St.

**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 will be benefitting from this project. Please attach letters of commitment or support at the end of the application.**

Groups which might benefit from this project, beyond the project team and the general population of UI students and staff who could be clients include:

* Members of the broader Champaign-Urbana community, who may also visit our workspace and attend pop-up clinics for assistance. It was noted above that our free collaborative repair assistance is important for students who are often on limited budgets. Our assistance is particularly beneficial to anyone with limited income/budgets in our broader community, as the perception of the cost of repair is one reason many people replace items rather than trying to repair them. We are aware, from patron reports, that some local repair shops have suggested that a patron who decides to not pursue repair with them due to limited funds seek out our project for assistance.
* Other “fixer” communities on campus (such as members of the bike shop) who may be interested in a place to work on maintenance and repair of additional products, and who could benefit from participation in the iFixit Technical writing program (which is not restricted to work involving electronic products). The Gadget Garage has a space dedicated to photography related to preparation of iFixit guides. This equipment, and advice on how the technical writing program could fit into their activities, could allow these other “fixers” to share their knowledge more broadly, further fostering a culture of repair and maintenance as opposed to disposal and replacement.
* iFixit, which benefits from having UI as a partner in its technical writing project (see <http://edu.ifixit.com/current-universities>).
* Various registered student organizations with interests in computers, electronics, engineering, design, STEM education, or in sustainability. Some RSOs, such as Engineers Without Borders, could benefit from volunteering at the Gadget Garage and learning about both collaborative repair and the creation of online repair guides.
* Local businesses involved in electronic repair and recycling, which could benefit from raised awareness resulting from Gadget Garage staff assisting patrons with research on available community services.
* Local non-profits which may benefit from Gadget Garage referrals for donations of devices or components (e.g. the IDEA Store, Goodwill, ReStore, etc.)
* “Maker” communities on campus (e.g. the FabLab) whose members are interested in product creation and prototyping. These individuals would also presumably be interested in repair and maintenance of their creations, and could benefit from the tools and resources which would be available at the Gadget Garage. These individuals might also learn lessons on designing for disassembly and repair to apply in their own creative projects through participation in collaborative repair and troubleshooting of existing devices at the Gadget Garage.
* Our project coordinator is a member of the Technical Assistance Program (TAP) staff at the Illinois Sustainable Technology Center, which works with a variety of clients throughout the state on improving the sustainability of operations. In some instances, TAP clients may be interested in sustainability engagement events for their own employees. In such instances, hosting an Illini Gadget Garage pop-up clinic at their facility may be recommended to TAP clients. (Note that TAP clients interested in hosting Gadget Garage pop-ups would pay for project staff time and other associated expenses via revenue generating agreements with ISTC; SSC grant funds would NOT be used for these activities.)
* Individuals and corporations which donate funds or materials (in-kind contributions) to support the project via the UI Foundation (see <http://wp.istc.illinois.edu/ilgadgetgarage/donate/sponsors/>).

**Please indicate how this project will involve or impact students. What role will students play in the project?**

Students (undergraduate and graduate) will continue to be involved as volunteers at the IGG, performing troubleshooting, assessment, and collaborative repair of devices along with IGG clientele. Courses, special student projects, and Registered Student Organization activities may also be held in conjunction with the IGG, as has been the case in previous years. As noted above, we would like to hire a student hourly employee to assist with project operations. And if funded, the aforementioned series of workshops would be offered free-of-charge to UI students.

Students will also be involved as clientele, benefiting from the repair of their items and/or the provision of information and assistance regarding recycling and reuse options. Students interact with digital devices everyday and many are unfamiliar with how they function or what can be done when they fail to function properly, as a result many devices that can be repaired are disgarded and end up in the waste stream. Doing so is not only environmentally harmful due to the waste being created, but also in driving the demand for more products to be manufactured – and by extension the depletion of our natural resources – when devices are discarded and new ones are purchased to replace them. Purchasing new items to replace damaged but still functioning devices (such as phones with cracked screens) is an additional financial burden placed on students which we seek to alleviate by teaching them about their devices, how to repair them themselves, and keep the devices functioning longer for less than the cost required to purchase a new replacement device. Student outreach through pop-ups around campus and through workshops will bring awareness to the issue and give students the opportuinity to learn and tinker with their devices in order to promote sustainability.

In learning and becoming comfortable with repairing devices and troubleshooting common issues, students may gain a valuable skillset that is not only financially beneficial but can be beneficial in future employment opportunities and well as in everyday life.

# Financial Information

*In addition to the below questions, please submit the supplemental budget spreadsheet available on the Student Sustainability Committee website. 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?**

Joy Scrogum was on the project team on a proposal submitted to SSC in 2011. That proposed project was similar to the Illini Gadget Garage concept, but focused on students repairing Prairie Research Institute (then the Institute of Natural Resource Sustainability) owned computers that would otherwise be sent to University Surplus. That proposal, called "Repurposing Campus E-waste," was not funded. Ms. Scrogum was on the project team for an SSC funded project called "UIUC Baseline Waste Characterization and Zero Waste Pilot Program." Ms. Scrogum and colleagues received funding from SSC in 2015 to launch the Illini Gadget Garage project. Additional funding was provided by the SSC in 2016 to perform renovations to make our work space ADA compliant.

**If this project is implemented, will there be 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.**

Ongoing funds will be required for consumables such as printer paper and office supplies, and for wages for hourly employees who coordinate volunteers, schedule and lead appointments with patrons, and other aspects of daily operations. Funds for such expenses will be sought via donations, additional relevant grants, and fees from off-campus events (e.g. [employee engagement events](http://wp.istc.illinois.edu/ilgadgetgarage/repair/employee-engagement-events/), workshops, etc.). At the time of writing this Step 2 proposal, we have scheduled a discussion with a company in Northern Illinois that is interested in collaborating with project staff to present a pop-up repair event in its community. Exploring this possibility is in preliminary stages, so it is too soon to be able to provide a letter of support to describe the activity. As noted before, any such activities with off-campus entitites would involve revenue generating agreements with those entitites to cover expenses and would not draw upon SSC grant funds. Thus, employee engagement events, workshops offered to the broader community for a fee, and off-campus clinics hosted in collaboration with businesses are potential additional sources of funds to help sustain the project and continue offering “free to the public” services both on and off campus. Workshops developed and presented to UI students for free as part of this proposal will be revised/improved based on feedback from participants, and offered in subsequent semesters to a broader community audience for registration fees, which would be used to sustain the project. The project team continues to appeal to corporate sponsors and individuals for donations to support the Gadget Garage. See <http://wp.istc.illinois.edu/ilgadgetgarage/donate/sponsors/>. See also <http://www.sustainelectronics.illinois.edu/SEIdonation.html> for a donation form set up with the UI Foundation; the Illini Gadget Garage is the only current educational project which is drawing on funds in that account. Finally, we are exploring the development of a service account so we might collect fees from individuals who drop off large quantities of batteries for recycling at our workspace, to cover the costs of shipping those items to a battery recycler.

**Please include any other sources of funding that have been obtained or applied for. Please attach any relevant letters of support as needed in a separate document.**

While initial funding has come from the SSC, the Illini Gadget Garage is seeking to become self-sustaining through providing community engagement opportunities (<http://wp.istc.illinois.edu/ilgadgetgarage/repair/employee-engagement-events/>) for local businesses and through generous donations of high level sponsors such as HOBI international and iFixit as well as local businesses and individuals who support our goals and mission. We are currently contacting local banks to request donations to support off-campus pop-up clinics.

# Environmental, Economic, and Awareness Impacts

*In addition to the below questions, please indicate specific measurable impacts as applicable on the supplemental budget spreadsheet.*

**Which aspects of sustainability does your project address, and how? Does the project fit within any of the iCAP goals? If so, how does the project go beyond the university status quo standards and policies.**

The Illini Gadget Garage addresses waste reduction of consumable electronics. Through education and outreach our goal is to inform students and community members of the dangers accompanying improper disposal of electronic waste and how it is a growing issue with the staggering amount of devices with electronic components in use and continuing to be produced today, as well as to empower them to take responsibility for their electronics through learning repair and sustainable practices. As noted previously, we also provide recycling opportunities for single use and rechargeable batteries, as well as “electronic accessory” materials such as CDs and DVDs. Our efforts help the campus to address the iCAP goal of diverting 90% of solid waste from landfills. Typically waste diversion efforts focus on recycling, but our project also fosters waste reduction and reuse, as well as educating the public about responsible recycling. These efforts further introduce concepts related to the circular economy, sustainable product design, legislation and infrastructure related to repair and recycling, and how individuals, manufacturers, and other stakeholders can contribute to achievement of UN Sustainable Development Goal 12: Ensure sustainable consumption and production patterns (<http://www.un.org/sustainabledevelopment/sustainable-consumption-production/>).

By providing experiential learning opportunities tied to everyday needs of students, faculty, and staff, and creating opportunities for UI students to become involved in community service, our project also addresses the iCAP goal related to providing sustainability immersive experiences. By being open to collaboration with professors to incorporate IGG service, projects, and/or the iFixit Technical Writing project into their courses (see “UI Student Involvement” at <http://wp.istc.illinois.edu/ilgadgetgarage/about/our-impact/>), we support the iCAP goal to encourage course development or modification to include sustainability and/or to provide students the opportunity to explore sustainability through independent student projects.

**How will the environmental impacts of your project be measured in the near and long term? What specific monitoring and evaluation processes will you be using to track outcomes and progress?**

Since the Illini Gadget Garage was started, statistics have been collected in order to monitor and evaluate our progress; weights of devices brought in for repair are recorded, as well as the weights of batteries and other “special materials” collected for recycling. In 2017 alone, the Gadget Garage diverted almost 350 pounds of materials away from landfills through repair and special collection recycling. Of that total, 212 pounds were diverted through the collaborative repair of damaged devices belonging to students and community members. We also keep track of the number of individuals who participate in collaborative repair with our guidance, the number of pop-ups and other community events we participate in, the number of iFixit guides created as the result of our project, course interactions, etc. See “Our Impact” page at <http://wp.istc.illinois.edu/ilgadgetgarage/about/our-impact/> and both the 2017 Impact Infographic (<https://drive.google.com/file/d/1z9t4L4l1cWejX6iS1idRDjRDtljMp8qK/view>) and the All Time Impact infographic (<https://drive.google.com/file/d/1WeSX_NBrUvl5K8kkBR9QU6Q4dVgtVEQ8/view>).

For workshops proposed for this grant, progress will be measured by the number of participants. We also plan to collect informal, post-workshop feedback from participants to guide us in improving programming for the future.

**What is the plan for publicizing the project on campus? In addition to SSC, where will information about this project be reported?**

The Illini Gadget Garage has several social media outlets which we uses to promote special events and our services to students and the community. In addition to Facebook, Twitter, YouTube, and Instagram, our website hosts a blog where we post about upcoming events or information pertaining to sustainable electronics. We work with communications staff at the Prairie Research Institute to provide digital signage for buildings across campus to promote pop-up clinics. We have also produced podcasts for WEFT on relevant issues and participated in various community events (e.g. Taste of Champaign, Quad Day, etc.) as listed on our impacts page (<http://wp.istc.illinois.edu/ilgadgetgarage/about/our-impact/>). We regularly take promotional postcards (<https://drive.google.com/file/d/0B2MYVVfo5KygY3I0MGhTcG1ldWM/view>) and/or flyers (<https://drive.google.com/file/d/0B2MYVVfo5KygdkRCNTI1a21Nbzg/view>) to post on various campus building bulletin boards or to place at information centers in libraries, cafes, etc. We will also continue to reach out to professors of relevant classes or participants in/advisors of relevant projects/programs (e.g. the Sustainability LLC, RSOs) to make presentations to groups of students who would be interested in being either patrons or volunteers. Information about our project is reported on our web site at <http://wp.istc.illinois.edu/ilgadgetgarage/>.

**What are your specific, measurable outreach goals? How will these be measured?**

In 2018 we hope to match or exceed our 2017 statistics (<https://drive.google.com/file/d/1z9t4L4l1cWejX6iS1idRDjRDtljMp8qK/view>) for the number of people assisted with repair and the amount of material diverted from landfill. The amount of material diverted from landfill is measured as the weights of devices successfully repaired (or referred to recycling, if applicable) and the weights of materials collected for recycling. We will also keep track of the number of participants in our proposed workshops.

**Do you have any additional comments or relevant information to aid in evaluation of this application?**

Please provide any additional information here.