Caltech Green Labs Guide

Tips and tricks to make your lab more sustainable.

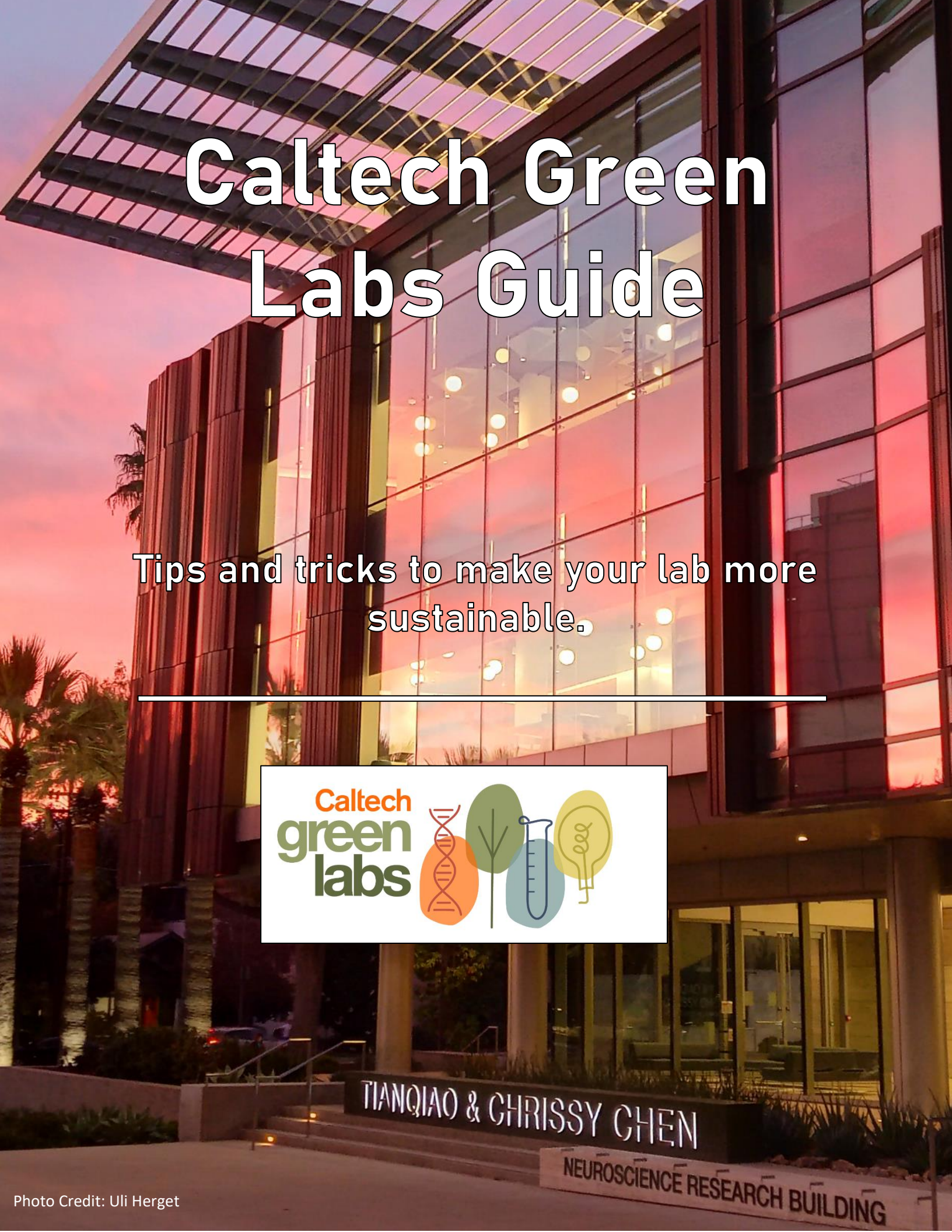

Photo Credit: Uli Herget

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1. Why Green Labs?

It is a truth universally acknowledged that science has a garbage problem. Further, California is currently facing an extreme drought and energy shortages compounded by a changing climate. We could expound on these and other issues until all the world's plastic fully decomposes. However, this kind of conversation is not conducive to getting people on board with changing lab culture to *actually* make a difference. The statistics we found when forming this guide are staggering (for example: did you know that average bench scientist typically produces over 2200 pounds of plastic waste each year, as compared to the average American who produces about 200 pounds of plastic waste every year? It's true!) and are, frankly, a result of scientists being overwhelmed and maintaining old habits and superstitions. So, instead of expounding on the sustainability issues facing scientists and citizens alike worldwide, Green Labs has decided instead to look at the positives of operating a sustainable lab. That's what this Guide is about!

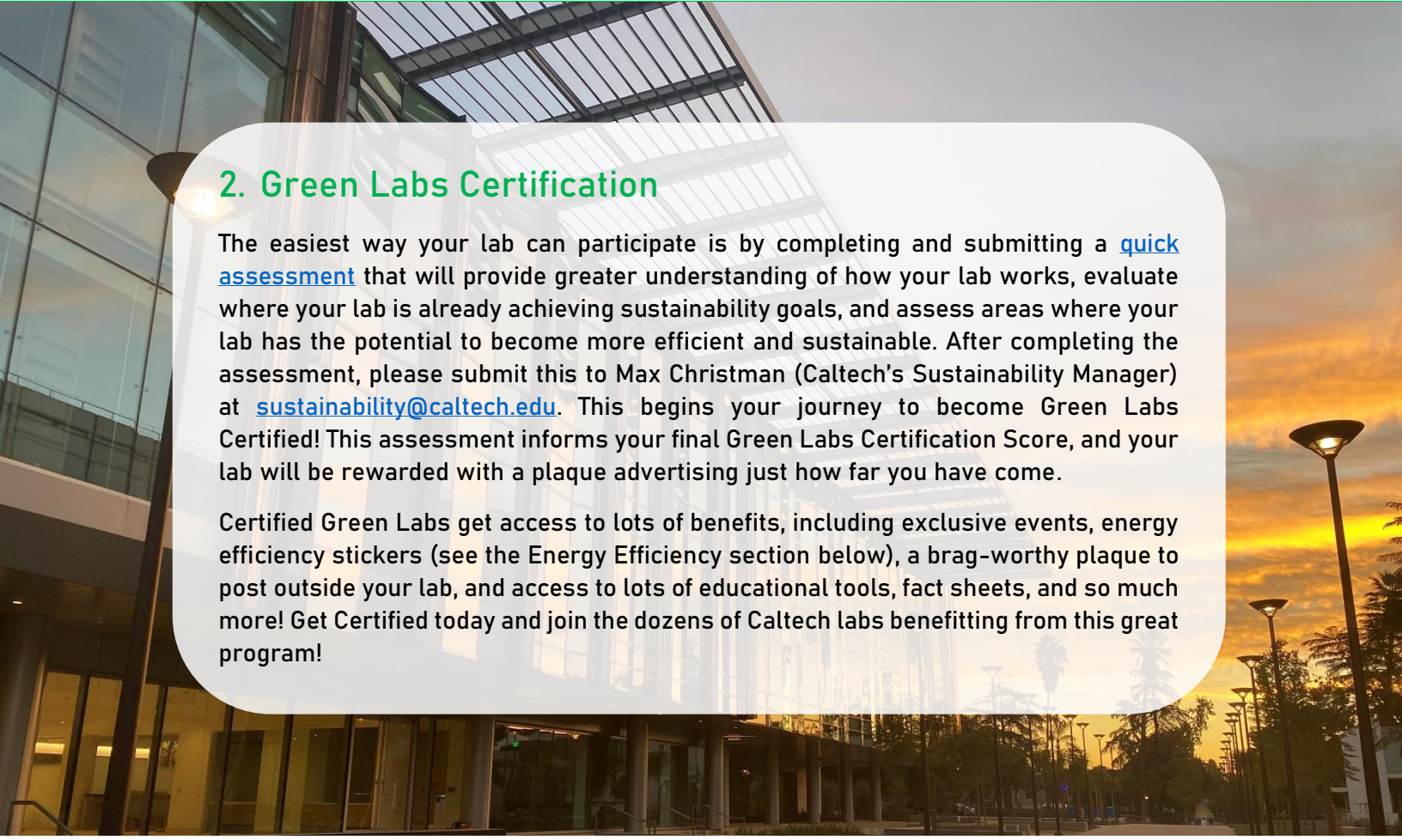
Operating a sustainable lab is beneficial not only to the environment, but also to a lab's bottom line! Often, simple, cheap (or free!) solutions make all the difference in a laboratory setting. It is in everyone's best interests to place sustainability first when running a lab.

However, we know that running a lab is complex and busy, and not all solutions will work for every lab. Here, we have outlined a few main areas of interest that have worked for our pilot labs, in the hope that these adjustments will work or will inspire other sustainable changes in your lab! The most important part is getting your whole lab engaged and excited about increasing efficiency, reducing costs, increasing safety in the lab, allowing for innovation, all without compromising research objectives.

The benefits of voluntary participation are:

❖ Reduce overhead costs ❖
❖ Increase research efficiency ❖
❖ Reduce carbon footprint and pollution ❖
❖ Recognition for sustainability efforts on grants ❖
❖ Strengthen team building and community ❖
❖ Prolong equipment life ❖
❖ Greater access to sustainability resources and funding ❖
❖ Recognition as lab sustainability champion ❖
❖ Increase scientific innovation ❖
❖ Enhance lab visibility and attractiveness to students ❖

Photo Credit: Tasha Cammidge



2. Green Labs Certification

The easiest way your lab can participate is by completing and submitting a quick assessment that will provide greater understanding of how your lab works, evaluate where your lab is already achieving sustainability goals, and assess areas where your lab has the potential to become more efficient and sustainable. After completing the assessment, please submit this to Max Christman (Caltech's Sustainability Manager) at sustainability@caltech.edu. This begins your journey to become Green Labs Certified! This assessment informs your final Green Labs Certification Score, and your lab will be rewarded with a plaque advertising just how far you have come.

Certified Green Labs get access to lots of benefits, including exclusive events, energy efficiency stickers (see the Energy Efficiency section below), a brag-worthy plaque to post outside your lab, and access to lots of educational tools, fact sheets, and so much more! Get Certified today and join the dozens of Caltech labs benefitting from this great program!

Caltech

Green Lab Certification Dashboard

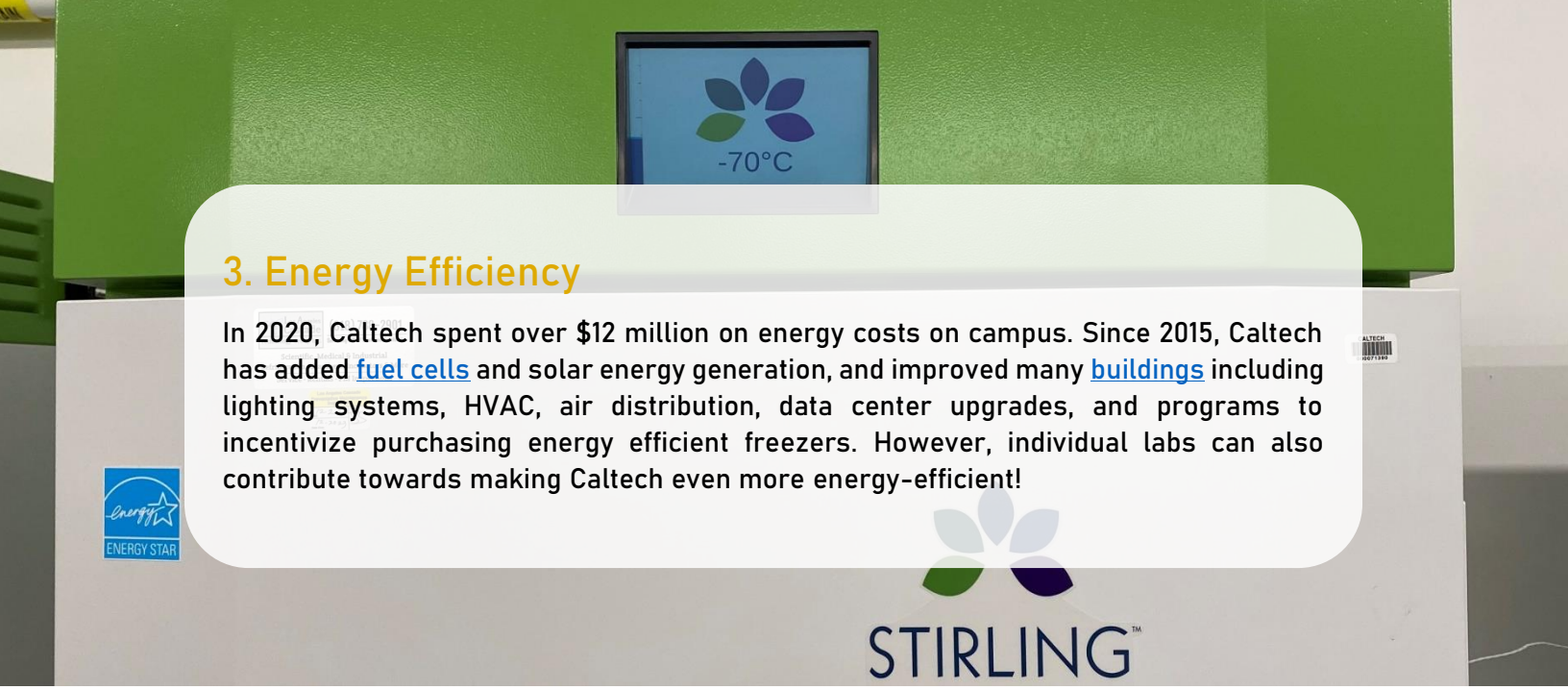
Current Level	Gold
Total Points	25
Points Needed to Achieve Next Level	5

Leaf Level	Points Required
Bronze	5
Silver	15
Gold	25
Platinum	30

What categories are you strongest/weakest in?

Category	Total Points Achieved	Total Points Available	Progress
Commitment	2	2	100%
Administrative	2	2	100%
Education	2	2	100%
Energy/Refrigeration	6	13	46%
Materials	6	7	86%
Purchasing	4	6	67%
Water	3	4	75%
TOTAL	25	36	69%

Photo Credit: Gerard Coughlin



3. Energy Efficiency

In 2020, Caltech spent over $12 million on energy costs on campus. Since 2015, Caltech has added fuel cells and solar energy generation, and improved many buildings including lighting systems, HVAC, air distribution, data center upgrades, and programs to incentivize purchasing energy efficient freezers. However, individual labs can also contribute towards making Caltech even more energy-efficient!

3.1 Turn off Equipment

This is by far the easiest way to save energy in the lab. Simply turn off any unused equipment, especially equipment that maintains temperature, as those draw the most power. One way to do this is to use outlet timers, which ensure equipment is ready to use when needed, but is turned off during quiet hours. Outlet timers can save 10% of energy annually. If you'd like more information on how to make general lab equipment more efficient, Science recently published this article.

Green Labs Certified labs have access to colour coded stickers that can communicate to lab members what the various energy needs are for each piece of equipment:

Green sticker: for equipment that can be turned off immediately after use
Yellow sticker: for equipment that can be turned off at the end of the day
Red sticker: for equipment that can never be turned off

Consider adding the condition that the last person to leave at the end of the day takes a look at the equipment and ensures all equipment that can be turned off is turned off before they leave!

You can also ask your lab members to turn off computers, computer monitors, printers, and other office equipment at the end of the day. These pieces of equipment can also be run using power-save modes where equipment that has not been in use for a while switch to lower-energy "sleep modes" and can quickly be "woken up" again. Also, turning off screen savers saves a lot of energy! Further, printers can be defaulted to only print in black and white, and only print double-sided to save both energy, and office supply costs!

Computers dedicated to laboratory equipment may also have "hibernate" interfaces, but it may be necessary to talk to a specialist to confirm these settings are safe and will not interfere with normal functioning of the equipment.

Lastly, your lab can work towards sending fewer emails. Each email emits about 4 g of CO_2 (and if there is an attachment it emits more than 50 grams of CO_2!). So, unsubscribing from all those unwanted mailing lists could save a lot of carbon a year! Further, if you are sending large attachments, you can select "upload to OneDrive" which minimizes the emissions from your email.

Photo Credit: Tasha Cammidge; Sticker design: Sami Chang

3.2 Shut the Sash Initiative

We know many (or most!) fume hoods on campus have a sticker indicating where the fume hood is safe to operate at, and that the sash should be closed after use to keep everyone safe. If your fume hood does not have this feature, please contact your building manager or facilities to have one installed. Many labs have been outfitted with sensors that will automatically close the sash after the user walks away. However, in those labs that do not have this feature, it is imperative that fume hoods are closed, not only to keep working conditions safe, but also to save energy. If possible, unused fume hoods may be able to be turned off, and/or work can be consolidated into a smaller number of fume hoods when possible.

3.3 Equipment Share Program

If your lab is considering purchasing new equipment, first see if labs nearby have those pieces of equipment that they may be able and willing to share with your lab. This is especially important for large freezers, cold rooms, and autoclaves. Further, if nearby labs can coordinate to only run autoclaves when they are full, this saves not only on energy consumption, but also water usage and costs for labs! Green Labs also hopes to work with facilities and building managers to develop an equipment and chemical repository or email share list.

3.4 -70˚C is the new -80˚C!

We know, we know! Changing the temperature on your ultra-low temperature (ULTs) freezers seems like the scariest possible thing to do in your lab! However, keeping freezers at -70˚C rather than -80˚C saves up to 30% of energy needed to run your freezer, which in turn will make it last longer. ULTs can consume as much energy as a typical house! You will also need to defrost your freezer less often, which, let's be honest, is a HUGE plus. While we know keeping the temperature lower also increases the amount of time your lab has to respond during an emergency, but consider this study that suggests that extra -10˚C only adds an additional 35 minutes before freezers get below where they are effective. Further, many things kept at -80˚C temperatures only actually require temperatures between -20 ˚C and -60 ˚C, due to how water crystallizes. It is also a good idea to keep an active inventory of stocks stored in the ULT, and keep the freezer free of frost, the cooling coils free of dust, and have your samples spaced out.

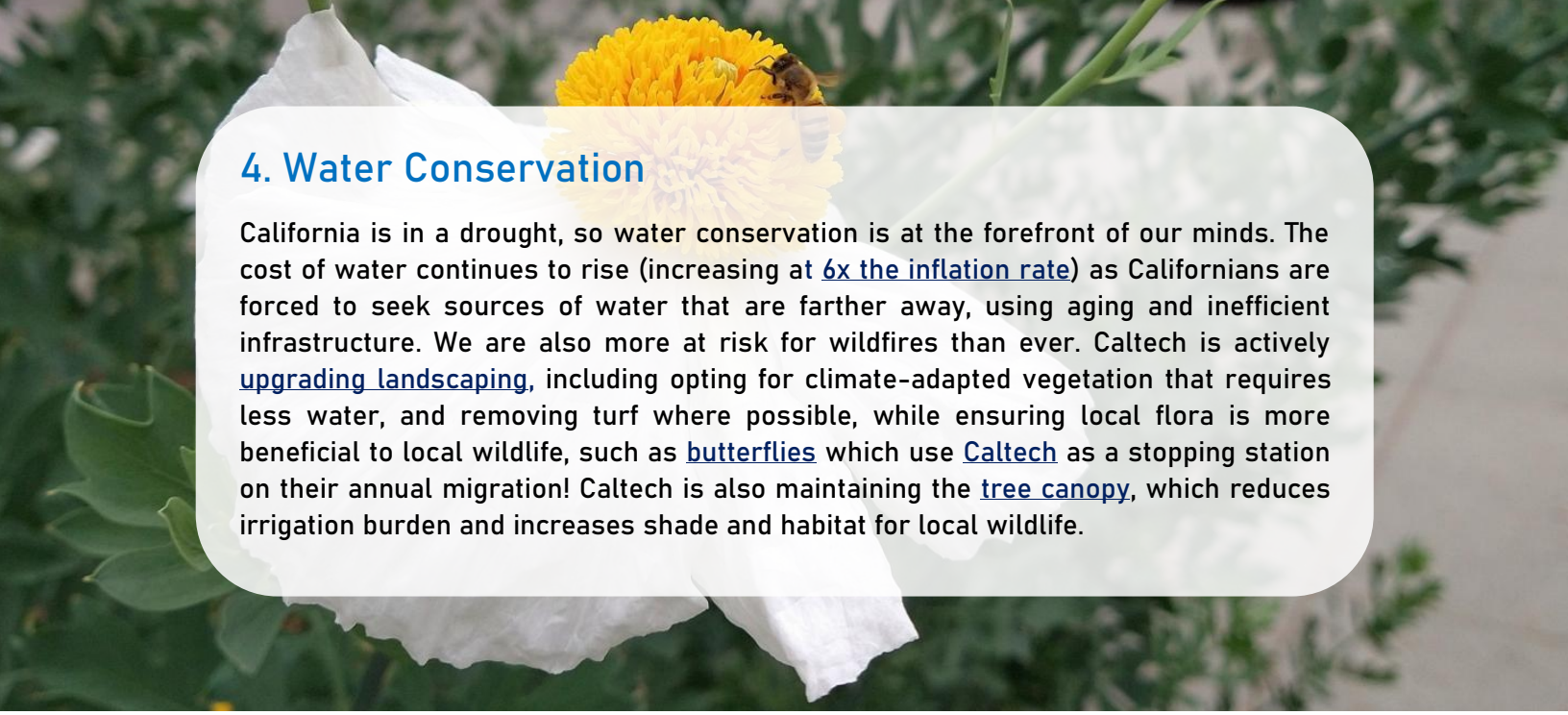
If your lab is unconvinced about switching the temperature permanently, you can also participate in our -70˚C/-80˚C comparison pilot study, or your lab can participate in the international Freezer Challenge for lots of great suggestions, and awesome prizes!

Lastly, if your -80 ˚C freezers are very old, consider replacing them with energy efficient models that consume less electricity. Sustainability has a great Freezer Rebate Program for anyone considering upgrading their ultra-low temperature freezers. Further, when disposing of your old -80 ˚C freezer, ensure it is disposed of correctly as they contain many materials that are hazardous, and even more that can be safely recycled! Some companies even have buy-back or trade-in programs that are worth investigating, especially for your new ULT.

3.5 Complete the Energy Efficiency Assessment

Green Labs members are developing a simple but useful energy efficiency assessment tool (coming soon!) that will help you analyze your lab and see where much of your energy use is coming from. While this tool is not all-encompassing, as it does not account for energy costs outside of the lab (for example: the blowers on the roofs of buildings), it will inform how your lab is "spending" energy.

You can also utilize the Lab Energy Score Tool from I2SL to compare your energy benchmark to other labs!



4. Water Conservation

California is in a drought, so water conservation is at the forefront of our minds. The cost of water continues to rise (increasing at 6x the inflation rate) as Californians are forced to seek sources of water that are farther away, using aging and inefficient infrastructure. We are also more at risk for wildfires than ever. Caltech is actively upgrading landscaping, including opting for climate-adapted vegetation that requires less water, and removing turf where possible, while ensuring local flora is more beneficial to local wildlife, such as butterflies which use Caltech as a stopping station on their annual migration! Caltech is also maintaining the tree canopy, which reduces irrigation burden and increases shade and habitat for local wildlife.

4.1 Report Leaks!

Leaks can go unaddressed for several weeks before they are reported, especially in public areas such as kitchens or washrooms. Even a small leak can waste a bathtub's worth of water a day! You can report leaks through the Facilities Service Requests Service Center.

4.2 Turn off Taps

We know this seems obvious, but you'd be surprised to know how much water gets wasted this way! Taps run at 4 gallons per minute, but aerators reduce flow to <1/5 gallons per minute (saving a whopping 300,000 – 900,000 gallons of water a year!). Consider installing water aerators that reduce the flow from your faucets. Further, foot pedals can be added to taps which make water usage more efficient, and more sanitary!

4.3 Use Appropriate Water Purity for Each Experiment

Water comes in many shapes and sizes in the lab, ranging from tap water to ultra-pure water. However, did you know it takes 3 gallons of water to make just 1 gallon of deionized (DI) water? You can help conserve water by using the appropriate grade of purity required for your work. Manufacture of higher purity water requires high pressure pumps and filters, all of which increase the energy consumption, consumables, and wastewater production. These adjustments will also help reduce financial and energy costs for your lab, and you won't have to replace those pesky water filters as often!

4.4 Replace Water-Intensive Machines

Many pieces of laboratory equipment are water-intensive, for example: water baths or single-pass cooling systems. Single-pass cooling systems use more than 13,000 gallons per year per lab! Consider replacing these machines with more sustainable models (for example: water baths can be replaced with bead baths or heat blocks (including those that can heat up to 98 ˚C in under 20 minutes!), which are less water- and energy-intensive!). A lab may even adopt simple alternatives for single pass cooling solutions for distillations or other procedures, such as high-efficiency air condensers (like the CondenSyn or Findenser), aquarium pumps placed in a bucket of ice water, or recirculating water cooling systems.

Photo Credit: Vijaya Kumar

4.5 Share Autoclaves and Check Autoclave Health

Autoclaves use as much as 60-90 gallons of water per cycle, equivalent to running your shower for 45 minutes. By running autoclaves only when full, you not only reduce water waste but also save a huge amount of energy! Consider arranging a schedule for autoclaving with your lab, and/or sharing loads with other nearby labs to reduce the need to run loads that are not full. Further, talk with your building manager about replacing older models, or installing water-saving devices on autoclaves. You can learn more about autoclaves here, and how to make their use more efficient (for example: many can be turned off or put into standby mode when not in use).

Take a look at the best practices for your equipment (for example: autoclave/steam sterilizers, glassware washers, fume hood filtration and washdown systems).

Lastly, ensure your autoclave is working properly. This includes checking to see if your solenoid needs to be replaced (do you hear water dripping constantly? That likely means your solenoid is broken and is automatically set to “open”, ensuring hot water doesn’t accidentally enter our pipes! Reach out to greenlabsinfo@caltech.edu for more information).

5. Waste Reduction

As we all know, science has a garbage problem! Not only in plastics production, but also in hazardous waste production. Labs produce over 2% of the world's plastic waste annually. Caltech alone spent $1.5 million disposing of over 1500 tons of waste in 2019! Waste reduction is definitely an area of sustainability that Caltech can improve upon.

5.1 Pipette Tip Box and Wafer Recycling and Composting Pilot Programs

Green Labs has partnered with USA Scientific and Genesee to establish pipette tip box and wafer recycling programs on campus. Any hard plastic that comes with pipette tips (wafers, racks, refill holders, filter tip refills, stack racks, etc.) can be recycled! Simply look on the map on our website showing where recycling bins are located. If you'd like a bin to be placed in your building, please reach out to us! If the brand you prefer offers refills, consider purchasing those as opposed to racks, since refill packaging has significantly less plastic than racks.

Green Labs also established a composting program, installing Lomi tabletop composters in kitchens in the Chen, Broad, and Beckman Institute buildings to tackle food waste at Caltech. We will collect data on the usage of these devices to encourage adoption of sustainable lunchtime practices for labs in BBE. In just a few hours per run, these Lomi composters transform our food waste into usable compost dirt that our gardeners are able to use to fertilize the lovely gardens here at Caltech.

5.2 Gloves

Gloves should be worn only where needed, and can be reused where safe and possible. Your lab can also consider alternatives to plastic gloves, including Genesee's biodegradable gloves, which not only are biodegradable, they are cheaper than traditional gloves (ask our rep for the Green Lab's discount!), and they come in larger box sizes (200 per box) which reduces waste! Green Labs is also looking into glove recycling programs, so stay tuned!

If you are an HHMI lab, you can get glove recycling for free (just reach out to your HHMI administrator for more details)! If you are interested in recycling your gloves, check out the Kimberly-Clark RightCycle Program (which recycles any eligible KC PPE) or the TerraCycle ZeroWaste Box Program (these can also be purchased through VWR for a discount!).

5.3 Hazardous Waste Disposal

Caltech removes, processes, and disposes of all hazardous waste on campus. Please contact the Biosafety Office for more information on what is, indeed, hazardous waste, and how to properly and safely dispose of this waste. EHS can provide advice and help your lab assess hazardous waste streams to optimize your workflow and waste disposal. For example: did you know that putting kimwipes or paper towel into the sharps hazardous waste disposal is an inefficient and costly method to dispose of these items? Instead, consider having a hazardous dry waste disposal area (for example: in a fume hood) where paper towel, Kimwipes, tips etc that have come in contact with hazardous chemicals can be safely disposed of.

Photo Credit: Brianna Garcia

5.4 Reduce, Reuse, and Recycle, folks!

Reduce: Managing purchases is the best way to eliminate waste. Consider asking other labs on campus if they have an excess of what you might need. Green Labs has established a Glassware, Chemical, and Equipment Exchange Program dedicated to sharing lab supplies (digital space for now, but we are actively looking for physical space!). Furthermore, labs can order only what is needed for the current experiments when possible, rather than ordering in bulk. What's more, you can reduce plastic waste by removing it entirely from your workflow (for example: you can opt to use glassware instead of plastic test tubes).

Reuse: Using plastics more than once, where possible and safe, is a good way to reduce plastic waste and reduce costs for your lab. For example: when loading a gel, tips can be reused for multiple wells by "washing" the tips between each sample in the gel buffer. Other items, such as test tubes and syringe plungers can also be saved and reused multiple times. Further, items that have only held water can be reused to hold other solutions in the future before discarding or can be turned into waste disposal vessels (if this is the case, thoroughly rinse the item and cross out the original label so others can safely handle the containers.

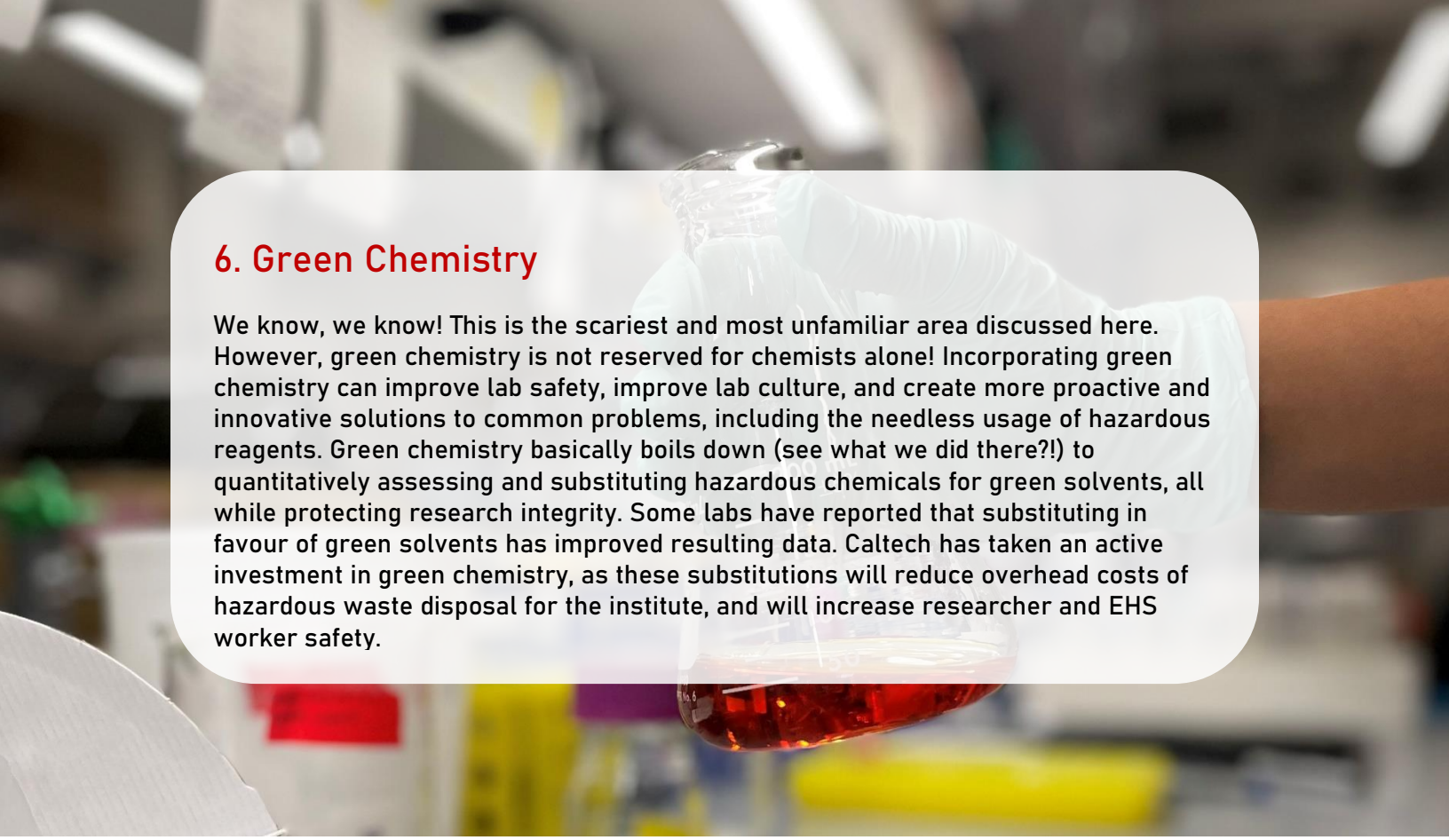
Many companies have buy-back programs. A few examples include Styrofoam return programs from NEB (just email them and they will send you a shipping label to send back Styrofoam boxes!), and Signa-Aldrich. Furthermore, Corning, Falcon, and Axygen product packaging can be recycled. Companies also commonly recycle printer ink and toner cartridges (check out this one from Office Depot, or this one from HP); we recommend searching for recyclers nearby that will recycle your ink cartridge brand. You can even sometimes send back your coffee pods! For companies that do not have buy-back or reuse/return programs, don't minimize your buying power! By asking companies you routinely purchase from to invest in buy back programs, you can use your leverage as a purchaser and sustainability champion to influence companies.

Soon, Green Labs is also establishing drop-off points where Styrofoam, and possibly ice packs, can be recycled or redistributed to labs in need. We are working with building managers and Facilities to investigate the best places on campus to put these drop-off points and will update the community as soon as locations are chosen.

Recycle: Most hard plastic can be recycled at Caltech! If you cannot reduce or reuse these items, please recycle them! For example: did you know that clean petri dishes can be recycled in regular recycling bins? Green Labs is developing new lab-specific signage for all your lab recycling needs, which will increase ease of recycling and transparency, and increase efficiency for custodians. Please ensure that all plastic that is recycled is non-hazardous and thoroughly rinsed/decontaminated before recycling. If recycling hard plastic bottles, please rinse and cross out the label, so custodians are assured they are not handling hazardous chemicals.

Generally, the best practice is trying to replace single-use plastics with reusable glassware that can be washed and reused for many years. This saves both the environment and lab finances!

Furthermore we recommend you utilize Caltech's e-waste program, which takes many types of common e-waste including batteries, laptops, printers, keyboards, cell phones, and so much more! If you wish to recycle a refrigerator, other large items, or items that don't fall within a particular e-waste category, please email safety@caltech.edu to check, as they may have chemicals or hazards that need to be cleared by the Safety Office prior to disposal. If you are recycling or divesting an old piece of equipment with an asset tag, check out Property Services for more information and instructions to ensure the equipment is removed from their inventories.



6. Green Chemistry

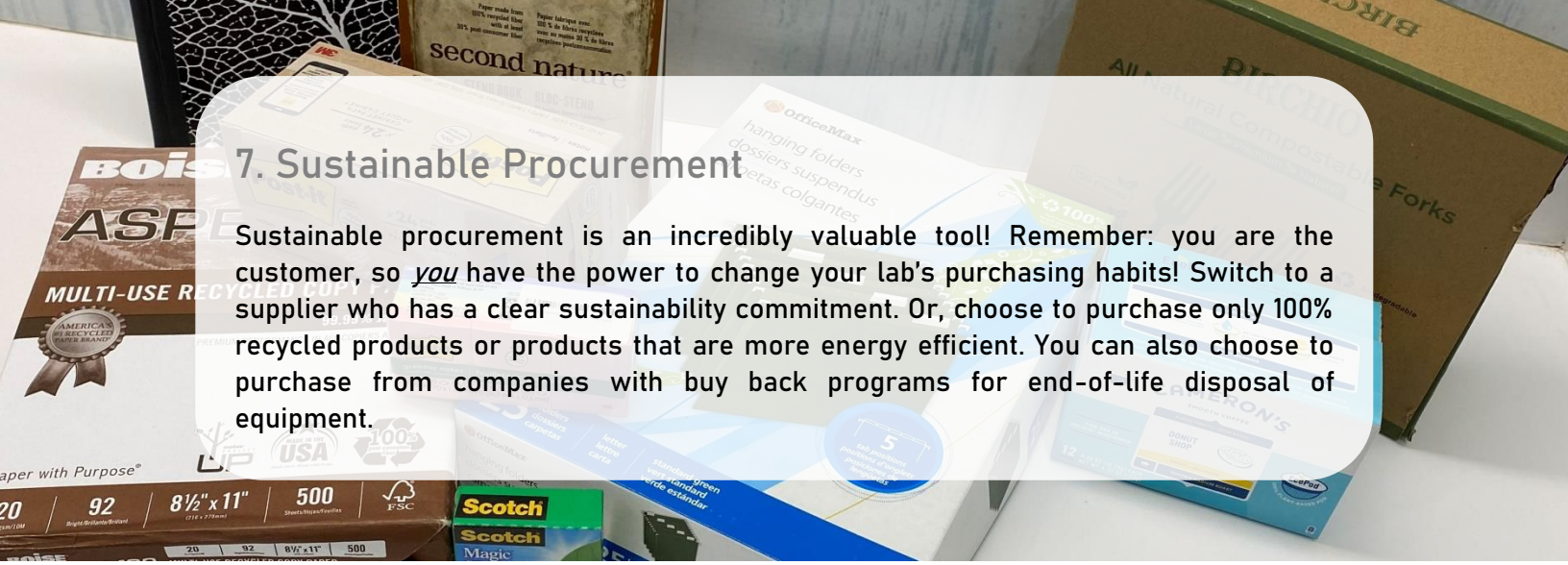
We know, we know! This is the scariest and most unfamiliar area discussed here. However, green chemistry is not reserved for chemists alone! Incorporating green chemistry can improve lab safety, improve lab culture, and create more proactive and innovative solutions to common problems, including the needless usage of hazardous reagents. Green chemistry basically boils down (see what we did there?!) to quantitatively assessing and substituting hazardous chemicals for green solvents, all while protecting research integrity. Some labs have reported that substituting in favour of green solvents has improved resulting data. Caltech has taken an active investment in green chemistry, as these substitutions will reduce overhead costs of hazardous waste disposal for the institute, and will increase researcher and EHS worker safety.

6.1 Adoption of Green Chemistry

Now, we realize how hard it is to convince your lab to adopt a new protocol. We hear you! However, if your lab is willing, there are often simple solutions to improve the safety of researchers. For example: did you know that when doing *in situ* hybridization, chemicals that contain the toxic chemical formamide can be switched out for ethylene carbonate without any modification to a traditional protocol (references here, here, and here)! Researchers have even reported improved results after adopting this greener solution. Some great resources include My Green Lab and Beyond Benign, which have a ton of information on green substitutions and green chemistry, and have great resources for teaching labs to incorporate green chemistry into lesson plans!

When developing new protocols or teaching modules, green chemistry can be utilized to great advantage to reduce toxic solvents and reagents. There are 12 Principles of Green Chemistry that allow a researcher to compare greener alternatives systematically. There are also several green chemistry tools available, including those from Millipore Sigma, or the US EPA Chemical Substances Inventory.

Photo Credit: Brianna Garcia



7. Sustainable Procurement

Sustainable procurement is an incredibly valuable tool! Remember: you are the customer, so *you* have the power to change your lab's purchasing habits! Switch to a supplier who has a clear sustainability commitment. Or, choose to purchase only 100% recycled products or products that are more energy efficient. You can also choose to purchase from companies with buy back programs for end-of-life disposal of equipment.

7.1 Keep an Inventory of Chemicals and Equipment

Keeping an inventory of chemicals and equipment is not only a way to prevent over-purchasing these items, it also allows equitable access for your entire lab, and encourages potential collaboration with neighbouring labs. Buying wisely and in the minimum amount required for research questions ensure that chemicals are not forgotten or become unsafe with time. Check out our Spring Clean Event website for a ton of helpful tips and tricks, as well as inventory spreadsheet examples, signage, sustainable product suggestions, and how-tos!

7.2 Sustainable Procurement / Purchasing

Careful consideration while procuring items incorporates environmental concerns, social equity, and human health. Caltech partners with many vendors to help purchasers choose eco-friendly products, and TechMart incorporates an option to find only eco-friendly products in searches. Before purchase of a new chemical or piece of equipment, consider checking the Glassware, Chemical, and Equipment Exchange Program established in mid-2024, to see if anyone has the item your lab needs. If not, consider ordering only the volumes needed for the experiment, rather than ordering in bulk, as this will reduce costs to purchase and dispose of unused items. When resupplying commonly used products, a purchaser can also change vendors to suppliers that have definite and clear commitments to sustainability, or those who have environmental criteria incorporated into their business practices.

Further, a purchaser can ask vendors if they use recyclable or reusable packaging, if they have buy back or take back programs for packaging, or if there are discounts or perks for customers who utilize these programs (see section 5.4 Reduce, Reuse, and Recycle, folks! for more details). A purchaser can also enquire if there are more eco-friendly options available for equipment, or if the product can be configured to be more eco-friendly (for example: is "sleep mode" configurable to reduce energy consumption). Lastly, also take into consideration that eco-friendly equipment that has a higher up-front cost may have cost-savings later on, including less expensive consumables (like bulbs or plastics), having a longer lifetime, less maintenance requirements, or fewer hazardous wastes needing disposal. A cheaper product may also be unethically produced, so a purchaser can investigate where the products were created to see if those countries of origin have fewer labour laws or environmental protections. Eco-friendly products also usually mean high-efficiency, which may be a starting point for subsidization! All of these factors contribute to a reduction of the cost of ownership and should all be considered when making an informed purchasing decision.

Photo Credit: Tasha Cammidge

7.3 ACT Labels

My Green Lab has developed an ACT Label that many suppliers have adopted. This label gives the environmental impact factor incorporating manufacturing of the product and packaging, energy and water consumption, and product's end-of-life status. This tool allows you to compare different products' environmental impact, with the lowest score being the most eco-friendly.

Other great resources for sustainable procurement include Lab Conscious and i2sl.

7.4 Other Sustainable Procurement Tips and Tricks

Some of our labs have found it useful to designate a single employee to handle orders, or to designate a person to order from a particular supplier, to ensure products are not being over-ordered. If you can, it may be beneficial to consolidate the number of vendors you purchase from, and you can use purchasing techniques such as vendor price matching to ensure you get the best prices. If applicable, neighbouring labs can even consolidate orders! If you have the space to store extra consumables, you can buy in bulk to reduce shipments (which also reduces the packaging you receive!), and/or right-size your purchases (for example: if you only need 50 mL of a reagent for a set of experiments, rather than purchasing a 1 L bottle, you can buy a 100 mL bottle. This way you are also ending up with less waste that has to be handled if you don't use it all up for your experiment!).

Some labs have begun swapping out traditional office supplies for 100% recycled products, to great benefit, with few lab members even noticing the change! It is estimated that the average office worker uses roughly 10,000 sheets of copy paper a year, but around 30% are never even picked up! Some recycled products include 100% recycled copy paper, post-it notes, writing pads, or reusable notebooks. More information on this trend can be found here and here.

There are a lot of other eco-friendly office supplies including tape, file folders, dish soap, sponges, scrubbers, napkins, beeswax wrap or bags for leftovers, and disposable plates. And, of course, we can't forget the most necessary of all products: coffee! A few good eco-friendly options for this ever-necessary, and life-giving substance include coffee stir sticks, compostable K cups and other reusable capsules or reusable k-cup coffee pods with disposable filters. You can even recycle your pods from some brands, like Nespresso! Lastly, but certainly not least, eco-conscious and/or ethically-sourced coffee coffee coffee coffee.

For even more suggestions, check our this Mock Order Sheet and Sustainable Product List sheet, with an ever-growing list of recommended sustainable products!

8. Sustainable Events

Green Labs has developed resources for labs to use to make their events more sustainable. Here, Green Labs has compiled and tested sustainable, vegetarian, and/or ethical restaurants that can serve Caltech. Many of these restaurants have been tested by Green Labs during our meetings. This is a living document, so please come back often to check out more restaurants or updated information! If you want to see a simplified version of this list, please click here. Green Labs is also committed to making events themselves more sustainable. Below, we have provided an ever-growing page of resources to make your events more sustainable, or even zero waste!

8.1 Planning a Sustainable or Zero-Waste Event

Planning a sustainable event means you plan your event with a set goal to reduce the amount of waste sent to landfills by reducing, reusing, and recycling where possible. Clever event planners can even plan zero-waste events by purchasing catering with compostable wrappings, serving food in bulk and avoiding individually-wrapped food items, and refusing any single-use plastics from vendors.

Having clear signs posted about which waste goes where, and having enough waste stations (we recommend one waste station for every 50 attendees) is key. You can make a Facilities Service Request (one week in advance) to have extra bins for compost, recycling, and trash (if needed). There is signage available on the Green Labs Events website for things like recycling and compost. Caltech Green Labs has made a Zero Waste Vendor Agreement form, which can be used to ensure vendors are respectful of Caltech's sustainability requirements and are responsible for any waste they produce while on campus. This agreement also asks vendors to use recyclable materials at the event, and to not bring items such as single-use plastic bags or non-recyclable marketing items like beach balls, stress balls, or bracelets.

Consider using Caltech Dining Services, which offers a zero-waste service if you add this to your Facilities Service Request (at least one week in advance to guarantee availability). This means CDS will bring washable plates, utensils, and cups, and will provide meals in washable containers. Drinks are provided in carboys for easy dispersal.

8.2 Sustainable Event Resources

Green Labs offers lunch at every event, including our monthly meetings. We wanted to make our events as sustainable as possible, so we chose restaurants for our events that had a sustainable option (whether that was vegetarian or vegan options, sustainable cutlery, reuse programs etc.). We then put these together into two Guides: Sustainable Restaurants Guide and Sustainable Coffee/Breakfast/Dessert Guide. These resources are updated periodically, and we are always looking for new restaurant options (if you have a good suggestion for us, please email us to let us know). We also developed a Vendor Agreement Form, asking vendors to commit to acting sustainably on campus, as well as other resources such as our Holiday Checklist poster. Since we are adding to this website often, please check out our Events page for all the latest resources to make your event sustainable.

Photo Credit: Caltech Admissions

8.3 Sustainable Event Products

For smaller events, lab members can bring their own reusable plates, cups, or utensils, or the event planner can provide them from one of the shared kitchens. As an alternative, you can purchase eco-friendly, compostable plates and utensils such as these, these, or these, and compostable cups such as these or these. You can also purchase drinks in recyclable cans or recyclable CRV plastic bottles, which are readily recyclable on campus.

A few other good resources for eco-friendly events include dish soap, sponges, scrubbers, napkins, beeswax wrap or bags for leftovers, and disposable plates. And, of course, we can't forget the most necessary of all products: coffee! A few good eco-friendly options for this ever-necessary, and life-giving substance include coffee stir sticks, compostable K cups and other reusable capsules or reusable k-cup coffee pods with disposable filters. Lastly, but certainly not least, eco-conscious and/or ethically-sourced coffee coffee coffee coffee.

8. Green Labs Members

Adrian Colazo
Amogh Johri
Amina Kinkhabwala
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Alexi McAdams
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Altyn Rymbek
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Melissa McPherson
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Maximilian Christman
Michael Anne Bolene
Marta Gonzalvo
Masami Hazu
Milla Freeman
Ben Ben
Maulik Jani
Manisha Kapasiawala
Matthew Langley
Marina Lecoeuche
Michelle Ravel
Mengcheng Wu
Manxuan Zhou
Needhar Kondapaneni
Noor Naji
Nadia Suryawinata
Nikki Swarna
Olivia Ettlin
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Ping Dong
Phillipa A. Ritcher
Ranjani Murali
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Renee Soriano
Samantha Chang
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Tatiana Solovieva
Tiffany Kimoto
Sarah Torres
Tasha Cammidge
Beth Huey-Tubman
Uli Herget
Vera Beilinson
Vijaya Kumar
Vy Nguyen
Wen Chen
Wonseok Lee
Yingying Gong
Yuxuan Li
Yodai Takei
Yvette Garcia- Flores
And many more!

Photo Credit: Gerard Coughlin

9. Special Thanks

Division of Biology and Biological Engineering
Caltech Biosafety Offices
Caltech Health and Safety
Caltech Facilities
OLAR
IACUC
Maximilian Christman - Caltech Sustainability Offices
Chen Institute
Caltech Procurement
Women in BBE (WiBBE)
Graduate Student's Association (GSA)
Carrie Metzgar – University of California Irvine
Kathryn Ann Ramirez Aguilar – University of Colorado Boulder
USA Scientific (especially Trinity Dorger)
ThermoFisher (especially Jan Schlieder and Sonita Akhavan)
Grenova (especially Jon Arroyo)
PolyCarbin (especially Garrett Hartnett)
Genesee (especially Erik Lawson)

Jaasiel Alvarez – Project Lead
Tasha Cammidge – Writer and Project Lead
Camille Chossis – Project Lead
Gerard Coughlin – Photographer
Jasmine Emtage - Photographer
Brianna Garcia - Photographer
Yvette Garcia-Flores – Project Lead
Vijaya Kumar – Editor, photographer, and Project Lead
James Linton – Project Lead
Kate Malecek – Project Lead
Tatiana Solovieva – Project Lead
Giada Spigolon – Project Lead
Honami Tanaka – Project Lead
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