

260612 Meeting Minutes

Attendees: Alyssa Player, Jaasiel Alvarez, Kate Malecek, Tasha Cammidge, Hanna Dy, Maddy Adolph, Emily Shi, Annie Lam, Luisa Segovia, Annalise Segovia, Vijaya Kumar, Barbara Orozco, Andrew Chang, Saksham Sharma.

- This month, [RSVP here](#) to order catered food from [HomeState Catering Menu](#)! (**please RSVP by Wednesday 9am**)! **Please remember to bring your laptops and bring your biodegradable/compostable items for our test.** For bonus sustainability: folks can bring their own cups and/or utensils and/or plates as an alternative to our usual compostable ones!
 - Note: they used a lot of plastic packaging!

Will update [Restaurant Guide](#) and our [Coffee, Breakfast, and Dessert Guide](#)

Introductions ...

Million Advocates for Sustainable Science Petition

- International Institute for Sustainable Laboratories (I2SL) along with My Green Lab are petitioning to change funding granting agency policy to promote sustainable research
- By signing the letter you can help transform how science funding organizations set expectations for efficiency, resiliency, and sustainability in the way scientific research is conducted
- Reached 1100+ signatures!

New quarterly challenge: Energy Savings!

- Ever wonder how much energy your lab uses?
- Sign up to get a FREE energy monitoring sensor and see!
- Email (greenlabsinfo@caltech.edu) to request a sensor!
- Plug in your sensor and monitor baseline energy usage and consumption of your equipment.
- If you want to reduce your energy consumption, talk to your lab about changing lab behaviours (like turning off equipment after use) or set up the timer feature to turn off the equipment overnight!
- Save energy!
- **There will be prizes**
- A different lab will be highlighted on our website every quarter
- **Submit to greenlabsinfo@caltech.edu by July 1**
- Anyone want one?
 - All labs present want at least 1! TC will reach out and hand them out next week once IMSS finishes the setup

Green Labs Monthly Tip: Smart Sensors!

- Consider implementing smart sensors on lab equipment for real-time monitoring of temperature, humidity, energy consumption, and equipment usage.
- This real-time information helps in understanding the operational conditions of lab equipment and identifying opportunities for energy and/or water optimization.
- (Quarterly challenge!)

Green Labs Adventure (April 2026-April 2027)

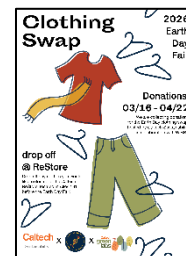
- Win a movie night for finishing various Green Labs Tasks! [Sign up here](#)!

Updates

- **32 Certified labs!! WHOOOOO**
 - Please get CERTIFIED TODAY! To get certified, finish the easy, 30-minute [Green Labs Certification](#) and submit it to sustainability@caltech.edu.
 - Certified Labs-exclusive event planned for April!
 - We have a FREE LAB RECYCLING PROGRAM STARTING IN NOVEMBER!! – you can recycle pipette tips, conical tubes, and more!
 - So far our first month diverted 40.5 kg clear plastic and 6 kg coloured plastic
- New recycling signage ahead of the safety inspection next week!

Updates on our Student Interns

- Writing both projects up as white papers before the summer
- Hosted a clothing swap with WiBBE March 16-April 22
 - Made clothing swap permanent program that is housed outside Alles 181, run an event every quarter or so
 - Interns who will work with us over the summer:
 - JT Tran, Bhakti Ahir Ahir, Rohan Bhattarai
 - New interns who will work with us over the summer:
 - Hanna Dy – ReStore Inventory and Fume Hood project
 - Emily Lencioni – Energy Benchmarking
 - Arabella Camunez – Water Saving Efforts
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Updates – Pilot Programs

- FUNDING IS AVAILABLE – SEE PILOT PROGRAMS WEBSITE
- July 1– Styrofoam recycling day
 - [Sign the petition!](#) [Technical bulletin from I2SL](#), [LCA of Styrofoam](#)
 - [Do you want a location added? LET US KNOW!](#)
 - [How to do LCAs](#)
- Pipette tip pilot is now a Caltech-run program
 - Now accepting all brands!
 - Over 1 dumpster full the first 2 weeks!
 - Do you want a location added? LET US KNOW!
- Lomi
 - Moving to giving dirt to Catalina Compost
 - 1,078 lbs of dirt (or 5,391 lbs food waste) – hasn't been collected yet for last month!
- -70°C/-80°C Comparison Pilot
 - 5 labs involved, collaborating with NIH and UVA + Norway labs collaboration
- Investigating animal bedding composting... more to come on that soon!
- PolyCarbin
 - Initial order replaced 31 pounds of crude oil and reduced 122 pounds of CO2E via sustainable procurement
 - 22 labs have bins installed!
 - So far our first month diverted 40.5 kg clear plastic and 6 kg coloured plastic
- Fume hood sensor project
 - Around \$1,300 savings per fume hood on average!!

- **Grenova pipette tip washer:** looking into funding options!
 - [Survey](#) for pipette tip types, cost per year, etc. to gather data
 - Looking into funding options
- Marketplace
 - \$225,895 (2,400 kg) diverted
 - \$5,438 (100 kg) donated to local schools (so far!)
 - Open houses rehomed \$96,000 + \$54,000 in just 1 day!
 - Over \$144k of supplies and \$200k of equipment online!
 - Sustainability website launched in February
 - Plants! They have arrived and we are growing now
- [Follow us on Instagram](#) →

Learning Opportunity

- “Perspectives on lab hazardous waste management”
 - [I2SL webinar June 17 9-10am PST](#)

ACT Label 2.0 Update – Kate Malecek

- Slides posted in our [Drive](#) (and you can see the ACT 1.0 discussion from 2025 [here](#))
- The environmental impact of lab research is due in large part to our infrastructure, our habits, and to our consumer choices
 - Spaces (HVAC, water, electricity)
 - Waste (plastic, chemical, biohazardous)
 - Operations (HVAC, water, electricity)
 - Equipment (manufacture, operation, and materials at end of life)
 - Consumables (manufacture, materials at end of life)
- If you want to be a more sustainable lab consumer, you might ask:
 - What sources of information can I consult about a lab consumable’s environmental impact?
 - How is this information collected? Is it accurate?
 - Do my choices make a difference?
- What sources of information can I consult about a lab consumable’s environmental impact?
- Vendors vary in shared info, who verifies it?
- Shouldn’t this be standardized and aggregated?
 - Vendor-shared information example in slides are nunc centrifuge tubes and traditionally packaged tubes
- ACT1.0 adopted in 2017, took 7+ years to get 1700 products
 - Score has changed in the 2.0 version from down to up
 - Different labels if you are in the EU/UK/US due to different manufacturer and rules
- ACT use third party verification to develop impact factors (scores)
 - A slide describes what each part of the label means
- Who generates the data?

- MGL has a conflict of interest if they interact directly with the vendors, so they changed to a 3rd party verified company
 - Utilize ISO standards developed in Geneva (opt-in scheme) (in US we use ANCI) especially for green labelling, VERICO (the 3rd party company) uses these standards
 - Audit process for 1.0 described on slides (develop plan, submit data, certify, launch label), and are valid for the life of the program with a 12-month no-cost check
 - Audit process for 2.0 is checked by verico, new process
 - submit data (Manufacturer provides product, packaging & facility data)
 - independent audit (Verico reviews the data and evidence vs. ACT criteria)
 - score and label (My Green Lab and Verico calculate the 100-point score)
 - publish (The scorecard goes live in the public ACT database)
 - surveillance (risk-based checks happen every 24-30 months, then recertify)
 - Verico
 - Independent of both the manufacturer and My Green Lab, Verico operates to ISO/IEC 17065 — the international standard for product-certification bodies that enforces impartiality. The audit is remote and collaborative, typically two to six months, then re-checked through risk-based surveillance every 24–30 months.
 - Government has to enforce the standards, and companies can otherwise sell without regulation
 - Recertify every 24-30 months because product does not change too much for some models, instead check if they have changed the changes they intended to make (ie water reduction) and if those aren't met they remove the label or reduce their score
 - How the numbers are measured
 - **ACT is manufacturer-reported, then auditor-verified.** Energy and water use a standardized “Typical Use” protocol vs. similar products; recycled content is counted by weight; chemicals are screened against REACH SVHC and PFAS; and the cradle-to-gate CO₂e must itself be third-party reviewed.
 - Where the label's authority comes from
 - *ISO writes the rules but enforces nothing. A chain of trust beneath it gives the ACT label its credibility.*
 - ISO/IEC : (sets the rules) Write the voluntary standards (ISO/IEC 17065, ISO 14024, 14064/14067) by consensus. No enforcement power of their own.
 - Accreditation bodies: (accredits) ANAB, UKAS and peers audit & accredit the certifiers; mutually recognized worldwide via IAF / ILAC.
 - Verico: (certifies and monitors) Independent certification body operating to ISO/IEC 17065 — audits products against the ACT Standard.
 - Verico SCE (Sustainable Carbon Emissions) is the third party verification service for Act Labels

- They certify a growing list of standards and products (household, health products, public spaces)
- Verico has an extensive audit process for products
- Transparency? Independence? Accuracy?
- What's the catch? How is this financially tenable?
- <https://www.globalcarboncouncil.com/verico-sce-earns-re-approval-as-gcc-verifier-strengthening-commitment-to-environmental-excellence/>
- In a world full of inaccurate and misleading sustainability claims, Verico provides independent, third-party audits, ensuring businesses meet various sustainability standard requirements. Our rigorous quality management system enables accuracy, transparency, and trust – helping our customers prove compliance, build credibility, and mitigate risk.
- <https://www.hpd-collaborative.org/case-study-san-francisco-airport/>
- However, they have been fooled by clever fraudsters, particularly in the EU where standards are stricter. They have been investigated for inconsistencies and flagged for not credible inspections. Their certification activities are supervised in Germany due to ongoing prosecution of their involvement in a fraudulent scheme about energy facilities held in China.
- The European website is far more informative than the US one.
- How do they make money?
- Consulting to reduce emissions, direct savings
- Guide companies through EU emissions trading, help companies acquire or sell allowances, ensure compliance
- If they help businesses generate carbon credits, that is an incentive (cost savings passed on)
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- Manufacturer + Act label: Earns the label; surveilled every 24–30 months; the ACT marks can be revoked for non-compliance.
- Does it negate the market
 - **Mostly no.** ISO standards are voluntary — they become a real gate only where a government writes them into law (e.g., EU CE marking) or a major buyer requires them.
 - **ACT is voluntary:** no one needs it to sell a product. It borrows the system's credibility — EPA-recommended, EU-aligned — to influence buying, not to control it.
- Compared two pipette tip boxes from USA Sci and Rainin from ACT 1.0
 - The 1.0 ACT Environmental Impact Factor EcoLabel is a helpful database for comparing consumables and equipment
 - It offers some standard if incomplete metrics for comparing product composition, operation, and their vendors' practices

- However, many organizations and governments are requiring more information about environmental impact and performance, at the company level
 - The 2.0 ACT Environmental Performance EcoLabel intends to leverage that regulatory push to provide greater transparency to the consumer
- Larger companies have the ability to do scope 3, which increases the scores...
- Global regulations on sustainability claims
 - EU: Empowering Consumers Directive + Green Claims Directive
 - Applies in EU Sept 2026, all ecolabels must come from evaluation against a standard, third-party verification of environmental claims
 - US: ACT approved by the US EPA as the only ecolabel for lab products
 - Canada: claims must be truthful and substantiated under the Competition Act
 - Australia: avoid misleading claims under Australian Consumer Law (ACL)
- What's new in V 2.0
 - Launched in May 2025, sharpens the science and makes it easier to use
 - For the 1.0 label, it took 7 years to get to 1,700 products. For 2.0, it took one year to get to 1,700 approved labels, and 4,100 are in audit (it takes about 6 months)
 - Smarter scoring: A refined 100-point system weights the attributes that matter most to the environment for fair comparisons.
 - Carbon reporting: Company- and product-level CO₂e data supports Scope 3 emissions tracking and procurement rules.
 - QR code transparency: Every label links to the audit details and scoring rationale behind each claim.
 - Clearer label design: A redesigned label communicates key sustainability attributes directly and at a glance.
 - Lots of momentum as there are lots
- How the score works: Each product earns an Environmental Performance Factor (EPF) on a science-based 100-point scale.
 - **Lower impact scores higher. The weighting now emphasizes the most environmentally significant attributes, so a freezer and a box of tips can be judged fairly within their own product class.**
 - The product: materials, recyclability, and longevity
 - It's impacts: energy, water, chemicals and carbon
 - The maker: manufacturing facility and GHG commitments
- What the label measures
 - Recycled and renewable content: Share of the product, by weight, made from recycled or renewable materials.
 - Recyclable materials: Weight of glass, metals and qualified plastics that can actually be recycled.
 - Chemicals of concern: Presence of REACH SVHC substances or PFAS "forever chemicals."
 - Energy consumption: Energy use vs. similar equipment, plus auto-shutoff and eco modes.
 - Product carbon footprint: Third-party-reviewed cradle-to-gate CO₂e for the product.
- More than the product: ACT is a product-level label, but the audit also weighs the facility and the company behind it. Seven areas feed the score:
 - Product and packaging
 - Diversion support

- Product carbon footprint
 - Facility
 - Company GHG cuts
 - Improvements
 - Innovations
- ACT2.0 has 5,800 products in audit
- Understanding the performance tiers: The tier is set by the EPF — a product's sustainability score out of 100. Each tier requires a minimum score (rounded to the nearest 0.5):
 - Weighted points are summed across materials, energy & water, chemicals, carbon, packaging, the maker's facility and company GHG cuts — into one EPF out of 100. Weighting follows U.S. EPA findings, so the biggest impacts count most.
 - A high scorer: **Thermo Scientific Vanquish HPLC & UHPLC systems earned Platinum, the second-highest tier.**
- Points available by category are broken out by class. Packaging, carbon, facility, company GHG cuts, improvements and innovation make up the rest
 - 3 product categories
 - Consumables, chemicals and reagents, lab equipment
- Points are awarded thus:
 - Product packaging (34 pts)
 - Company GHG reductions (17 pts)
 - Renewable electricity and energy (22 pts)
 - Product carbon footprint (6 pts) – note this is hard to do so many companies take the 0 here
 - Facility best practices (18 pts)
 - Improvements (3 pts)
 - Innovation bonus (+6 bonus points)
- Why it matters at your bench: small purchasing choices, repeated across a lab, add up to real environmental impact
 - Compare before you buy: When two products do the same job, check their ACT scores and tiers to pick the lower-impact option.
 - Build it into ordering: Filter for ACT-labeled products and use the CO₂e data to back sustainable procurement requests.
 - Make impact visible: Audited, transparent data lets your lab show progress on sustainability goals — no greenwashing.
 - Trusted standard: The only lab ecolabel recommended by the U.S. EPA and aligned with EU regulations.
 - For example: a tube that uses less plastic but is made in a dumpster fire of a facility should not be scored the same as a tube that uses more plastic but is produced in a good facility!
- Looked at a generic ACT 2.0 label
 - TC: what does “single use” mean? Meant for single use (as in labs should only use it once) or if they select no, is it that items *could* be used multiple times but labs typically wouldn't?
 - KM: will reach out to check
- Compared 1.0 version to 2.0 version for same PCR plate
 - Talked through what each means
- KM: what do you expect the BEST product to have?

- MA: low chemicals, ships ambiently, locally made, reusable, lots of recycled materials, large company that does CO2 reporting
- Looked at one of the best products on ACT (from Thermo)
- Compared freezers
 - Thermo vs Stirling
 - Thermo has a platinum rating
 - (AI had to develop 2.0 version for Stirling as it isn't available yet but the Thermo one comes out on top!)
 - Why is Thermo coming out on top?
 - A category-leading freezer from a genuinely sustainability-minded company lands in Bronze, maybe Silver, because 2.0 labels reward renewable energy and validated corporate targets as heavily as the product itself. — Claude
 - Claude predicts a more modest score of 50-60 because it's not just about the freezer, it's about the company too. They may get a bonus for innovation on their compressor free, natural refrigerant design. Stay tuned for the real score!
- What can we do now as scientists sourcing supplies in a world of green labeling?
 - 1. Look up your most used products in the ACT database and compare them to other products in the category
 - 2. Request sustainability feature information when requesting a quote from a vendor
- 3. Refer suppliers to the ACT database if they aren't participating
- 4. Consider local factors that influence the impact of a product during your use, and after
 - Where is the product shipping from?
 - Can you recycle, reuse, or return it to the vendor?
 - Can you share it with the Caltech community via ReStore?
 - What is the commitment of the vendor and manufacturer to sustainability, beyond just this product?
 - Has that commitment been transparently shared and audited?
- Conversation after:
 - MA: 2.0 is better than 1.0 for sure
 - KM: yes, can compare items 1:1 which is nice
 - KM: interesting to see if the Stirling freezer lets their score slide, or what it is compared to other models (Stay tuned!), especially since we use that as a gold standard for things like freezer rebate
 - JA: this type of label hopefully puts pressure on companies, but I hope it doesn't affect the ability of smaller companies to compete, especially if they can't do the CO2 reporting (it would be interesting if they could separate larger companies from smaller for that reason, to still give credit to smaller companies doing the right thing and make them competitive)
 - JA: there are also lots of rebates for energy- or water-wise equipment from municipalities, I wonder if companies can take advantage of that
 - TC: Also targeting the companies and factories is super interesting, rather than looking at just the product (wonder if this will encourage more companies to do energy savings and other initiatives to get better scores, would be cool to compare 5 years ago 2.0 scores to today if you could get the data)
 - KM: would people use this?
 - All: mostly yesses !

- KM: want to see this incorporated into TechMart, as right now we have to leave TM to visit ACT label to investigate things even if they are on the regular website (like for Thermo)
 - TC: one day, yessss
- TC presented on the rough-draft freezer rebate program upgrade – more to come in the coming months once the program is accepted!

Next meeting July 10