250808 Meeting Minutes

Attendees: Tatiana Solovenia, Linda Mondaca, Ameerah Saliu, Aarohi Patel, Bhakti Ahir Ahir, Luisa Segovia, Maddy Adolph, Olivia Finney, Vijaya Kumar, Alyssa Player, Jaasiel Alvarez, Annie Lam, Dennis Ko, Tasha Cammidge, Chris Kalaw, Raj Mukkamala, Ameerah Saliu, Emily Shi, Emma, Shawn, Xiaohui Li.

- This month, RSVP here to order food HomeState Catering Menu! In your RSVP, please type in your preferred food order. **The deadline for submitting your food order is Thursday 9am.** I will also bring a kettle so we can boil hot water and I will bring some yummy hot chocolate packets and tea bags for folks to enjoy! If you prefer, BYOT. **Please remember to bring your laptops.** For bonus sustainability: folks can bring their own cups and/or utensils and/or plates as an alternative to our usual compostable ones!

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!

Green Labs Monthly Tip: Sustainable Education

1. MyGreenLab Ambassador program - free, online learning program will provide you with a quick introduction to lab sustainability and ideas
2. Green Chemistry Trainings and CU Boulder Green Chemistry Courses and WSU Green Chemistry Certificate
    - The 12 guiding principles of green chemistry and real-world examples of innovation
    - Key concepts in toxicology to better understand how to reduce hazards in chemical and product design
    - Business drivers and barriers that influence the implementation of sustainable solutions
    - Frameworks for integrating human and environmental health considerations into product design, material selection, and supply chain decision-making
    - Leadership and engagement strategies to become an effective change agent in your workplace
3. Emails from Education Re-Advance
4. I2SL Community of Practice
5. Blogs: Lab Manager, LabConscious

Updates

- **26 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!

Updates – SURF Students

- Aarohi Patel: working on finalizing sensor, database is 600+ pieces of equipment

- Bhakti Ahir Ahir: almost done a completely revamped sensor, just working on final kinks in code and finalizing the casing

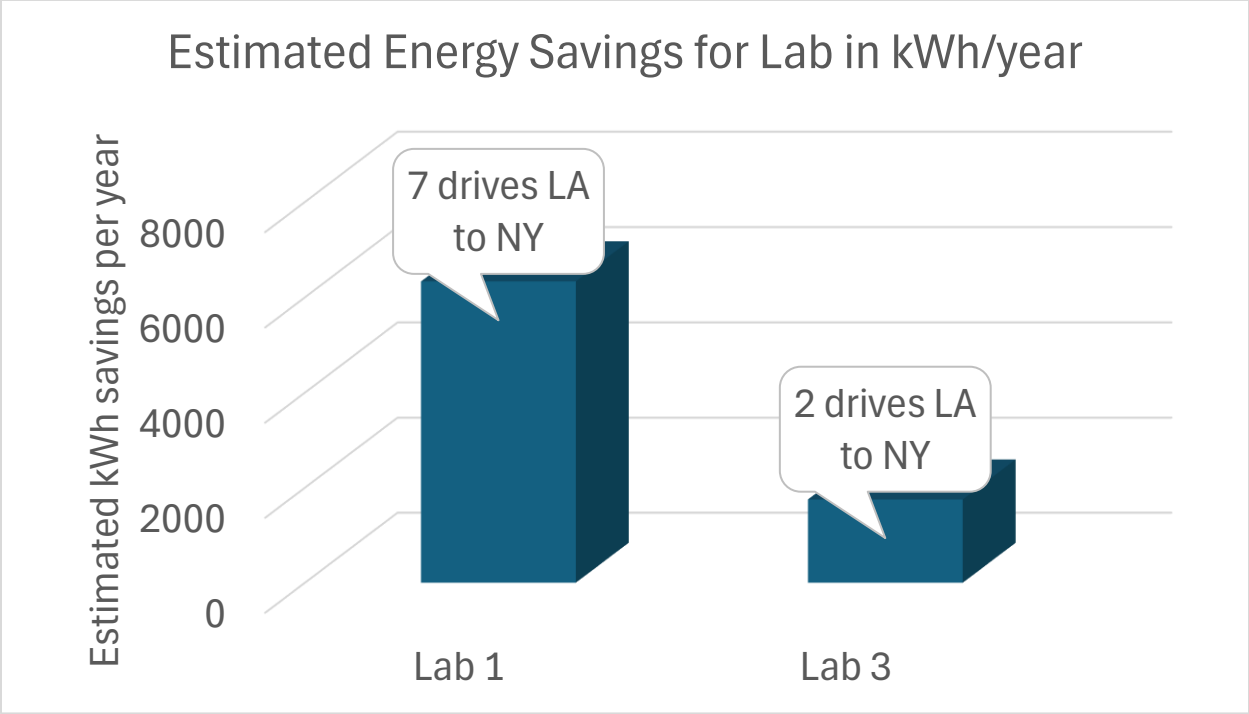
Updates – Pilot Programs

- FUNDING IS AVAILABLE – SEE PILOT PROGRAMS WEBSITE
    - Lomi Composter Pilot (8 on campus): 1274 lbs of dirt (or 6371 5 lbs food waste)
- Pipette Tip Box Recycling: 2,775 pounds (5842 gallons or 22,113+ liters) of plastic waste diverted EXPANDING PROGRAM!
- -70˚C/-80˚C Comparison Pilot: 5 labs involved, collaborating with NIH and UVA + Norway labs collaboration
- PolyCarbin: Initial order replaced 31 pounds of crude oil and reduced 122 pounds of CO2E via sustainable procurement
    - AP: sent off another box of coloured plastic, 34 lbs of plastic recycled, 12,793 water conserved, 70 lbs carbon emissions reduced
- Styrofoam recycling pilot
    - DIVERTED 30 DUMPTSTERS total!!
    - Sign the petition!
    - Technical bulletin from I2SL
    - LCA of Styrofoam
    - How to do LCAs
- Fume hood sensor project
    - Around $1,300 savings per fume hood on average!! GG writing up now for our 21 fume hoods
- **Grenova pipette tip washer:** looking into funding options!
    - Survey for pipette tip types, cost per year, etc. to gather data
    - Looking into funding options
- **Follow us on Instagram** →
- Marketplace
    - Flow Cytometry Lab SHOUTOUT! Especially Maddy Adolphs…!!
        - Picked up supplies from two biotech companies that have shut down in recent months and diverted those supplies to labs at Caltech
            - Their lab claimed $15,026 worth of supplies from those labs!
            - Posted supplies on Marketplace:
        - TOTAL OF $35,081.07 since March 2025….

Updates – Past Events

- August 6– Styrofoam recycling day
    - Looking to get a 40 yard bin in the recycling yard and to partner with a new vendor
    - Volume?
- Pipette tip pilot is now a Caltech-run program
    - Expanding soon to other brands!
    - First pickup happened this week, awaiting feedback and then can expand!
    - Over 1 dumpster full the first 2 weeks!
- Lomi
    - Moving to giving dirt to Catalina Compost
    - 1274 lbs of dirt (or 6371 lbs food waste)

- Freezer Challenge – Achieved $1,617 savings a year! (*Assuming distance LA->NY 2776 miles and an EV car uses 100 kWh/300 miles)



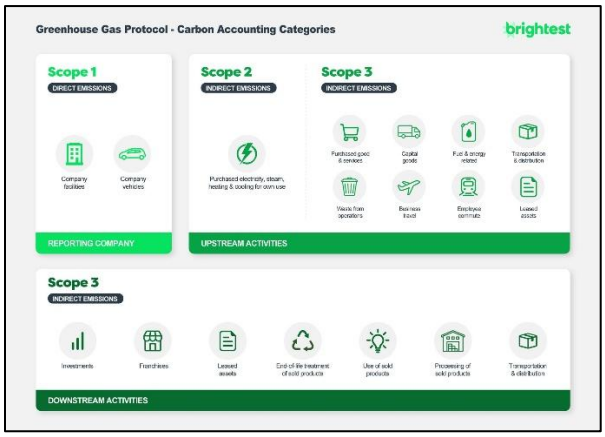
<u>Updates – Future Events</u>

- New Marketplace webpage!
    - OVER 100 entries!!
    - Flow Cytometry Lab SHOUTOUT!
    - TOTAL OF $35,081.07 since March 2025….
    - Sourced location to have a ReStore!
        - Open a few hours a week, run by student interns
        - Working with EHS to finalize plans and make rules about what to accept
        - Open in October?
        - Sourcing cabinets and supplies from labs
        - Budget is $750
        - Have space for 1 year pilot
- Polycarbin recycling program
    - Some funding left over at end of fiscal year, is anyone interested in getting these recycling bins, based on Beacon center's good experiences?
        - Most said yes!! – TC will put together a proposal
        - Secured a 30% discount on these supplies, want to put them in Certified labs and teaching labs if possible for 1 year

Presentation from Tasha Cammidge on Sustainable Purchasing Initiatives

- Now more than ever it is important for us to be thinking sustainably and efficiently about our purchases

- Series of talks and resources throughout the summer
- One thing we haven't discussed is carbon emissions…
    - Release of carbon (CO_2) into the atmosphere
    - Contribute to global warming as greenhouse gases (GHG), including CO_2, build up in the atmosphere and trap heat
    - Carbon is naturally cycled through the atmosphere, oceans, and living organisms
    - Current human contributions are having a range of effects including raising sea levels, extreme weather, and ecosystem disruption
- What is California doing?
    - SB 261: Most businesses with over $500M in revenue must report greenhouse gas (GHG) emissions starting for 2026 reporting year
    - California Air Resources Board (CARB) responsible for implementation and enforcement
- What is Caltech doing?
    - Developed a Sustainable Procurement Working Group
        - Looking mostly at Scope 3 emissions for goods and services
        - Making recommendations for changes to TechMart
        - Developing a Sustainable Purchasing Guide



    - How are we generating data?
        - Already have some, included in reports like the Annual Sustainability Report
        - Waste diversion, travel, energy production and purchase, commuting etc.
        - Purchased goods and services category is a problem….
            - Largest category of Scope 3 for most universities
            - Divvied up the data into most addressable -> least addressable
            - Started with smaller spend categories (non-highlighted)
            - Growing into larger spend categories from Divisions (highlighted)
        - Need to calculate the emissions!
            - BUT FIRST: we need to analyze data from our purchases and require subsequent data from each company we purchase from on those purchases
                - Including most and least addressable I'm responsible for $68M ($48M in most addressable) in purchases from over 1200 vendors
                - Lots of good references and roadmaps, especially UofT and Stanford

- Requires us to reach out to thousands of vendors to see what data quality they have (if any)

1. A Scope 3 emissions summary report or any useful emissions data on the products/services purchased under associated POs, any associated Scope 1 and 2 emissions reporting, missions factors for each product (i.e. x pounds of CO2 per y pounds of product purchased)
2. Scope 1-3 emissions for their company
    a. (Scope 1-3 emissions / company revenue = emissions factor)
3. If they cannot provide the above data
    a. Provide a list of all goods and services provided to Caltech and your company's supplier-specific emissions factor
    b. Or the category a company falls under based on the National Greenhouse Gas Industry Attribution Model

- Do a mix of calculations (good-bad-no data) to determine emissions
    - Start EARLY – reporting starting for us in 2024 will be inaccurate, but hopefully by 2026 will show improvements in accuracy and compliance
        - Data from company:
        - **Item-specific:** requires vendor to send list of items and quantities and specific emissions factor for each item, we then zipper the files and do the calculations
        - **Supplier-specific:** requires vendor to provide emissions for entire company and we do calculations based on spend
        - **Industry-average factor:** we can do some back-of-the napkin math for typical emissions for a particular industry or process as per this article (requires vendors to send us a categorized list of purchases) - this would mean (for example) VWR and ThermoFisher would have the same emissions factor
        - **EEIO database:** we can divvy up the items on each purchase order into the categories that match the EEIO (Environmentally Extended Input-Output) database from the NAICS codes (National Greenhouse Gas Industry Attribution Model) Chris is using, or based on industry (though this is the most time-intensive, and requires vendors to send us categorized purchases) - this would again mean that we divvy up VWR into industry categories of, say, chemicals, electronics, etc, and have an emissions factor for each of those categories
- Data from company:
    - **LABS ARE HARD**
    - How do you find the category to put ThermoFisher in, when it gives us electronics, chemicals, services, plastics, etc?!
    - TM data is not organized to differentiate categories
    - Back of the napkin math and averaged across many databases (EEIO, CEDA, ADEME, CES1P5 etc)
    - Inaccurate…
    - BUT since many companies like TF, VWR, etc. work with other universities, they MAY already have the #1 or #2 data we need…!

                - If they produce Life Cycle Analyses (LCAs) for their products, including those done through ACT labels, they may be able to send us detailed information easily!
            - Using SIMAP for consolidation, visualization, and reporting of data
- Greenwashing
    - Deceptive marketing practice that misrepresents the environmental benefits of a product or service that makes it appear more eco-friendly than it actually is
        - Greenwashing has grown in parallel to the demand for sustainable lab products and practices
        - Can undermine lab leaders own sustainability goals!
        - Myth: eco-friendly products cost more than less eco-friendly options
    - What does Greenwashing look like?
        - Vague or misleading claims
            - Often a lack of transparency, or use of vague language
            - Focus on only one aspect and ignoring others
            - Citing features that are already legally required
            - Misleading labels
            - Lack of regulation of terms
        - False "accreditations" or certifications
            - Self-certification, self-disclosure, or lack of quantification or third-party verification
            - Lab companies create their own sustainability certifications and award their own products with it
                - (ACT label fills this gap to some extent)
                - Vacancy of universal standards that allows for-profit companies to measure their own credentials
            - Pictures of leaves, trees, green colours
        - Companies should pair claims with quantified or third-party data
            - Sometimes claims are made in good faith based on internal estimates
                - **<u>BUT #DataOrItDidn'tHappen</u>**
            - Data can be manipulated to support narratives, or can be overstated
                - If data is viewed against other companies it can even be average or below average
            - Even TechMart is guilty…
                - Companies self-report and can have the green or recycled category applied to any product
    - What can you do?
        - Don't be afraid to follow up with vendors and put them on the spot – no one wants damage to their reputations!
            - Demand data and transparency
                - LCAs
            - Demand regulation – pressure companies to be more sustainable AND to disclose both working conditions from factories and accreditations
        - Verify certifications – do they come from reputable organizations? Do they use third-party verifications?
            - Should be non-negotiable
        - Be skeptical and do your own research!

            - Remember: you're reading marketing materials! Be suspicious
        - Research the company and see what their overall environmental practices and policies are, do a "sniff test"
            - "company name" + "investor relations"
            - Look for dedicated sustainability sections or reports on company website
            - Annual sustainability reports with goals, actions, progress (can be integrated into financial reports)
            - Look for certifications like Energy Star or LEED as indicators of commitment, or other reputable organization certification for specific sustainability practices
            - Check for waste management/reduction strategies, waste audits, recycling programs, efforts to minimize waste generation
        - Can use tools like this one for assessing the sustainability of chemical processes

- Sustainable Procurement Guide
    - What questions can we ask vendors to ensure we are *actually* purchasing sustainably?
        - LCAs, ACT label
        - Olivia: chemicals use green chemistry to minimize hazards, multiple ways to synthesize and if it is better for environment or not
    - What do YOU need to make sustainable decisions?
    - What questions can YOU ask to ensure companies are not greenwashing?
    - What things should we search for during our own research?
        - AP: LA Apparel, workers are paid well, sourced properly,
        - Olivia: art supplies, recycled canvases etc official certifications?
        - Ameerah: Certifications databases,
        - VK: change NEB and illumina, changes with dry ice, comes in sustainable packaging, tt vendors that don't use sust packaging, bring to rep attention and let them know we consider them move favorably if they make changes
        - Olivia: register with verifiably sust vendors, make it easier to find good vendors
        - Resources:
            - United Nations Sustainable Development Goals
            - Library of Congress Research Guides on Green Business Standards and Certifications
            - Carbon Disclosure Project – environmental data on companies
            - ESG Manager (Global Socrates) – database providing environmental, social, and governance data on companies
            - Cornell CSR and Sustainability Lists
            - https://sustainability.virginia.edu/blog/guide-stocking-sustainable-lab
            - Great resource from the EPA "Environmentally Preferable Purchasing Program"
                - Tools to help identify greener products and services including recommendations of specifications, standards, and ecolabels
                - Why buy Greener products?
                - Helpful Guide to greener products and services for purchasers

        - List of questions for vendors to give us details for development on scope 3 emissions
        -
    - Updates to TechMart?
        - Restricted commodities?
            - Olivia: gloves are easy to source, but if it is specific to your lab may not need oversight, opt-in (Maddy agrees), want it for free first, maybe halfway through the year can work with TM to get rid of the stock
            - TS: make sure it is advertised, target the lab managers , advertise the time it is open and let people browse
            - VK: banner on TM for restore
            - Olivia: thrifting, might want to get into that if we will it that way, grand opening
            - AL: Maybe if there can be a "green/sustainable" section on the front page on the "Caltech Catalog Suppliers" punchout for suppliers that carry sustainable products?
            - AL: Or if Techmart can have a section on their front page about sustainable supplies with links people can reference and also reference the Restore.
        - Product lists?
        - 3rd party verification requirements? (ACT label) -
    - Marketplace…
        - Swap meets?
        - Storage?
        - Lab cleanout resources?

References:

- https://www.forvismazars.us/forsights/2024/12/california-doubles-down-on-ghg-climate-reporting-requirements
- GHG Protocol
- GHG Protocol 3rd Party Databases
- NAICS Database
- NAICS Website
- EPA Reports including Supply chain GHG emission factors for industry
- National Greenhouse Gas Industry Attribution Model
- EEIO database
- Purchases dominate the carbon footprint of research laboratories
- https://physicsworld.com/a/open-source-tool-allows-researchers-to-calculate-their-labs-carbon-footprint/
- https://www.epa.gov/climateleadership/scope-3-inventory-guidance
- https://www.climatiq.io/data/source/epa
- file:///C:/Users/tscammid/Downloads/ESTIMATING%20EMBODIED%20ENVIRONMENTAL%20FLOWS%20IN%20INTERNATIONAL%20IMPORTS%20FOR%20THE%20USEEIO%20MODEL.PDF

- https://www.biorxiv.org/content/10.1101/2023.04.04.535626v1.full
- https://css.umich.edu/publications/factsheets/sustainability-indicators/carbon-footprint-factsheet
- https://normative.io/insight/scope-1-2-3-emissions-explained/
- GHG Management Guide
- EPA Calculator Resources
- EPA Calculator
- https://thepathologist.com/issues/2023/articles/jun/the-great-laboratory-greenwash/
- https://dbiomed.com/blogs/news/greenwashing-in-the-lab-and-more-sustainable-options-from-labcon?srsltid=AfmBOoqmYXfTHc8PchQhLDZ2oR6i00CKv_AbQz5eOHu_nf96LdLP2UqJ
- https://www.labmanager.com/avoiding-greenwashing-a-guide-for-sustainable-lab-purchases-33854
- https://toxinfreeusa.org/what-is-greenwashing-a-guide-with-greenwashing-examples/
- https://cvskinlabs.com/beware-greenwashing-in-cosmetic-products/
- https://greenlabs.caltech.edu/resources/fact-sheets
- https://pubs.acs.org/doi/full/10.1021/acs.oprd.5c00047

For next time:

- Want to investigate what we need to be sustainable purchasers, so consider and come prepared to discuss:
    - What questions can we ask vendors to ensure we are *actually* purchasing sustainably?
    - What do YOU need to make sustainable decisions?
    - What questions can YOU ask to ensure companies are not greenwashing?
    - What things should we search for during our own research?
- Next meeting Sept 12!!

I2SL LabSavers Initiative

1. I2SL used our program and CU Boulder's program to make an online resource, and they would like feedback. Since we just did cleanups, is anyone willing to read through and provide them feedback?
    a. JA: sure!
    b. TC: will post in minutes and in email on Monday

OK, see you next time September 12 and excited to hear Green Labs SURF students!