

Save Money & Reduce Pollution: Greening your Food & Beverage Facility

July 29, 2024



COOK COUNTY
DEPARTMENT OF
Environment &
Sustainability



Illinois Green Business Program & Businesses Reducing Impact on the Environment (BRITE) Program

IL Green Business Program

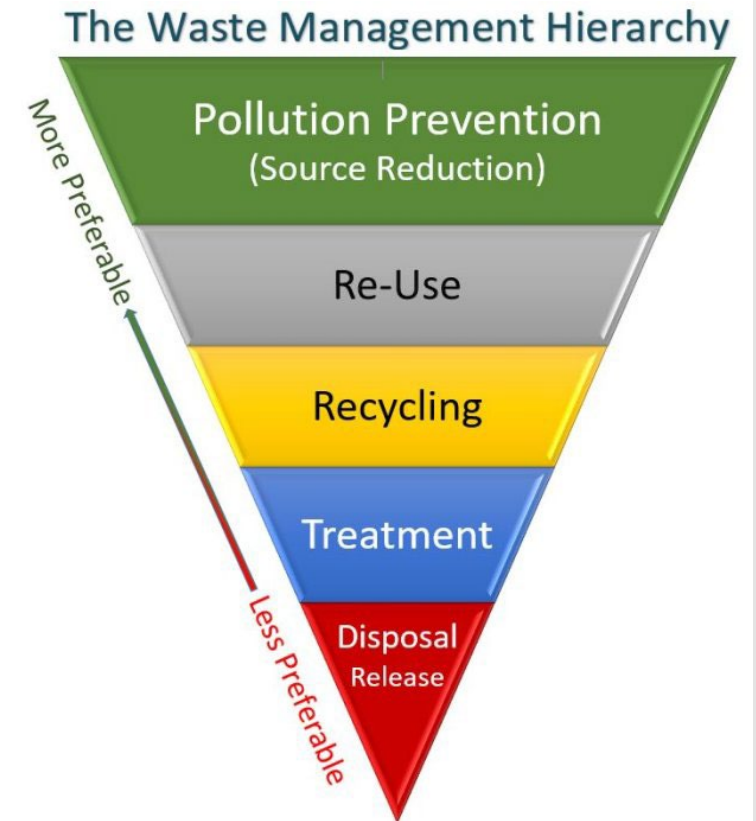
- Founded in 2008 by the IL Green Business Association (IGBA)
- A partnership between the Smart Energy Design Assistance Center (SEDAC) and IGBA
- A green business program to make it easier for businesses to go green
 - Reduce costs
 - Increase efficiency
 - Connect to available resources – saving you valuable time and resources
 - Recognition for your efforts!

BRITE

- Established in 2022 through federal funding for COVID relief.
- Focuses on pollution prevention of 4 priority industries.
 - Dry Cleaners
 - Auto Body and Repair Shops
 - Metal Finishers
 - Food and Beverage Manufacturers
- Free assessments offered to suburban Cook County Businesses.
- Grant opportunities for funding recommendations.

The Importance of Pollution Prevention

- Pollution Prevention (P2) is any practice that reduces, eliminates, or prevents pollution at the source before it is created.
- It involves a variety of applications, including energy efficiency, elimination of toxics, reuse of input materials during production, and reduced water consumption.
- Pollution prevention reduces both financial costs (waste management and cleanup) and environmental costs (health problems and environmental damage)



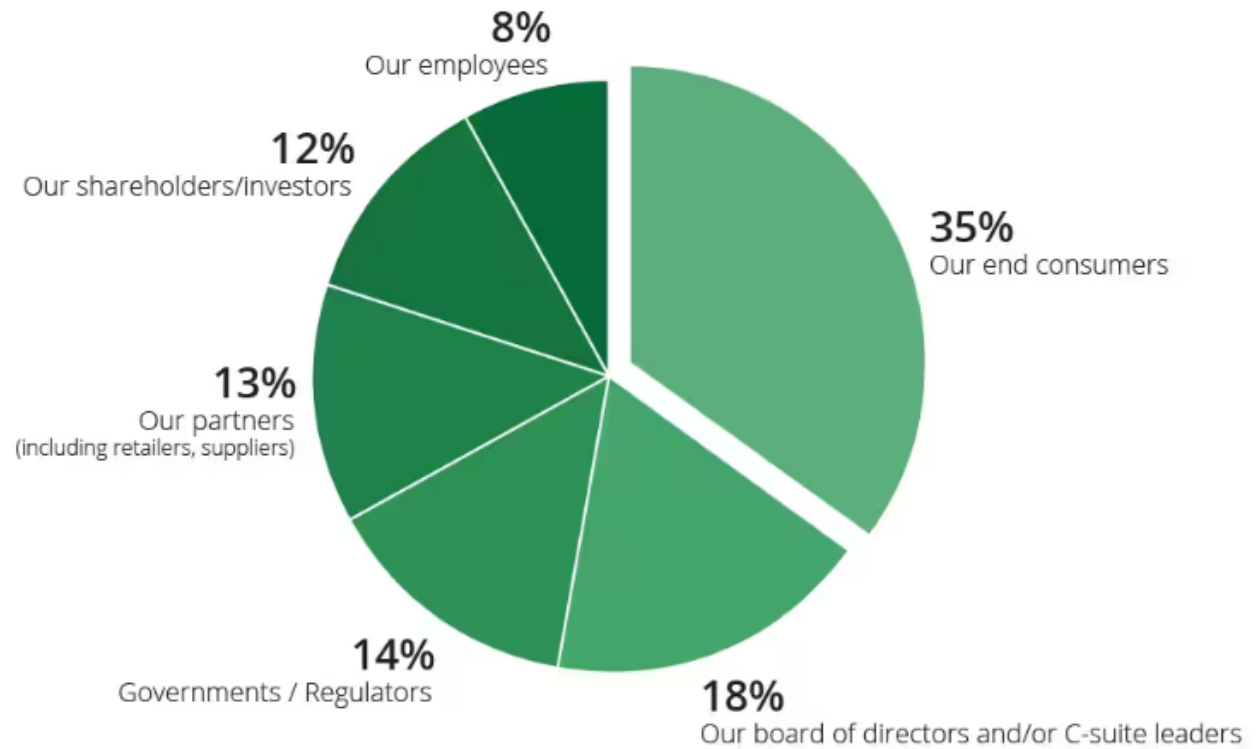
Why “go green”?

- **Identify sustainability solutions that:**
 - Save money by wasting less
 - Increase resource and operational efficiency
 - Reduce environmental impact in your community
- **Differentiation in your regional market**
- **Attract and connect with customers and employees** who care about their community and the environment



Why Food & Beverage facilities care?

Figure 1: Stakeholders applying the most pressure to act on environmental sustainability



Source: Deloitte's 2022 Consumer Products Industry Outlook Survey.

Why Food & Beverage facilities care?



The time is now – most people are willing to cut ties with brands that do not take action.

70% of people would be willing to cancel their relationship with a brand that does not take sustainability and social initiatives seriously and 69% would even leave their current company to work for a brand that places a greater focus on these efforts.

If organizations can clearly demonstrate the progress they are making on environmental and social issues, people would be more willing to pay a premium for their products and services (87%); invest in them (83%); and work for them (83%).

Why Food & Beverage facilities care?

70% of employees and job seekers **say a sustainability program makes an employer more appealing.**

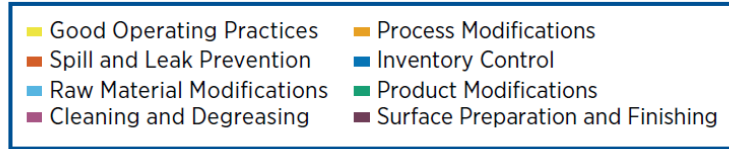
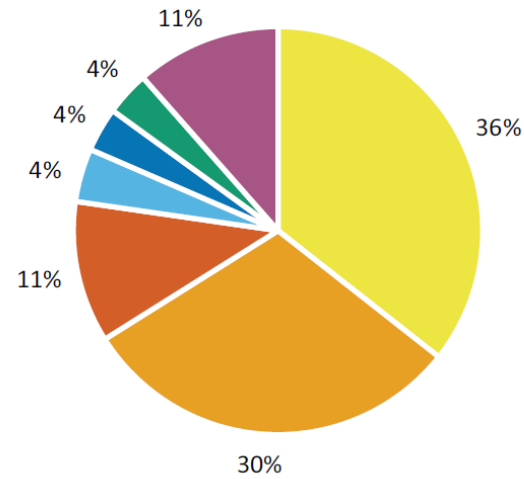
44% of executives **consider their company's climate initiatives to be an effective tool for recruitment and retention.**



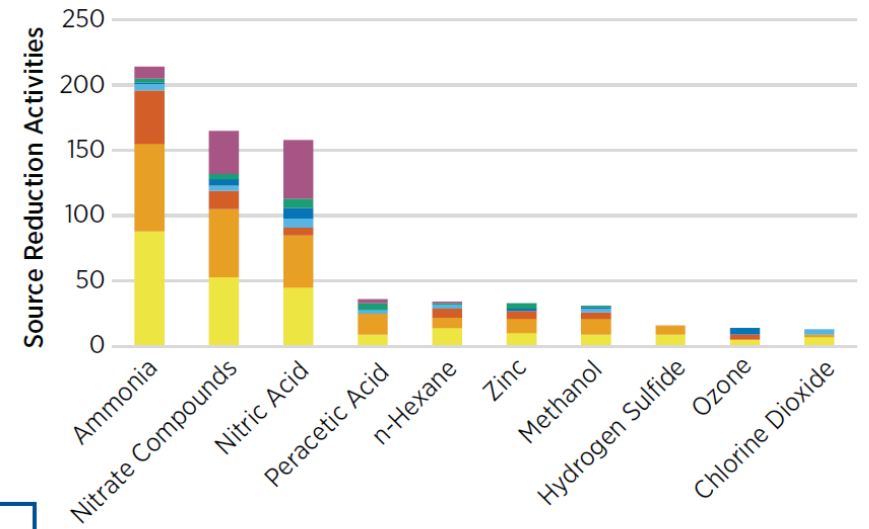
Key Sustainability Practices

Food and Beverage Manufacturing, 2016-2020

Source Reduction Activities



Source Reduction Activities by Chemical



Key Sustainability Practices

Energy Efficiency

Reduce Toxics

Divert & Eliminate Waste

Conserve Water



Energy

- **Repair air and steam leaks**
 - Reduce compressed air usage – use the lowest possible pressure and check condensate valve settings
 - Review steam distribution for efficiencies
 - Use flash steam
- **Install variable frequency drives (VFDs) on pumps/motors as possible**
- **Refrigeration**
 - Install new seals, curtains, and minimize the time that cooler doors are open
 - High speed doors can also reduce air loss
 - Install electrically commutated motors (EC Motors)
 - Make sure units are ENERGY STAR certified
- **LED Lighting**
 - Use motion sensors in areas that aren't frequently occupied and in restrooms and tie them to exhaust fans
 - Install motion sensors on warehouse lighting



Energy

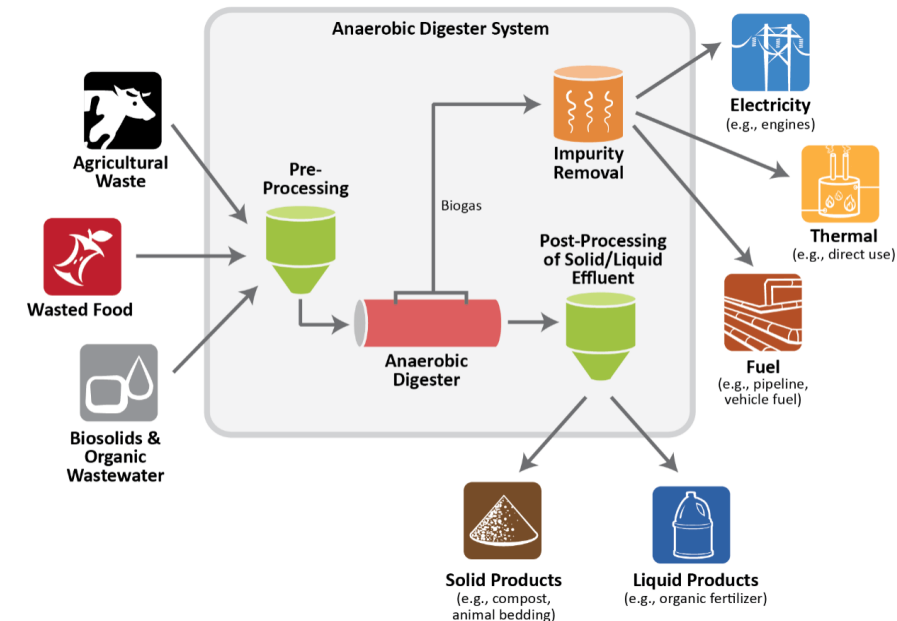
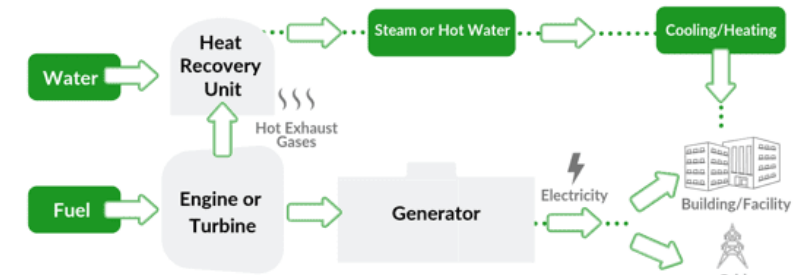
- **Ventilation**
 - Use demand-use or gas-detection technology to reduce exhaust fan energy use (optimization)
 - Demand-controlled ventilation in office areas
 - Use large fans in open warehouse areas
- **HVAC**
 - Optimize chiller performance
 - Switch to high efficiency boilers or heat pump HVAC units and water heaters, where applicable.
 - Use smart programmable thermostats
- **Insulate all hot water and cold suction lines**
- **Consider electrification of equipment**
 - Ovens, kettles, etc.



Energy

- Consider installing solar to produce supply electricity
- Explore Combined Heat & Power (CHP) systems to capture
 - Heat capture to produce power
 - Can provide electricity and majority of steam
 - As energy use increases, CHP can help reduce energy costs per product produced, Manufacturing more for less.
- Anaerobic Digestion for Food Waste
 - Digest food waste and produce power via biogas
 - Byproducts may be able to be sold as well

COMBINED HEAT & POWER



Natural Refrigerants

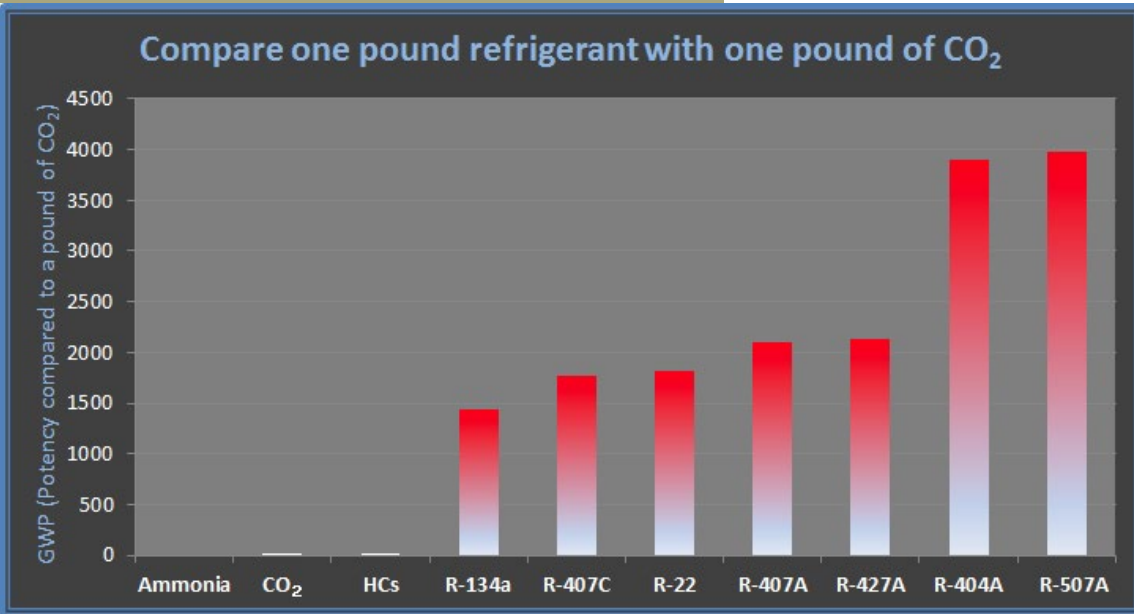
Toxics
Reductions



Refrigerants

- **Background**

- The most used refrigerants today have Global Warming Potentials (GWP) that are **thousands of times greater** than CO₂.
 - This means every pound of these refrigerants that are released to the environment is the equivalent of several thousand pounds of CO₂.
- According to the EPA, approximately **20%-30% of a refrigerant charge** is leaked over the course of a year.



Choosing a New System? |
California Air Resources Board

Guide to Good Leak Testing
(epa.gov)

Pollution from Common Refrigerants

It's Time to
Transition to
Low-GWP
Refrigerants



- **The Solution**

- **Natural refrigerants**, most commonly CO₂, Ammonia, and propane, are one of the most cost-effective climate mitigation strategies.
- As natural refrigerants have a zero or near-zero GWP, integrating natural refrigerants can be a **"future-proof" investment**.

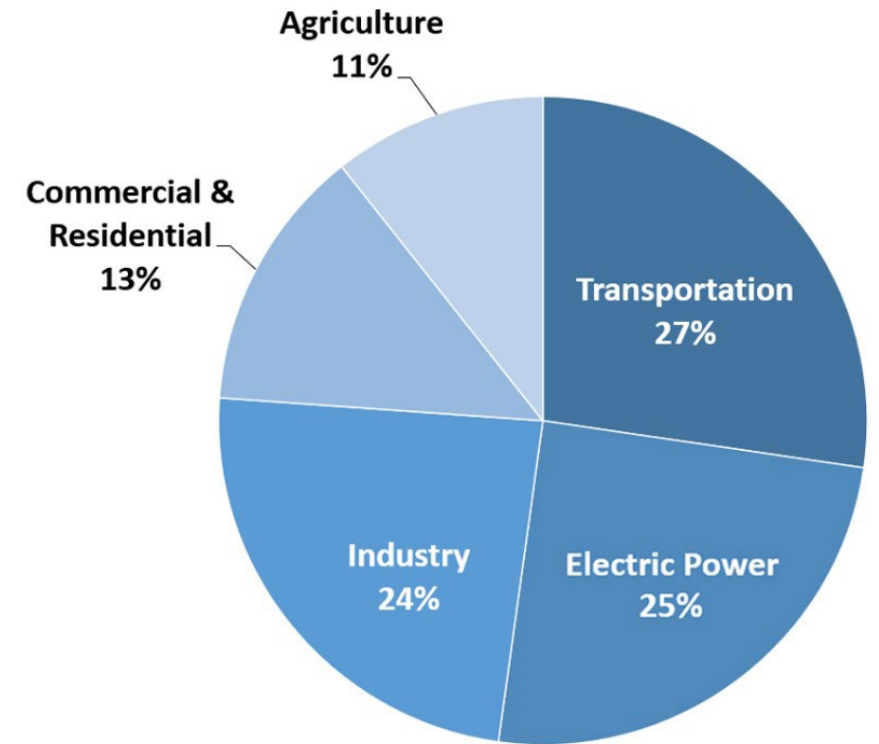
- **The Challenges**

- Integrating natural refrigerants have unique challenges, including **high up-front costs** to make the transition.
- A shortage of workforce training and lack of performance data can also pose concerns to businesses.

Toxics- Vehicle Emissions

- 27% of the US's GHG emissions comes from transportation
- Switching a fossil fuel fleet to electric vehicles can save money on gas but does require installing an Electric Vehicle Charger

Sources of U.S. Greenhouse Gas Emissions in 2020



U.S. Environmental Protection Agency (2022). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2020

Toxics Reductions

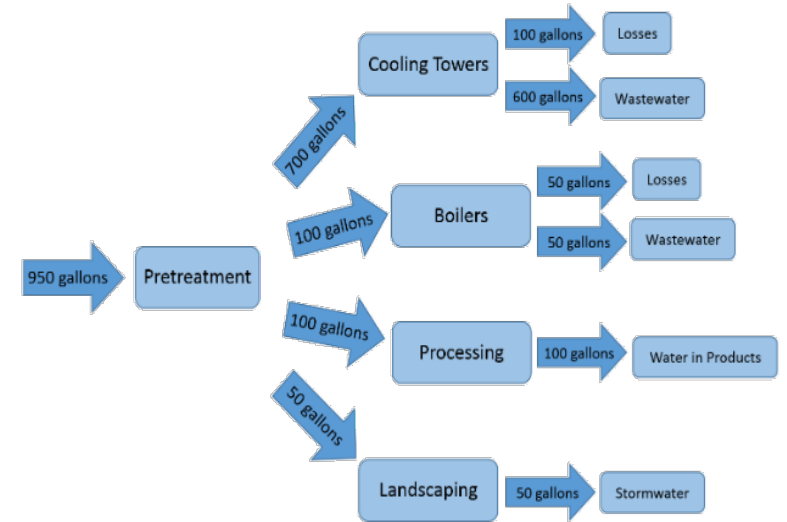
- **Make sure pollution spill kits are in key areas of the facility** and employees are trained on procedures.
- **Use secondary containment for all hazardous materials or oils**
- Investigate **aqueous ozone technology** for sanitation needs
 - Replaces acid and chlorine-based solution, reducing chemical purchasing, water consumption, heating, and sanitation labor.
 - ** Check with your local health department
- **Reduce toxic chemical use** – find EPA Safer Choice or other credibly certified greener chemicals for cleaning
- **Replace bisphenol A (BPA) in food packaging.**



Water

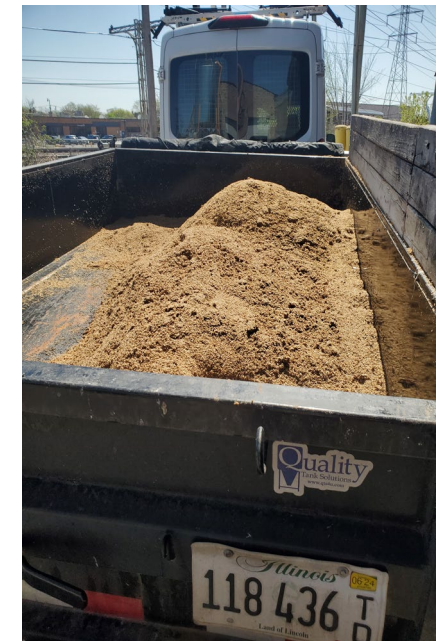
- Use a high-pressure, low volume nozzles for cleaning equipment
- Conduct a water assessment to identify processes where water use can be reduced
 - Track your water use/product volume produced
 - Breweries: per barrel produced
- Repair any process water leaks immediately
- Install low-flow devices in restrooms and hand-washing areas
 - Automated faucets for hand washing basins
- Shut off cleaning water on process lines in between batches

Figure 9: Simplified Elements of a Water Balance



Waste

- **Use recycled content and/or recyclable packaging.**
 - Reduce plastics as well , where possible/feasible.
- **Conduct a waste assessment to identify waste reduction and diversion opportunities**
 - Regularly audit bins for contamination
 - Clearly label bins and provide signage for bins
 - Public and staff bins
 - Engaging and training staff – assign a waste coordinator!
- **Divert as much organic waste to composting as possible**
 - Reuse waste products to create other marketable products where possible.
- **Work with suppliers or other facilities/brewers to recycle or reuse items**
- **Beverage Facilities:** Collect and reuse can carriers (Pak Techs)
 - <https://www.craftforclimate.org/can-carrier-program>



Water & Wastewater - Breweries

- Breweries regularly discharge large volumes of waste beer, wort, yeast, and grains into a wastewater system, incurring expensive permitting fees and straining public treatment capacity.¹
 - This makes water use and wastewater discharge important considerations for P2 in breweries.
- Conducting regular water and wastewater audits with your local wastewater treatment facility can help you explore options like Heat Recovery Systems, using alternatives to phosphorous-based cleaning solutions, reducing water from CIP systems, and installing water-conserving plumbing options.
- You can use the Water Use Calculator from the Chelan County (WA) Public Utility District (PUD) to create a rough estimate of your water usage and the savings possible.²

GENERAL QUESTIONS 10

Total number of people in your household. (Required)

INDOOR WATER USE

BATHROOM

How many showers are taken each day in your household?

What is the average length (in minutes) of each shower.
Enter 6.3 if you are unsure.

What is the flow rate (gallons per minute) of your showerhead?
Enter 5 for standard showerhead; 2 for low flow.

Total number of baths taken each week by members of your household.
Assuming 40 gallons/bath.

TOILETS

Number of times each person flushes a toilet in your house per day.
Enter 4 if you are unsure.

How many gallons does your toilet use per flush?
Enter 5 if you have a standard toilet; 1.6 if you have a low volume toilet.

FAUCETS

How many times each day does each household member use faucets to shave, brush teeth, wash hands and face?

How many minutes does the water run during each use?
Assuming 3 gallons/minute.

WASHING DISHES

How many times are dishes washed by hand each day?

How many minutes does the water run during each wash?
Assuming 3 gallons/minute.

If you have a dishwasher, how many times is it used each week?

The average dishwasher uses 15 gallons of water per load; change this number if yours is different.

OTHER USES

Water is also used outdoors to wash cars, fill pools, rinse outdoor furniture and clean equipment.

Estimate the number of minutes water is used outdoors for purposes other than watering each week.
Assuming 10 gallons/minute.

Press the Calculate button to compute your overall water use.

RESULTS

PER CAPITA DAILY WATER USE IN YOUR HOUSEHOLD (gallons)

Bathroom	<input type="text" value="0"/>	Lawn Watering (averaged out over the year)	
Toilets	<input type="text" value="10"/>	Other Outdoor Uses	
Faucets	<input type="text" value="3"/>		
Laundry	<input type="text" value="0"/>		
Dishwasher	<input type="text" value="2"/>		
Hand Washing Dishes	<input type="text" value="0"/>		

COMPARISON BETWEEN YOUR HOUSEHOLD AND THE AVERAGE* HOUSEHOLD IN THE PUD'S WENATCHEE SERVICE AREA

	Your House	Wenatchee Ave
Interior per household gallons per day	<input type="text" value="150"/>	172
Exterior per household gallons per day	<input type="text" value="0"/>	157
	Total Gallons of Water Used in the House	
	Per Day	Per Month
Your Household	<input type="text" value="150"/>	<input type="text" value="4560"/>
Wenatchee Average	<input type="text" value="329"/>	<input type="text" value="9870"/>

¹-P2: Pollution Prevention – Brewing Success with P2 Grantees (ct.gov)

²-<https://www.chelanpud.org/conservationhome/water-conservation/water-use-calculator#resultsBottom>

Wastewater

- **Conduct upstream sampling to establish a baseline before treating water**
 - Could reduce discharge fees
- **Reduce phosphorous-based cleaners** (particularly brewery tanks) to reduce future permitting fees from your local wastewater treatment system
- **Make sure all sinks have drainage baskets** to catch food waste – compost if possible.
- **Use UV disinfection systems** to treat wastewater rather than chlorination



Getting Started

- **Start with "wins" - grow initiatives over time**
 - You don't have to do all of this at once!
- **Focus on resource-intensive operations first to yield impacts**
- **Engage employees in providing feedback and implementing initiatives**
- **Share your story with your employees and customers!**
 - Videos
 - Short social media posts
 - Website
 - In your taproom!



SUSTAINABLE BREWING

Sketchbook has committed to decrease our carbon footprint and be kind to the planet from the very beginning. When our [sustainability goals](#) back in 2014 met our goal early, we asked for extra funding to support equipment such as a heat exchanger and cold water tanks. "Local brewing is already a green enterprise -- reducing transportation, refrigeration, bottling, and other pollution-contributing processes -- but the new equipment would allow us to be as green as possible from the get-go," said one of Sketchbook's principal owners, Shawn Decker.



Sketchbook Brewing: Sustainability and Pollution Prevention Accomplishments



Support and Funding



Cook County: BRITE Grant Program and Eligibility

- **Any business is eligible for the BRITE assessment that meets the following requirements:**
 - Is located in suburban Cook County.
 - Is a Dry Cleaning facility, Auto Body and Repair Shop, Metal Finisher, or **Food and Beverage Manufacturer.**
- **To be considered for the Grant, business must meet the above requirements as well as:**
 - Must complete a BRITE assessment
 - Must have no more than 500 full-time employees.
 - Must have been in operation prior to January 1, 2020.
 - Must have experienced negative economic impacts due to the COVID-19 pandemic, demonstrated by proof of revenue loss.
- Businesses will also be required to attend three (3) sustainability trainings covering General Grant Administration, Industry-Specific Pollution Prevention Practices, and General Sustainability.
- Businesses can receive a maximum of \$300k for recommendations. This includes:
 - 100% cover of top pollution-preventing project
 - Up to 50% cost-share with all other recommendations
 - 25% maximum cost-share for any fossil-fuel based recommendations

Apply for an Assessment or Grant Now!

<https://www.cookcountyil.gov/BRITE>

Cook County Bureau of Economic Development (BED)



- BED's Commercial Property Assessed Clean Energy (CPACE) financing is an innovative tool that provides low-cost, long-term financing for energy efficiency, renewable energy, water conservation, and resiliency projects in commercial buildings.
- Cook County commercial property owners can obtain up to 100% upfront financing from private capital providers for qualified upgrades such as HVAC, lighting and solar photovoltaic systems, and many more, in both existing buildings and new construction projects.

** If you are not located in Cook County, the State of Illinois has a statewide program, or visit il-fa.com to see if your county/local municipality has a CPACE Program.

Other Technical Assistance Programs

- **MWRD – Metropolitan Water Reclamation District (Chicagoland Area)**
 - Schedule assessments to have staff come out and evaluate your water use
- **UIC**
 - For Chicago-based businesses, UIC offers a similar program to BRITE excluding internal funding opportunities.
- **US DOE Industrial Assessment Center**
 - Federal assessment and grant program, must have <500 employees, manufacture food/beverage, etc., must have 'energy' bills over \$100,000/year. A potential source of funding with the larger food & beverage manufacturers!
- **EPA Energy Star Industrial Assistance Program**
 - EPA has launched the Great Lakes Industrial Assistance Network to support businesses find more ways to reduce energy usage through trainings and networking opportunities with similar businesses.
- **Illinois Sustainable Technology Center**
 - Offer assessments for manufacturing facilities across Illinois



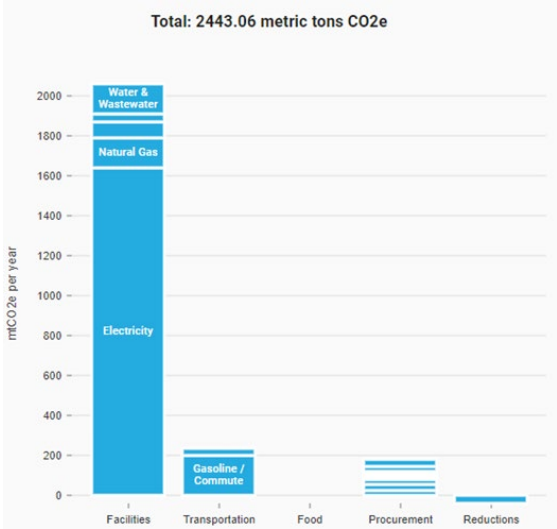
Illinois Green Business Program

Three key steps:

Assess Opportunities

Take Action

Get Recognized!



Statewide Funding Support

Utility Rebate and Assessment Programs

- Electric Utilities:
 - [ComEd For Your Business](#)
 - Ameren Illinois Energy Efficiency Program
 - Illinois Municipal Electric Agency
- Gas Utilities:
 - [NICOR Commercial & Industrial Rebates](#)
 - [Rebates \(peoplesgas.com\)](#)
 - North Shore Gas
 - Ameren Illinois

Utility incentives could cover:

Lighting
(interior, exterior,
controls)

Heating &
Cooling

Refrigeration

Compressed air

Anything that
touches energy
use!



Statewide Funding Support

Forklifts







- ComEd incentives for battery chargers – Instant Discounts
 - <https://www.comed.com/ways-to-save/for-your-business/incentives/instant-discounts/fork-truck-technology>
- Ameren Illinois incentives for battery chargers
 - <https://www.amerenillinoisavings.com/business/specialty-equipment/>

Electric Vehicle (EV) Incentives

- Federal clean vehicle credit
 - Up to \$40,000
 - 15% of your basis in the vehicle, 30% if vehicle is not powered by gas or diesel
- ComEd customers:
 - Light duty (Class 1-2) vehicles: \$5,000 - \$7,500
 - Medium duty (Class 3-6) vehicles: \$20,000 - \$30,000
 - Heavy duty (Class 7-8) vehicles: \$50,000 - \$75,000

EV Charging Incentives

- Federal tax credit – up to 30% of the cost to purchase and install charging stations
- IEPA charging incentive program
 - Level 2 charging stations and direct current fast charging
 - Up to 80% of costs
- ComEd customers:
 - Level 2 chargers – \$5,333 - \$8,000 per port
 - Level 3 chargers - \$667/kW produced
- Ameren IL – EV Rate program plans to reduce charging costs

 LEVEL 1 Charging	 LEVEL 2 Charging	 DC Fast Charging
 Standard Wall Plug	 J1772 Tesla	 CHAdeMO CCS Combo Tesla Supercharger
VOLTAGE 120V	VOLTAGE 208V or 240V	VOLTAGE 208V or 480V - 3 phase
AMPS 15A to 20A (12-16A load)	AMPS 20A to 100A (16-80A load)	AMPS 50A to 400A+
CHARGING POWER 1.4kW to 1.9kW	CHARGING POWER 3.4kW to 19.2kW	CHARGING POWER 50kW to 150kW+
CHARGE TIME FOR VEHICLE 4mi/hr to 6mi/hr	CHARGE TIME FOR VEHICLE 10mi/hr to 60mi/hr	CHARGE TIME FOR VEHICLE 25+mi/10mins to 75+mi/10mins

Statewide Funding Support

Solar is really viable for business in Illinois!

- 30% federal tax credit (through 2032, then steps down until 2034)
- 35-40% Illinois Solar Renewable Energy Credit (SREC) payment
- MACRS depreciation tax credit – another 5-10% on the project
- Utility Resources:
 - <https://secure.comed.com/MyGeneration/>
 - Community solar: <https://secure.comed.com/solar/MarketEnablement>
 - <https://www.ameren.com/illinois/residential/supply-choice/renewables>

Consider Energy Service Performance Contractors



Questions?



Visit smartenergy.illinois.edu/green-business for more information, email greenbiz@mx.uillinois.edu, or call 800-214-7954.

Visit cookcountyiil.gov/BRITE or email BRITE@cookcountyiil.gov for more information. You can also call us at 773-519-1774.