



Craft Beverage Environmental Best Practices

April 2023

The [New Hampshire Sustainable Craft Beverage Program](#) (NHSCB) is a voluntary recognition and technical assistance program managed by the New Hampshire Department of Environmental Services’ Pollution Prevention Program for environmental leaders in the craft beverage industry. This program recognizes businesses that implement pollution prevention strategies that reduce waste at the source and consciously manage resources and outputs to reduce a business’s overall environmental footprint. To apply to the program please complete the [New Hampshire Sustainable Craft Beverage Program Brewery Application Form](#).

This list is a combination of operational- and facility-specific environmental best practices for breweries, some items may not be applicable to your facility. Refer to our [Energy Efficiency Incentives, Grants and Other Funding Opportunities document](#) for a list of current funding opportunities.

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WATER

Brewing beer consumes 3 to 10 times the amount of water contained in beer. Reducing water consumption, protecting water resources and reusing water can help lower costs, reduce ecological impact and create a healthier workplace.

Company Policy and Employee Training

- Implement a water use policy and/or plan for water conservation or use reduction.
- Train staff on how to read a water meter.
- Train staff about water use at the facility (know which equipment uses water, how much it uses and why it uses water).
- Set a goal for percent reduction for facility water use of percent.
- Track water usage ratio.
- Reduce water usage ratio (from previous year) .
- Monitor groundwater (annual testing of water quality, metering, and/or water levels).

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Procedure

- Complete water efficiency audit/assessment.
- Implement at least 50% of the assessor's recommendations.
- Perform plumbing leak checks at least quarterly (documented review).
- Use broom, squeegee, shovel, etc. for spills when possible instead of using a hose.
- Reuse final rinse water for initial rinse on fermenters/equipment.
- Reuse heated and chilled water.
- Reuse final rinse water to rinse cans/bottles after filling or keg cleaning.

Equipment

- Install closed loop cooling systems for fermenter.
- Replace water cooled equipment with air cooled equipment.
- Use a clean-in-place system (uses 60% less water).
- Use ionizing can/bottle rinse instead of water rinse.
- Use low flow toilets or automatic flush sensors. **
- Use waterless urinals.
- Use low flow aerators or automatic shut off sensors faucets. **
- Install water meter(s) – separate meters for high-use lines and/or for certain equipment.
- Install spring loaded shut offs on water fixtures.
- Use high pressure low flow spray nozzle on water hoses.

Outdoors/Grounds Keeping

Rainwater capture/stormwater management

- Install rain barrels or rain water collection system.
- Develop [stormwater](#) management plan.
- Install pervious pavement for parking areas, walkways and patios.
- Install retention/detention basin.
- Install water containment system.

Landscaping water conservation practices

- Use soaker hoses.
- Use timed irrigation watering only early morning and late afternoon.
- Install moisture sensors.
- Plant drought resistant plants to reduce the need to water.
- Plant native plants that require little maintenance.
- Limit watering during drought.
- Use mulch or compost as soil amendment to reduce need for water.
- Minimize the use of synthetic pesticides/herbicides to protect water quality.
- Use integrated pest management instead of pesticides/herbicides.
- Plan vegetation planting to address environmental issues like erosion, water storage, etc.

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WASTEWATER

Approximately 70% of the water used to create craft beverages is discharged as wastewater. Wastewater pre-treatment may be required by your wastewater treatment facility or septic system to remove organics/solids, reduce BOD, temperature and adjust the pH.

- Implement side streaming - Estimate the number gallons wastewater side streamed per year .
- What is side streamed? (Examples: first rinse, spent grain, final rinse water) Please describe .
- Install wastewater treatment system. Please describe .

AIR

Volatile organic compounds (VOCs) from fermentation and filling processes, and particulate matter (PM) from grain handling are the primary emissions from craft beverage producers. In addition, carbon dioxide (CO₂) is used and generated in the brewing process. Boilers burn natural gas and emit nitrogen oxide (NOx).

Both ambient and indoor air quality can have impacts on the environment and human health. By reducing air emissions within your facility, you are playing a role in improving air quality.

Company Policy and Employee Training

- Obtain required Air Permit if an anaerobic digestion system is used on-site.
- Train staff to recognize and avoid air pollution (such as leaving a forklift or other gas powered engine running when not actively in use, using electric powered equipment instead of gas, etc.).

Equipment

- Install low NOx burners on boilers. **
- Install a Nitrogen Generator to clear lines/hoses instead of using CO₂.
- Use alternative powered equipment such as electric powered forklift instead of gas.
Please specify: .

Procedure

- Install fabric filters to control particulate matter emissions from grain handling and drying.
- Recapture CO₂ generated during fermentation process and reuse.
- Use low Volatile Organic Compound (VOC) paint, furniture and flooring.

ENERGY

Refrigeration and cooling create the largest electrical load, while brewing and distilling consume the largest amount of natural gas, propane or oil. Similar to water conservation, reducing energy consumption and implementing alternative energy sources can reduce utility costs and improve air quality.

Company Policies and Employee Training

- Create an Energy Efficiency Plan.
- Train employees about energy saving measures.

Procedure

- Complete an Energy Audit in last two years (Contact: nhppp@des.nh.gov to set up an energy audit). **
- Implement any energy related improvement opportunities identified in an Energy Audit.

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Please specify: .

- Track electricity use - [benchmark](#) or internal tracking (Contact: nhppp@des.nh.gov for help benchmarking).
- Track water use - [benchmark](#) or internal tracking (Contact: nhppp@des.nh.gov for help benchmarking).
- Track fuel use - [benchmark](#) or internal tracking (Contact: nhppp@des.nh.gov for help benchmarking).
- Participate in an [Employee Energy Treasure Hunt](#) (Contact: nhppp@des.nh.gov to set up a treasure hunt) .
- Use [ENERGY STAR](#) equipment and appliances (office, tasting room, kitchen, and other areas).

Alternative Energy

- Use alternative energy: Solar Wind Hydro Bio-Fuel Geothermal. **
- Install electric vehicle charging stations. **

Lighting and Windows

- Use LED lighting through entire operation. **
- Use natural lighting where and when possible.
- Establish a policy to turn off lights when not in use
- Install occupancy sensors or use signs to remind staff to turn off lights when not in use. **
- Install window film and treatments to reduce solar gain.
- Install [ENERGY STAR](#) labeled windows, doors, skylights. **

Please specify: .

Heating/Cooling – HVAC

- Install geothermal heating/cooling. **
- Use ambient air cooling, free cooling or evaporative cooling.
- Use efficient HVAC system (> 15 SEER, ground source heat pump, solar, etc.). **
- Use programmable HVAC system. **
- Set thermostats to heat or cool less when space is not occupied.
- Perform regular tune-up maintenance on HVAC units annually. **
- Check for leaks, clogs, obstructions in HVAC system monthly.
- Check, clean or change filters every four months (including outside units).
- Monitor efficiency of HVAC (utility/device tracking).
- Use correct filters for HVAC system. Some filters can reduce air flow making the system work harder than necessary.

Production Equipment

- Use lined, jacketed or insulated equipment/tanks.
- Install insulated heat and condensate recover systems to recycle heat.
- Repair air and steam leaks. **
- Check production equipment monthly and repair as needed.
- Recover heat from processes (brew kettles, wort cooling, boiler economizers) and use it to pre-heat for hot water needs.

Refrigeration/Product Cooling

- Inspect for refrigerant/coolant leaks – annually.
- Inspect cooler/refrigerator door seals/gaskets for leaks monthly.

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- Installed curtains to contain cool air near coolers.
- Minimize time the door is open to coolers.
- Insulate refrigeration units/coolers and coolant pipes. **
- Install variable speed motors. **
- Install programmable thermostat. **

Hot Water Heater

- Install insulation jacket on water heaters and hot water pipes.
- Switch to on-demand or tankless hot water heater. **
- Install heat pump water heater. **
- Install solar panels to heat water. **
- Set hot water temperature back to 120 degrees for non-food related use.

Air Compressor

- Set air compressor to lowest possible setting.
- Regularly maintain and check setting on compressed-air system (minimum monthly check).
- Train employees that compressed air is energy intensive and to avoid using it for cleaning.

Canning/Bottling

- Install variable speed motors. **
- Use ionizing rinse instead of water rinse.
- Reuse rinse water for outside of bottles/cans or to rinse returned kegs.

Insulation/Weatherization

- Use green/efficient insulation (green foam, hemp, cellulose, etc.). **
- Install tightly sealed weather stripping on all doors and windows. **
- Implemented any practical weatherization opportunities.

Please specify: _____ .

WASTE

Spent grains are byproducts of the malting and lautering processes and are the largest source of waste for most brewing and distilling operations. Sustainably managing materials through minimizing resource consumption, maximizing reuse, adopting diversion strategies and recycling can reduce impacts to land resources and environment.

Company Policy and Employee Training

- Implement company policy about waste reduction, diversion and recycling.
- Conduct a waste stream audit.
- Train personnel to sort, stage and store materials to increase recycling and reuse awareness.
- Develop a plan for products not meeting specifications. Where does bad beer go? Side streamed?
- Consider onsite waste management strategies such as purchasing a cardboard bailer, establishing a compost bin or reusing wood pallets.
- Use flyers, signs, decals, magnets, verbal reminders and other communication to encourage guests to conserve resources and recycle pak-tech rings or aluminum cans in designated areas.

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- Make the community aware of waste management/environmental program through advertisements, website, and/or social media.
- Store, recycle, and/or dispose of [Hazardous Waste](#), [Electronics Waste](#) (computers, computer monitors and peripherals, printers, and TVs of any type,) and [Universal Waste](#) (such as fluorescent lamps and bulbs and mercury thermostats) in accordance with federal, state and local laws*.

Procedure

- Recycle (any type of landfill diversion that has a beneficial use for the materials listed below).
 - Glass Wood Plastic Cardboard/Paper
 - Metal Pallets Plastic Film/Shrink Wrap

Brew House Process and Byproducts

- Compost production waste such as spent grain and restaurant organics.
Estimated amount of waste composted yearly: .
- Send spent grain to farmers as animal feed supplement.
Estimated amount of spent grain/restaurant organics sent to farmers yearly: .
- Send residual yeast suitable for soil amendment to reduce pH to farmers.
Estimated amount of residual yeast sent to farmers yearly: .
- Recycle or compost filter aid and sheet plate (perlite & diatomaceous material)
Estimated amount of residual yeast sent to farmers yearly: .

Grain Storage and Packaging

- Install a grain silo to store large deliveries of grain. Reduces waste packaging & grain transport.
- Recycle/take back program on-site for pak-tech rings or other materials.
- Add a statement to shrink wrap labels on cans that the plastic film must be removed to recycle.

Tasting Room/Pub/Restaurant/To Go

Implement the following items/options:

- Reusable or QR code menu Reusable growlers, steins, glassware
- Reusable plates/silverware Bulk/refillable condiments
- Bulk drink dispensers Offer Straws by request only
- Reusable or no coasters Reusable or no placemats
- Cloth/recycled/tree-free fiber napkins Recycled/tree-free fiber toilet paper
- Reusable coffee filters Compost paper coffee filters
- Recycle cooking oil Compost food trimmings/scrap
- Use non-styrofoam food containers for leftovers and “to go” orders.
- Use PFAs free cardboard/paper food containers ([CEH PFAS-free foodware information](#)).
- Reduce the amount of containers/utensils given to only those necessary or requested.
- Donate excess edible food to Soup Kitchen/Charity.
Estimated amount of food donated yearly: .
- Other (please specify): .

Office/Building

- Use recycled content or tree-free fiber content printing paper and envelopes.
- Set photocopier default setting to print on both sides.
- Renovate an existing building rather than building from new.

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- Use environmentally responsible building materials/techniques for construction or renovation. **

CLEANING/SANITIZING

Using less chemicals and/or less toxic chemicals protects worker health and the environment. Choose cleaners and sanitizers that are readily biodegradable and do not contain toxic chemicals. Refer to the Toxics Use Reduction Institute ([TURI brewery cleaning/sanitizing](#)) or [EPA's Saferchoice](#) website for more information.

Company Policy and Employee Training

- Implement a cleaning/sanitizing product waste reduction plan.
- Develop a Standard Operating Procedure for cleaning and disinfecting on site.
- Train employees to use the proper amount, procedure and chemical storage.
- Use signage to encourage employees to use the proper amount, procedure and chemical storage.
- Post/share information about the use of environmentally sustainable cleaning products.

Procedure

- Use [TURI brewery cleaning/sanitizing](#) recommended products and procedures.
- Use natural cleaners/green cleaners/less toxic cleaners such as [Green Seal](#), [EcoLogo](#), [Design for the Environment](#) products.
- Purchase cleaning products in bulk containers or concentrated to reduce waste.
- Store, cover and contain cleaning and sanitizing products safely.
- Recover and reuse cleaning and sanitizing products when appropriate.

MAINTENANCE

Regularly scheduled and performed maintenance extends operational life and capacity of equipment, therefore reducing emissions associated with operating this equipment. It also reduces lifecycle environmental costs by decreasing the regularity with which these systems need to be replaced. Routine maintenance also helps in identifying problems before complete failure of that equipment.

- Material handling – forklift, pallet jack
- Delivery or fleet vehicles
- HVAC (including outside units)
- Steam system **
- Manufacturing/packaging equipment for canning/bottling

PURCHASING/SOURCING

Sourcing local ingredients, packaging, materials and equipment can reduce the amount of greenhouse gases emitted from transportation.

- Purchase locally sourced ingredients (within 50 miles).
Estimate the percentage or pounds of food/products sourced locally: .
- Buy hops, barley and other ingredients from sustainable farms.
- Grow hops, herbs, produce, other ingredients for production or restaurant use.
Estimate the percentage or pounds of food grown on-site: .
- Purchase locally sourced packaging/labeling material (within 500 miles)
- Communicate Environmentally Preferable Purchasing (EPP) policy to purchasing staff annually or as new staff are employed.
- Choose products/ingredients that use alternative/light-weight, environmentally friendly packaging material

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made from recycled content.

- Give preference to vendors of environmentally sustainable products.
- Consider durability and lifespan of products/equipment over cost when purchasing.
- Purchase recycled content products (napkins, paper towels, toilet paper, copy paper, etc.).
- Purchase furniture and equipment that is used, remanufactured or made from sustainable materials. **
Please specify: .

TRANSPORTATION

Considering employee, guest, delivery trucks and tour bus greenhouse gas emissions protects the environment.

- Offer employees incentives to carpool, walk, bike or use public transit to get to work.
- Provide bike racks for guests and employees.
- Use alternative fuel fleet vehicles, including bio-fuel, hybrid, electric vehicles, pedal-powered, natural gas or propane.
- Offer special parking for guests with hybrid, electric, or alternative fuel vehicles.
- Provide electric vehicle charging station(s) for guests and employees. **
- Post “no idling” signs for fleet vehicles, guest vehicles, delivery trucks and tour buses.

ENVIRONMENTAL MEASURES/BENCHMARKING

Tracking waste generation, energy usage and water usage helps businesses identify areas for improvement.

- Benchmark using [National Brewers Association tool](#) (Contact: nhppp@des.nh.gov for help benchmarking).
- Track solid waste disposal-to-landfill by weight or volume monthly.
- Track record recycling totals by weight or volume.
- Track energy usage Electricity Fuel oil Propane None
- Track water consumption monthly.
- Track spent grain/fruit waste by weight or volume monthly.
- Track restaurant/pub food waste by weight or volume monthly.
- Communicate environmental measurements with management and staff.
- Communicate environmental measurements with the public and/or media.

COMMUNITY

Conducting community engagement through educational opportunities and/or clean ups to improve the local environment, allows an organization to have a positive social and environmental impact on their surroundings.

- Plan, attend and/or participate in events that support and provide education on sustainability topics.
- Participate in stream clean-ups, roadside or community litter pick up, or other beautification activity
Please specify: .
- Promote or participate in community garden, composting, beehives.
- Participate in Give Back Programs – give back to the community through financial support, volunteering or other actions that support surrounding areas.
- Make charitable contributions include any donation of money, good/services, or time.
- Provide free venue opportunities – providing a free space for community organizations to meet.

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- Partner with environmental/conservation groups to promote the environment, conservation and stewardship - Please specify: .

SOURCES

We would like to thank the following agencies and associations for leading the way in developing the New Hampshire Sustainable Craft Beverage Program Recognition Application and Environmental Best Practices Checklist:

- North Carolina's Department of Environmental Quality - [NC Green Travel Initiative – Green Breweries and Distilleries](#)
- Tennessee's Department of Environment and Conservation - [Sustainable Spirits Program](#)
- Colorado's Department of Public Health and Environment - [Environmental Leadership Program](#) and [Sustainable Breweries Assistance](#)
- Iowa Waste Reduction Center and University of Northern Iowa – [Iowa Green Brewery Certification](#)
- National Brewer's Association - [Sustainability Guides](#)

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