



# THE SUSTAINABLE CRAFT BREWERY

OF THE FUTURE



*What do craft brewers need to be doing right now to be good citizens of the planet?*

*How do they improve their sustainability?*

By Jenn Orgolini



When asked about New Belgium's sustainability ethos, I'm quick to point out that as a whole, the craft brewing industry attracts hands-on tinkerers, dreamers, and visionaries. They are

just the sort of people who abhor waste and are driven to continuous improvement, people to whom sustainable business practices come naturally. That said, craft brewers have a lot on their plates and may have yet to take stock of their ability to meet the following challenges:

- Rising energy prices, as the remaining fossil fuel stores become more difficult to harvest.
- Consumer demand for transparency and accountability and for the opportunity to support a company that reflects their values.
- Pressure on water supply and quality due to development and climate change.
- The harsh reality of climate change itself and, hopefully, an eventual response from the U.S. legislature to internalize the cost of carbon.

Profitability, reputation, legislation, and conscience all conspire to bring sustainable practices to the top of every company's agenda. Certainly any vision of the future for craft beer will include a focus on environmental sustainability.

But what are sustainable business practices? In an industry whose members' annual production ranges from 20 barrels to 2 million barrels, a plethora of approaches will make sense. Oftentimes, preserving our natural resources is just another name for thrift, a best practice in any business and essential for cash-poor start-ups. As companies, and their founders, mature, thoughts turn to succession—who will sustain the company and how does our generation sustain a world worth living in?

#### GETTING STARTED

The most obvious place to begin to address sustainability is under one's own roof, in operations. Brewers have the opportunity—and responsibility—to continuously maximize efficiency in water and energy use. Before picking projects, though, it can be useful to cultivate intentions. Will sustainability's merit be measured solely on the income statement or does it spring from a broader ethical base? Is the CEO, or ultimate financial decision-maker, on board? What about co-workers—will sustainability practices become part of the daily conversation at the brewery or will this work be the province of a few? Will sustainability be a

discrete program or a way to evaluate all decisions made at your brewery?

It is important to become clear about what you are trying to achieve in order to determine whether or not you've been successful. Ideally, craft breweries of every size will fully embrace the mission of sustainability, making it part of their purpose, alongside creating fabulous beer and wonderful places to work.

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OPPOSITE PAGE: New Belgium Brewing Co.'s 870-panel, 200 kWh photovoltaic array, the largest privately held solar array in Colorado.

The methane recapture bubble is used to harvest methane-rich gas off New Belgium's process water treatment facility. The methane is piped back into the building to fire a co-generator that can produce about 15% of the brewery's electrical needs.

New Belgium brewhouse shows ambient daylight streaming into the Brewhouse 2 facility.

The  
FUTURE of  
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In fact, environmental consciousness seems almost synonymous with employee engagement. When a whole company co-creates its vision and strategy, its achievement is almost assured. Co-workers who share in the company's success are more likely to pay careful attention to energy and water use. If employees are empowered to improve the processes they are responsible for, innovation arises everywhere.

At New Belgium, when we decided several years ago to become more strategic about our sustainability, we formed a team with representatives from throughout the brewery—the CEO, a project engineer, a graphic designer, guest relations, maintenance, packaging, cellaring, Environment, Health & Safety, and accounting—to create a sustainability management system. Together we decided what we were trying to achieve, determined how we would measure and report on our achievements, and collected project ideas. We identified three existential questions that helped us surface our intentions: What environmental crises are facing the planet? How does the brewing industry contribute to these challenges? What can we do to help improve the industry's impacts?

#### ESTABLISHING A BASELINE

After determining why you're striving for sustainability and what you hope to achieve, it's time to dig into the brewing process, but you can't manage what you can't measure. Step one toward increasing efficiency is establishing a baseline. Start by compiling utility data and normalizing it against your production. After measuring what is easy to understand and calculate—electricity, water, and gas—James Soares from Squatters Brewery recommends adding a new measurement every year—like co-worker commuting, waste diversion, or emissions from distribution.

Taking 10°C water, heating it to 80°C, then eventually cooling it to -1°C—brewing takes a lot of energy, so eliminating inefficiencies is imperative: track down wasted heat, water, air, and energy (e.g. in lighting and HVAC).

James Emmerson, Full Sail's brewmaster, attributes much of their industry leading 3.5:1 water use ratio to "paying attention—eyes watch each stage of the CIP process to optimize pH and water use." Often utilities offer free industrial energy audits to help their customers find opportunities for savings.

For many brewers, a capacity expansion is an opportunity to pursue the elegant solution, wedding beer quality, fiscal responsibility, and environmental stewardship. Redeveloping a brownfield site (an abandoned or

# SUSTAINABILITY CHECKLIST

## OPERATIONS: transparency, authenticity, accountability, walking the talk

- Collect accurate data on water, electricity, and gas use, as well as on waste generated.
- Harvest the collective intelligence and enthusiasm of your co-workers.
- Create a sustainability management system to spur continuous improvement.
- Publish clear data and inspiring stories to let your customers, co-workers, and community know how you're doing.
- Address low-hanging fruit to improve water, electric and gas efficiency.
- Find a local non-profit who can help improve your landfill diversion.
- Let your utility and local providers know that you're interested in participating in energy efficiency audits and renewable energy pilots.
- Partner with local universities by inviting students to use elements of your operations as case studies.

## SUPPLY CHAIN: knowledge, collaboration

- Know your suppliers; ask them what they are doing to foster just working environments and ecologically sound business practices.
- Invite your suppliers to know you and open the door for future collaboration. Inform them of your interest in creating a more sustainable product.
- Source locally, organically and with minimal, recyclable or compostable packaging when possible.
- Talk to your distributors about EPA Smart Ways.
- Research the feasibility of alternative fuels for local deliveries.
- Promote refillable containers.
- Sign on to the Opposition to Commercially Release Genetically Engineered Barley statement.

## ADVOCACY: shaping policy that creates conditions that promote environmental sustainability

- Support local, state, and national policies to increase renewable energy on the grid.
- Support legislation to increase beverage container recycling.
- Support meaningful climate change legislation.
- Check into American Sustainable Business Council.

## PHILANTHROPY: giving back

- Modernize the ancient practice of tithing, giving to organizations who work for our communities and the earth in ways we're unable, given that we're running a business.
- Use events to raise awareness of and support for local environmental issues.
- Consider joining 1% For the Planet, a global movement of companies donating at least 1 percent of their annual net revenues to environmental organizations worldwide.

*What are you doing with the brief moment in time that you're given on this planet? The greater good that craft brewers provide is building community just as taverns of old were the center of business and civic life.*

—James Ottolini, Schlafly's brewmaster



ABOVE: Sierra Nevada's HotRot composter.

underused industrial and commercial facility) reuses materials and creates a connection to our industrial legacy. Unexpectedly, spending more money at first to upsize piping and infrastructure has been a successful strategy at many breweries. Oversized lines and pumps don't have to work as hard, thus using less energy. Larger vessels allow for more efficient batch sizes and abbreviated work weeks. And more glycol storage flattens cooling peaks so tonnage can be reduced.

Two U.S. craft breweries, Alaskan and Full Sail, have replaced their lautertuns with Meura mash presses and achieved staggering reductions in water usage and significant increases in extract efficiency. Drier spent grains mean fewer truckloads, too.

#### LOOKING OUTSIDE THE BREWERY

For most consumer packaged goods, beer included, the greatest environmental impacts are in the supply chain. For example, more water is used to grow barley and make malt and more energy is used to make glass and distribute beer, than are used at the brewery. So our accountability extends beyond the making of our beer to its sourcing

and selling. If we work together to improve the impact of our supply chain, we are in effect making our whole industry more sustainable, rather than just our individual companies. Like consumers influencing the sustainability of the marketplace with their purchasing decisions, we can do the same and reward those who are trying to change business as usual.

As in operations, the first step toward decreasing your environmental impact is to understand what it is. Ask your suppliers. Do they:

- Measure and minimize the environmental footprint of their operations and products by looking at transportation, packaging, waste, energy, toxic substances, water, and CO<sub>2</sub> emissions?
- Create a corporate culture that values and rewards everyone's contributions?
- Have a management system that demonstrates environmental commitment by setting goals and reporting regularly?
- Work with others to improve the sustainability of *their* industry?

Use these answers and research into best practices to determine your priorities. One-hundred-percent recycled content paperboard should be low hanging fruit whereas moving to organic malt is a multi-year transition.

One-year-old Asher Brewing, which produced just shy of 400 barrels in 2010, has committed to sourcing all organic materials because it believes organic ingredients are better for consumers and for the environment. By starting small and supporting local producers, they hope to grow their suppliers with their own production, creating an economically sustaining, environmentally friendly brewing community.

While some brewers are able to source their ingredients locally, most barley is grown in the Midwest while beer is brewed everywhere. Schlafly has created a win-win situation with its malt vendor through transloading. The malt is transported as far as feasible—to about 10 miles away—by rail. There a third-party transloader loads the grain into its trucks and hauls it to the brewery. Even though there's another party involved, who derives economic benefit, the cost is lower for both Schlafly and the maltster. Sierra Nevada, while well-known for magnificent on-site renewable energy projects, has also made great strides in getting more trucks off the road by using intermodal. Their finished product is loaded into containers that are trucked about 140 miles south to Stockton. Those containers are then loaded onto rail for shipping across the country. Even though these rail shipments take longer than if they were trucked,

the cost is lower, and the fuel efficiency is about 50 percent greater. Perhaps intermodal is an option for smaller brewers in one region to share shipments to another part of the country.

A burgeoning threat to craft brewers is the potential for genetically engineered barley—not only because our customers may not want to drink genetically engineered beer, but because for millennia, human civilization has sustained itself through an agrarian cycle of planting, harvesting, storing, and replanting. Genetically engineered seed is intellectual property, and the fundamental right to replant seed is legislated away. The wine industry, though it stands to greatly benefit from GE yeast and grapes, has collectively taken a stand to preserve the way that wine has been produced for over six thousand years. Craft brewers need to become aware of the issue and to send clear signals to our raw material suppliers if we care to preserve free and public access to seeds.

While there often aren't many options for new packaging and raw materials suppliers, brewers' point of sale provides lots of opportunity for improvement. At New Belgium, we created a matrix, scoring each of our 125+ point of sale, soft goods, and promotional items in terms of their design longevity, durability, origin, mode of transport, materials, and packaging. Just by contacting our suppliers, we were able to easily make tangible improvements. For example, we now get our bike reflectors grouped by the dozens, wrapped in heavy paper, instead of being individually wrapped in plastic. The supplier's theory was that their customers preferred little plastic bags, and it took just one simple phone call to disabuse them of that assumption.

#### THE BIG PICTURE

While we do the day-in and day-out work of making our business more sustainable, it is easy to wonder what impact we can really have in the big picture of global climate change, peak oil, and the earth's growing toxic load. Even within our industry, it's difficult for one company to make systemic change. Studies show that the glass bottle creates the single largest greenhouse gas emissions impact when looking at all the inputs and outputs of a six-pack of beer, but the recycled content available to a glass manufacturer is determined by public policy, not the ardent pleas of an environmentally minded brewer. Locally, we can encourage our customers to pick up and refill growlers at the brewery. But to really effect change, we will need to work together to support legislation. Better bottle bills can be written, ones that don't shift undue burden onto our retail





Great Lakes Brewing's staff harvested pumpkins for their Pumpkin Ale from their gardens at Ohio City Farm, the largest urban farm in the country. Their community shuttle bus runs on their restaurant's vegetable oil.

partners. Many beverage manufacturers outside of the brewing industry are supporting the concept of Extended Producer Responsibility (EPR), a legal framework that shifts responsibility for waste management from general taxpayers to producers and users.

When pollution and waste costs are externalized (i.e. carried by general taxpayers), pollution and waste increases. But when these costs are internalized, businesses and consumers are rewarded for reducing these costs, bureaucratic overhead is minimized, and innovation is fostered. Producers are in the best position to design and manage waste reduction programs and will be incented to do so if they accrue the cost savings from reducing waste. As craft brewers, we have the opportunity, if not the responsibility, to lead our industry toward

more responsible end of life for our packaging, which will significantly reduce the environmental footprint of our products.

Another important way we can work together to improve our sustainability is to advocate for a price on carbon. If the marketplace is not sending the correct signals about the long-term cost of greenhouse gas emissions, investment in efficiency and renewable energy will always be at the mercy of political whims. Both Business for Innovative Climate and Energy Policy ([www.ceres.org/bicep](http://www.ceres.org/bicep)) and The Future 500 ([www.future500.org/programs/climate](http://www.future500.org/programs/climate)) are known for rational, business-conscious legislative proposals that strive to reach across both sides of the aisle. Beyond climate, the American Sustainable Business Council ([www.asbcouncil.org](http://www.asbcouncil.org)) is mobilizing business networks to let

our legislators know that "American business" is not a monolith represented by the U.S. Chamber of Commerce, but that small businesses actually employ the majority of Americans and are interested in a vibrant, just, and sustainable economy.

When you've set your goals, improved your own practices, collaborated in your supply chain, participated in your democracy, been transparent to your customers, and you find the world is not yet saved, look to the many environmental non-profits who fight to protect our natural heritage. The diversity of causes to support is unlimited. At New Belgium, we decided to focus on those that were strategically tied to the brewing industry—water stewardship, sustainable agriculture—as well as those that resonated personally—bike advocacy and youth environmental education. Working with non-profits is also a great way to get to know—and cultivate—passionate brand advocates.

Many brewers support non-profits through product and event space donations. Events themselves, like our Tour de Fat or Great Lakes Brewing's Burning River Fest, can plant the seed of environmental consciousness through education, joyful non-commercial experiences, local foods, and zero-waste. Great Lakes is well-known for its Fatty Wagon—a shuttle that runs on straight vegetable oil. But the most significant achievement of the Fatty Wagon is not that it runs on an alternative fuel, but that it brings awareness of alternative fuels to the people it shuttles.

The work we do as brewers may be but a splash, but our ability to promote the pleasures of a simple life that honors nature and community can create a ripple. As James Ottoloni, Schlafly's brewmaster, puts it: "What are you doing with the brief moment in time that you're given on this planet? The greater good that craft brewers provide is building community just as taverns of old were the center of business and civic life." We are honoring our heritage to use beer as a platform from which to improve our world.

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