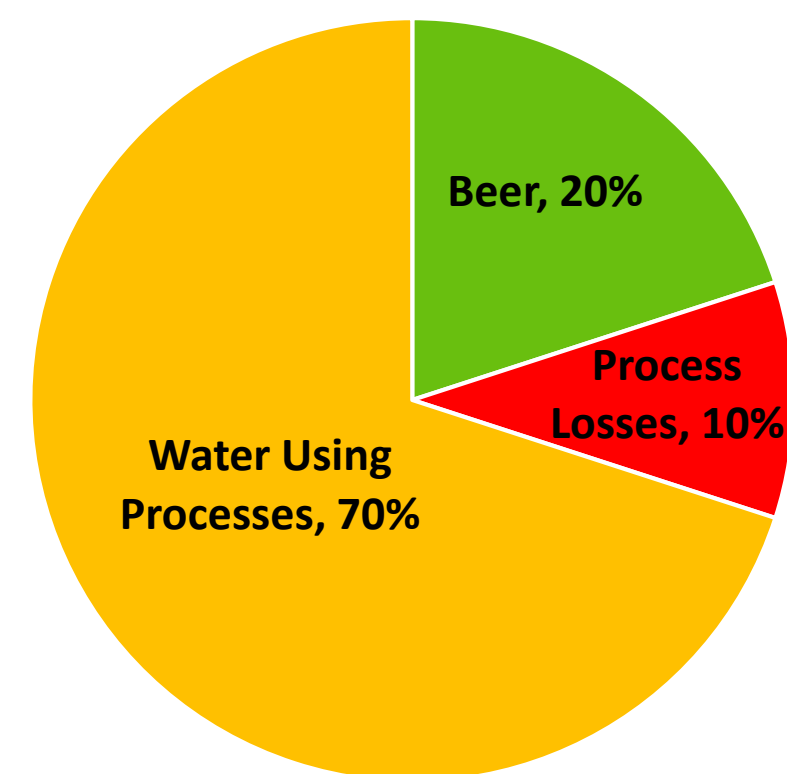


The Problem

- Global beer production continues to increase and with it, water consumption, wastewater production, and energy demand
- Breweries generate high biological oxygen demand (BOD) wastewater that is **expensive to treat**
- Population growth, aging infrastructure, and climate change have forced municipalities to set **stringent water supply restrictions** and **regulations for wastewater disposal**, and with the continued rise in energy demand, central utilities have **increased rates for electricity**
- Relying on municipal wastewater treatment plants has become extremely costly and in some cases, inhibits growth

Efficient Brewery 4:1 Water:Beer Ratio



Wastewater Characteristics

- High hops and esters
- Variable conc. and vol.
- 2000 - 5000 mg/L TSS
- 4000 - 17000 mg/L sBOD
- 6000 - 14000 mg/L TDS

The Opportunity

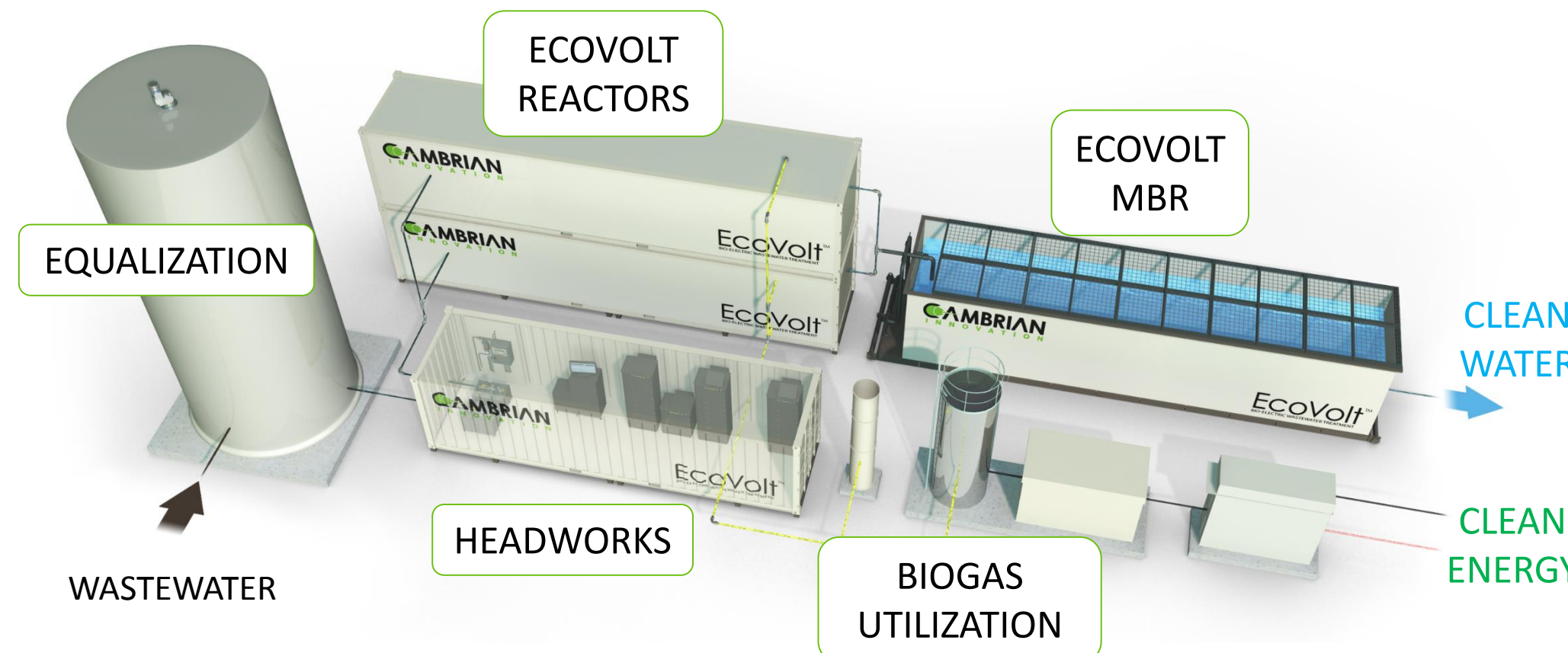
- Wastewater contains energy: up to 3 kWh per kg of BOD
- Distributed, modular wastewater-to-energy solutions help breweries shift away from centralized infrastructure, cutting costs, increasing production, and boosting sustainability

The New, Disruptive Solution: EcoVolt® Bioelectrically-Enhanced Wastewater Treatment



Lowest Lifecycle Cost
Modular & Expandable
Energy Positive
Fully Automated

- Leverages electrically-active microbes to treat wastewater for breweries while generating clean water and clean energy
- Treats a broad range of wastewater types at all levels of production
- Produces high-quality biogas to generate electricity and heat for onsite use
- Modular/stackable + containerized = small footprint, low installation costs, and on-demand capacity increase
- Progressive approach to water, wastewater, and energy management, enabling resource security at the **lowest lifecycle cost**



Case Study: EcoVolt Mini for Emerging Craft Breweries Northern United Brewing Company, Creators of Jolly Pumpkin



"With the City's and State's help, we are bringing wastewater management in-house with an innovative system from Cambrian. We're excited to expand our production, and we're proud to do our part to reduce pressure on the community's water system."
- Tony Grant, CEO and CFO, NUBC



Brewery Profile & Problem

- Location: Dexter, MI
- Annual Production: ~ 11,000 bbl
- The town of Dexter, MI was unable to accommodate more wastewater, leaving **NUBC unable to increase production and meet market demand**



Solution

- The **EcoVolt Mini**, an all-in-one solution for treatment and reuse
- Combines EcoVolt Reactor (anaerobic wastewater treatment and clean energy generation) and EcoVolt MBR technology (aerobic polishing)
- Designed for craft breweries producing between 3,000 and 25,000 barrels per year

Impact

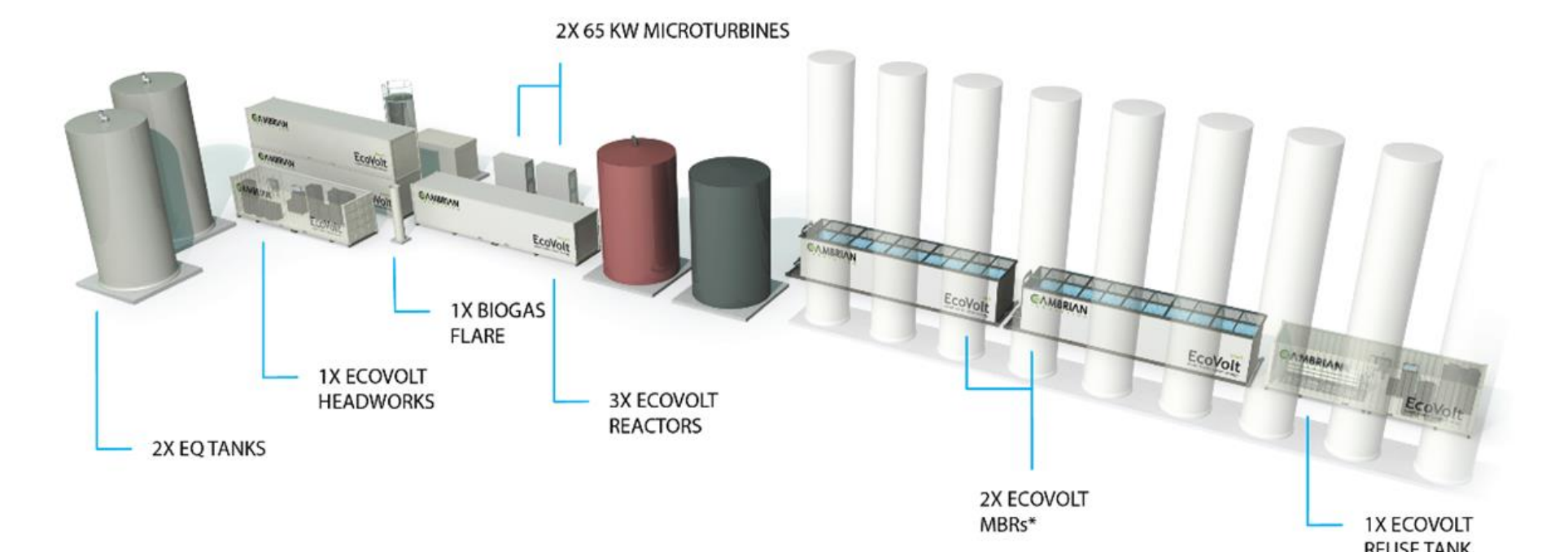
- Minimizes impact to city of Dexter; supports production expansion of over 40%**
- 100% of wastewater treated onsite
- 99.9% of contaminants (COD and TSS) removed from spent brewing water
- 11,500 therms of heat per year generated
- 65 metric tons of CO₂ per year eliminated

Case Study: EcoVolt for Large-Scale Breweries Lagunitas Brewing Company



Brewery Profile & Problem

- Location: Petaluma, CA
- Annual Production: ~ 500,000 bbl
- Trucking **high-strength wastewater offsite**
 - High economic and environmental cost
- Significant capacity fee** for increased discharge down sewer
- Water intake restrictions**



Solution

- One **headworks unit** controlling three **EcoVolt Reactors**, three **EcoVolt MBRs**, and a **reverse osmosis with disinfection system**
- Treats wastewater onsite to reuse quality
- Supplies energy to run itself and sends excess to the brewery



Impact

- 100% of wastewater treated onsite
- 99.9% of contaminants (COD and TSS) removed from spent brewing water
- 70% of sewer discharge cut through onsite treatment and reuse
- 40% of water demand cut through onsite treatment and reuse
- 1,138,800 kWh of electricity per year generated
- 45,000 therms of heat per year generated
- 1,600 metric tons of CO₂ per year eliminated