



Sustainable Spirits

Reducing Environmental Impact of Breweries and Distilleries in Minnesota

October 24th, 2017



UNIVERSITY OF MINNESOTA

Driven to DiscoverSM

MnTAP Mission

Strengthening Minnesota businesses by improving efficiency while saving money through energy, water, and waste prevention.

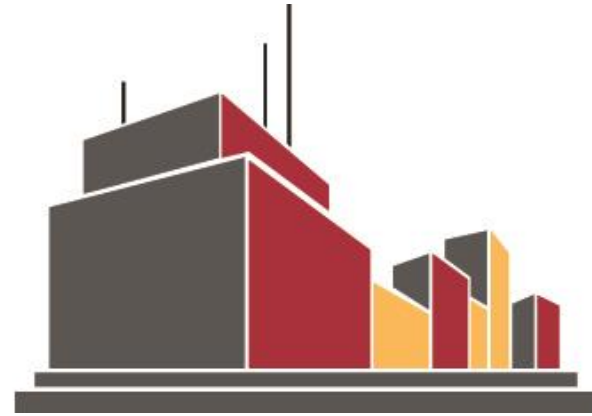
- Confidential and Non-Regulatory
- Businesses remain competitive
- Improve employee and public health
- Protect the environment

Strengthening Minnesota's economy - 2016



**\$1.38 million to the
bottom line of
56 businesses**

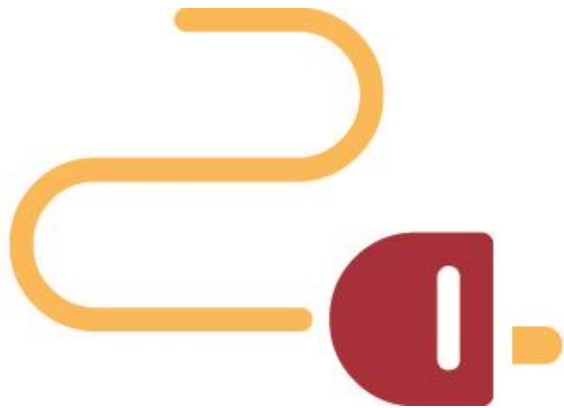
**14 engineering
interns at 20
companies**



**279 small and large
companies**

Preserving Minnesota's environment

1.7 million kWh &
42,000 Therms



1.4 million pounds
of waste

45.3 million gallons
of water



Past Engagements

- Past Intern Projects:
 - 2017: Fulton Brewing, CEE Energy Project: Insight Brewing
 - 2016: Local Brewery in Duluth Lincoln Park neighborhood
 - 2015: Antea Group / Brewers Association Benchmarking
 - 2011: August Schell
- Project addressed energy, water, material waste, and wastewater issues.

Insight Brewing

Center for Energy and Environment (CEE) partner

Two week internship

Identified:
125,500 kWh/year (\$13,400)



Insight Brewing Intern-



A standard 60W bulb can be replaced by a 6.5W Edison Style LED

- Lighting: 69,100 kWh/year (\$7,400)
- Move Chiller Outside: 35,000 kWh/year (\$3,900)
- Compressed Air Adjustments: 9,100 kWh/year (\$730)
- HVAC Maintenance & Controls: 5,900 kWh/year (\$710)
- Additional Recommendations: 6,400 kWh/year (\$3,900)

Fulton Brewing



500 hour internship

Water – 10% reduction
503,000 gal of water/year
(\$6,640)

Wastewater
115,000 lbs solids (\$7,400)

Natural Gas
2,140 therms/year (\$1,340)

Fulton Brewing



- Canning line water reuse – implemented: 150,000 gal/year
- Broken valve on keg line- repaired: 74,000 gal/year, 540 therms
- Vacuum Pump Water reuse: 220,000 gal/year
- Flatjet nozzles in the kettle: 41,000 gal/year
- Insulate Boiler Head plates: 1,600 therms/year

Fulton Brewing

Wastewater issue: MCES strength charges for brewers and distillers took effect in 2016

Evaporator for yeast and cold trub:
115,000 lbs/year yeast and trub could be added to spent grain



Sustainable Brewing and Distilling

Current Effort funded Environmental Assistance Grant by MPCA

- No Cost assessment for 8-10 eligible microbrewery or micro distiller.
- Assist in implementing checklist to standardize sustainable practices
- Up to \$500 in free equipment to implement reduction ideas



Thank You!

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