



## 2020 NRC Zero Waste Conference

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Sustainability Manager





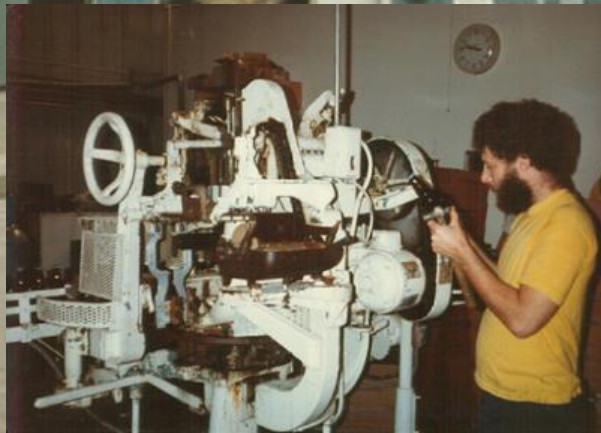
1980



Ken Grossman



Ken Grossman



1980





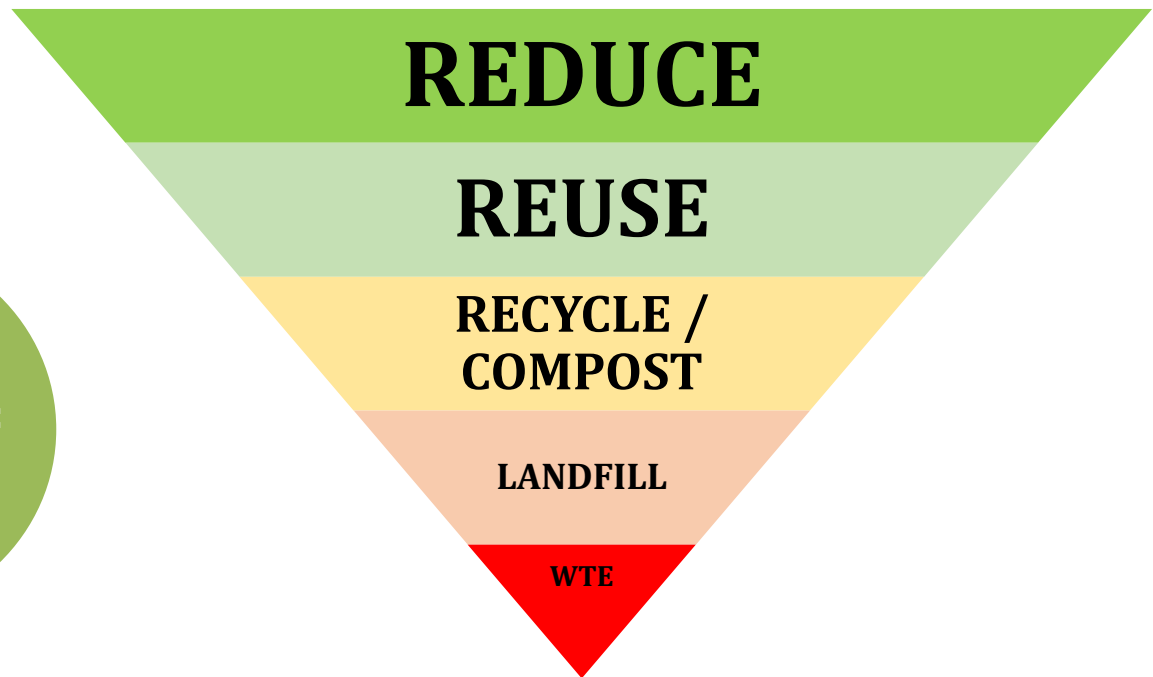
# Snapshot

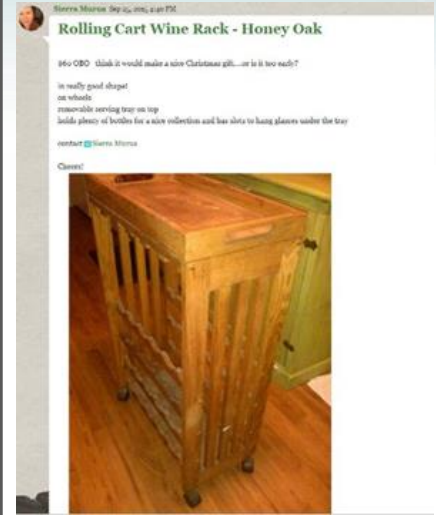
- 3<sup>rd</sup> largest craft brewery
- 10<sup>th</sup> largest brewery overall
- Independent/family-owned
- ~1200 employees
- Pioneer/mentor in craft
- Pioneer in craft sustainability
- Platinum TRUE certified



# Zero Waste Philosophy

- **ZWIA Definition of Zero Waste**
- **ZWIA Zero Waste Business Principles**
- **Sustainability: Triple Bottom Line**
- **Continuous Improvement beyond solid waste**
- **Close loops whenever possible**





# Reduce / Reuse









Recycle / Compost

99.8% Diversion Rate



Total lbs waste / BBL

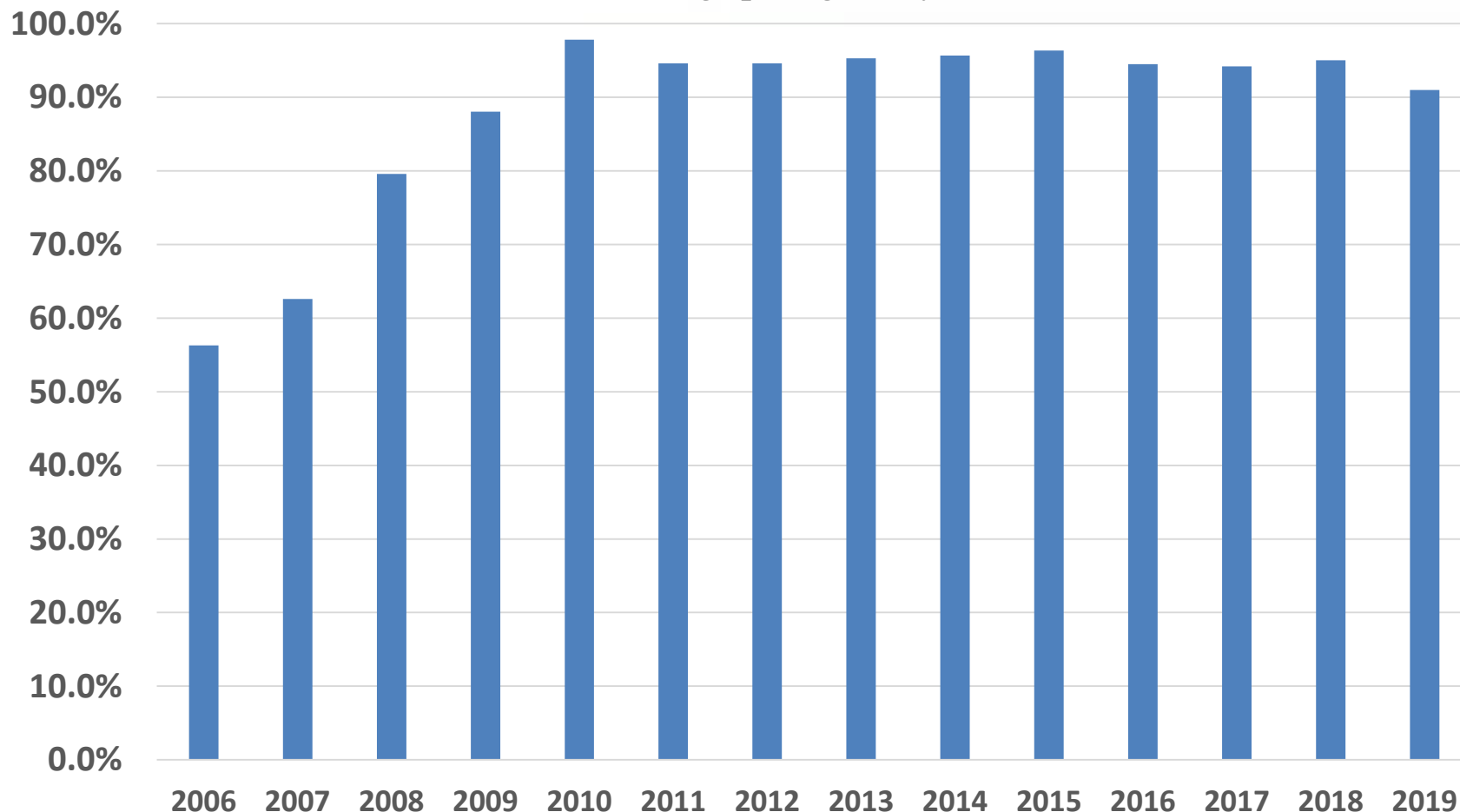


# Onsite Composting: Hotrot

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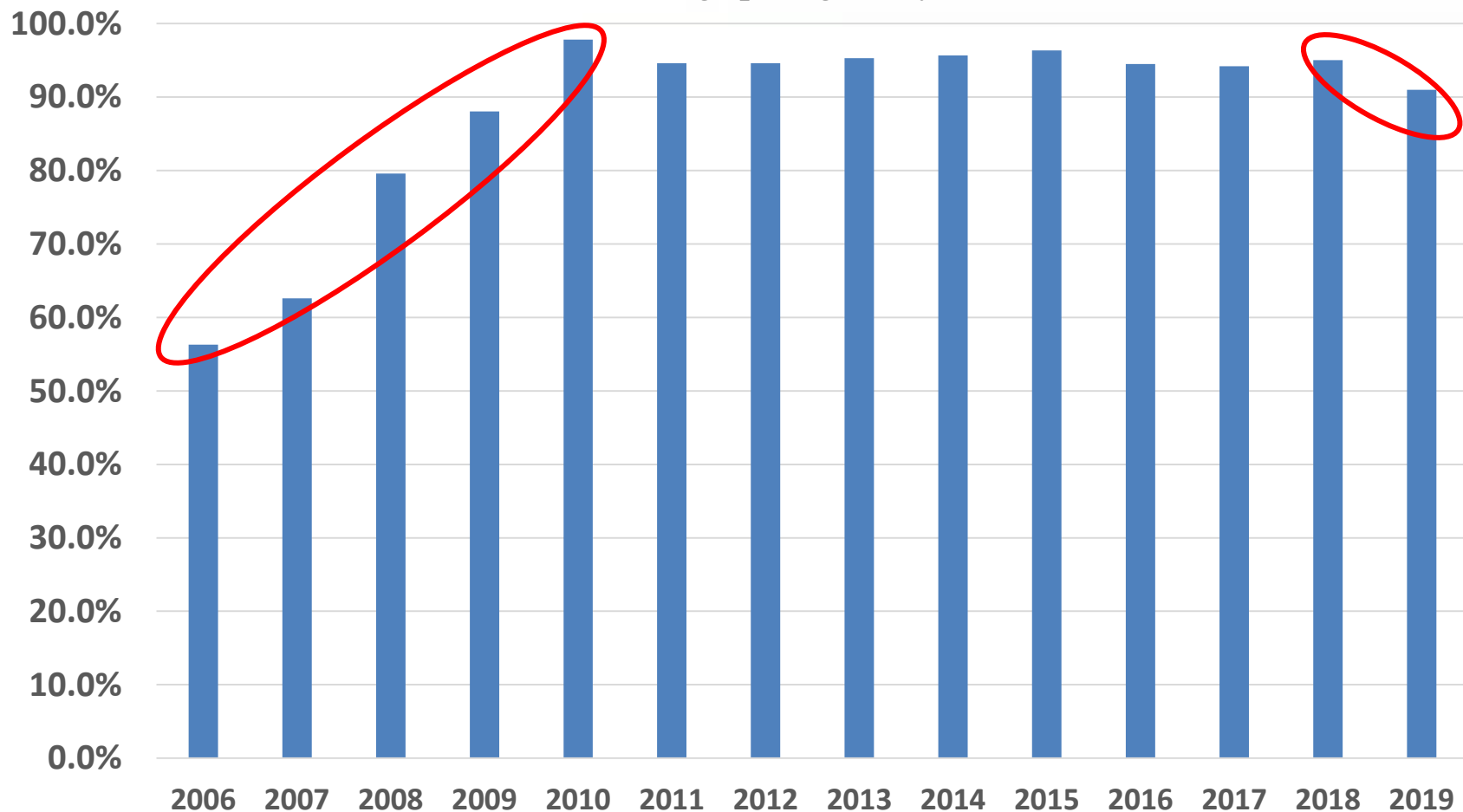
# Historical Perspective

Sierra Nevada Annual Diversion Rate  
(excluding spent grain/yeast)



# Historical Perspective

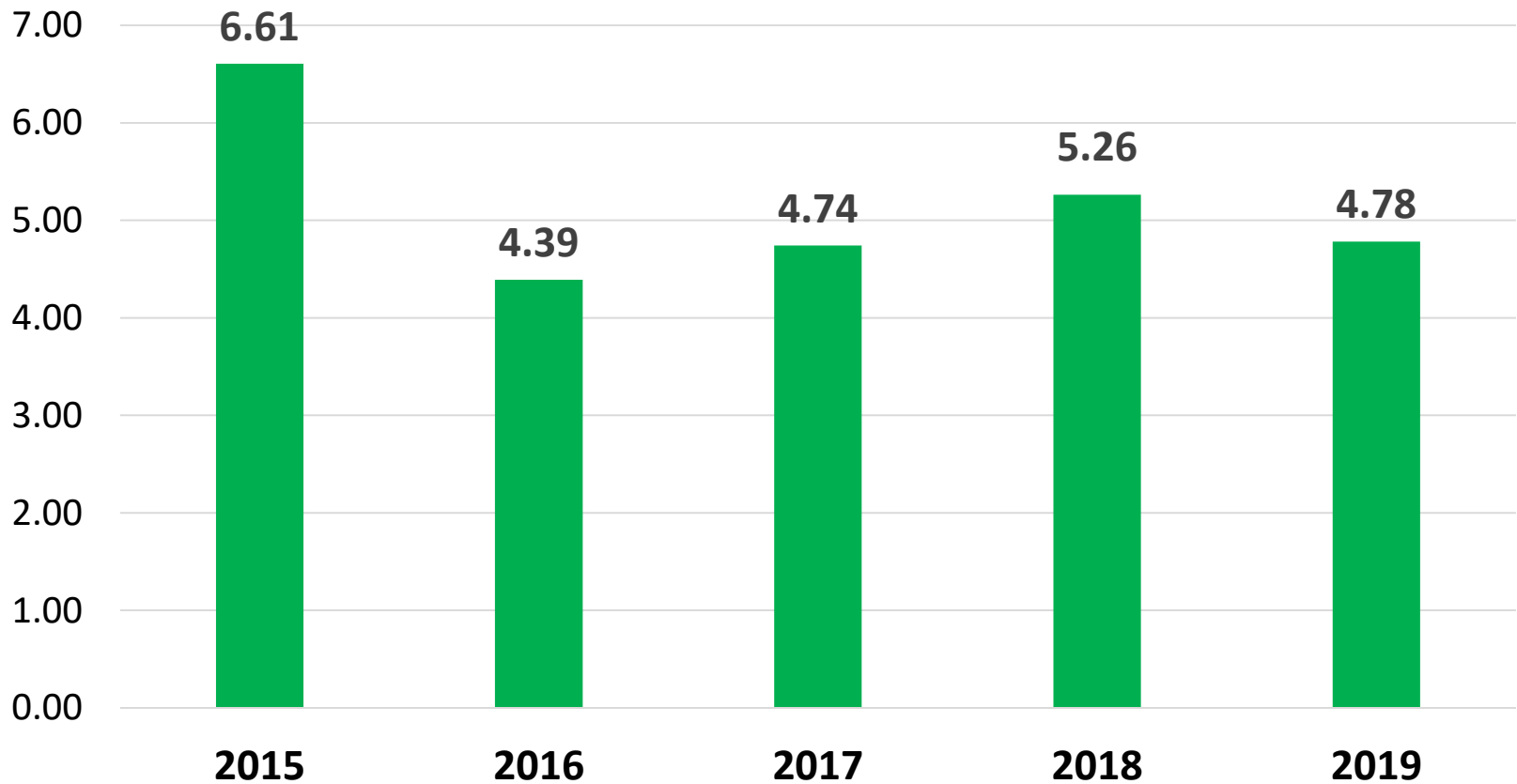
Sierra Nevada Annual Diversion Rate  
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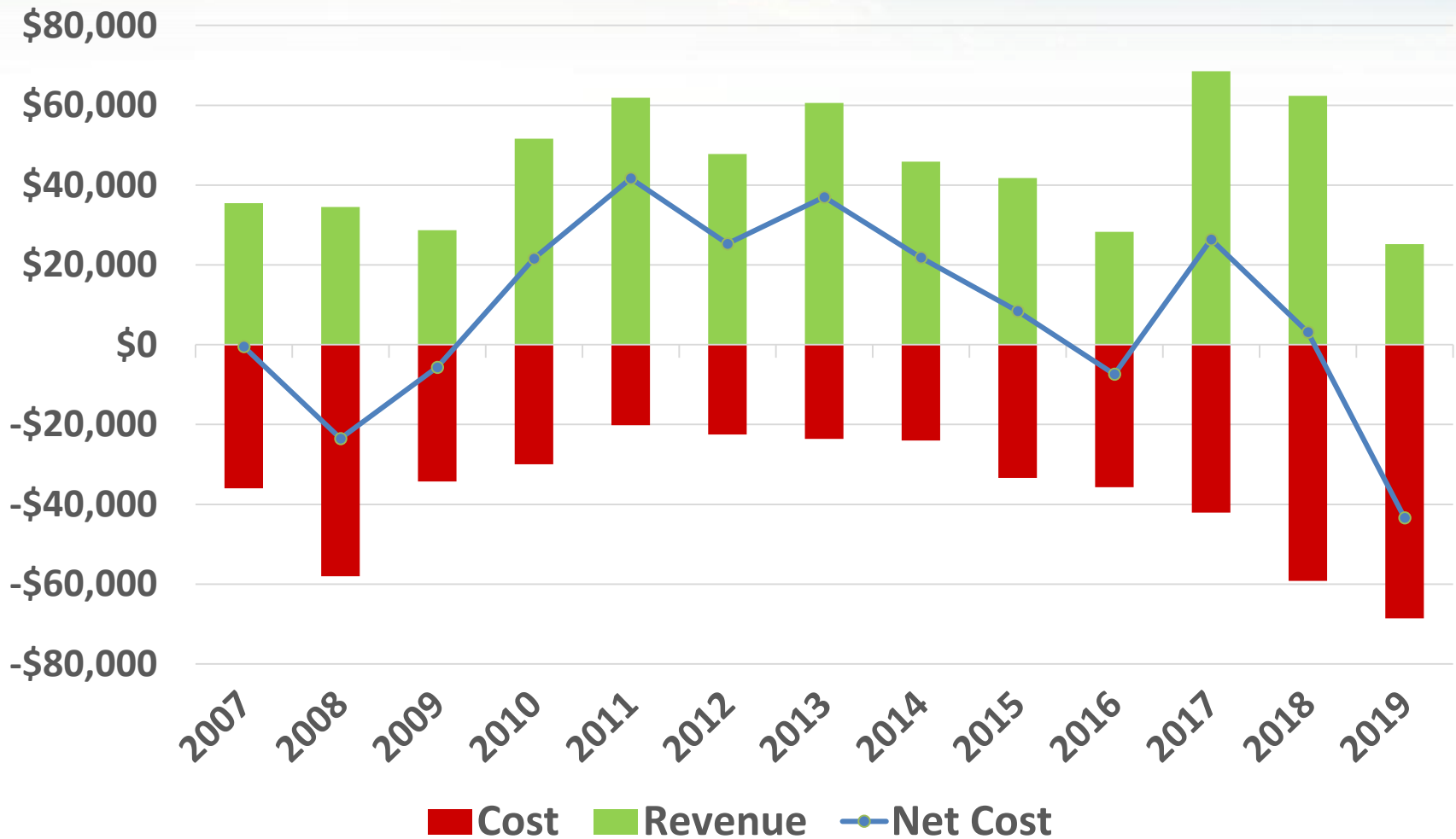
# New Metric- Lbs waste\* / BBL

\*Excluding spent grain & yeast

2020 Target: 4.6 lbs/BBL

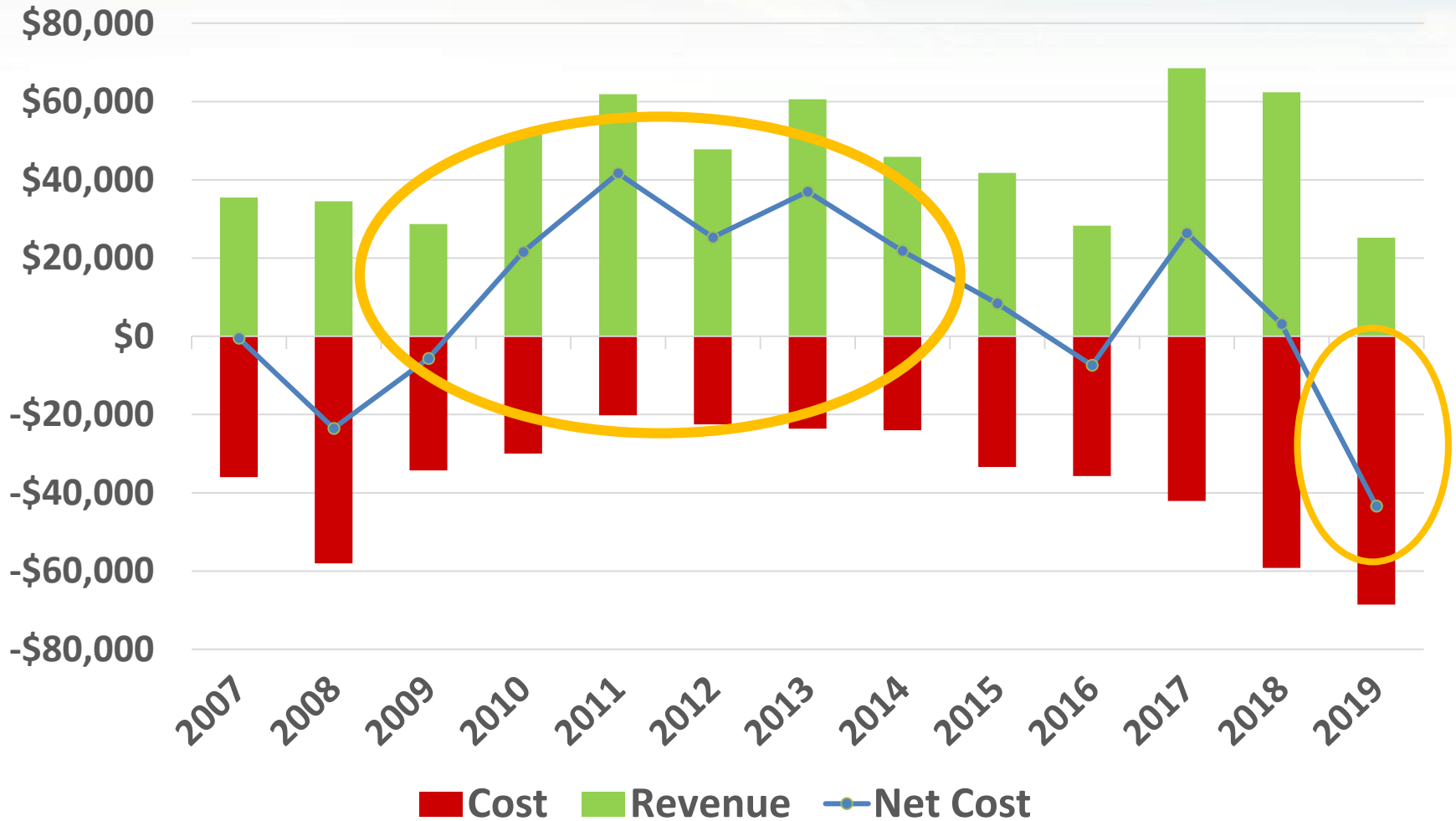


# Economics of Recycling





# Economics of Recycling



# Biogas Recovery



Brewhouse



Wastewater



Biogas Recovery



Boilers/Microturbines

# CO<sub>2</sub> Recovery



# Internal Engagement

- New employee orientation & onboarding
- Zero Waste 101
- Monthly waste KPI
- Excess & Obsolete
- Purchasing Criteria / Guidelines
- GHG Reporting





# Advocacy

- Bottle Bills
- Reduction of non-recyclable, single-use packaging
- Regional composting infrastructure
- Brewers Association



## Chico



## Mills River



### TOTAL POWER GENERATION

ENERGY SOURCE	KILOWATTS	% OF BREWERY POWER
Capstone Microturbines	1072kW	71%
Solar Arrays	427kW	28%
<b>Total</b>	<b>1499kW</b>	<b>100%</b>



Thank you!