Agenda

• History and Background
• Production Plans
• Sustainability Drivers
• Partnering with City of San Diego
• Pure Stone Pure Water
• Partnering with EWA
History and Background

• Founded in 1996 by Greg Koch and Steve Wagner
• In San Marcos, CA; Northern San Diego County
• Relocated to Escondido in 2005
• Stone Brewing World Bistro and Gardens opened in 2006
History and Background

- Packaging Hall built in 2014
- 2016 annual revenue ~ $220 million
- Substantial part of the $600 million economic impact craft breweries provide to the SD region
Background

- Seven year-round beers
- Multiple “Special Release” beers each year
- Regular collaboration releases annually in support of craft beer camaraderie
- ~1,200 employees
- Stone Beers are available in 50 states, 17 countries in Europe, 28 countries total
- 9th largest craft brewery in the US and one of the fastest growing craft breweries in the US
Escondido Production

• 2015 - 330,000 barrels of beer packaged or 10 million gallons (MG) or 31 acre-feet

• 2016 – 305 kbbls

• 2017 - ~250 kbbls

• Anticipate around 10% increases moving forward
Sustainability and Drivers

- Stone's commitment – a path of continuous improvement to deliver craft beer with progressively less negative impact to Earth's resources
- Stress on water/energy supplies
- Long term - resource savings allows more regional development => more beer drinkers
- Branding
Partnering for Sustainability
Stone and City of San Diego

• Stone is committed to promoting and encouraging sustainability at all levels

• Stone and City partnered to brew Full Circle Pale Ale

• Very high quality treated water from City’s Pure Water Project

• Water quality was so good we added minerals for the brew
Partnering for Sustainability
Stone and City of San Diego

North City Pure Water Facility

Title 22
Tertiary Effluent

Ozonation
Biological Activated Carbon Filters
Membrane Filtration
Reverse Osmosis
Ultraviolet Disinfection / Advanced Oxidation

Design completion in 2018
Partnering for Sustainability: Pure Stone San Diego

John Helminski
Assistant Director
City of San Diego Public Utilities Department
San Diego’s **Water Supply System**

Existing System... Primarily a Single-Use System

Pure Water... Completes Our Water Cycle
Pure Water Runs a Successful Demonstration Facility

- 50,000 lab tests: Met all standards
- Water quality: Exceptional
- Energy use: Renewable
Pure Water Uses Proven Technology

Ozonation

Biological Activated Carbon

Membrane Filtration

Reverse Osmosis

UV/Advanced Oxidation
## Pure Water Profile

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<thead>
<tr>
<th>Parameters</th>
<th>Concentration</th>
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<td>TDS (mg/L)</td>
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<tr>
<td>pH</td>
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<td>Total Alkalinity (mg/L)</td>
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<td>conductivity (µMHO/cm)</td>
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<td>Fluoride (mg/L)</td>
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<td>TOC (mg/L)</td>
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<td>Total Nitrogen (mg/L)</td>
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<td>Manganese (µg/L)</td>
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<tr>
<td>Strontium (µg/L)</td>
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Pure Stone San Diego

• Five kegs of Stone Full Circle Pale Ale brewed with water from Pure Water Demonstration Facility
• First commercial brewery to brew beer with 100% advanced-treated recycled water
• Obtained ~300 gallons of water
• Stone added minerals back to brew the beer
• Division of Drinking Water approved the use of advanced-treated recycled water for brewing
Pure Stone San Diego

- 200+ attendees
- Mayor Faulconer proclaimed March 16 “Pure Stone Day”
- More than 80 pieces of local, national and international media coverage
- Stone Brewing and the City share a commitment to sustainability at all levels
Partnering for Sustainability – Pure Brew

- 16 brewers brewed 15 beers with Pure Water
- Attendees voted for their favorites using poker chips
- Stone Full Circle Ale also made a (non-contest) appearance
- Second competition
Partnering for Sustainability – Bike to Work Day

- Partnered with Ryan Bros Coffee as part of San Diego Bike to Work Day in 2018 and 2019
- First to brew coffee with 100% advanced-treated recycled water
- 120+ riders enjoyed the coffee
Community Outreach & Education

- **673** Community Presentations
- **262** Community Events
- **380** Stakeholder Interviews
- **4,566** Support Pledges from San Diegans

More than **17,600** people have toured the Pure Water Facility.
Pure Water will produce 1/3 of your water locally.

Phases 2 & 3
- 2035 Completion
- 53 mgd
- Central Area PWF to San Vicente or Lake Murray
- South Bay PWF to Lower Otay Reservoir (if needed)
Pure Water will provide the City of San Diego with a safe, reliable and sustainable water supply.
Pure Stone

- In a one time event, Stone brewed 5 kegs of Full Circle Pale Ale for the City
- Department of Drinking Water approved the use of the purified water for brewing
- Stone obtained ~300 gallons from the City’s demonstration plant and brewed it in our pilot facility in Escondido
- The City/Stone held a joint ceremony at our Liberty Station Bistro in Point Loma on March 16, 2017
- Mayor Faulconer proclaimed it Pure Stone Day – first time a commercial brewery used purified wastewater to brew beer
Stone and Sustainability

• Stone recycles 50% of its wastewater in Escondido

All spent grains in US are repurposed for cattle feed ~ 70-130 tons per day

• 15% of electricity used in Escondido is generated from solar panels – also use VFDs everywhere

• Working with Encina Wastewater Authority to utilize our brewing by-products for use in generating electricity
  ✨ 12000 gallons per day of brewing wort by product
  ✨ 6000 gallons per day of spent yeast
Stone Infrastructure

- Shortly after moving to Escondido, Stone was required to install wastewater pre-treatment system
- Invested ~ $5 million to date in capital on wastewater treatment system
- Expend more than $1 million annually to operate, maintain and monitor
Stone Infrastructure

- Recently invested ~$400k in pump, chemical feed, press, & tank, to produce solids free by-products
Treats wastewater solids in anaerobic digesters (AD) to produce a renewable resource called biogas.

Biogas is used to fuel 4 internal combustion engines that produce electricity and usable heat.

Each low-emission engine generates 750 kilowatts of electricity.

Over 86% of the electricity used by the EWPCF is provided by the cogeneration facility.
• 33% more biogas production than Fats/Oil/Grease (FOG) and 60% more than conventional WW sludge

• Easier to process, very little maintenance, no solids, already heated

• No deleterious effects on digesters and other FOG processing equipment (i.e. little to no maintenance)

• Eliminates possible GHG pollution from sending Stone waste to composting operations
• Existing EWA facilities can be used to accept organic waste to process and generate additional electricity

• EWA treats Stone’s by-products for reasonable cost - saving Stone and EWA $

• Stone will assist EWA implementing industrial compliance to segregate brew wastes from 32 other breweries in service area at the request of brewers
EWA Benefits

- Implementation of brewery byproduct treatment (existing or new) using this procedure
- Helps cities with AB 1826 compliance
- Eliminates energy required to treat this waste aerobically in WWTP
- Potential pollution credit by converting this waste to CO2 and not allowing to convert to methane (which is a more harmful GHG)
- Provides additional energy generation for energy independence
Questions
Pure Stone – Media Coverage

• Coverage from over 70 local, national, and international media outlets

• Not all positive – but any media is good media
  • We had customers threaten to not drink our beer anymore

Pure Stone – Pure Water

• Stone appreciates all the efforts the City of San Diego is doing to establish reliable and sustainable water supplies in the San Diego region and wishes to thank them for this opportunity.