

# Why Go Green?



**An Entrepreneur's Perspective**

**By**

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# Remember This?



1973. Anytown, USA





# The Lesson Begins



## New Concepts

- Oil Embargo
- Gas Rationing/Dependence
- Finiteness
- Air Pollution
- The utility of carpooling, walking and biking



# Solutions? Look Up.



**1976. President Jimmy Carter installs PV panels at  
The White House**



# Must Capitalists Be Ruthless?



**“Make money, money by fair means if you can, but by any means make money. ”**

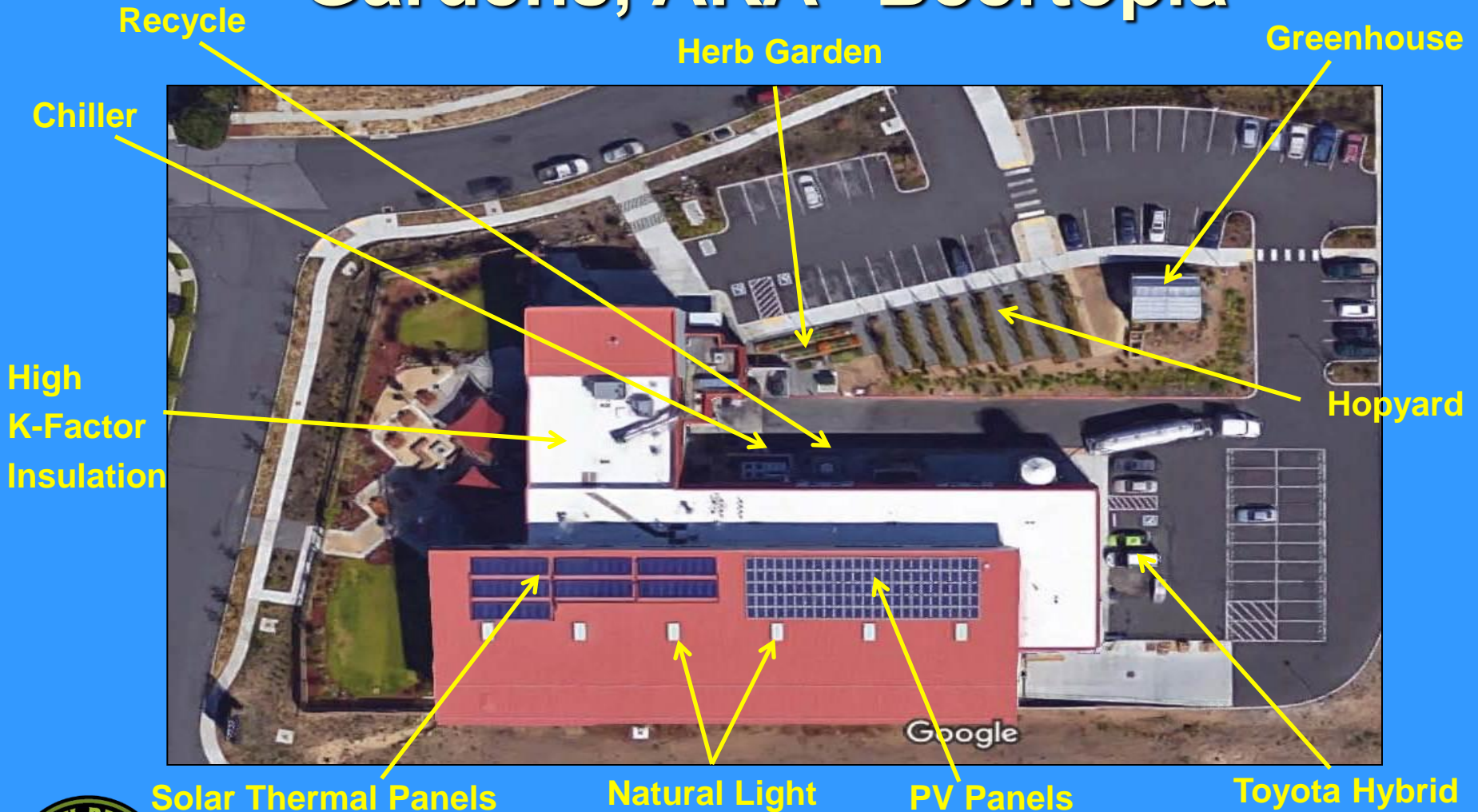
---Horace, 65 BC.

....hmmmm





# Worthy Brewing Restaurant & Gardens, AKA "Beertopia"



2015 Beertopia Part I



# Beertopia Part II



- Hopservatory
- Beermuda triangle
- Hop Mahal Banquet Hall
- Star Bar with Solar Awning





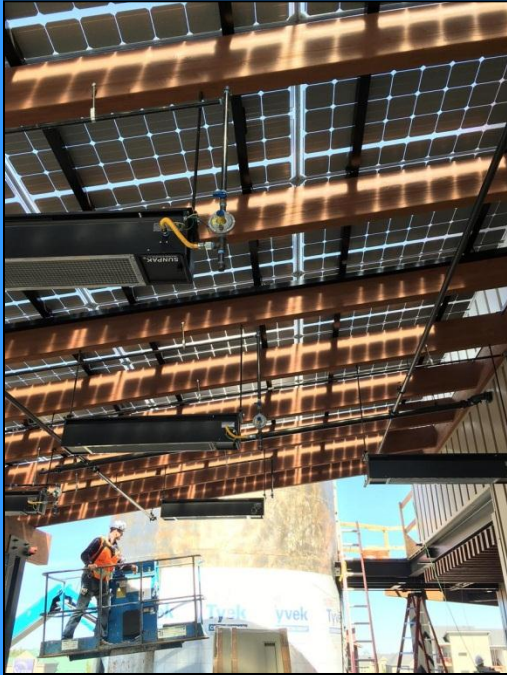
# Solar (PV) Powered Beer



- 117 SolarWorld 235 watt PV modules (2012).
- 27.5 kW installed capacity.
- PV Powered 35 kW inverter (in order to accommodate possible future expansion).
- This system produces at least 37,000 kWhs per year
- Estimated savings annually about \$5,000.
- Only brewery in Bend that brews it's beer using solar power.



# Solar Electric Awning in Star Bar



- 2016 Beertopia Update. Engage your customers.
- 48 Lumos frameless 255 watt solar panels.
- 12.24 kW installed capacity. Total: 50KW system.
- SMA 12 kW inverter.
- Dual function cool awning roof and power producer.
- System should produce between 11,000 and 12,000 kWhs per year.
- Estimated savings annually about \$1250.





# Solar Hot Water System



- 56 SunMaxx Solar Hot Water Collectors (Panels) covering 1,450 sq ft
- 2,000 gallon solar hot water storage tank aka "Hot Tub" Preheats water for use in Brewery and Restaurant . 170-180F.
- Est. annual savings in therms: 3,937 (equiv. to 115,000 kWhs of electric power.
- Est. annual saving : \$3,500-\$5,000
- Est. equivalency of pounds of CO2 saved per year: 42,000 lbs





# Green is Good





# Worthy Feed Back Loop



Beer waste = Happy Cows

BTW: hops are a natural antibiotic



# Cleaning Worthy's Waste Stream

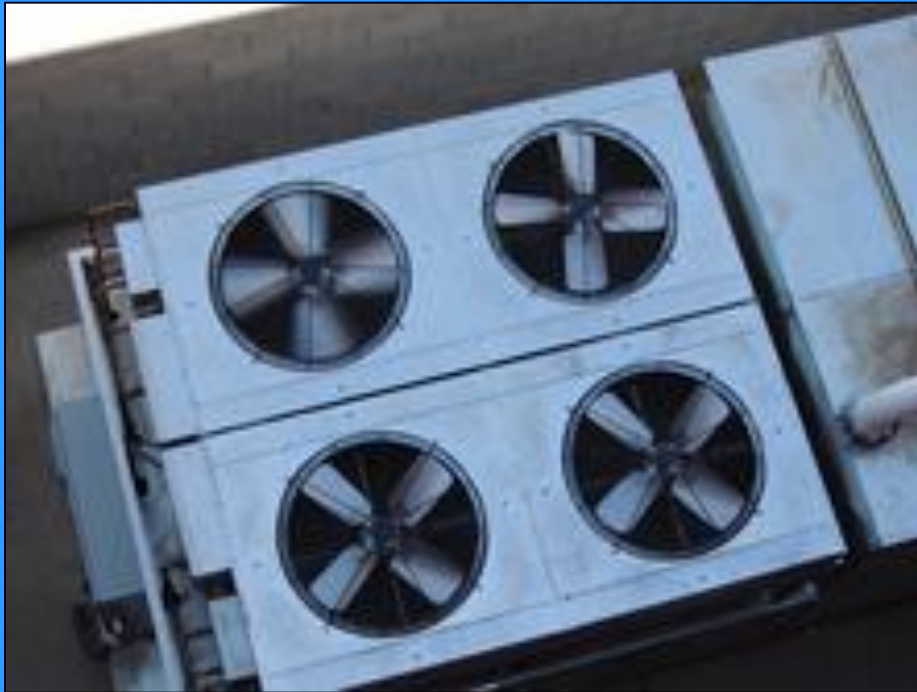


- Avoid overloading COB WW treatment system and corroding COB sewer pipes.
- Not required by the COB in 2012. Jump S curve.
- Deschutes only other brewery pre-treating brewery effluent.
- Extracts major solids (TSS) and barley/hops organics (BOD).
- Add Caustic to raise PH. Water around 7.
- Model voluntary program.





# Going Green Conventionally



## Smart Chiller

- "Variable-frequency drive" brain center. Only consumes electricity when she's thirsty.



## High Efficiency Boiler

- Conventional Boilers 75% efficient.
- Parker-Hannifin boiler 95% efficient.
- Flue gas economizer captures vented hot air and pre-heats feedwater.
- Saves over \$3,000 a year.



# Environmental Benefits of the two Solar Electric (PV) systems combined

- 57,069 Estimated pounds of CO<sub>2</sub> saved (year 1)
- 60.3 Estimated pounds of SO<sub>2</sub> saved (year 1)
- 83.6 Estimated pounds of NO<sub>x</sub> saved (year 1)
- 68,462 Equivalent miles of reduced driving (year 1)
- 4.4 Equivalent acres of trees planted (year 1)



**60% of Pacific Power electricity generated by coal burning power plants.**



*All systems combined, over 100,000 CO<sub>2</sub> scrubbed and over 8 acres of trees planted per year.*

*Source: Energy Trust of Oregon*

# Financial Incentives

## Commercial

### Cash Incentives

- **Energy Trust of Oregon Rebate:** The Energy Trust of Oregon (ETO) cash incentive reduces a solar installation's upfront cost. ETO incentives are available to Pacific Power and PGE customers only. The incentive rates for solar are based on system size and availability, and are not available for all solar installation.

### Tax Credits

- **Federal Tax Credit (30% of Customer Price):** The Federal Investment Tax Credit (ITC) is claimed in the fiscal year that the solar installation is placed in service. The federal tax credit is worth 30% of the customer price (after utility rebate), and is currently set to expire in 2022.
- **MACRS – Federal Depreciation Benefits:** Accelerated Depreciation benefits may be available for businesses depending on their tax situation. Please consult your tax preparer.





# Does It Pencil Out?

## Solar System Cost

\$294,705.00 Total Project Cost

\* 2012 PV, 2012 Solar Hot Water, 2016 Solar Awning expansion

\$46,500.00 Energy Trust Rebates (<16%)

**\$248,205.00 Customer Price for all three systems**

## Tax Credit Incentives

\$66,528.02 Est MACRS Depreciation (<26%)

\* Dependent on the tax situation of the individual

\$74,461.50 Fed Invest Tax Credit - 30% Customer Price (<29%)

**\$107,215.48 Net Cost (<66%)**

## Investment

10% Internal Rate of Return (25-year)

9yrs Simple Payback

**\$434,324.00 25-year Energy Savings**



# ROI?

Year	Customer Price	Depreciation Benefits	30% Federal Tax Credit	Estimated Energy Savings	Annual Savings	Total Savings
0	\$ (248,205)	\$ -	\$ -	\$ -	\$ (248,205)	\$ (248,205)
1		\$ 7,385	\$ 74,462	\$ 10,098	\$ 91,945	\$ (156,260)
2		\$ 23,633		\$ 10,526	\$ 34,159	\$ (122,101)
3		\$ 14,180		\$ 10,972	\$ 25,152	\$ (96,948)
4		\$ 8,538		\$ 11,437	\$ 19,975	\$ (76,974)
5		\$ 8,538		\$ 11,922	\$ 20,460	\$ (56,514)
6		\$ 4,254		\$ 12,427	\$ 16,681	\$ (39,832)
7				\$ 12,954	\$ 12,954	\$ (26,878)
8				\$ 13,503	\$ 13,503	\$ (13,375)
9				\$ 14,076	\$ 14,076	\$ 701
10				\$ 14,672	\$ 14,672	\$ 15,373

Yes.



# Data Chart Art



DECK packages your energy usage data in graphs, equivalencies, and other visual features that are engaging and easy to understand. Good way to showcase your green culture, engage customers, stimulate utopia talk, promote renewable energy and planetary health.

Also, a fun way to see dollars saved daily! Such a deal!





# Customer Engagement

## 400 PPM Clean Ale



400 PPM is the atmospheric CO2 Rubicon. At Worthy we're doing our part to bring us back from that dire threshold. We sourced all the ingredients from within 150 miles - the malt is from Vancouver, the rolled oats are Bob's Red Mill from Milwaukee and the hops were grown in Silverton and milled in Hubbard at Indie Hops. Earthy, lemon peel aroma. Euro spicy flavor. Dry finish with a bite. What are you doing to reduce your carbon footprint?



# Why Go Green?



- Jump the S curve
- Carpe Diem! – Horace (Be the grid)
- Financial incentives, rebates, and savings
- Leadership – *“Don’t tell me your values. Show me your budget.”*
- Ethics: Think Global. Shop local. Generate power.
- Legacy: “I was part of the solution.”
- Moral Obligation: There’s No Place Like Home.
- If not green now, when? If not you, who?





**Thank You  
to  
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