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Nick Spencer

Today's Agenda

- Basic Microbrewery and Beer Information
- Our Product and Recipe
- Our Brewing Process and Schedule of Operations
- Marketing Analysis and Strategy
- Deterministic Model
- Financial Projections

Introduction

- What is a Microbrewery?
  - Produces less than 15,000 barrels of beer per year
- Advantage of a Microbrewery
  - Able to supply product at peak of freshness
  - Highest quality ingredients
- Craft Beer Production is Increasing
  - Up 3.4% in 2003

Raw Material Description

- Hops
  - Cultivated flower
  - Provide the bitter flavoring
- Malted Barley
  - Grain with kernels
  - Provide the sweet flavoring
- Yeast
  - Ferments (makes the beer)
  - Some provide fruity flavor

Types of Beer

- Differ by Yeast Temperature and Fermentation Time
  - Top-fermenting (high temps and short time)
  - Bottom-fermenting (low temps and long time)

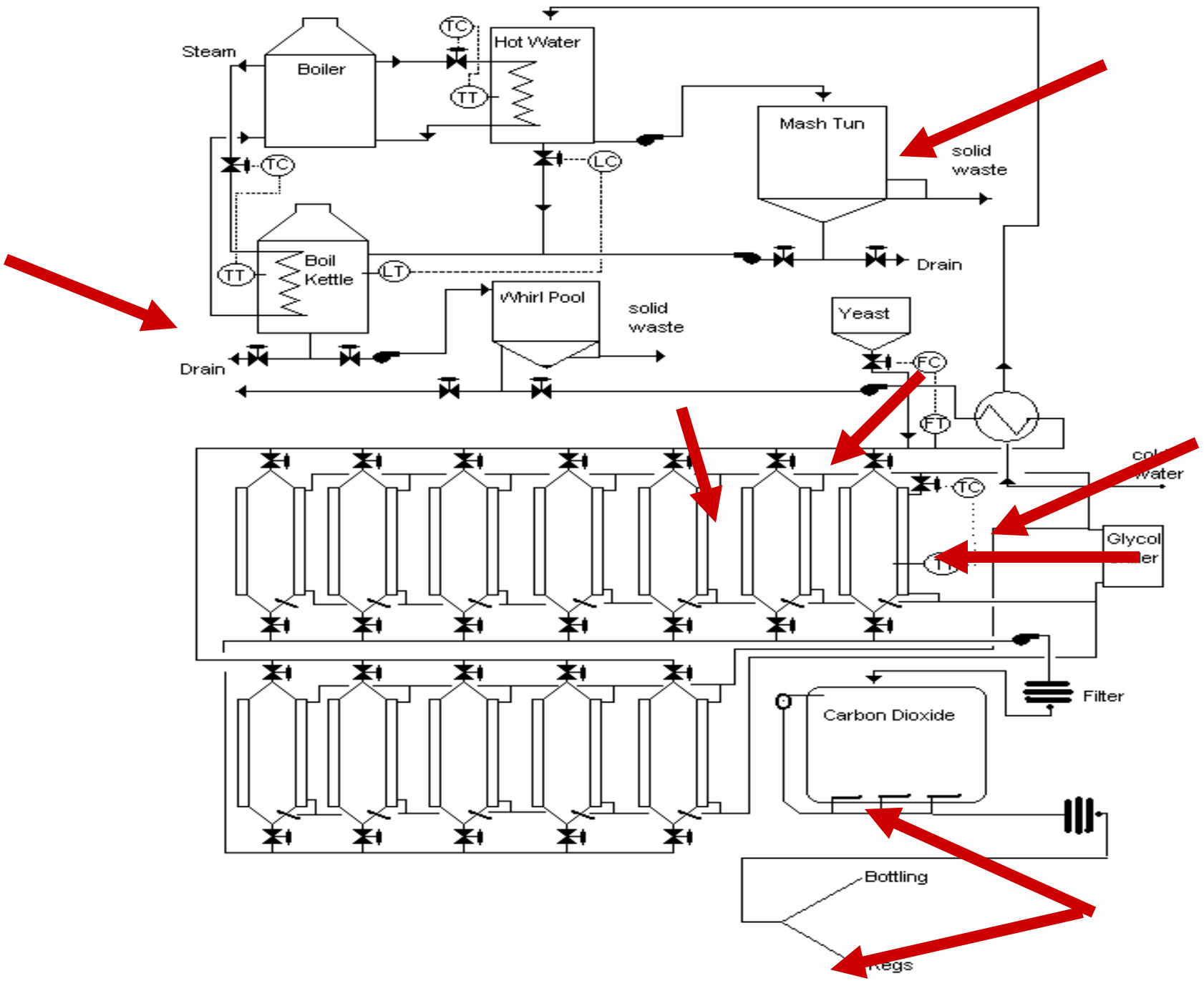
- Top-fermenting
  - Ales, Wheat beers
- Bottom-fermenting
  - Lagers, Bock

Our Product

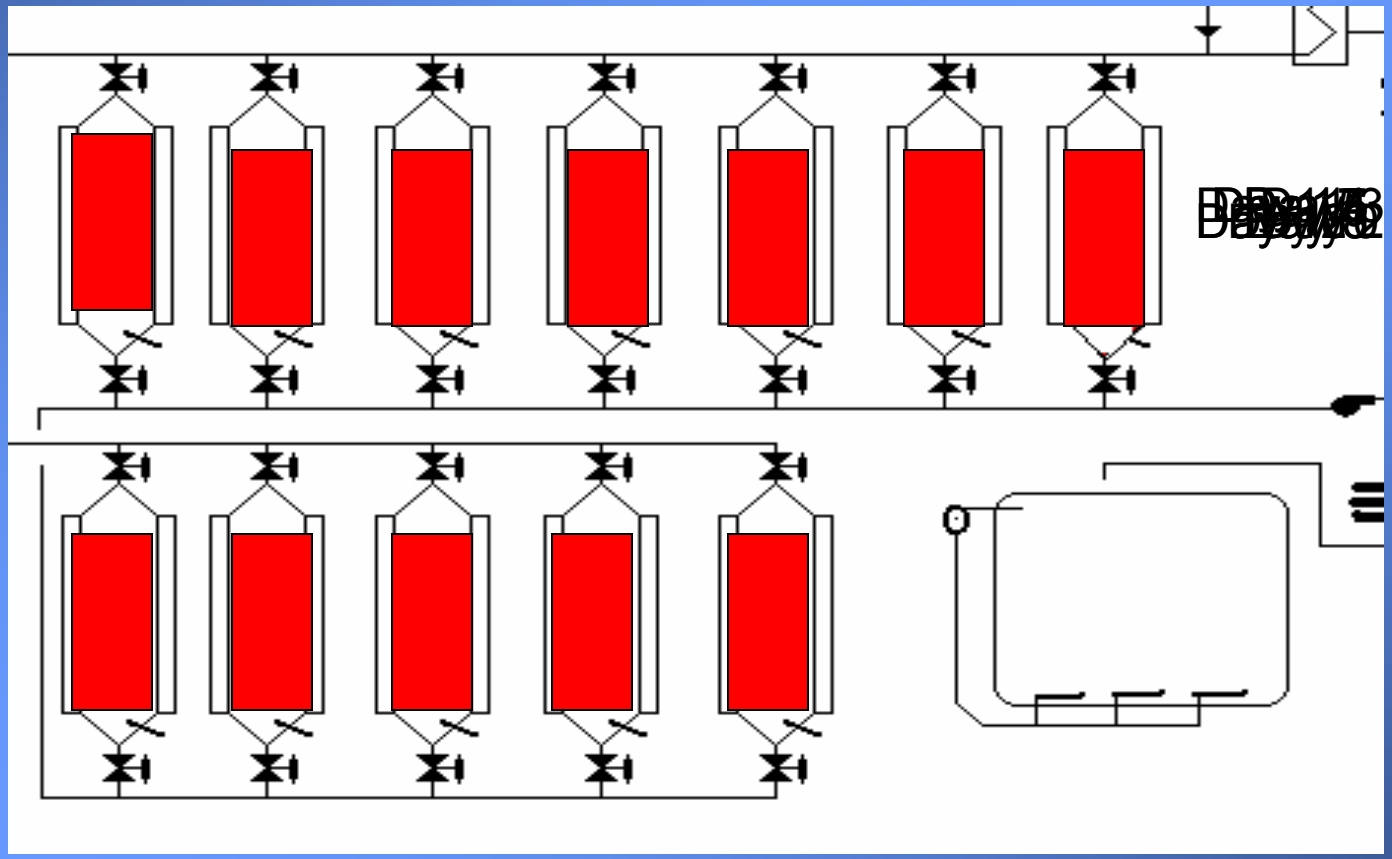
- Rooster Brew
  - An American Pale Ale
- What is a Pale Ale?
  - Lighter in taste than other microbrews
  - Pale golden color
  - Moderate hop and malt flavor
- Why Pale Ale?
  - Appeals to males and females
  - More flavorful than large-scale domestic beers

Recipe for Rooster Brew

- For 1 batch of a 30 barrel process
  - Pale Malted Barley – 1210 lbs
  - Water for Mash Tun – 5740 lbs
  - Cascade Pellet Hops – 24 lbs
  - Yeast – 4 lbs
  - Water for Boil Kettle – 7000 lbs


Steam
Boiler
TC
Hot Water
TT
LC
Mash Tun
solid
waste
TC
Boil
Kettle
TT
LT
Drain
Whirl Pool
solid
waste
Yeast
Drain
FC
FT
TC
Glycol
Filter
Carbon Dioxide
Bottling
Kegs

Fermentation Process

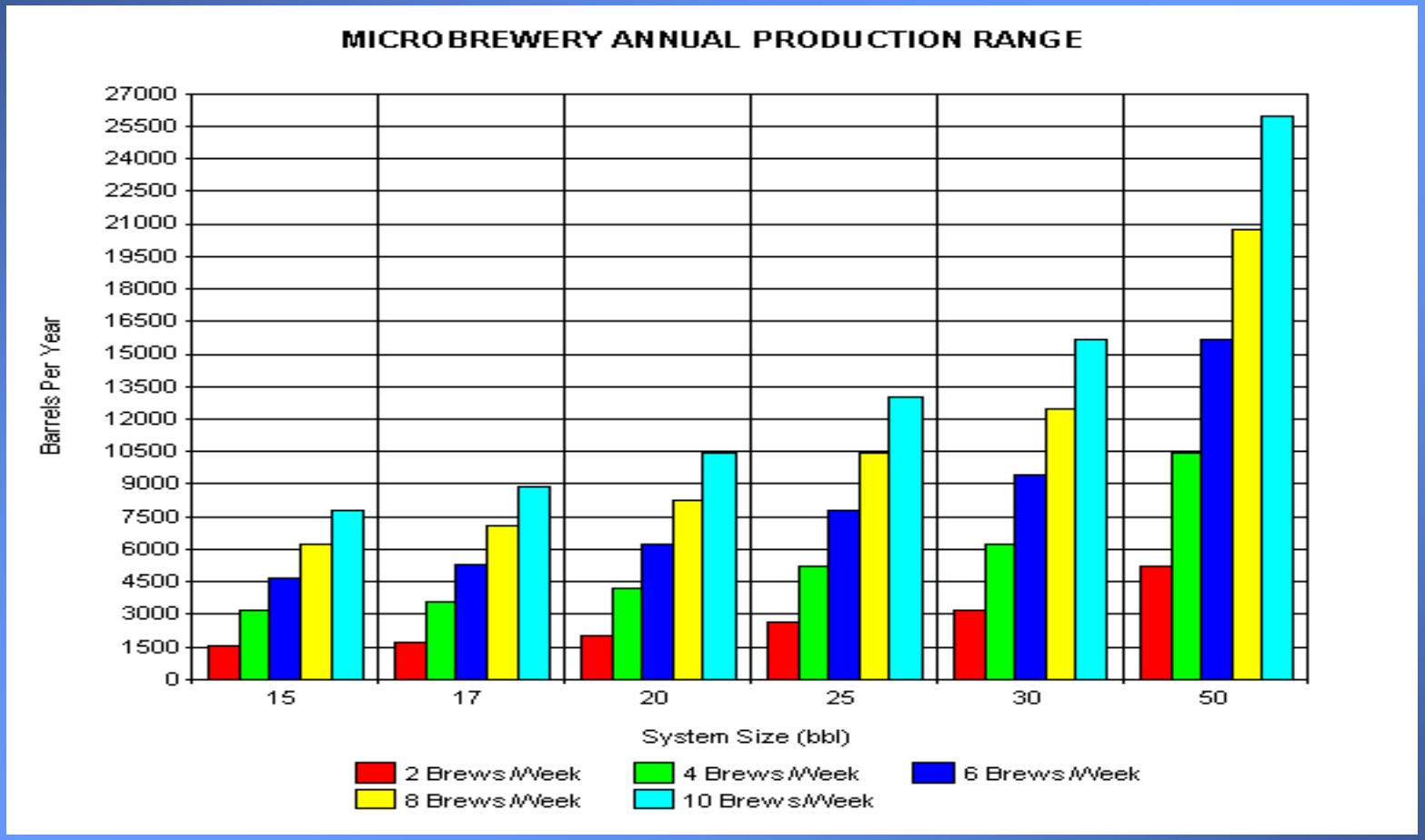


Bottling and Kegging

- Flash Pasteurization
- Bottle Rinsing
- Bottle Feeding
- Bottle Filling
- Bottle Labeling
- Case Packing

Production Range

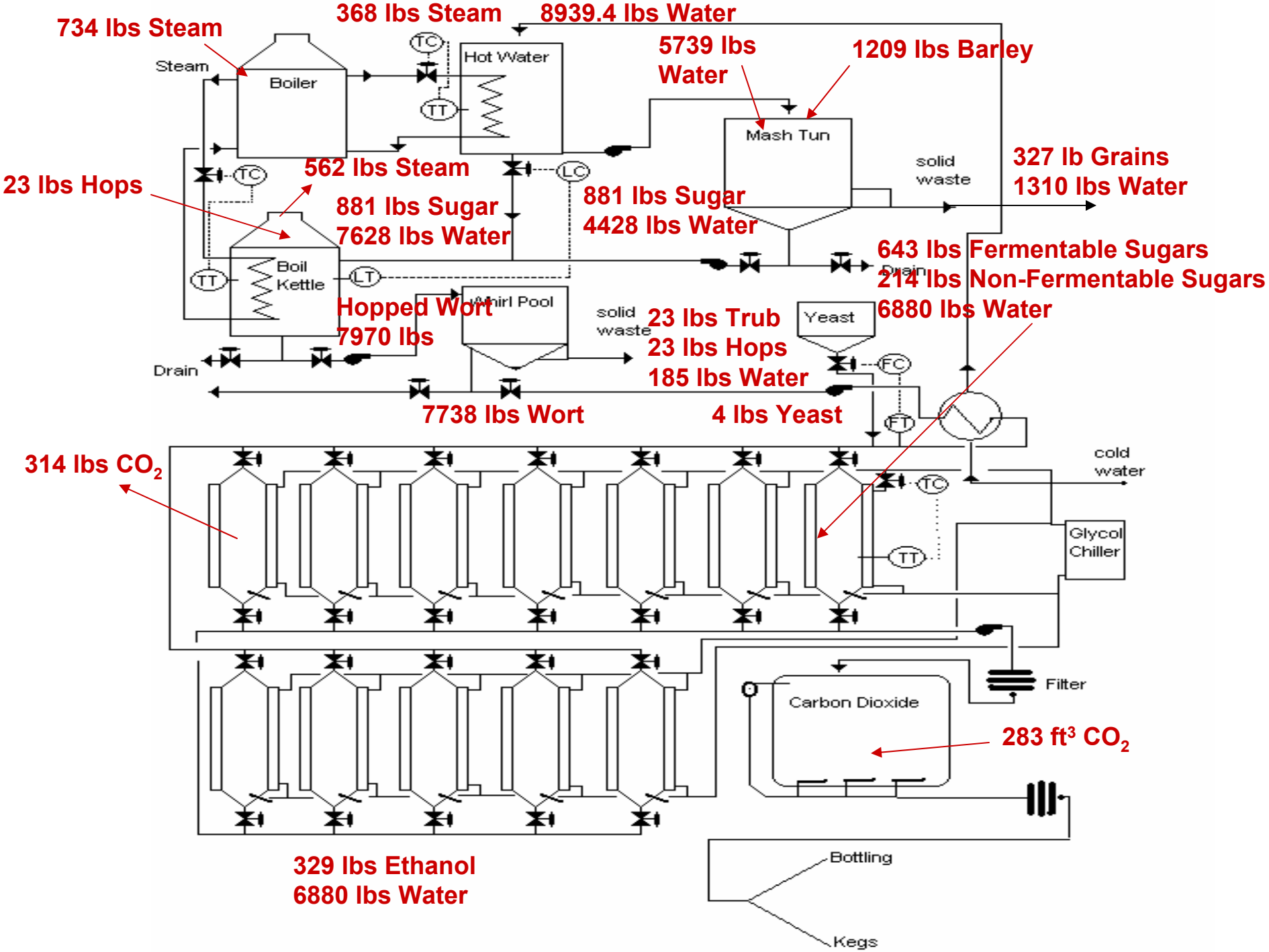
15,000

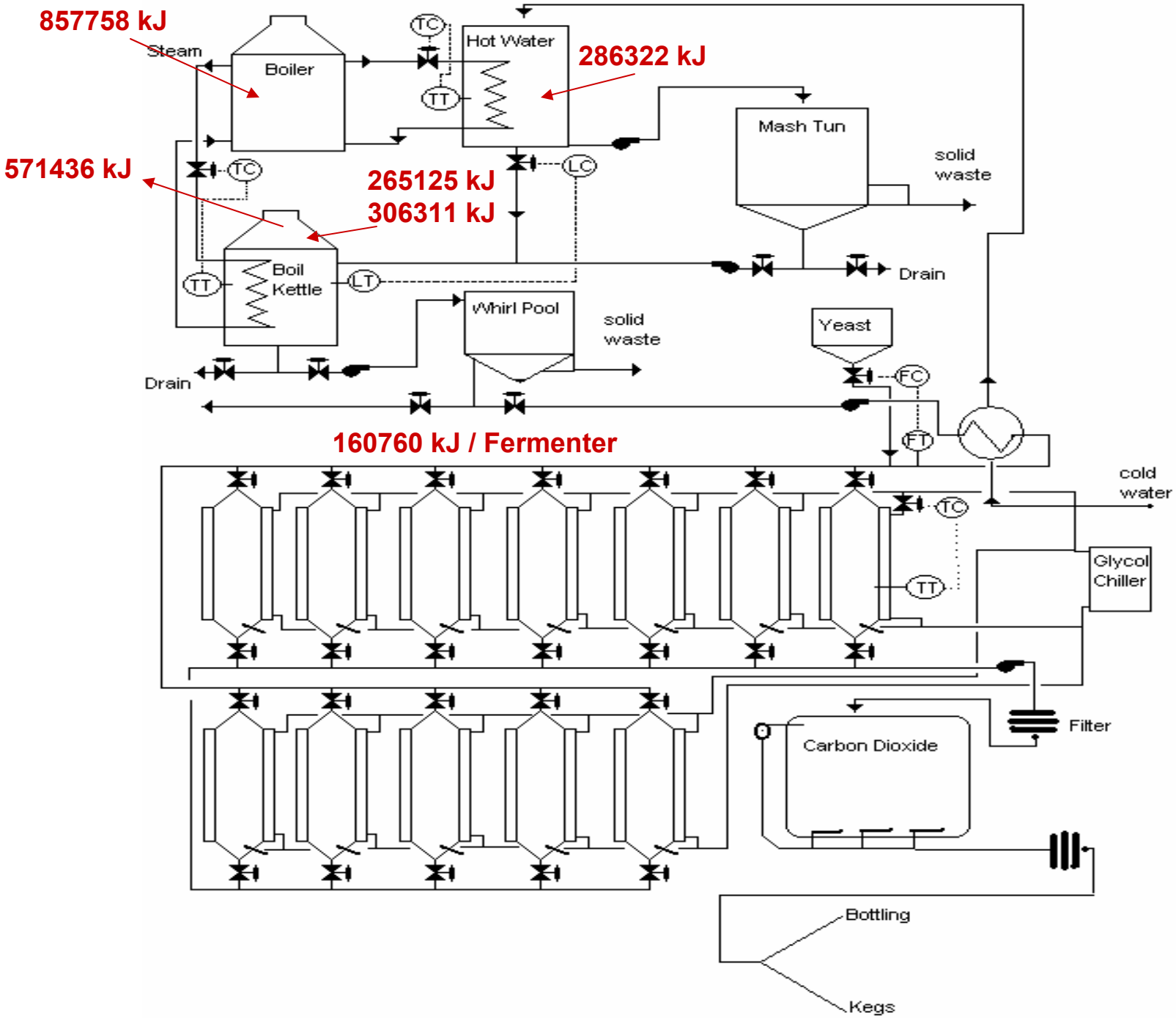


- 30 Barrel Process
  - Produces 6,000 barrels per year at 4 brews/week

Equipment Cost for 30 Barrel System

Item	Qty.	Unit Price
Mash / Lauter Tun	1	$31,135.00
Brew Kettle	1	$9,065.00
Whirlpool	1	$10,300.00
Brewer's Platform	1	$5,200.00
Heat Exchanger	1	$6,500.00
Grist Hopper with Cover	1	$3,700.00
Fermenter	12	$16,480.00
Conditioning/Bright Vessel (glycol cooled vessel)	1	$11,555.00
Pressure Steam Boiler	1	$8,300.00
Sankey Keg Racker	1-Triple Head	$675.00
Sankey Keg Rinser/Washer	1-Three-Head Semi-Automated	$9,700.00
Total - 30 Barrel Brewery Equipment Package		**$342,059.55**


734 lbs Steam
368 lbs Steam
8939.4 lbs Water
5739 lbs Water
1209 lbs Barley
Steam
Boiler
Hot Water
TC
TT
Mash Tun
solid waste
327 lb Grains
1310 lbs Water
23 lbs Hops
562 lbs Steam
881 lbs Sugar
7628 lbs Water
881 lbs Sugar
4428 lbs Water
643 lbs Fermentable Sugars
214 lbs Non-Fermentable Sugars
6880 lbs Water
Boil Kettle
LT
LC
Drain
Hopped Wort
7970 lbs
Whirl Pool
solid waste
23 lbs Trub
23 lbs Hops
185 lbs Water
Yeast
FC
FT
7738 lbs Wort
4 lbs Yeast
314 lbs CO_2
cold water
Glycol Chiller
Filter
Carbon Dioxide
283 ft^3 CO_2
329 lbs Ethanol
6880 lbs Water
Bottling
Kegs


857758 kJ
Steam
Boiler
TC
Hot Water
TT
286322 kJ
Mash Tun
solid
waste
571436 kJ
TC
265125 kJ
306311 kJ
LC
Boil
Kettle
TT
LT
Drain
Whirl Pool
solid
waste
Yeast
Drain
FC
FT
160760 kJ / Fermenter
cold
water
TC
TT
Glycol
Chiller
Filter
Carbon Dioxide
Bottling
Kegs

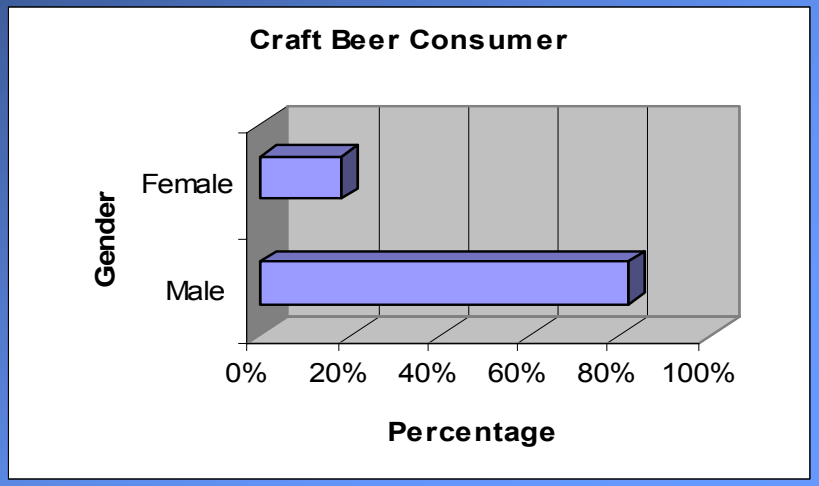
HAZOPS – Hot Water Tank

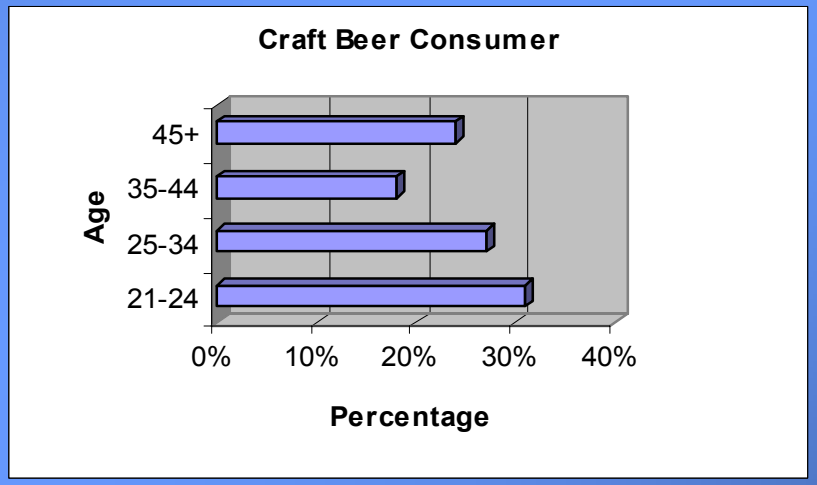
Deviation	Cause	Consequence	Safeguards
Temperature-More	Steam Coils too Hot	Water Fed to Mash Tun too Hot	Temperature Controller
	Water Fed too Hot		Temperature Alarm
	Controller Fails		Check Temperature Regularly
	Alarm Fails		
Temperature-Less	Steam Coils too Cold	Water Fed to Mash Tun too Cold	Temperature Controller
	Water Fed too Cold		Temperature Alarm
	Controller Fails		Check Temperature Regularly
	Alarm Fails		
Level-More	Pump Failure	Water Overflows/Equipment Damage	Level Alarm
	Water Fed to Tank too Fast		Level Controller
	Controller Fails		Check Level Regularly
	Alarm Fails		
Level-Less	Drain Valve Open	Not Enough Water to Mash Tun	Level Alarm
	Water Fed to Tank too Slow		Level Controller
	Controller Fails		Check Level Regularly
	Alarm Fails		

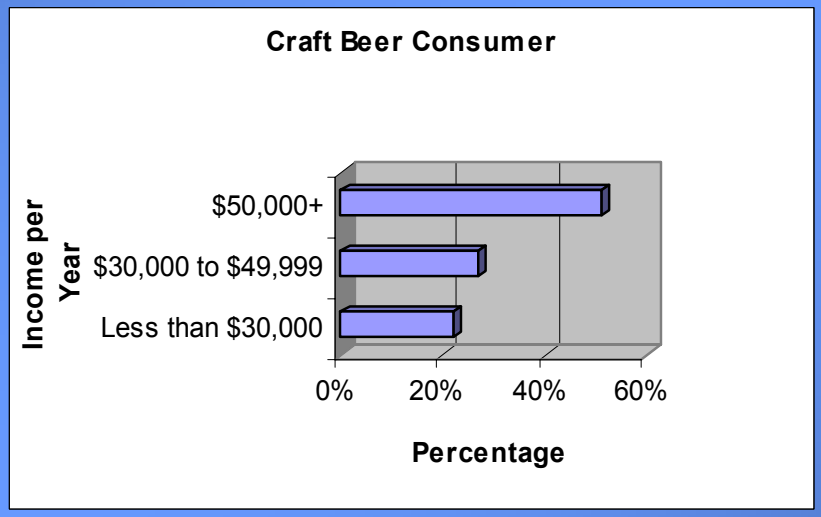
Environmental Concerns

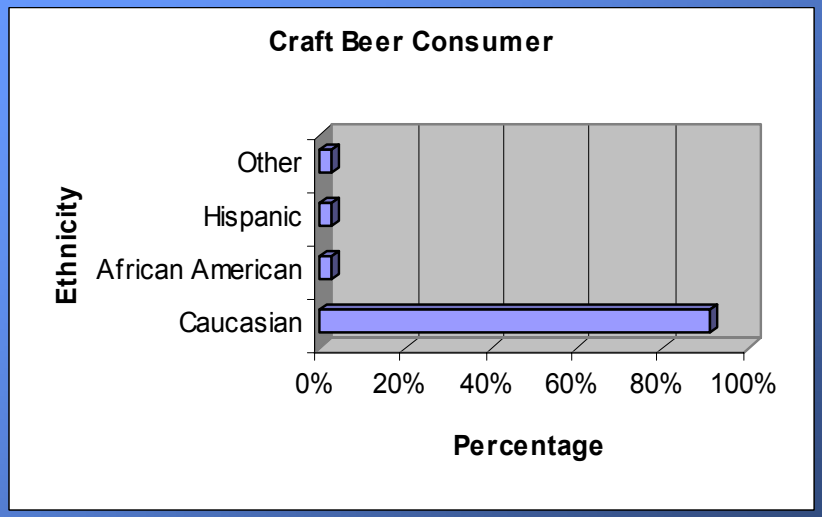
- Solid Waste
  - Spent grains, grain dust, hot trub, spent hop cones, excess yeast
  - All can be used as livestock feed – sold to local farmers
- Liquid Waste
  - Waste water and beer
  - Fix leaks & faulty equipment immediately
- Gaseous Waste
  - CO_2 from fermentation & vapor from boiler
  - CO_2 from fermentation negligible

Microbrewed Beer Consumer









Source- Adams Beverage Group

U.S. Beer Market Shares

	2002	2001	%Consumption Change
Domestic	85.66%	86.23%	-0.50%
Import	11.26%	10.75%	+0.51%
Specialty	3.08%	3.02%	+0.06%

Source- Beer Institute

- Anticipate Cornering 2% of Microbrewery Market
- Resulting in 0.06% of our Targeted Beer Market

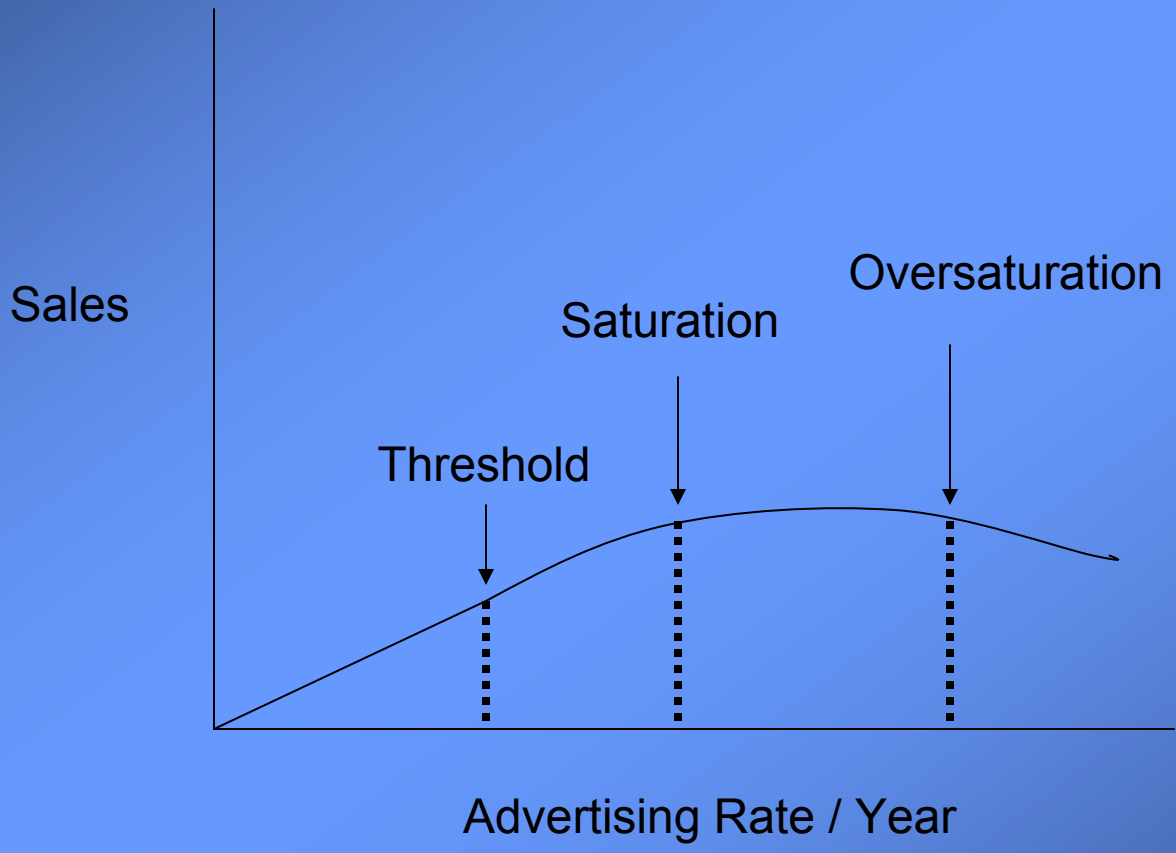
Advertising Basics

- Communication of Goods and Services Available from Various Sellers
- Generate Demand by Offering Specific Information on a Product, Service or Brand
- Advertising Industry Composed of:
  - Media institutions
  - Clients
  - Advertising Agencies

Advertising Concerns

- Size of Total Advertising Budget
- Allocation of this Budget to Marketing Areas
- Allocation of the Individual Market Area Budgets Among Media (radio, news, etc)
- The Timing of Advertising
- The Theme of the Campaign
- The Effort Invested in Campaign

Basic Advertising Trend

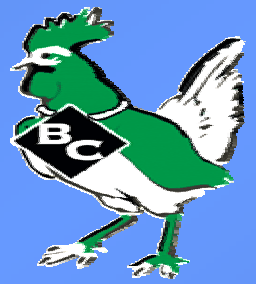


Source- Quantitative Theories of Advertising

Marketing Strategy

- Pricing
  - Price Rooster Brew at average microbrew selling price (Wholesale $13 per case)
- Advertise via Main Channels
  - Radio
  - Newspaper
  - Billboards
  - Direct-mail and Flyers
  - Website: www.bigcockbrewingcompany.com

Marketing Strategy



- Company Logo
  - Modeled after success of “Hooters”
  - Memorable and recognizable
  - Wide merchandising capabilities
- Merchandising
  - T-shirts, koozies, keychains, coasters, etc.
- Promotions
  - Sponsorships

Projected Sales

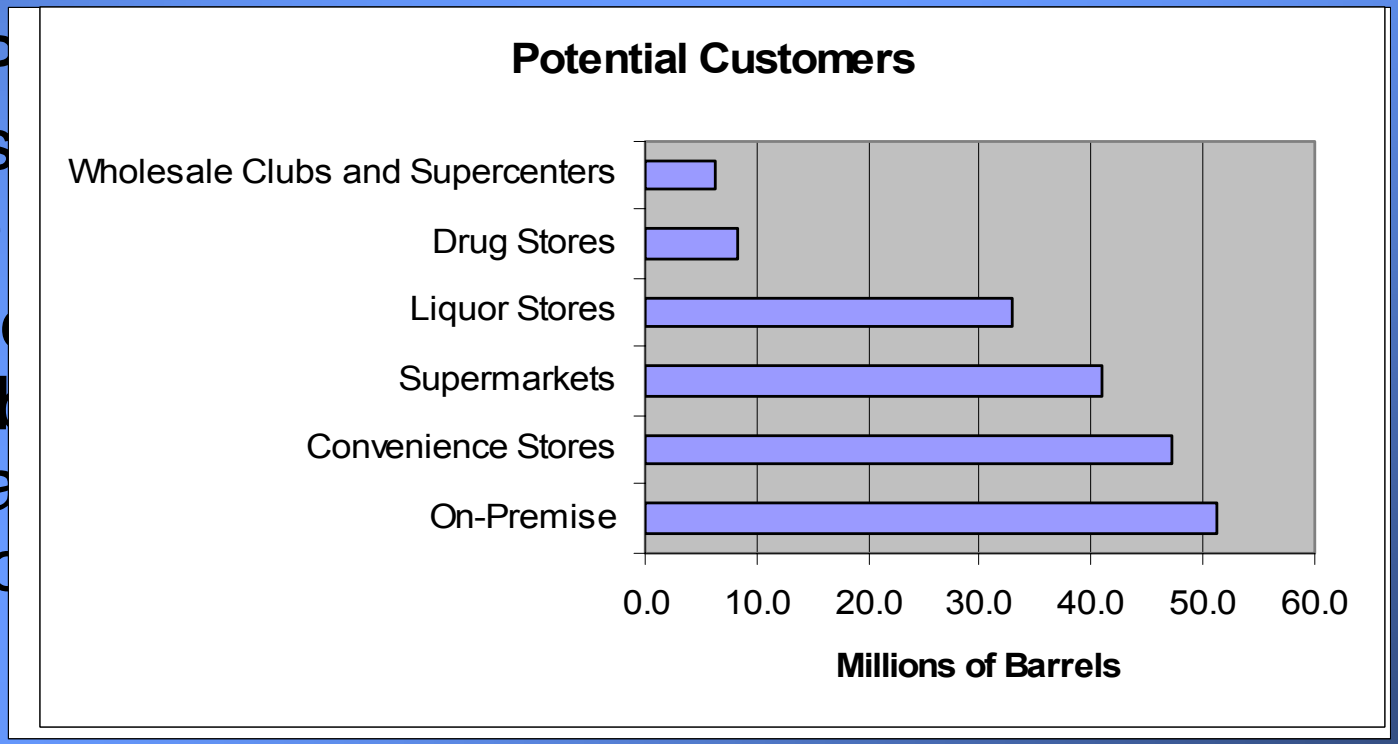
- Beer Consumption Increases by 1.5% Each Year Until 2010
- Gathered Data on Consumption in Each Market
- Used 1.5% Increase and Expected 0.06% Market Share to Estimate Projections

Competition

- Other Microbreweries
  - New Belgium Brewing Company
  - Boston Beer Company
  - Spoetzle Brewery
- BCB's Competitive Edge
  - Deterministic model to determine optimal size, location and market
  - Process with highest level of automation
  - Aggressive marketing of Rooster Brew

Preferred Customers

- Most Important Customers: Owners and Managers of Liquor Retail Outlets
- On-P
  Pubs
  Hote
- Targ
  Estal
  Alrea
  Micr



Beer Distribution

- Distributing is an Industry Within the Beer Industry
- One of the Most Important Components in Microbrewery Operation
- Distributors
  - Purchase beer from brewers
  - Market beer to retailers
  - Sell beer to retailers

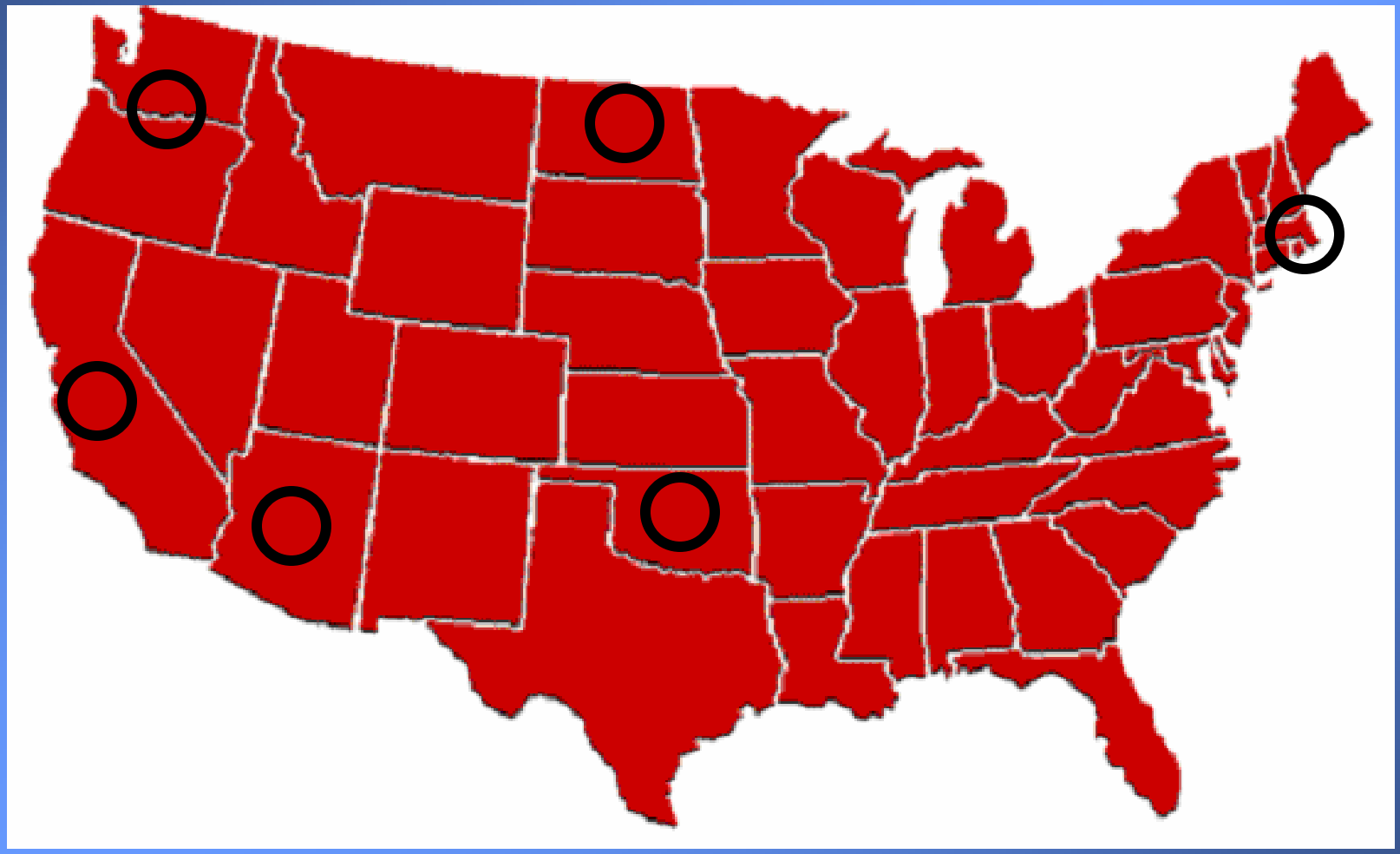
Our Distribution

- Not Pursuing Self-Distribution
  - Buy, rent, or lease trailers and trucks
  - Purchase insurance
  - Hire licensed drivers
- Will Hire Professional Distributor
  - Assume risk of retailer non-payment
  - Reduce capital requirements
  - Maintain freshness of product

Startup Task Timeline

	Week															
Task	1-16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Register Business																
Find Investors																
Hire CEO																
Hire Brewmaster																
Find Site Location																
Lease Warehouse																
Warehouse Preparation for Equipment																
Contact Raw Material Suppliers																
Contact Equipment Suppliers																
Order Equipment																
Hire Assistants																
Install Equipment																
Order Raw Materials																
Initial Marketing																
Preliminary Production																
Bottling and Kegging																
Distributing																

Where to Build?



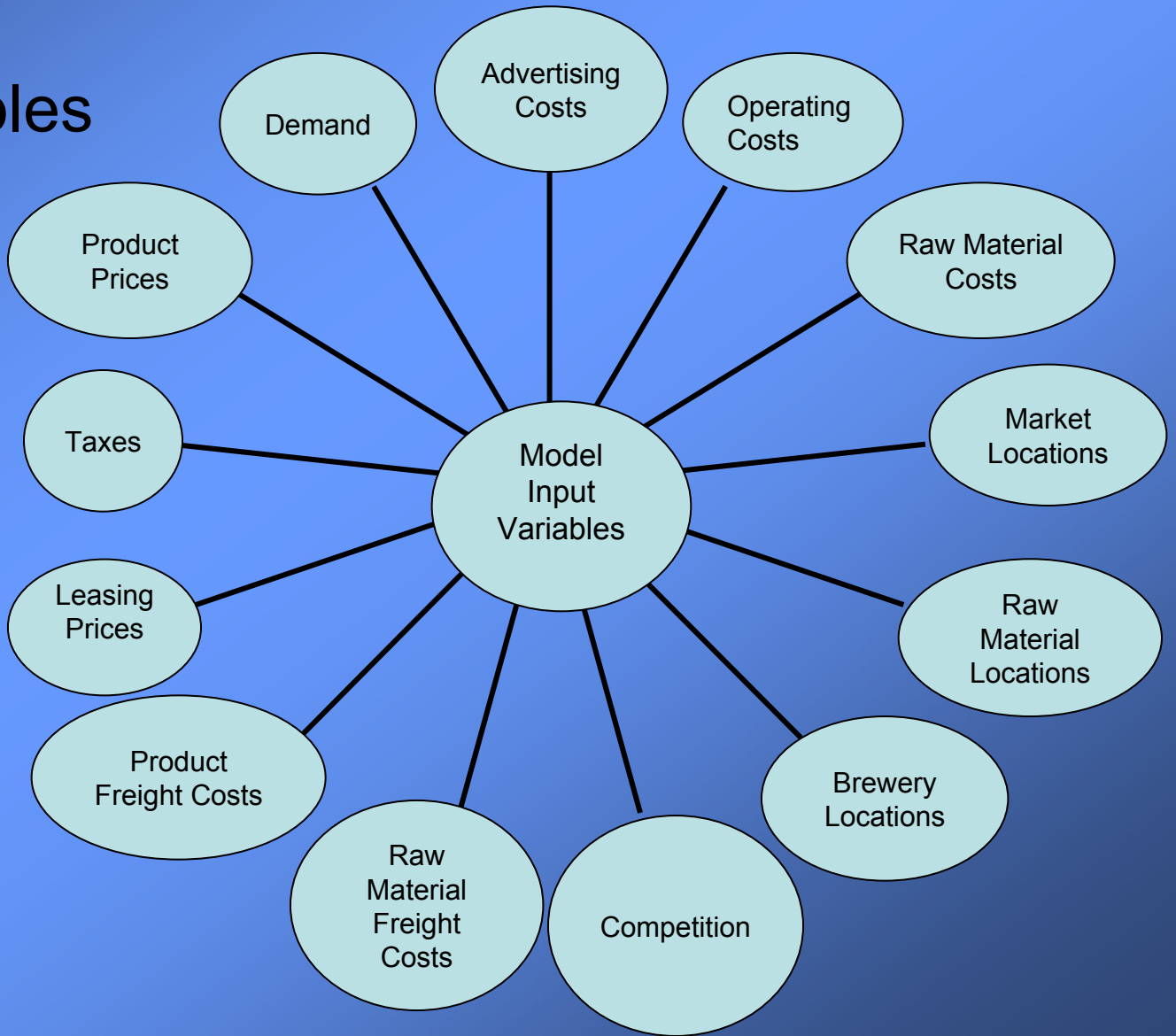
Largest [illegible] years bbl

Deterministic Model

- Simultaneous Consideration of all Possible Given Scenarios for a Project
- Realistic Constraints
- Results
  - Optimal operations
  - Future operations, expansions

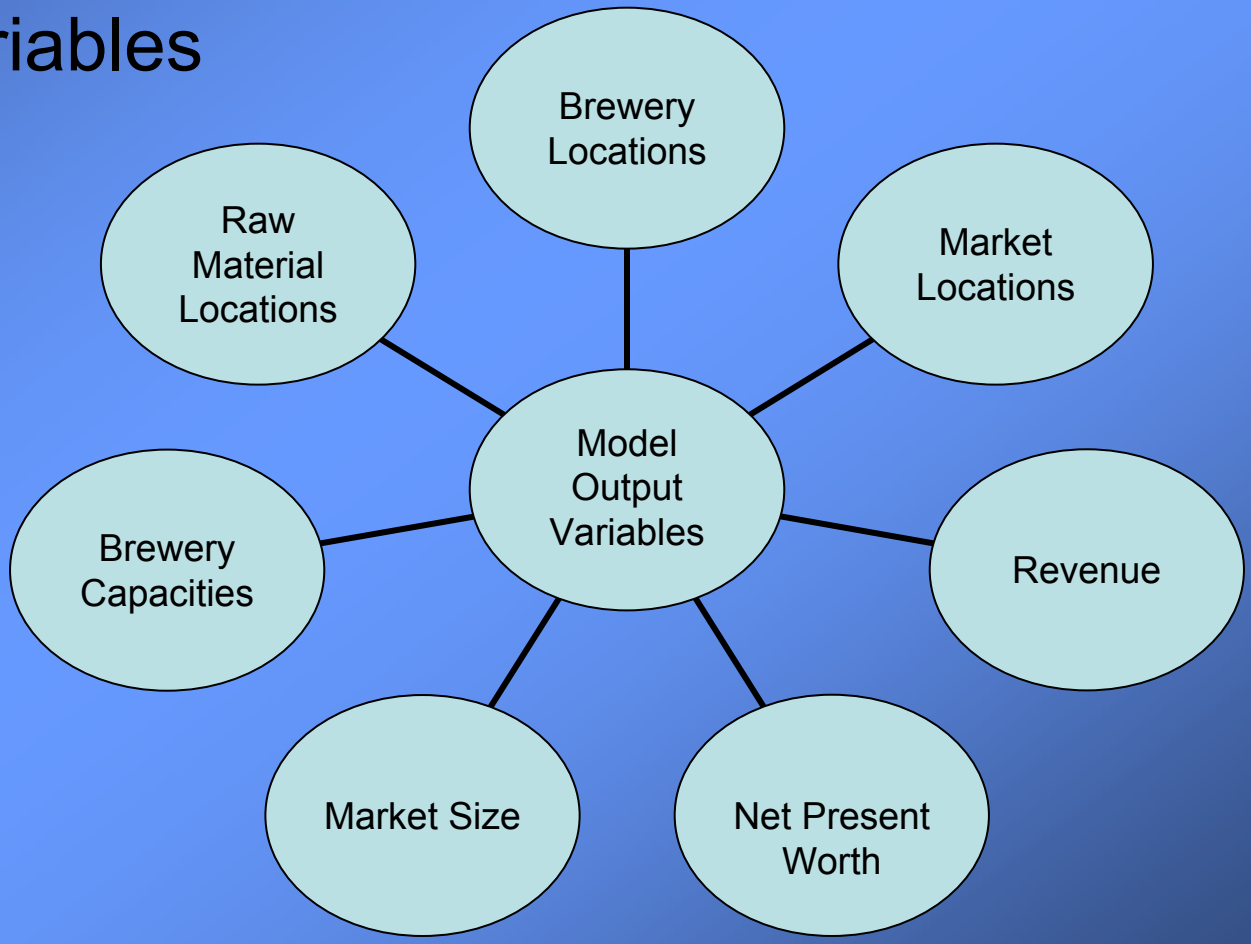
The Deterministic Model

- Input Variables



The Deterministic Model

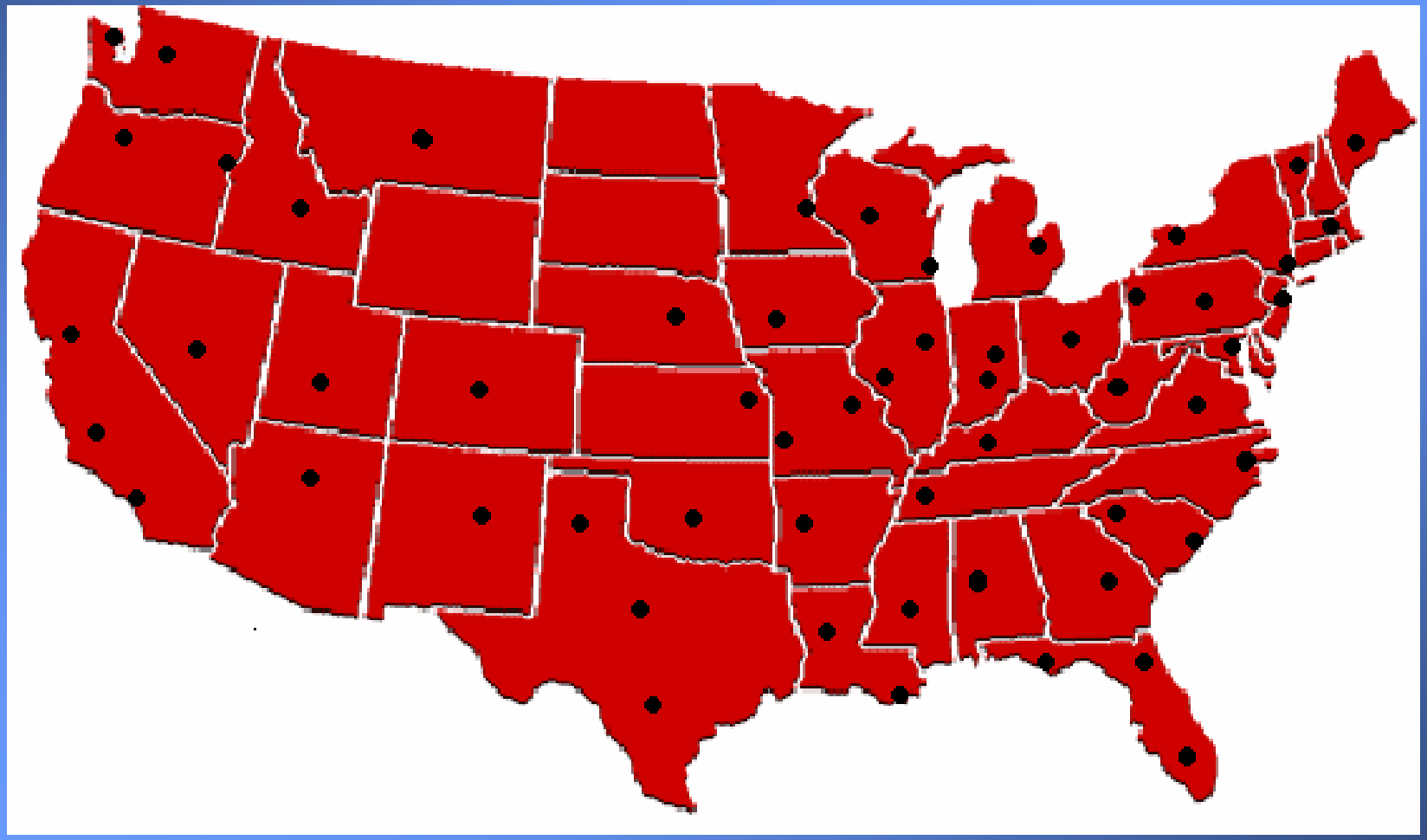
- Output Variables



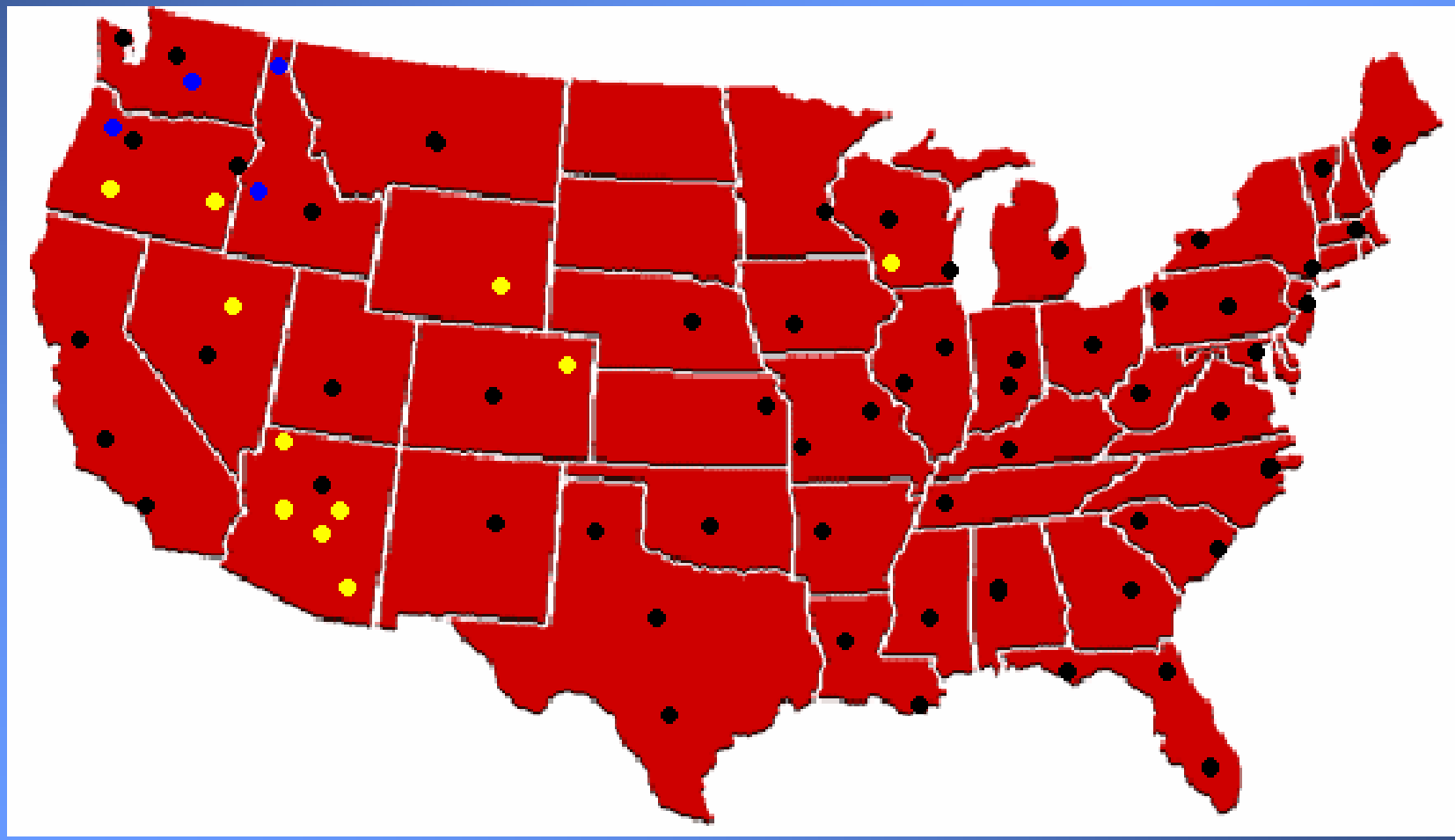
Brewery Locations

- 61 Possible Brewery Locations
- Based Upon
  - Entrepreneurial Activity
  - Small-Business Growth
  - Job Growth
  - Risk
- Source: Dun and Bradstreet

Market & Brewery Locations



Barley & Hops Locations



Distance

- Calculated for
  - Raw Material to Brewery
  - Brewery to Market
- Latitude and Longitude for Locations

$$D_{1,2} = 3963 \cdot \arccos\left[\sin\left(\frac{lat1}{a}\right) \cdot \sin\left(\frac{lat2}{a}\right) + \cos\left(\frac{lat1}{a}\right) \cdot \cos\left(\frac{lat2}{a}\right) \cdot \cos\left(\frac{lon2}{a} - \frac{lon1}{a}\right)\right]$$

$$a = \frac{180}{\pi} = 57.2958$$

$$lat = citylatitude$$

$$lon = citylongitude$$

Advertising

Radio	TV	Newspaper	Magazine	Billboards
$1.53	$11.26	$6.66	$4.91	$1.43

- Cost Per Day to Reach 1,000 People
- Linear Relationship Between Advertising Cost and Increase in Market Share
- Model Capable of Choosing Whether to Advertise and to What Extent

Competition

- For Every Market Location
  - Evaluated size
  - Evaluated number of breweries
- Implemented Market Percentage Reduction Based on Competition Factor

Reinvestments

- Model Selects up to 40% of Profit to Reinvest

- Reinvestment Used For:
  - Advertising
  - Expansions
  - Future breweries

The Code

```
build(brewery)..        sum(tp,b(brewery,tp)) =l= 1;

brewerynum..          sum(tp,sum(brewery,b(brewery,tp)))=l= 2;

maxbrewery(brewery,tp)..
breweryprod(brewery,tp)=l=capacity(brewery,tp);

constraint2(brewery,tp).. sum(market,sales(brewery, market,tp))=e=
breweryprod(brewery,tp)   ;

Costbarley(brewery,tp).. purchCbarley(brewery,tp) =e=
sum(barleyloc,barley_purchase(brewery,barleyloc,tp))*barleyprice;

Amountbarley(brewery,tp)..
sum(barleyloc,barley_purchase(brewery,barleyloc,tp)) =e=

breweryprod(brewery,tp)*barleyweightperbbl;
```

Sensitivity Parameters

- Production Cost per Barrel
  - Energy
  - Gas
  - Sewage
  - Labor
  - Water
  - Bottles
  - Labels
- FCI Brewery
- FCI Expansion
- Working Capital Brewery
- Working Capital Expansion
- Federal Income Taxes

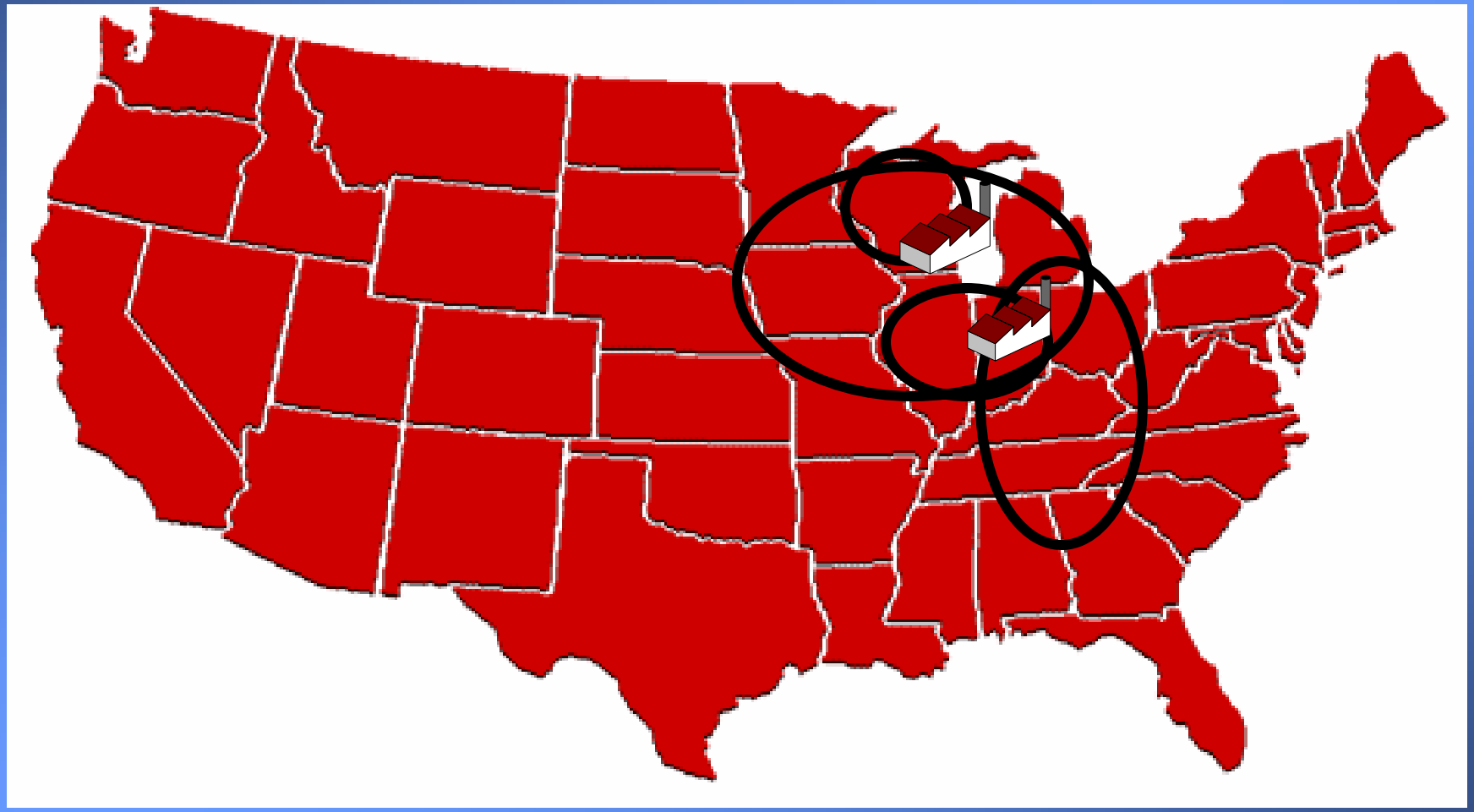
Tabulated Parameters

- State Excise Taxes
- Leasing
- Selling Price
- Market Size
- Market Share

Sensitivity

- With Advertising Cost:
  - Spending $96,000
  - NPW $5.4 million
  - Indianapolis (1), Milwaukee (4)
- Without Advertising Cost:
  - NPW $5.2 million
  - Louisville (1), Milwaukee (4)

Brewery can Market Locations WITHOUT Advertising

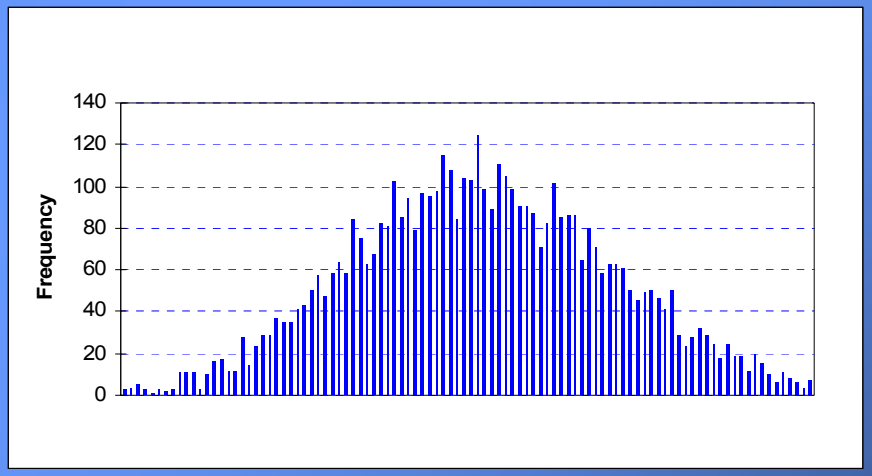


Sensitivity

- Increasing Freight Cost by 20%
  - No Change in Brewery Locations
  - No Change in Market Locations
  - NPW reduced by $100,000
- Increase Raw Material Costs
  - No Change in Brewery Locations
  - No Change in Market Locations
  - NPW reduced by $700,000

Risk

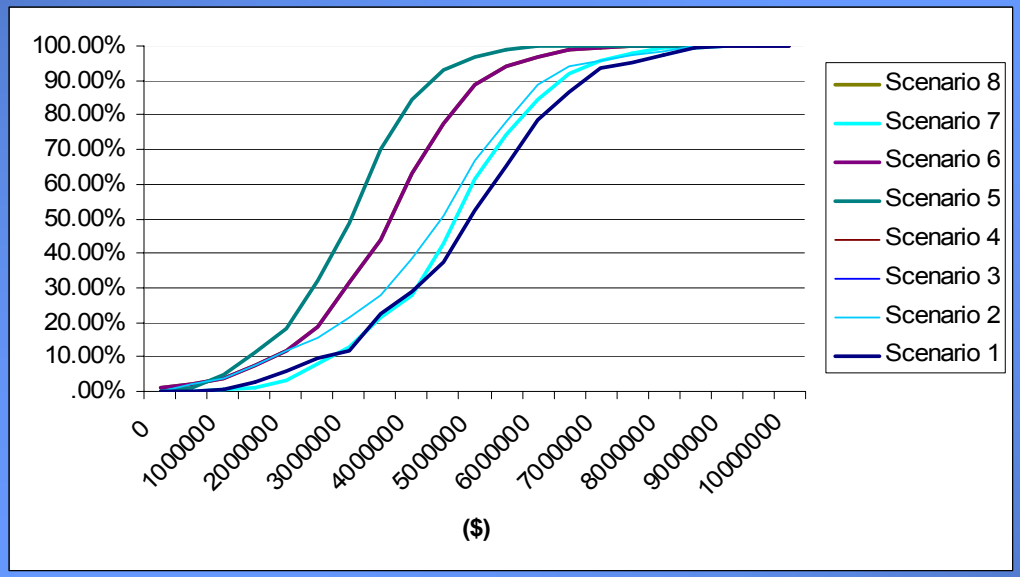
- Nine Parameters Chosen from Sensitivity Analysis
  - FCI brewery, FCI expansion, Working Capital, Advertising, Market Share, Operating Costs, Raw Material Costs, Freight Costs, and Leasing Costs
- Based on Uncertainty of Parameters



Scenarios

- Best Case Scenario
  - Net Present Worth $12.2 MM
- Worst Case Scenario
  - Net Present Worth -$59,000

Risk Results



Results

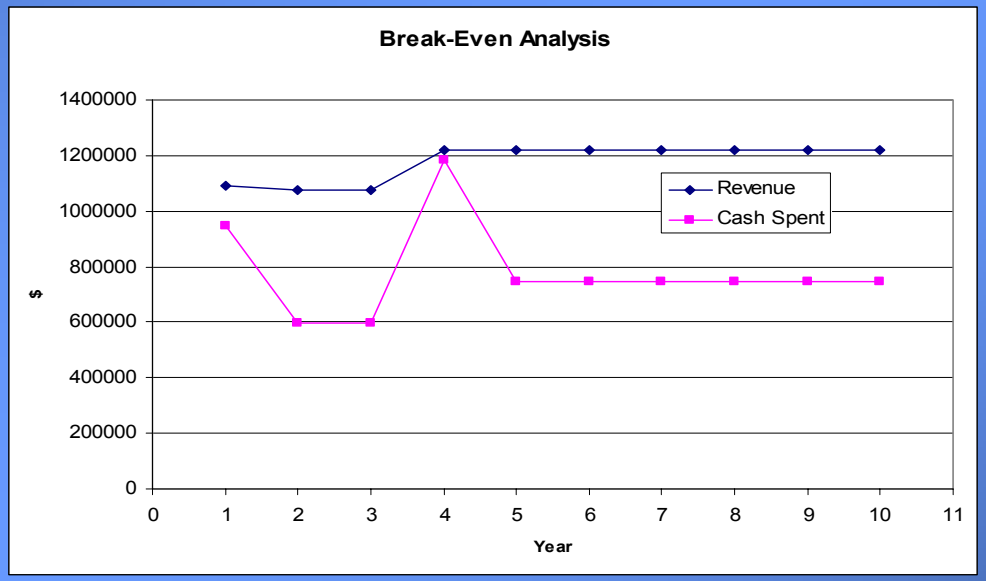
- Brewery Locations
  - Indianapolis, Indiana
  - Milwaukee, Wisconsin (Not built until 4th year)
- Net Present Worth
  - $5,413,000
- Expansion
  - Milwaukee expands by 9,000 barrels in 4th year
- Markets
  - Illinois: 3,600 barrels sold in 1st year
  - Indiana: 2,400 barrels sold in 1st year
  - Wisconsin: 15,000 barrels sold in 4th year

Financial Projections

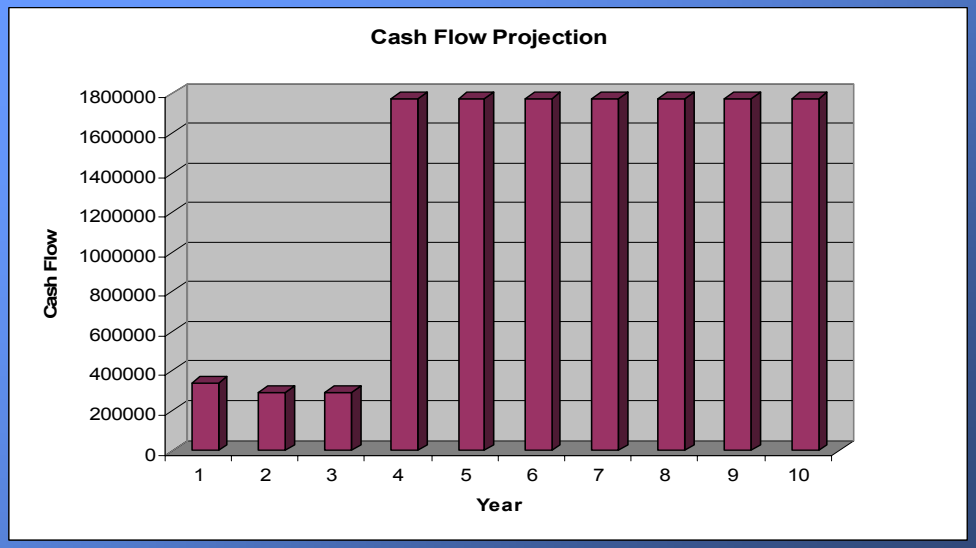
- Estimated Investment Capital of $420,000
  - $340,000 Equipment Costs
  - $80,000 Working Capital
    - Leasing
    - Electricity & Natural Gas
    - Sewage
    - Labor
    - Licensing
- Sell Product for Approximately $180/barrel
  - 30 Barrel Process at 4 Batches/Week
  - $90,000/month in Sales

Financial Projections

- 10-Year Break-Even Analysis



- 10-Year Cash Flow Analysis



Summary

- Decided to Build Microbreweries
- Too Many Parameters for Classical Modeling
  - Used Deterministic Model
- Conducted Analysis
  - Market
  - Sensitivity
  - Uncertainty
  - Risk
- Obtained Optimal Results
  - Maximizing Net Present Worth

BIG COCK

BREWING COMPANY

www.bigcockbrewingcompany.com