



EPA CLIMATE LEADERS PROGRAM

MILLER BREWING CO.

MID-TERM PROGRESS REPORT

2001-2004

JIM SURFUS

Senior Environmental Engineer

MAY 2005



CLIMATE LEADERS PARTNERS COMMITMENT:

- CORPORATE-WIDE GHG INVENTORY
- AGGRESSIVE GHG REDUCTION GOAL 5-10 YEARS
- DEVELOP A CORPORATE IMP
- ANNUALLY REPORT DATA AND DOCUMENT PROGRESS
- PUBLICIZE PARTICIPATION AND ACCOMPLISHMENTS



SABMiller

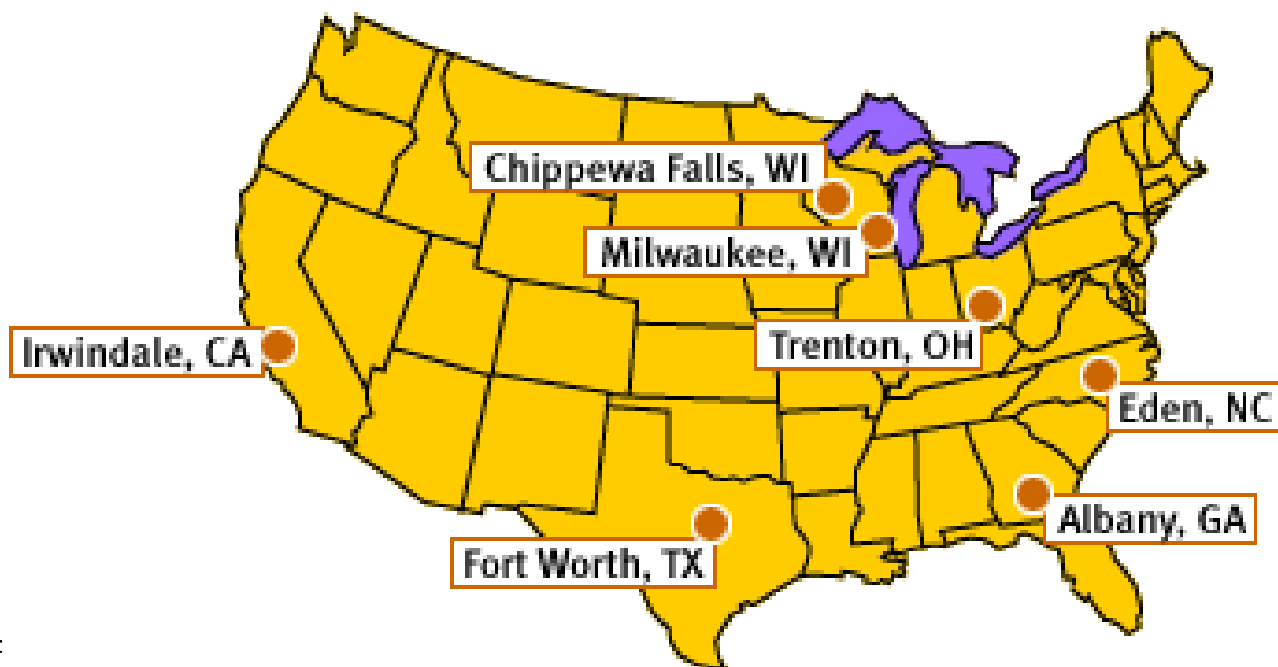
- One of the world's largest brewers
- Over 80 breweries and 20 bottling plants operating in 40 countries on four continents
- Outside of the U.S., SABMiller is one of the largest Coca-Cola bottlers in the world





Miller Brewing Company

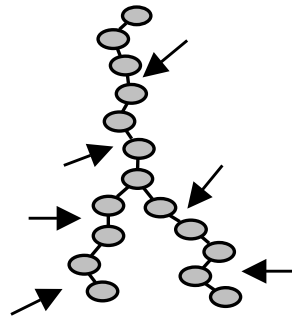
- 6 Major Breweries
 - Milwaukee, WI
 - Eden, NC
 - Albany, GA
 - Fort Worth, TX
 - Irwindale, CA
 - Trenton, OH
- 2 Regional Breweries
 - Chippewa Falls, WI
 - Milwaukee, WI



- Hops Processing Plant
 - Watertown, WI



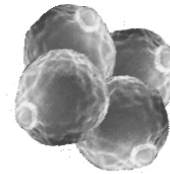
Biochemical Reactions



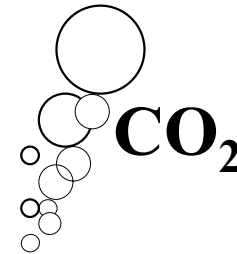
Starch



Sugar



Yeast



Heat



Alcohol

Cereals provide the Starch and natural enzymes to convert Starch > Sugar

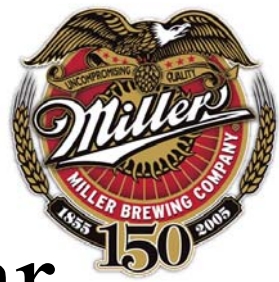


The Steps Behind Making a Miller Beer



- Brewing
- Fermentation
- Aging
- Packaging
- Distribution





Significant Events Since Base Year

- Closure of Tumwater Brewery
- SABMiller reorganization
- Irwindale Brewery CHP installation
- Green Power purchase at Milwaukee Brewery
- Retirement of 2.5 MW steam turbine at Milwaukee
- New products and contract brewing



Goal Related Projects

Focus on increasing efficiencies and conversion of older equipment to new more efficient equipment

- **Projects completed**

- Trenton Powerhouse
 - Condensing turbine
 - Energy Management System
- Fort worth – NH₃ compressor controls
- Leinenkugel – new boiler with economizer
- Milwaukee – new powerhouse (retired 50 yr old boilers)
- Milwaukee – compressed air controls
- Milwaukee, Fort Worth – Boiler NO_x reduction & Eff improvement

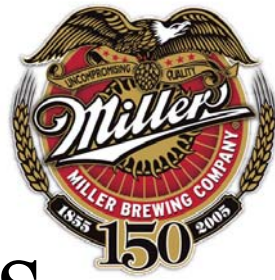




Future Goal Related Projects

Focus on increasing efficiencies and replacement of old equipment and newer control technology

- Projects planned or in development
 - Eden & Albany Powerhouse
 - Energy Management System
 - Irwindale – Anaerobic Wastewater Treatment-Biogas
 - Trenton – Wastewater treatment reduced blower aeration
 - Eden – Wastewater treatment aeration system upgrades
 - Multiple plants – photovoltaic electricity or solar water heating



Future Goal Related Activities

- Benchmarking with Other Breweries
 - Worldwide Energy Efficiency Benchmark
 - Spec Energy Consumption in top 25% for breweries
 - Determine our minimum base vs variable load
 - Climate dependent
 - Package Mix
 - Process Variable dependent
 - Establishing an Environmental Footprint index
- Leverage our world wide technical expertise
 - Innovation

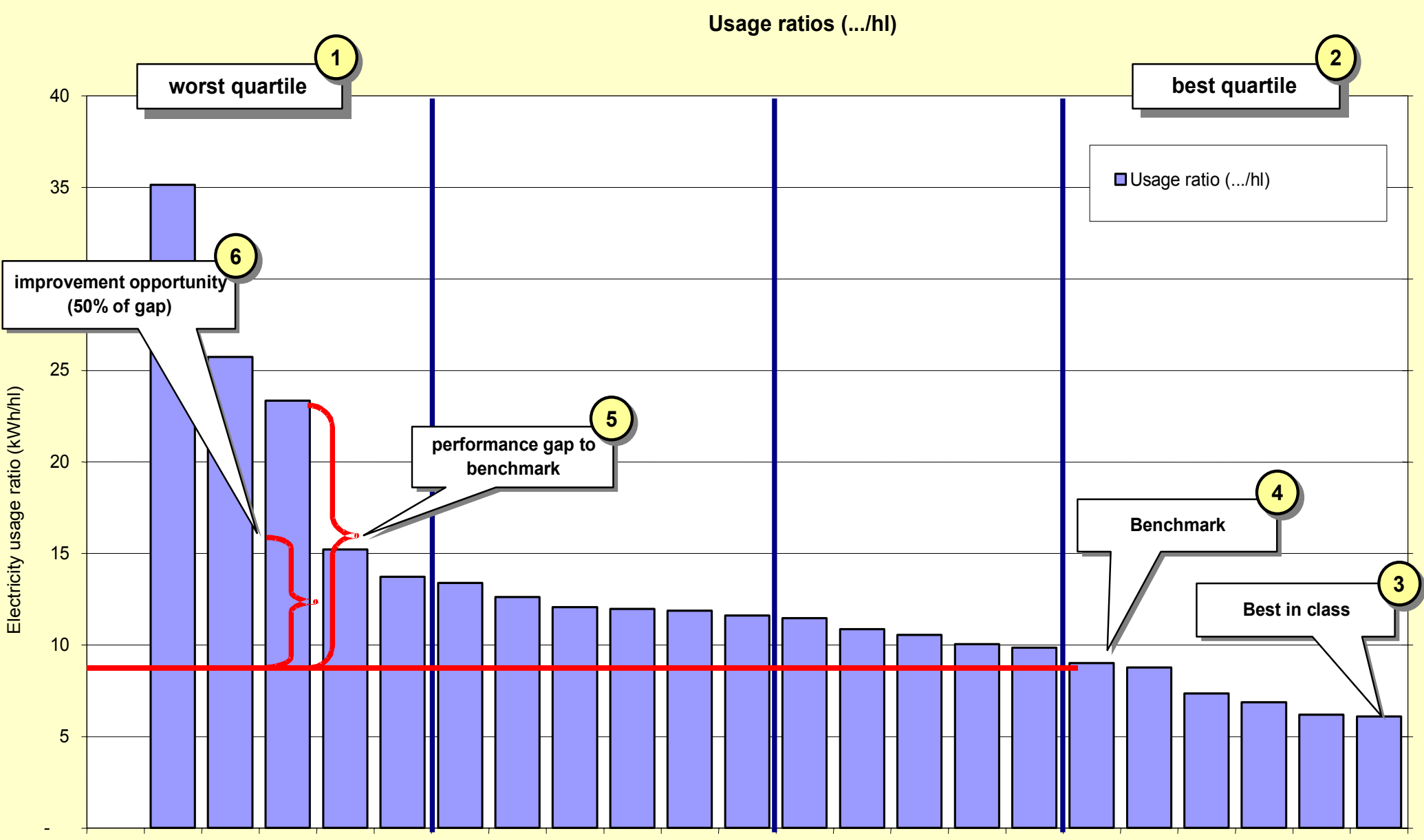


Tracking and Setting Goals to Reduce Carbon Dioxide Emission Impacts

- The procedure used to set brewery goals:
 - The Second most efficient Brewery in the *Fuel or Electric* category becomes the yearly benchmark
 - The breweries above the benchmark will have a goal set at half-way between the benchmark and their current efficiency
 - Example: Benchmark = 9 KWH / hl-beer, Brewery's Current efficiency = 24 KWH/ hl-beer, Annual Goal 16.5 KWH/ hl -beer.



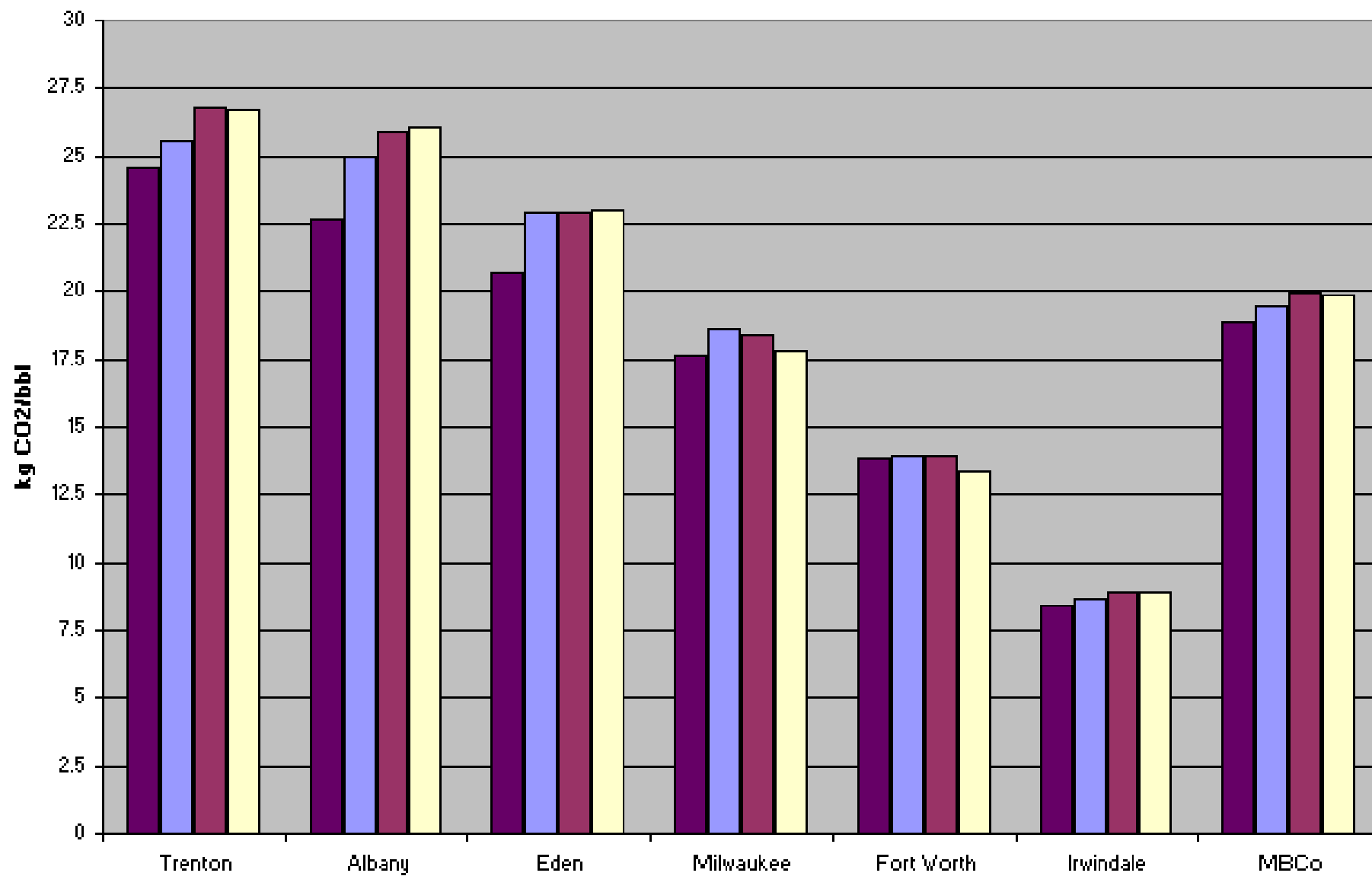
Alternate Quartile Method Brewery Goals Development





MID-TERM PROGRESS GHG REDUCTION

■ 2001 ■ 2002 ■ 2003 ■ 2004





SUMMARY

- It takes an Able Challenger mentality throughout an organization to look at obstacles and find a way to turn them into successes
- A big factor is a Performance Management system with Key Performance Indicators (KPI's) and annual reduction goals
- It takes time to investigate, develop, and implement capital projects and then to realize the GHG reductions
- We are not there yet, but our future depends on our ability to challenge ourselves; to demand our full potential as individuals and as a business system. We will stay the course

A pledge not written down is just a wish.