

# **The Price of Water: Should it be Higher?**

**Sammis B. White, PhD, UW-Milwaukee**

**G. William Page, PhD, U Buffalo**

**Michael Wolkoff, PhD, U of Rochester**

**Great Lakes Water Conservation Workshop**

**Rochester, NY**

**March 26, 2010**

# **Why worry about water price?**

- **Most craft brewers are local/regional**
- **Region has many lakes, rivers, & wells**
- **Seeming wealth of water resources**
- **Modest population growth in most parts**
- **Some efforts underway to remove contaminants**

# Water is Critical to Brewing

- **Stories of the west**
  - **Oregon - Bridgeport**
  - **California – Sierra Nevada**
  - **Colorado – Odell's**

# **Picture may be Changing**

- **Water on planet is limited: 0.007% is accessible freshwater**
- **Demand is growing as incomes rise**
- **New pollutants are increasingly present**
- **Energy costs are rising**
- **Existing infrastructure is deteriorating**
- **Little interest in water conservation**

# **Water Shortages Increasing**

- **Shortages in 36 states by 2025**
- **Water-rich WI today**
- **Rainy Atlanta last year**
- **Dry Las Vegas for years**
- **CA last year**
- **Maybe not your location, but it may be coming with climate change/new weather patterns**

# **Water Threats: Pollution**

- **From the air: mercury, sulfur**
- **From waste treatment: PPCPs**
- **From below: historic/new contamination**
- **From new energy searches: e.g., hydro-fracking, coal bed methane**

# **Water Waste: Leaks**

- **Estimated \$635 B needed in US for water and waste water infrastructure**
- **Some places 30-40% is lost in water transmission**
- **Energy wasted in treating and moving**

# **Water Waste: Careless Use**

- **Water is wasted in many ways:**
  - **Use 10% of treated water for human consumption**
  - **Little thought of conservation, so run tap, shower, lawn, running toilet**
  - **Businesses use and release, unless sewage treatment charges**

# **Water Challenge: Conservation**

- **One solution: Charge much more for water**
- **Will it force conservation?**
- **Will it help reduce shortages, pollution reduction, waste, consumption?**
- **IS A HIGHER PRICE A GOOD THING FOR BREWERS?**

# Barriers to Solutions

- **Low price of water: *what do you pay?***
- **Long-held belief: right to cheap water, same as air; *but what of food?***
- **Seeming sufficiency: Lake MI + 15,000 lakes in WI; similar patterns in NY/NE**
- **Low incomes or bargain hunters**
- **Slow development/use of tech solutions**

# **Today: Water is cheap**

- **Price today is for distribution only**
- **Price excludes capital costs**
- **Price excludes “externalities”**
- **Price excludes “research”**
- **What matters more: cost, availability, or quality of water?**
- **Should Brewers (and others) pay more?**

# **Case For/Against Price Hikes**

- **Bill Page**
- **Michael Wolkoff**

# **The Cost of Water and its Implications**

**G. William Page**

**Department of Urban & Regional Planning**

**University at Buffalo, SUNY**

**March 26, 2010**

# Potable Water Consumption Around the World

Municipal consumption of water varies considerably depending on the services and utilities provided, climate, and cost. Most cities in the world fall in the range of 300-600 liters per day, although cities in some developing countries are in the 50 liters per day range and in a few places in the 10-40 liters per day range (Shiklomanov 1998, p. 17).

# Potable Water Cost Around the World

- Data on cost in 14 developed countries reveals considerable variation in the cost to users of potable water: with Germany high at \$1.69 per cubic meter, Canada low at \$0.35 per cubic meter, and the USA about \$0.50 per cubic meter (The Economist 1995).

# Potable Water Cost Around the World

- **In developing countries the cost of water is often low.**
- **Water in Beijing – 0.15 cent per cubic meter (1.3 RENMINBI ) for residential customers and 0.16 cents for industrial users.**
- **The price of water in New Delhi, India 1/3<sup>rd</sup> to 1/2 the cost in Beijing.**

# **Drinking Water Cost Around the World**

- **At home, I pay 1.44 cents per cubic foot of water.**
- **That is equivalent to \$0.51 per cubic meter of water, which is 34 times more than the cost of water in Beijing.**

## **The cost of water can serve different purposes**

- **Social stability**
- **To subsidize and promote Agriculture**
- **To influence where people live**
- **Economic development**

## **Implications of Low Water Cost**

- **The Yellow River runs dry every year. It was dry for 226 days in 1997.**







Result of a water main  
break, Portland,  
Oregon

# The Price of Water

Michael Wolkoff  
Department of Economics,  
University of Rochester  
March 26, 2010

# Perspectives on Water

- **“I never drink water. Fish hook up in it.”**

**W.C. Fields (paraphrased, perhaps 1920 or so)**

# Perspective II

- Water is far from a simple commodity,  
Water's a sociological oddity  
Water's a pasture for science to forage in.  
Water's a mark of our dubious origin.  
Water's a link with a distant futurity,  
Water's a symbol of ritual purity,  
Water is politics, water's religion.  
Water is just about anyone's pigeon.  
Water is frightening, water's endearing,  
Water's a lot more than mere engineering.  
Water is tragical, water is comical.  
Water is far from the Pure Economical.  
So studies of water, though free from aridity,  
Are apt to produce a good deal of turbidity.

Ken Boulding (1964)

# The Pure Economical

**Economist pricing prescription –**

**Efficiency in market economy requires marginal cost pricing.**

**Consumers/producers will use the resource up to the point where the marginal value of the last unit used will equilibrate with its marginal cost.**

**Usage beyond that point is inefficient in that society values the resource used less than the cost to produce it. Less usage means that further gains can be had as society values the use more than the resources used to create it.**

# Marginal Cost Pricing

**Marginal cost is the cost of supplying an additional unit of water.**

**Likely to differ across jurisdictions and over time.**

**Marginal cost of water will vary with:**

**location**

**time**

**season**

**infrastructure age/capacity**

**cost of additional water supply**

# The Reality

**Water pricing typically differs from marginal cost pricing.**

**More typically we observe:**

**Flat Rate pricing – no marginal cost for additional units.**

**Although water usage is price inelastic, zero marginal price results in consumption rates estimated to be 70% higher than what MC pricing would generate (Canadian study).**

**Volumetric pricing – no adjustment for point on MC curve.**

**Either block (increasing or decreasing)**

**Flat rate.**

# Why deviations from MC pricing?

**Not the only time we fail to listen to economists!**

**Different objectives/constraints**

**Historical patterns.**

**Difficulty in implementation.**

**Politics.**

**Incentives.**

**Utility revenue requirements.**

# Pricing Rules

## Average Cost Pricing

- » Meets revenue requirement but may be based on arbitrary accounting categories. Historical cost rather than economic cost concepts.

## – Two Part Pricing

- Cover fixed costs then price at marginal
- Fixed cost portion “too large”, marginal pricing “too low”
- First part may have distributional consequences.

# Questions for any of us?

- We look forward to enjoying the fruits of your labors.