



The Economic Impact of Water Shortages: Marin Municipal Water District (MMWD)

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Introduction

- A water shortage has widespread economic effects
 - Reduces business spending on labor in lieu of water
 - Especially water-intensive businesses (construction and ag)
 - General reactions somewhat limited short-term
 - Conservation can be mandatory or voluntary
 - Should help understand long-term need for water independence
 - Analogous to how rising gas prices made us think about energy independence
 - Economic impacts on Marin depend water shortage magnitude
 - 10% \Rightarrow \$79 million in business incomes & over 480 lost jobs
 - **30% \Rightarrow \$1.87 billion in business incomes & over 11,000 lost jobs**
 - **Literature suggests exponential problems after 30%**

Introduction (cont.)

- Current economic situation a strange conundrum for utilities
 - Recession bring in some questions about reactions to water shortages
 - Does recession imply water conservation?
 - Does recession imply more residential use or commercial?
 - Current situation difficult on larger water supply projects
 - Pipelines or desalination projects

National and State Situations

- Policy close to providing all it can
 - Federal budget continues to grow
 - May be redirected and cut slightly in 2009-10 version
 - AB 811 may draw funding here for water projects
 - Monetary policy as aggressive as ever
 - Consumer confidence continues to fall
- State budget likely to affect services more than anything
 - Reform of some type needed
 - Further pressure on state agencies to boost revenue or reduce services
- Need a supply-side boost
 - This may come from a “New Deal” style of budget
 - Will water be part of this package?

Macro Factors

- Recession: think unemployment rising as an indicator
 - Water demand likely to fall in business use?
 - Likely to rise in residential (unemployment)?
- Should Obama administration look at water as a major concern?
 - Does it matter if they do?
 - What about water independence regionally?
- Energy issues may provide positive and negative effects on desalination efforts
 - Heavy user, possible innovations (energy use and production)
 - Capital requirements large, may slow down project growth

Supply and Demand

- Supply
 - Local reservoirs the key sources of water
 - Russian River supplements
 - Surface water the other source in Marin
- Demand
 - Residential Customers (approx. 65% of local demand)
 - Inside versus outside use
 - Residential customers relatively insensitive to rate increases concerning conservation incentives
 - Business Customers
 - More sensitive to rate changes versus residential
- Conservation: change price or quantity
 - Consumers get to pick their fate (sort of).

Economic Impact for Water Shortage

- Economic Impact
 - Businesses shift expenses toward more expensive water
 - Businesses reduce labor force in reaction to more costly water
 - Residents shift expenses toward more expensive water, reduce demand for other goods and services
 - Construction, medical services, wineries, real estate services, auto repair the major industries affected
 - Direct effects \Rightarrow indirect effects \Rightarrow induced effects
 - Think of a rock dropped into a still pond
 - Best Management Practices (BMPs) could reduce negative impacts and actually enhance local economy

Economic Impacts (cont.)

- 30% water shortage makes losses rise quickly
 - Major problems in finding substitutes
 - Water-saving technology not enough to curb consumption
 - Cost of water would rise very quickly
- 10% and 20% losses assumed to have linear relationship
 - 20% water shortage is double the losses of a 10% water shortage approximately
- **Assumes cultural and economic adjustments rapid and rational**
 - **Can the culture of water consumption be changed?**
 - **Can conservation be seen like recycling?**

County Effects

- Marin County
 - Construction, retail, medical offices, restaurants largest direct effects
- Indirect and induced effects are larger on retail, professional and personal services
- Remember:
 - Sales tax revenue affected also
 - Recession means that tiered pricing must be careful to not target businesses over residential consumers

Summary Table: Marin

Water Shortage	Approx. Lost Jobs	Approx. Value of Lost Output	<u>Main Industries Affected</u>
10%	486	\$79 mil	<ul style="list-style-type: none">• Construction• Medical Offices• Restaurants• Real Estate• Grocery Stores• Hospitals• Banking• Car Repair
20%	974	\$159 mil	
30%	11,036	\$1.871 bil	

Conclusions

- Water shortage touches all
- Residential customers are relatively insensitive to price
 - Can they be made more sensitive through receiving more information?
- Using best management practices (BMPs) provides incentives to purchase local goods and services
 - Retrofit current homes to save water
 - Reduces negative economic impacts

Policy Recommendations

- Public policy should be shaped to react to water shortages in both an equitable and efficient manner
- Fund incentives for BMP initiation and infrastructure changes from excess revenues
- Partner with local businesses that supply water conservation products
- Increase promotion and education about new technologies, especially using recycled water
- Encourage and investigate infrastructure changes and expansions
- Water retailers should provide more information about water use in billing and other communications



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