

CALIFORNIA'S "ECONOMIC PRODUCTIVITY" OF WATER USE

Jobs, Income, and Water Use in California

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Introduction

This short summary presents information on total employment, total revenues/income, and total water use in California for various industrial and commercial sectors, using data through 2004. Far more detailed information, data, and analysis are available from the Pacific Institute and complete data sources are listed at the end of this memo.

Conclusion

There are gross disparities in the "economic productivity" of water use. Even modest reallocations of water from one sector of our economy to another can produce significant changes in job availability and gross state product, but such reallocations must take account of regional economic priorities, job displacement and retraining issues, equity, and environmental side-effects.

The data in this analysis suggest that carefully tailored water and business strategies, however, can lead to substantial benefits for California's economy, job picture, and agricultural production.

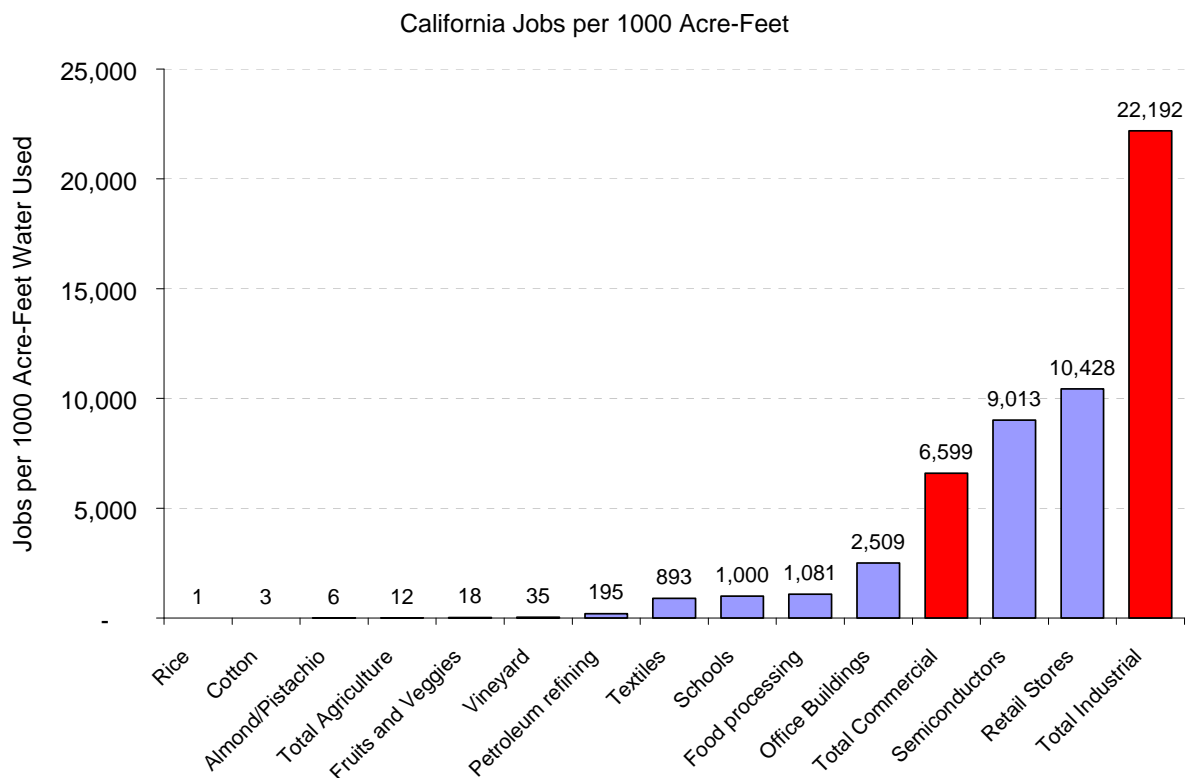
Jobs and Water

As Table 1 and Figure 1 show, there is a huge disparity in the number of jobs that 1,000 acre-feet of water produces in different sectors of California's economy. The use of 1,000 acre-feet of water produces 9,000 jobs in the semiconductor industry, 2,500 jobs in commercial offices, 35 jobs in grape and wine production, and 3 jobs growing cotton. **Overall, 1,000 acre-feet of water produces 22,000 jobs in California's industrial sector, 6,600 jobs in the commercial sector, and 12 jobs in the agricultural sector.**

Table 1: Jobs Produced per Thousand Acre-Feet of Water Used in California

Economic Sector	Jobs per 1000 Acre Feet
Rice	1
Cotton	3
Almond/Pistachio	6
Total Agriculture	12
Fruits and Veggies	18
Vineyard	35
Petroleum refining	195
Textiles	893
Schools	1,000
Food processing	1,081
Office Buildings	2,509
Total Commercial	6,599
Semiconductors	9,013
Retail Stores	10,428
Total Industrial	22,192

Note: This is a representative subset of California's economic sectors, showing the range of jobs produced in each primary industry.

Figure 1: Jobs Produced per Thousand Acre-Feet of Water Used in Various Sectors of California's Economy

California Gross State Product and Water

Table 2 and Figure 2 show a comparable huge disparity in the gross state revenue generated by the use of an acre-foot of water in different sectors of California's economy. The use of one acre-foot of water produces \$950,000 in the semiconductor industry, \$162,000 in the petroleum and refining sector, \$1,500 in grape and wine production, and around \$60 growing cotton and alfalfa. **Overall, an acre-foot of water produces \$575,000 in California's industrial sector, \$545,000 in the commercial sector, and \$900 in the agricultural sector.**

Figure 2: Gross State Product (2001) per Acre-Foot of Water Used in Various Sectors of California's Economy

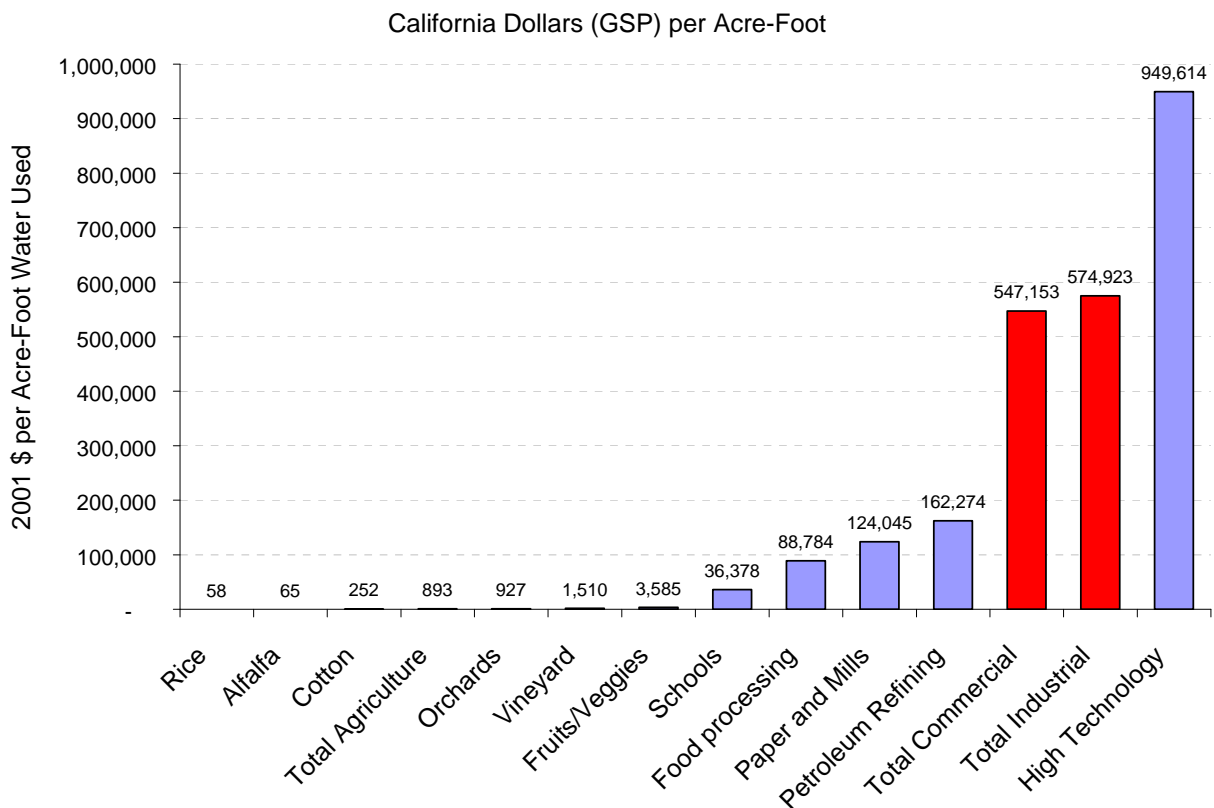


Table 2: Dollars of Gross State Product (2001) per Acre-Foot of Water Used

Economic Sector	Dollars (GSP 2001) per Acre-Foot
Rice	58
Alfalfa	65
Cotton	252
Total Agriculture	893
Orchards	927
Vineyard	1,510
Fruits/Veggies	3,585
Schools	36,378
Food processing	88,784
Paper and Mills	124,045
Petroleum Refining	162,274
Total Commercial	547,153
Total Industrial	574,923
High Technology	949,614

Note: This is a representative subset of California's economic sectors, showing the range of jobs produced in each primary industry.

Data Sources

Agricultural water use data from:

California Department of Water Resources, agricultural data base (CaLWU092404.mdb, qry_AW_State(TAF))

Agricultural employment and income data from:

<http://www.calmis.cahwnet.gov/file/agric/agcalif.xls>,

Department of Food and Agriculture, California Agricultural Statistics Service

<http://www.cdfa.ca.gov/>

Commercial and Industrial Water Use data from:

Gleick, et al. 2003. Waste Not, Want Not: The Potential for Urban Water Conservation in California. Pacific Institute, Oakland, California.

California Commercial and Industrial Employment data from:

"Industry Employment and Labor Force: Annual Average (California)" Employment Development Dept., Labor Market Information Division

[http://www.calmis.ca.gov/file/sichist/cal\\$hawsic.xls](http://www.calmis.ca.gov/file/sichist/cal$hawsic.xls)

California Commercial and Industrial Revenue, Gross State Product, Value Added Data from:

U.S. Department of Commerce, Bureau of the Census, <http://www.census.gov/>

Department of Finance, Economic Research Unit

California Statistical Database, Table D-2 California Gross State Product, 2001, including categories Wholesale Trade, Retail Trade, Financial Institutions, Services, and Government.

[http://www.calmis.ca.gov/file/sichist/cal\\$haw-sic.xls](http://www.calmis.ca.gov/file/sichist/cal$haw-sic.xls)



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