

The Economic Importance of Water: Kansas and Arizona



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November 14, 2016

Overview

- Economic impact of the Central Arizona Project (1973-2010)
- Potential economic losses associated with constrained water availability in 63 Kansas counties in 2062
- The economic measures assessed are:
 - Gross State Product (GSP) – \$ value of all goods and services produced for final demand in a state
 - Employment – Count of full- and part-time jobs, including wage and salary workers and the self-employed
 - Labor income – Includes both employee compensation (wages and benefits) and proprietor income

Caveats

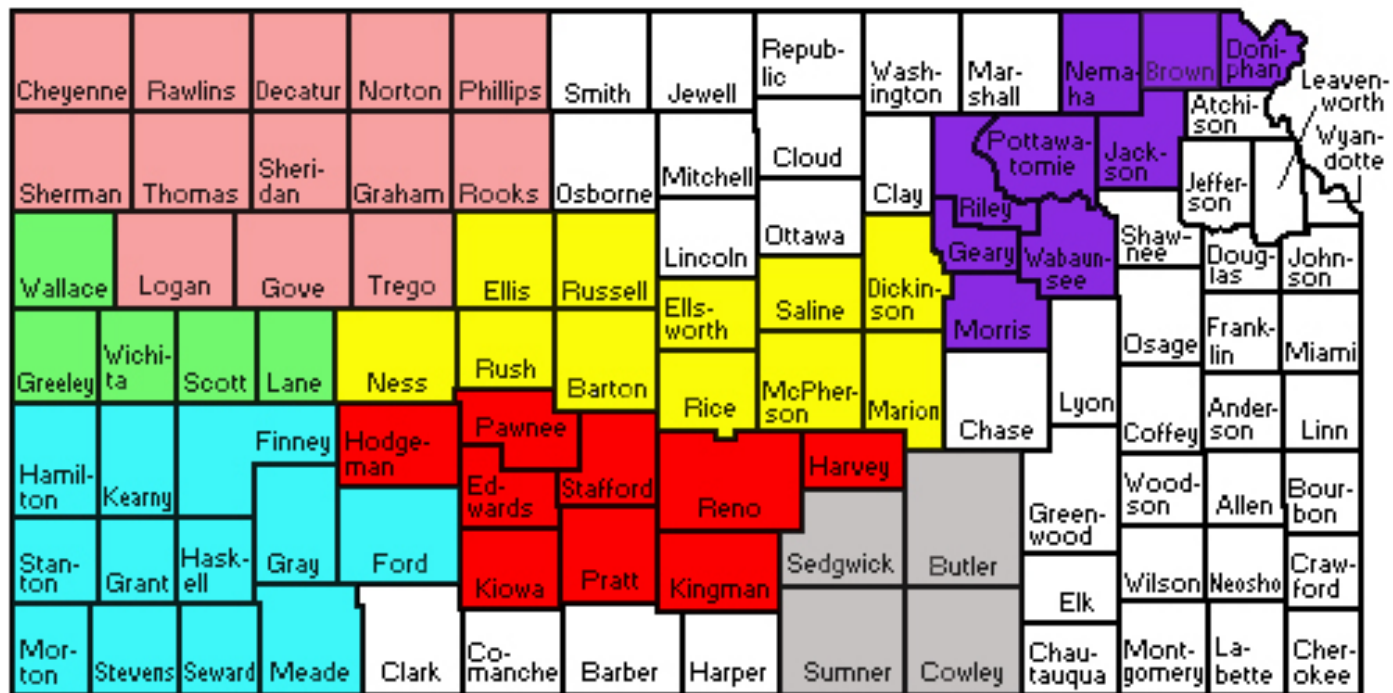
Forecasts are based on:

- **Reduced availability** of water pro rata
- **Non-substitutability** of water to compensate for the loss
- **Non-adaptability** of producers and consumers

Kansas - Assumptions

- Compares the estimated value of the economy in 2062 if water is freely available with a scenario in which the level of water availability is constrained
- Considers 7 areas in the state (63 counties), 5 of which are estimated to experience a water deficit by 2062
- Constrained water estimates supplied by Kansas Groundwater Management District, primarily based on depletion of groundwater supplies and silting (no droughts)
- Modified IMPLAN input-output models used in conjunction with 10-year average BEA sector-specific growth estimates for the State of Kansas

Kansas – Areas of Study



Area 1 Area 2 Area 3 Area 4 Area 5 Area 6 Area 7

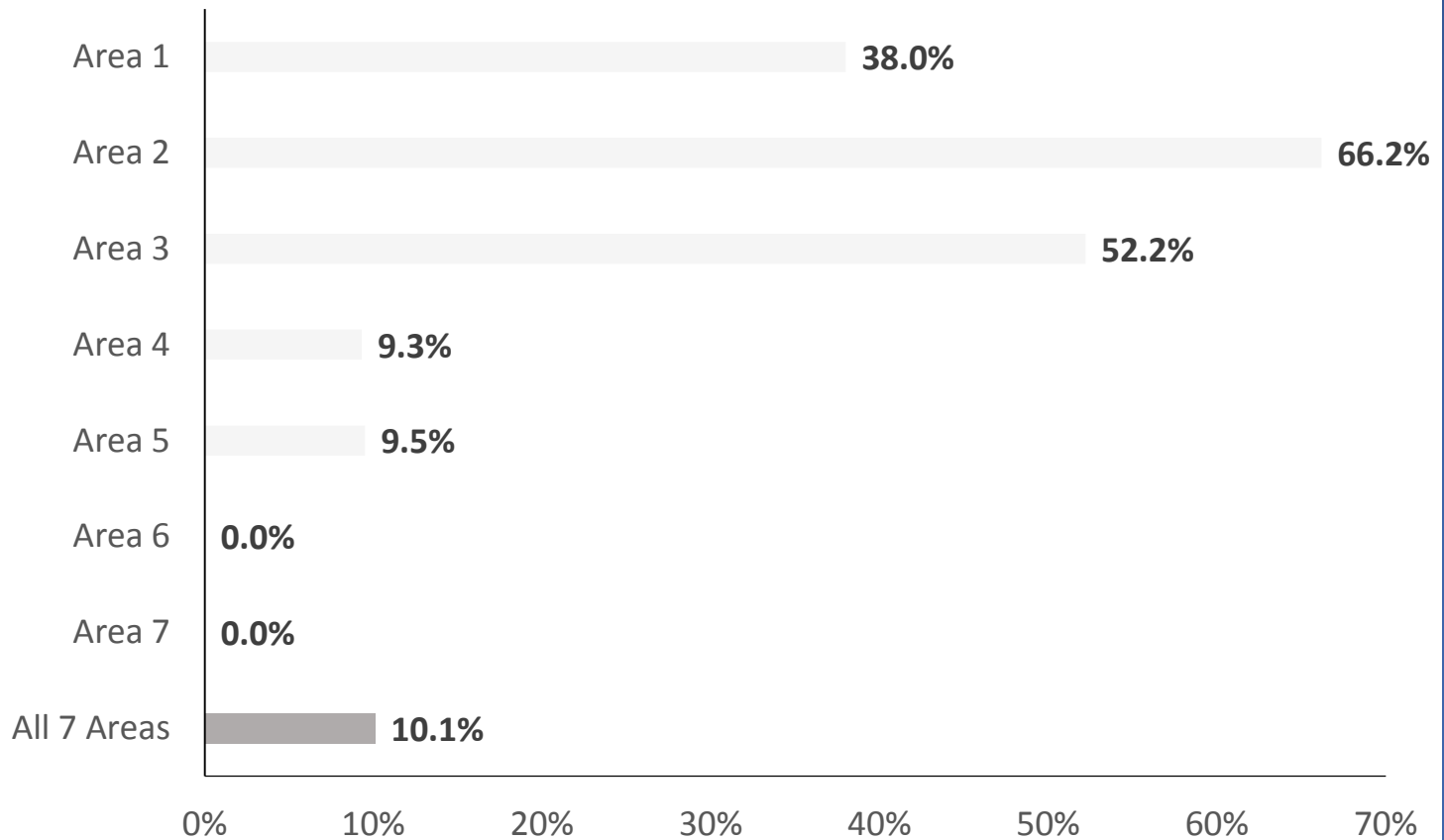
Total Water Availability by Area (Actual and Estimated)

STATE OF KANSAS AREA	AGRICULTURAL		MUNICIPAL & INDUSTRIAL		TOTAL	
	2012 Base Data (AF)	2062 Estimated Availability (AF)	2012 Base Data (AF)	2062 Estimated Availability (AF)	2012 Base Data (AF)	2062 Estimated Availability (AF)
Area 1	650,244	368,442	13,549	7,677	663,793	376,119
Area 2	1,207,950	1,009,715	21,447	17,927	1,229,397	1,027,642
Area 3	2,130,583	879,790	57,965	23,936	2,188,548	903,726
Area 4	148,858	133,838	40,766	36,653	189,624	170,491
Area 5	664,083	600,369	50,457	45,616	714,540	645,985
Area 6	1,102,670	1,102,670	173,893	173,893	1,276,563	1,276,563
Area 7	30,851	30,851	44,702	44,702	75,553	75,553

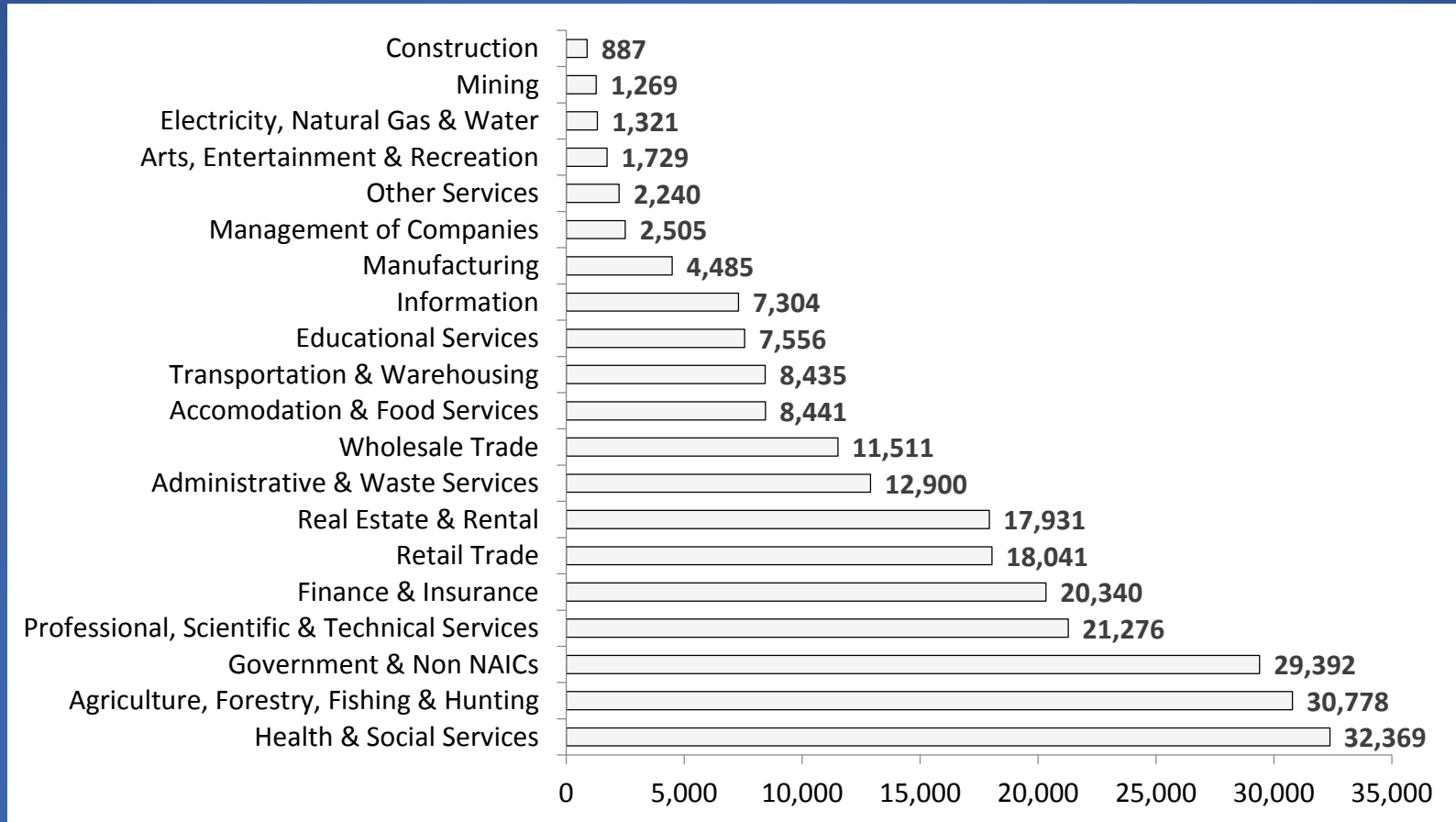
Estimated Losses Associated with Constrained Water Scenario for the State of Kansas Economy in 2062

ECONOMIC IMPACT TYPE	GROSS STATE PRODUCT Billions 2015 \$	EMPLOYMENT Job Years	LABOR INCOME Billions 2015 \$
Direct Losses	12.3	157,764	6.29
Indirect Losses	3.0	35,047	1.4
Induced Losses	3.0	47,897	1.7
Total Estimated Economic Losses	18.3	240,708	9.4

% GSP Losses in Constrained Water Scenario, 2062



Estimated Total Job Losses by Sector in 2062



Estimated Total Economic Losses Associated with Constrained Water Scenario by Area in 2062

STATE OF KANSAS AREA	GROSS STATE PRODUCT Billions 2015 \$	EMPLOYMENT Job Years	LABOR INCOME Billions 2015 \$
Area 1	2.5	38,441	1.3
Area 2	1.4	20,116	0.7
Area 3	10.4	123,961	5.3
Area 4	2.6	36,842	1.4
Area 5	1.4	21,348	0.7
Area 6	-	-	-
Area 7	-	-	-

The Economic Importance of the Central Arizona Project



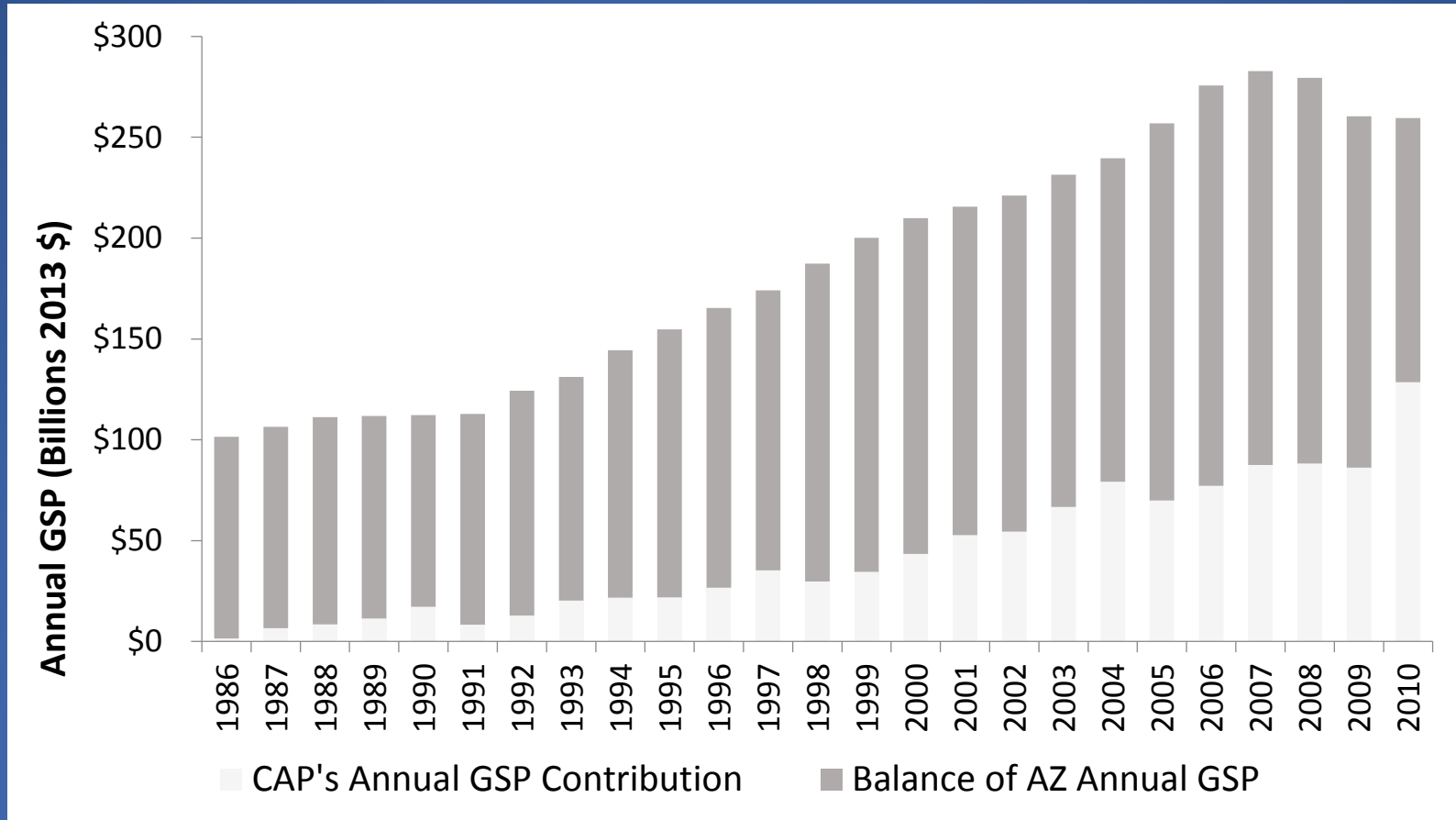
Central Arizona Project (CAP) - Assumptions

- Considers the economic impact of the construction of CAP (1973-1993) and CAP's water supply delivery operations (1986-2010) for the State of Arizona
- Modified IMPLAN input-output models to account for inter-related nature of the economy
- Total field construction costs: \$3.3 billion
- CAP delivered 27.3 MAF water to municipal, industrial, and agricultural customers in Maricopa, Pima and Pinal Counties, 1986-2010

Estimated Total Economic Impacts of CAP's Construction (1973-1993) for the State of Arizona

ECONOMIC IMPACT TYPE	CUMULATIVE GROSS STATE PRODUCT Millions 2013 \$	EMPLOYMENT Job Years
Direct Impacts	996.1	5,030
Indirect Impacts	653.0	1,892
Induced Impacts	715.8	2,490
Total Estimated Economic Impacts	2,364.8	9,412

CAP's Contribution to Annual GSP



CAP's water supply is cumulatively estimated to generate \$1,090 billion GSP (2013 \$) – that is 23.3% of cumulative statewide GSP throughout the 25-year study period

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