

# Is the Lake Powell Pipeline Affordable?

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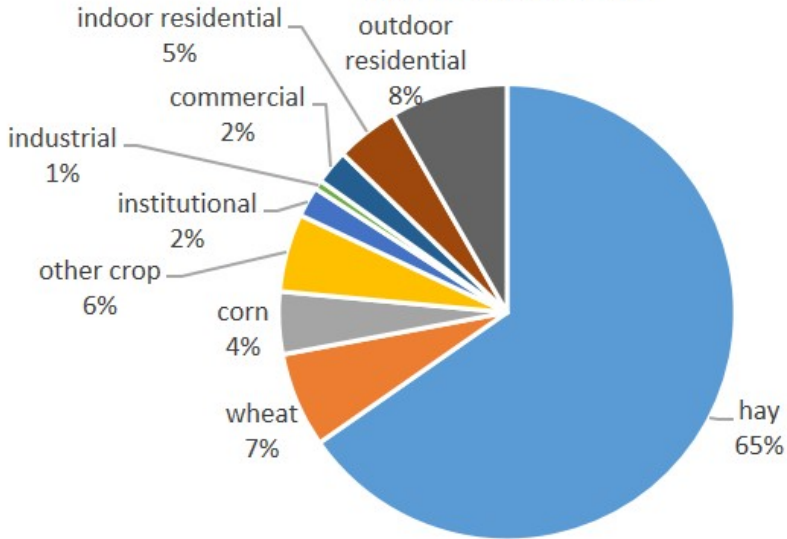
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Thanks to:  
Gail Blattenberger  
Associate Professor of Economics Emeritus  
University of Utah



# Utah Water Use



The “Lake Powell Pipeline Development Act” requires the water districts which receive the water to fully compensate the State for building the pipeline.

How affordable would this be?



# LPP Costs & Revenues

For Washington County only (approx. 94% of total):

	Low Cost	High Cost
Construction Costs	\$1,328,461,944	\$1,750,908,555
“O&M”	\$23,493,231	\$62,867,794
Power sale revenue	\$9,947,747	\$72,005,740

source: Draft Socioeconomics and Water Resource Economics Study Report, Utah Board of Water Resources, 2012

## Other WCWCD income & expenses

- Property Taxes (\$9,938,660 in 2013, rising with population)
- sale of Real Estate
- Debt Service on existing debt
- Impact Fees (\$6102/ERU in 2013, rising with population)
- Water Sales (\$7,013,377 in 2013, rising with population)



## Base Case: No Price or Fee Changes, Low-Cost Scenario

- Utah Code Title 73 Chapter 28 Part 4 Section 402 (4) (a portion of the Lake Powell Pipeline Development Act):  
*“The board shall establish and charge a reasonable interest rate for the unpaid balance of reimbursable preconstruction and construction costs.”*
- Assume the LPP is paid for with a 50-year “mortgage” at 4%.
- Annual debt payment: \$61,840,170.
- WCWCD capital account balance in the year 2064:  $-\$6,732,647,870$ .
- So price and/or fee changes are needed.



# Price and/or Fee Changes that pay off the LPP by 2064:

	Increase in Impact Fee Revenues (factor)	Increase in Water Sales Revenues (factor)
one option	0	4.18713
another option	3.45680	0
yet another option	$1 + \frac{1}{2} \times (3.45680 - 1)$ = 2.228	$1 + \frac{1}{2} \times (4.18713 - 1)$ = 2.594
in general	$1 + (1 - c) \times (3.45680 - 1)$	$1 + c \times (4.18713 - 1)$

for  $c$  between 0 and 1.



# Obtaining Increased Revenue

So:

- Impact Fee Revenue has to increase, or
- Water Sales Revenue has to increase, or
- both of the above have to happen.

# Obtaining Increased Impact Fee Revenue

- The impact fee with no fee changes was \$6,102.
- It has to increase to  $2.228 \times \$6,102 = \$13,598$ .
- The WCWCD can decree this change.
- This will result in the price of the average home site falling by the same amount, so the losers are current Washington County landowners, not newcomers.

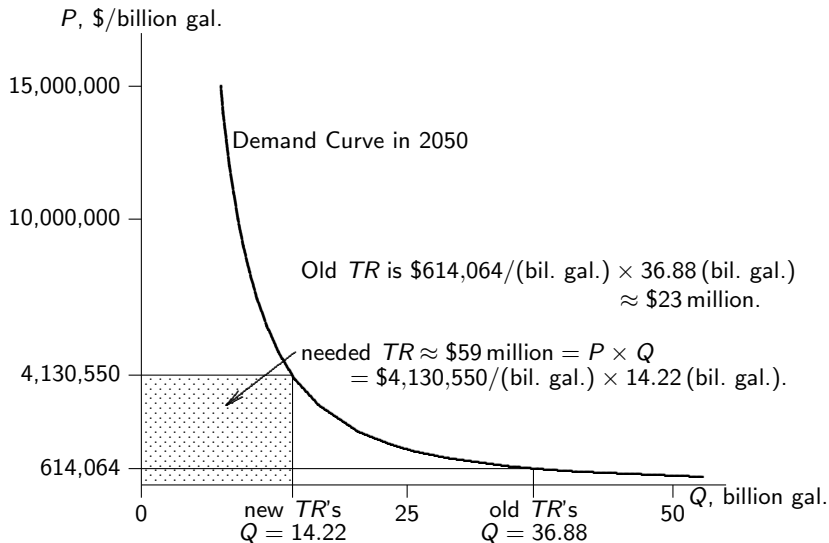


# Obtaining Increased Water Sales Revenue: year 2050

Taking the year 2050 as an example, the water sales revenue with no price changes was \$22,644,522.

We need to increase it to  $2.594 \times \$22,644,522 = \$58,730,040$ .

How?



$4,130,550/614,064 \approx 6.7$



# Summary of Base Case for Economists' Model

- District's annual debt payment \$62 million for 50 years (\$3.1 billion in total).
- Can be paid for by:
  - raising impact fees from \$6,102 to \$13,598 and
  - raising water prices by a factor of 6.7.
- This prices the LPP's water out of the market (at least before 2050).



# The Washington County Water Conservancy District's Model



# WCWCD Repayment Schedule

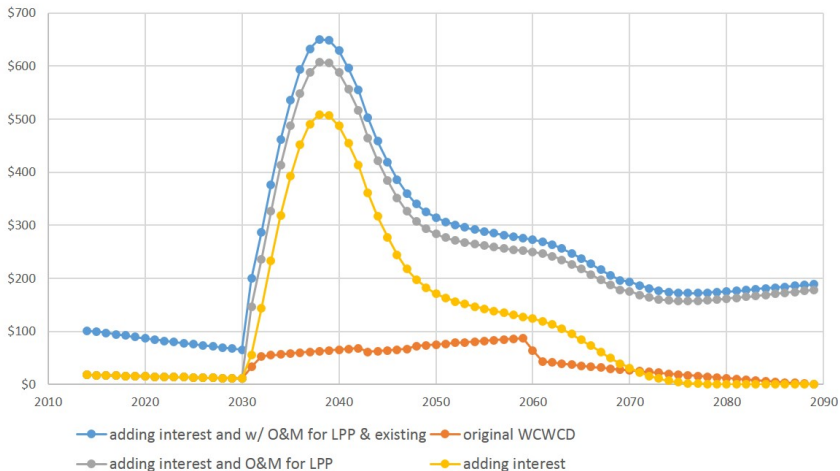
Date	% of 2014 LPP cost to be repaid	million \$ to be repaid	repayment in million 2014 \$
2014		50	50
2032	1.2%	10.8	5.3
2033	2.3%	20.7	9.8
2034	2.3%	21.3	9.7
⋮	⋮	⋮	⋮
2050	3.8%	35.3	8.6
⋮	⋮	⋮	⋮
2060	5.1%	46.8	7.7
sum	100%	969	306

Note: Year 2061 is actually the last year of payments; fixed in our version of the WCWCD spreadsheet.



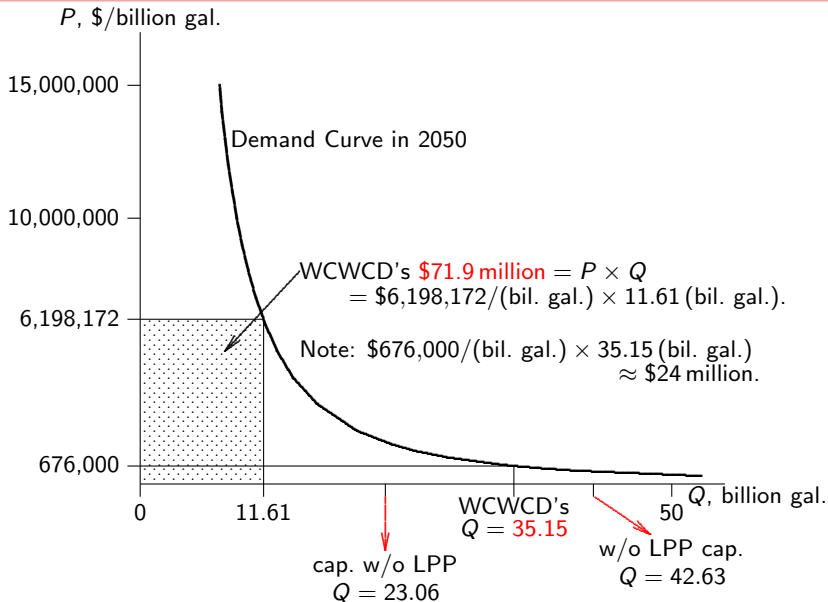
# Problems with the WCWCD model so far

Cost per person per year (current dollars, not 2014 dollars)





# Inconsistent: 35.15 billion gallons and \$71.9 million



# Summary of the WCWCD Model

- Uses low values for the LPP cost and for the non-LPP water system capacity.
- Omits operations and maintenance costs.
- Omits reimbursement for interest payments made by taxpayers of the State of Utah.
- Does not account for demand curves, invalidating its conclusions about prices.



# “Envision Utah” survey of 2015

- Scenarios presented: either construct the LPP and the Bear River projects; or
- “Very little grass is used in landscaping for yards and public open spaces.”



# Walter P. Cottam, "Is Utah Sahara Bound?" 2/19/1947

*"Mr. Philip Francis De LaMare, the last male pioneer of Tooele. . . often related that on his arrival in Tooele as a boy he remembered a valley full of high waving grass, a veritable herder's paradise, and said he, it was not an uncommon happening for stockmen to be unable to find their animals because of being lost in this high grass which spread over the valley.*

*"Today Tooele Valley is known as Utah's dust bowl."*

source: Eleventh Annual Frederick William Reynolds Lecture, University of Utah. Reprinted in *Bulletin of the University of Utah*, Vol. 37 No. 11.



# Better Information for Better Models

**Economists:** Water projects' financial costs, investigated openly.

**Landscape Architects:** Xeriscape possibilities in northern Utah.

**Geographers:** Farmland-to-urban land use conversion.

**Biologists & Physicians:** Water projects' ecological costs.

**Business-people:** Water projects' damage to their firms.

**Water Districts:** Water's true cost (no property-tax obfuscation of it);  
water use data.

**Attitudes of neighboring states:** Is competition the only paradigm?



# Let the market work

- Utah farmers cannot sell “wet” water, shackled by 19<sup>th</sup> century water law.
- In Australia, a farmer can, for example, sell a week’s unneeded water online, and it’s delivered the next day.

The water infrastructure we really do need:

- ① the legal infrastructure to allow farmers to sell & buy “wet” water; and
- ② the physical infrastructure to allow farmers to sell & buy “wet” water.

