



THE ECONOMIC IMPACTS OF UMATILLA BASIN AQUIFER RECHARGE PROJECT

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Water Allocation Scenarios

Project Options	Total Withdrawal (acre-foot)	Proposed Allocation of Stored Water (acre-foot)			
		Irrigation	River Flow Augmentation	Municipals & Domestic	Basalt Aquifer Replenishment
County Line- #5&6	54,900	37,000	14,000	600	3,300
County Line- #7	99,830	68,664	24,000	1,000	6,166
Full Project (3 CGA)	158,330	113,664	27,000	7,000	10,666



Study Assumptions

- Establish baseline economics of the region
- Economic impact with and without recharge project
- Economic benefits of recharge from two perspectives:
 - National Economic Development (NED), and
 - Regional Economic Development (RED)
- Use national IMPLAN input-output model
 - Use 2006 database (representative of present economy)
- Project is in planning-level engineering investigation phase and necessary data for a detailed economic analysis are not yet determined



Economic Baseline

- Umatilla and Morrow counties (Basin) rely on employment as main source of income. In 2006, labor income accounted for 65% of total personal income which is similar to State's average of 65%.
- Basin's 2006 per capita personal income (PCPI) of \$25,254 represents 76% of Oregon's PCPI and 69% of the national PCPI.



Economic Baseline

- Farm production, frozen food and cheese manufacturing, vegetable canning, mining, utilities, transportation and warehousing sectors constitute the economic base (or engine) of the basin.
- These sectors provide core employment and income on which the rest of the local economy depends.
- The basin's agriculture accounted for 12% of Oregon's 2006 total farm sales (or \$536 million).



Economic Baseline

- In 2006, agricultural industry of the Basin accounted for:
 - 21% (or \$1.4 billion) of the Basin's total direct value of output
 - 22% (or 10,090 jobs) of the Basin's total direct employment.
 - The Basin's growers and food processors together exported more than \$1.027 billion to domestic and foreign markets, accounted for 42% of total basin's export.



Economic Baseline

- In 2006, including the secondary (ripple) effects, agriculture industry accounted for:
 - 27% of total value of output (or \$1.8 billion)
 - 30% of the Basin's total private employment (14,000 jobs)
 - 16% of the basin's total labor income (\$700 million).
- Majority of economic contribution of agriculture industry is attributed to **irrigation**.



National Economic Development (NED)

- Economic value of irrigation water for the Basin \approx \$95/ac-ft (based on crop budget)
- Economic value of Umatilla River flow augmentation \approx \$85-\$124/ac-ft (based on historical USBR water exchanges for instream use and data from other basins).



National Economic Development (NED)

- Economic value of water for aquifer replenishment \approx \$95/ac-ft (based on opportunity cost of stored water).
- Economic value for municipal uses \approx \$234/ac-ft (based on value of water for municipals in western states).
- Economic benefits were estimated at **\$99**, **\$99**, and **\$103**/ac-ft for the 3 engineering scenarios.



National Economic Development (NED)

- Among all Columbia River uses (recreation, fishery, navigation, hydropower) only hydropower shows a measurable adverse economic impact. The foregone hydropower generation loss is estimated at:

County Line#5&6	\$4.13/ac-ft
County Line#7	\$4.22/ac-ft
Full-Project	\$4.44/ac-ft



National Economic Development (NED)

- Annualized initial capital costs for County-Line options 5 &6, and 7, and Full-Project \approx \$26, \$33, and \$33 per ac-ft, respectively (based on 50-year planning horizon and 2.44% current U.S. Treasury Real Long-Term Rate discount rate)
- Annualized capital cost + annual O&M cost for County-Line options 5&6 and 7, and Full-Project \approx **\$116**, **\$120**, and **\$118** per ac-ft, respectively.



Farm Gate Production Values

	County Line-5&6, 12,701 acres		County Line-7, 23,561 acres		Full-Project, 39,006 acres	
	Proposed Crop Mix	Farm Gate Production Value	Proposed Crop Mix	Farm Gate Production Value	Proposed Crop Mix	Farm Gate Production Value
	(%/ac)	\$	(%/ac)	(\$)	(%/ac)	(\$)
Alfalfa hay	24%	\$ 2,514,760	28%	\$ 5,382,433	28%	\$ 8,909,893
Field Corn	12%	\$ 1,023,584	14%	\$ 2,190,813	14%	\$ 3,626,596
Potatoes	16%	\$ 6,332,319	18%	\$ 13,553,293	18%	\$ 22,435,650
Onions	12%	\$ 7,596,405	14%	\$ 16,258,862	14%	\$ 26,914,356
Wheat-full irrigation	11%	\$ 721,247	13%	\$ 1,543,712	13%	\$ 2,555,407
Sweet corn, pro.	6%	\$ 569,250	3%	\$ 569,279	3%	\$ 942,364
Green Peas, proc.	6%	\$ 377,214	3%	\$ 373,244	3%	\$ 617,855
Peppermint for Oil	8%	\$ 1,188,796	4%	\$ 1,188,855	4%	\$ 1,967,989
Grass seed	7%	\$ 1,436,049	4%	\$ 1,436,120	4%	\$ 2,377,304
Other Veg. crops	4%	\$ 595,922	2%	\$ 595,952	2%	\$ 986,518
TOTAL	106%	\$ 22,355,547	103%	\$ 43,092,562	103%	\$ 71,333,930

* The crop yields and crop prices are used in the calculation of farm gate production values are presented in Table 14.



Regional Economic Impacts, 2006\$

Project Options	Output (2006\$)		Labor Income (2006\$)		Employment (# of jobs)	
	Direct	Total	Direct	Total	Direct	Total
County-Line #5&6	\$80,635,422	\$116,265,246	\$12,573,426	\$24,150,857	330	679
County-Line #7	\$144,770,763	\$208,720,310	\$ 22,656,434	\$ 43,452,201	606	1,233
Full Project	\$239,020,310	\$344,264,806	\$37,346,288	\$71,600,591	1,040	2,074

* Labor income consists of employee compensation plus proprietor's net profit



Regional Economic Development

- The project would increase regional business activities:
 - **\$116-\$344** million, depending on the project options.
 - **\$80-\$239** million is direct impact
 - **\$36-\$105** million is the secondary impact.
- The project would add **679-2,074** jobs
 - **330-1,040** jobs are direct
 - **349-1,034** jobs are indirect
- The project would increase annual regional labor income (employee compensation plus proprietor's income):
 - **\$24-\$72** million, depending on the project options.
- Assuming a 7% marginal tax rate, the project would increase annual State tax revenue:
 - **\$1.7-\$5** million, depending on the project options.



Regional Value of Irrigation Water (2006\$)

Project Options	Direct (\$/ac-ft)	Total* (\$/ac-ft)
County Line#5 &6	\$340	\$652
County Line#7	\$330	\$633
Full Project	\$328	\$629

* Total includes direct plus the secondary impact.



Total Annual Regional Benefits and Costs, 2006\$

Project Options	Regional Annual Benefit* (\$/ac-ft)	Annual Total Cost** (\$/ac-ft)
County Line#5 &6	\$264-\$502	\$116
County Line#7	\$257-\$489	\$120
Full Project	\$256-\$486	\$118

* The range in Regional Benefits include direct regional impact and total regional impact (direct plus the secondary impact).



Summary

Based on the assumed discount rate and planning horizon, the Umatilla Basin aquifer recharge project appears to be economically feasible from Regional and State perspectives.