

## DEBT REPAYMENT OBLIGATIONS CREATED BY THE PROPOSED BEAR RIVER DEVELOPMENT PROJECT

This research policy brief summarizes a report that was commissioned by U.S. Magnesium to ascertain what expenses the northern Utah cities slated to receive water from proposed Bear River Development (BRD) would have to pay in return. The analysis presented in this brief and report makes comparisons between the costs of water from the BRD and the costs of other available water supplies in northern Utah.

Bear River Development is a water project proposed by the Utah Division of Water Resources, an agency under the Utah Department of Natural Resources. The purpose of BRD is to provide additional water to the Wasatch Front region and in particular to residents in Salt Lake, Weber, Davis, Box Elder and Cache Counties.

The project would divert 220,000 acre-feet of water from the Bear River through the construction of a 90-100 mile pipeline and several as-yet-unselected dams and reservoirs. Bear River Development was authorized by the Utah Legislature in 1991 in the Bear River Development Act, which allocates the water for the project to participating counties and stipulates other aspects of the project. The Bear River is the principal surface water source to the Great Salt Lake, so the proposed Bear River Development Project will affect the future of the Great Salt Lake and the businesses, such as the brine shrimp industry and U.S. Magnesium, which depend upon it for their operations.

### Key findings

- If all four water conservancy districts participated in the proposed Bear River Development in the near future, none of these agencies would be able to make their annual debt payments for the project given their current net revenues.
- Result of the report suggests that each of the four water conservancy districts would likely have to carefully weigh whether or not they should opt out of the Bear River Development. If one water conservancy district opts to not participate in the co-financing of Bear River Development, it may shift the burden of costs to other remaining water conservancy districts.

### Research question

For nearly the last 20 years, an ongoing conversation about the proposed Bear River Development project has garnered the attention of the public, the media, elected officials, industry leaders and conservationists. Although much attention has focused on the environmental impacts of this project, relatively little focus has been given to the financial repercussions of

this proposal.

The findings in this brief summarizing the report offers the first step forward in examining the possible financial impacts of the proposed Bear River Development upon both the ratepayers and taxpayers of the Wasatch Front whom this project is intended to serve.

The primary question our economic analysis seeks to address is how the debt from the construction costs of the Bear River Development would affect the four water conservancy districts slated to receive water from the project. (The water delivery in these areas would be managed by the Jordan Valley Water Conservancy District (WCD), the Weber Basin WCD, the Cache WCD and the Bear River WCD. ) We obtained a reasonable estimate of construction costs from the most recent Bear River Development engineering report, then adjusted for inflation and for a base level of environmental mitigation.

After we amortized these project costs into a 30 year loan with an interest rate of 4%, we compared the annual debt payments of each of the four water conservancy districts receiving water from the project to their current net annual revenues. This test of affordability offered a preview of how the rating agencies might rate these bonds, were they to be issued on the private market.

Our analysis revealed that if all four water conservancy districts participated in the proposed Bear River Development in the near future, none of these agencies would be able to make their annual debt payments for the project given their current net revenues. The

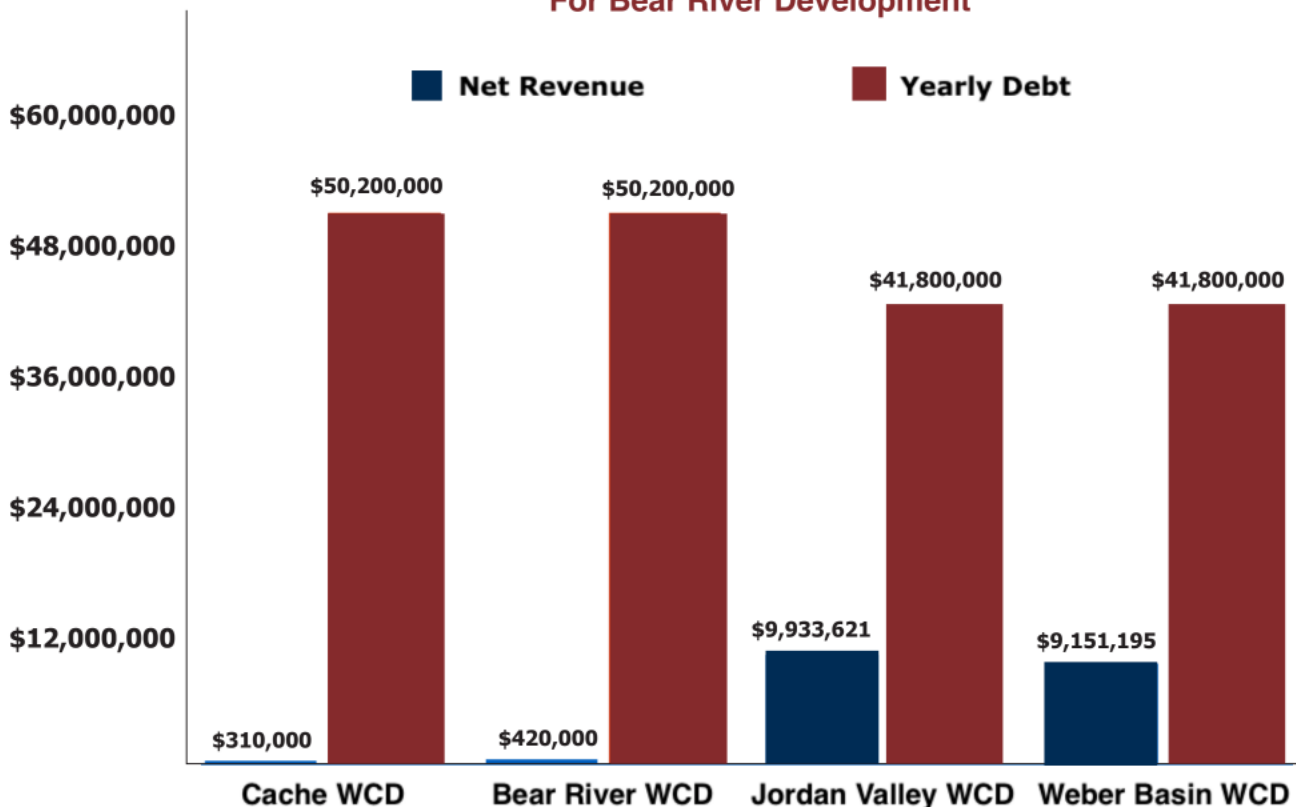
bar graph below compares the current net annual revenues of each of the four water conservancy districts with their annual debt payment for the Bear River Development.

This result means each of the four water conservancy districts would likely have to carefully weigh whether or not they should opt out of the Bear River Development. If one water conservancy district opts to not participate in the co-financing of Bear River Development, it may shift the burden of costs to other remaining water conservancy districts. This creates a complicated set of scenarios of differing engineering features, varying project costs and increased or decreased debt burdens on each water district.

We created a 15-scenario model which address all the permutations of water conservancy district participation in the Bear River Development project, each permutation associated with its unique required construction cost. In every scenario permutation of this model, financing the Bear River Development is not financially viable without a massive increase in revenues by each of the participating water districts—some more than others.

Although increasing water rates might at first be thought of as a panacea for raising the revenues

**Water District Net Revenues vs Annual Debt Payments For Bear River Development**



needed for annual debt payments, the needed revenue increases are so significant that these rate increases would likely result in major decreases in water use, which questions the need for Bear River water for future population growth. More research would be required to determine specific water rate increases necessary for each community Bear River water is intended to serve. Furthermore, urban water rate increases of this magnitude may make agricultural-to-urban water sales very highly attractive to both farmers and urban water districts, further negating the Bear River Development's value.

Our analysis is limited in nature because the State has not estimated costs of opt-out scenarios nor has any district yet decided to raise the needed revenue using specific policies which we could then analyze. Nevertheless we can demonstrate that the Bear River Development would require these four water conservancy districts to increase their revenues very substantially, in turn forcing the cities making up the districts to do the same.

Our numerical analysis is all contained in a spreadsheet which the public is invited to download and then critique or use to see how much the results change if the spreadsheet's parameters, such as the interest rate, change.

## Scenario Assumptions

The cost estimates for each Bear River Development participation scenario vary depending upon the geography being served and the engineering features needed to serve that geography. For each scenario, we examined which engineering components of the Bear River Development as assumed in Combination B were necessary for the water districts participating in the scenario. For each scenario, the least-cost combination of reservoirs that could provide the needed water storage was chosen.

Scenario 1 entails all four water districts participating in Bear River Development.

In Scenario 2, where Bear River WCD, Jordan Valley WCD, and Weber Basin WCD all participate in the project but Cache WD does not, we removed the Cache Project Facilities portion of Combination B. We also removed the Cub River Reservoir as the project will provide less water and thus does not need as much storage.

As discussed above, it is likely that neither the Cache WD nor the Bear River WCD will participate in the Project. This would lead to Scenario 6, in which 50,000 acre-feet of water would be delivered to Weber Basin WCD and 50,000 acre-feet of water would be delivered to Jordan Valley WCD. We

calculate that project costs in Scenario 6 would fall to 80% of the full Scenario 1 project costs, but nevertheless the DSCRs for the Weber Basin WCD and the Jordan Valley WCD would fall to 0.12 and 0.17, respectively.

One aspect of our methodology leads to an upward bias in costs. In the scenarios where Jordan Valley WCD but not Weber Basin WCD participate in the project or scenarios where Weber Basin WCD but not Jordan Valley WCD participate in the project, we assumed that the West Haven WTP will still cost the same as in the Scenario 1, even though in these two situations the treatment plant could be built at a smaller, less costly scale. Similarly, the pipe diameter of the Bear River Pipeline could be made smaller if it serves fewer districts, but the State has not studied what these cost savings might be so we cannot take them into account. On the other hand, our decision to put operations and maintenance expenditures at \$50/acre-foot in 2010 prices when the State gives \$188/acre-foot in its 2019 study leads to a downward bias in costs. Omission of Great Salt Lake mitigation expenditures leads to another downward bias in costs.

Furthermore, the Debt Service Coverage Ratios we have discovered are so low that no realistic cost decreases would get them out of junk-bond range. Scenario 1 has all the districts participating, and has DSCRs of zero for Cache WD and 0.01 for the Bear River WCD. No prudent lender or borrower would proceed with anything close to this financing situation. The Scenario 1 DSCRs for Weber Basin WCD and Jordan Valley WCD are 0.22 and 0.31, respectively, very far into the junk-bond range.

In Scenario 12 only the Jordan Valley WCD remains. By our estimates, project costs in this scenario fall to 47% of the full Scenario 1 project costs, but nevertheless the Jordan Valley WCD's DSCR falls to 0.15.

For another perspective on how unsatisfactory Scenario 12 would be, we investigated its implications for the retailers (mostly cities) within the Jordan Valley WCD service area which are forecasted to need Bear River water in the future. This information was based upon the Utah State Water Plan, prepared by the Utah Division of Water Resources as described in the June 2010 Jordan River Basin Plan. This agency makes projections for water shortfalls for cities in the Jordan River Basin in Table 17. If one supposes that Bear River water, and therefore debt, is allocated to the cities in proportion to their projected 2060 water deficits then we can calculate how much of Scenario 12's \$1.50 billion cost (debt) would be borne by each retailer. The result, in millions of dollars, is shown in Table 9.

**Table 9: Jordan Valley WCD Debt from Bear River Development, Scenario 12**

Water System	Annual Payments for Bear River Development	Total Debt from Bear River Development
Bluffdale	\$5,150,000	\$79,200,000
Draper City Water	\$2,650,000	\$40,700,000
Water Pro	\$4,380,000	\$67,300,000
Granger-Hunter ID	\$8,470,000	\$130,200,000
Herriman	\$6,160,000	\$94,700,000
Kearns ID	\$15,790,000	\$242,700,000
Magna Water	\$6,520,000	\$100,200,000
Midvale City Water	\$1,450,000	\$22,300,000
Riverton Water	\$6,870,000	\$105,600,000
South Jordan	\$12,700,000	\$195,200,000
South Salt Lake Water	\$1,230,000	\$18,900,000
Taylorville-Bennion ID	\$3,810,000	\$58,600,000
West Jordan City Water	\$11,820,000	\$181,700,000
Total	\$87,000,000	\$1,337,000,000

Scenario 6 DSCRs, which were .12 (Weber Basin WCD) and .17 (Jordan Valley WCD), would rise to .17 and .24. The Scenario 12 Jordan Valley WCD DSCR of .147 (rounded to .15) would rise to .155. Furthermore, considering that our environmental mitigation costs include no mitigation for the Great Salt Lake, it is not unreasonable to think that they may be underestimates not overestimates.

## Further reading

For more information and a full list of all of our results, the reader is invited to download the Excel spreadsheet generating the results from <http://content.csbs.utah.edu/~lozada/Research/BearRiverScenarios.xlsx> and its accompanying Technical Appendix from [http://content.csbs.utah.edu/~lozada/Research/ExplanationOfBearRiver\\_Spreadsheet.docx](http://content.csbs.utah.edu/~lozada/Research/ExplanationOfBearRiver_Spreadsheet.docx).

## Policy considerations

Our overall conclusion is that with current revenues, if the water districts had to get their own financing on the free market for the Bear River Development (instead of being able to get financing from the State), obtaining that financing would be impossible. Furthermore, with current revenues, if the State lends the funds to the water districts it should place high probability on not being paid back, and the districts should place high probability on becoming insolvent. It is true that districts can increase their revenues, for example by raising water rates. But increased water rates will reduce water demand, calling into question the need for the Bear River Development water in the first place. Districts might also be able to use interest-only or negative-amortization financing, to back-load repayment obligations. On the free market such structuring usually results in a higher interest rate and lower debt rating, which might not be the case here. In addition, as mentioned above, there are reasons to think that our cost estimates for the opt-out scenarios are overestimates, and we recommend the State develop more accurate cost estimates for the opt-out scenarios. On the other hand, pre-construction budget projections often turn out to be underestimates, and the costs we use for operations and maintenance are also likely to be underestimates.

Environmental mitigation costs are responsible for some of the low DSCRs but even if mitigation costs were zero the DSCRs would not increase much. The Scenario 1 DSCRs, which were zero, .008 (rounded to .01), .22, and .31 for the Cache WD, Bear River WCD, Weber Basin WCD, and Jordan Valley WCD, respectively, would rise to zero, .011, .29, and .41. The



Economic Evaluation Unit

