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ADVOCATES**

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The Flaming Gorge Pipeline: A Liability No One Can Afford

The proposed Flaming Gorge Pipeline would pump 250,000 acre feet (AF) — 81 billion gallons — of water annually from the Green River and Flaming Gorge Reservoir in Wyoming to the Front Range of Colorado. The project has been proposed by both a private developer, Aaron Million, and a public partnership, the Wyoming-Colorado coalition.

If built, the project would deliver the most expensive water in Colorado's history, with costs dependent on a host of factors. Western Resource Advocates identified several critical questions about the economics of the Flaming Gorge project, and contracted with Honey Creek Resources¹ to investigate those questions.

The enormous costs and financial impacts of investing in the Flaming Gorge project are relevant for private investors, public bonding agencies, city councils or water utilities considering large capital outlays, and the state government agencies that would likely be called on for funding support.

¹ Honey Creek Resources is a well-regarded economics and financial consulting firm that has worked for water utilities, federal agencies, and state agencies in Colorado.

2260 Baseline Rd, Suite 200, Boulder, CO 80302
www.westernresourceadvocates.org

Find the full report at www.westernresourceadvocates.org/pipeline

Q & A

What is the likely cost of water from the Flaming Gorge Pipeline?

During the first 10 years of operation, project water would likely cost almost \$4,700/AF/yr for a privately developed project, and \$2,800/AF/yr for a public project.

How does the cost differ if the project is developed by a public or private entity?

Water from the pipeline would be expensive, regardless. While a private project may have lower construction costs, it will also include profits for the developers; the water will cost 67% more than under a public project.

How does this compare to other, proposed water supplies for Colorado?

Water delivered by the Flaming Gorge Pipeline would cost 2-10 times more than other proposed or recently developed new supplies. Denver Water's Moffat Expansion, for example, would deliver water at approximately \$530/AF/yr, while the more expensive Southern Delivery System would provide water at an estimated \$1,500/AF/yr.

Who would, or could, finance this project?

The public project proponents likely could not finance \$6 billion in debt; if they sought state subsidies, it would strain the state of Colorado's budget, which already falls short of meeting all demands.

What are the potential economic impacts on other sectors?

The Flaming Gorge Pipeline would deplete flows in the Green River and Flaming Gorge Reservoir levels, reducing tourism and recreation revenues by an estimated \$59 million each year. In addition, the increased variability in flows and reservoir levels could result in large fluctuations in annual revenues. The increased risk of a Colorado River Compact call would have extensive economic impacts on water users throughout the state.

The Most Expensive Water in Colorado's History

Water delivered by the Flaming Gorge Pipeline — whether developed as a public or private project — would cost more than any other large water project developed in the state of Colorado (Figure 1). In fact, it would cost 2-10 times more than some of the recently proposed or developed projects, with cost estimates that range from \$530-\$1,500/AF/yr.

For comparison, a household in Denver would pay approximately \$1,070/AF of water today. That cost includes the cost of treatment, distribution, and staff time, which are not included in the Flaming Gorge cost estimates. The cost of water depends on a host of factors — construction costs, financing terms, and water demand and availability are the most critical pieces. To evaluate the cost of water delivered by the project, Honey Creek Resources developed a cash flow analysis model for both a private and public project. The model evaluates project financing during two time periods: the initial 10 years of the project, when the project faces the highest level of financial risk, and over the long-term life of the project (the years 2033-2060), as shown in Table 1.

Private Project

If the project is built privately, the cost of water during the initial 10 years would be considerably more expensive than over the long term. The average cost is estimated to exceed \$4,670/AF/yr. Over the long-term operation of the project,

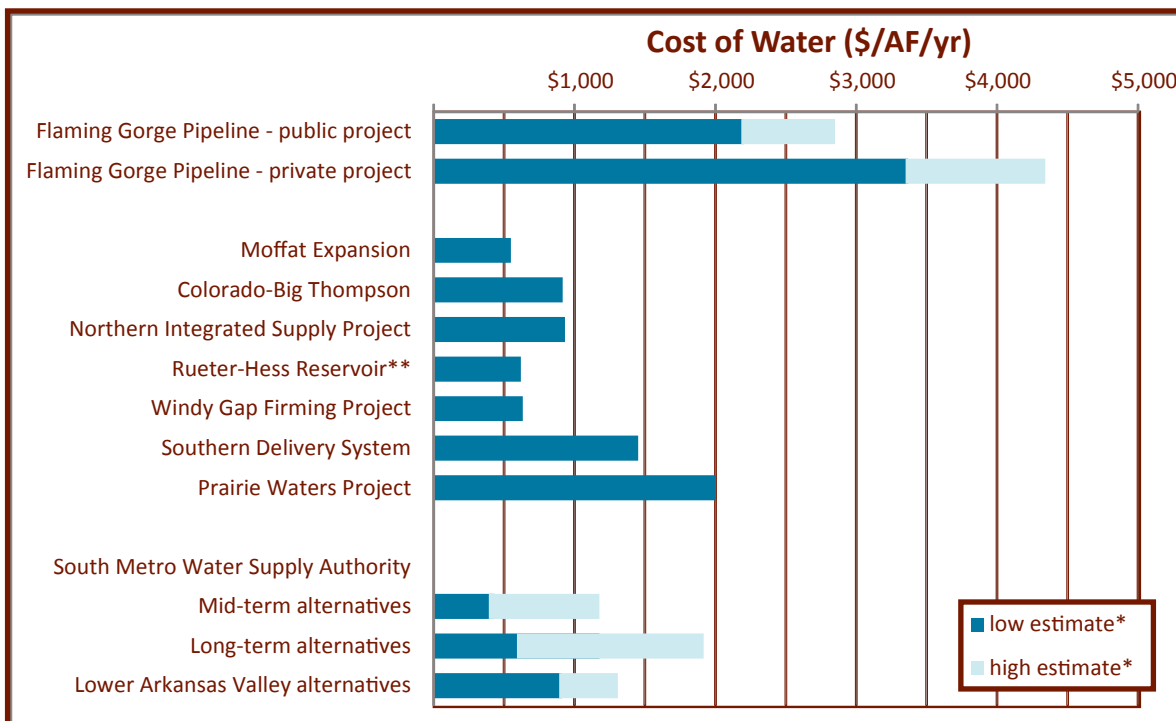
the cost of water is slightly lower — approximately \$3,360/AF/yr.

The volume of water needed in early years has a large influence over the initial cost of water. If, for example, demand for project water is less than 100,000 AF/yr when the project begins operation, the cost per gallon of water delivered could be much higher. For this reason, uncertain demands should be a real financial concern for private financiers and public participants. Take the following examples:

- Douglas County submitted a letter to the Army Corps of Engineers in 2009 expressing interest in 40,000 AF of water from Million's proposed project. However, Douglas County's water demands at build-out total 40,000 AF/yr, and the WISE Partnership between Denver Water, Aurora, and cities in the south Denver metro area could provide up to 60,000 AF/yr over the long term.
- Pikes Peak Regional Water Authority expressed interest in 22,600 AF/yr of project water, but has also recently developed a preliminary agreement for water from the Super Ditch (at a projected cost of \$500/AF/yr). Pikes Peak is unlikely to need water from both sources.

If the demand for water from the Flaming Gorge Pipeline does not materialize, remaining participants (or private investors) could be on the hook for considerably more expensive water.

Figure 1. Range of new water supply costs for Front Range providers.



* The low estimate for the Flaming Gorge pipeline costs reflects long-term water costs (2033-2060); the high estimate reflects the water costs for the first 10 years of operation (2023-2032).

** Rueter-Hess Reservoir costs include construction costs only, not water rights.

† Each project may incur additional, unforeseen costs such as treatment plant upgrades and other mitigation, some of which may be substantial. These costs are not included in the calculations.



Public Project

If developed as a public project, the cost of water would still exceed the cost of all other new water supplies in Colorado. During the first 10 years of operation, the average cost of water would exceed \$2,840/AF/yr.

Over the long-term operation of the project, the average cost of water falls slightly, to approximately \$2,190/AF/yr. This price assumes that demand for the full 250,000 AF of first-use water (in addition to reuse) exists — an unlikely proposition at these prices.

	Initial 10 years of operation, 2023-2032	Long-term operation, 2033-2060
Private project	\$4,670	\$3,360
Public project	\$2,840	\$2,190

Table 1. Comparison of water costs, \$/AF/yr (2011 dollars, 50th percentile values).

Who Can Pay? No One.

Paying for the proposed pipeline would prove challenging. The level of public financing required is highly uncertain and possibly not achievable without large state or federal subsidies.

Other than the state of Colorado, no entity provides Front Range water agencies with the authority to issue bonds, let alone as much as \$6 billion in bonds. The South Metro Water Supply Authority, for instance, cannot issue bonds, although its individual members can. Individual cities' and utilities' bonding capacity depends on numerous factors, but would almost certainly not cover the full capital cost of the project. For example, the current debt of all South Metro districts is less than \$1 billion — nowhere near the \$6 billion needed.²

If project proponents are unable to fund the project, they would likely turn to state or federal agencies for subsidies.

² Pinery Water and Sanitation District, "Future Water Supply Projects and Associated Costs," public meeting presentation, November 16, 2010.

Federal funding of water projects is highly unlikely, and funding the cost of the project would place a substantial strain on the state of Colorado's budget. The state's proposed 2011-2012 budget totaled \$20.6 billion, which included a shortfall of \$715 million.³ Paying the interest and principal on the Flaming Gorge Pipeline's construction bonds alone would cost the state over \$370 million per year.⁴

These costs would strain existing local and state government budgets, and would reduce government agencies' ability to fund other essential capital projects — improving roads, schools, and existing infrastructure in need of repairs.

Tipping the Apple Cart

The Flaming Gorge Pipeline also poses a risk of overdeveloping Colorado's share of water from the Colorado River. If Colorado's overuse of water contributes to a river-wide shortage, it would spark a compact call. This would result in the curtailment of water diversions from the Flaming Gorge Pipeline and other Colorado River diversions, including current diversions to the Front Range (like the Windy Gap, Fryingpan-Arkansas, and Colorado-Big Thompson Projects) and on the Western Slope — tipping the apple cart.

Even if a compact call were to reduce or eliminate diversions through the Flaming Gorge Pipeline, project participants' bond repayment obligations would remain unchanged. For example, if a compact call curtails deliveries in one out of five years, managers of the Flaming Gorge Pipeline would increase the cost of water during "good" years (i.e., four out of five years) in order to have sufficient revenue to cover the bond payments during a dry year. Under these conditions and the public financing scenario, the cost of water would increase from \$2,200/AF/yr of "wet" water to \$2,900/AF/yr, with annual shortages dependent on the impacts of climate change.

³ Information from Colorado Governor Bill Ritter's FY 2011-2012 Budget Request, presentation to the Joint Budget Committee, November 2, 2010.

⁴ Figure assumes \$6.1 billion in capital costs, financed over 40 years at a 6% interest rate.



Assumptions

At present, only limited information on the costs of the Flaming Gorge Pipeline is available. In order to develop a reasonable estimate of the costs of the project, Honey Creek Resources estimated low, most likely, and high values for each financial uncertainty. In general, all assumptions were conservative (e.g., we deliberately chose low cost estimates, high water demand and availability estimates, and favorable bond rate terms). Twelve values were modeled and are shown in the table below. Construction costs, the initial demand, and financing terms have, by far, the most significant impact on the cost of water.

Table 2. Factors modeled in economic analysis.

	Low	Most Likely	High
Initial demand (AF/yr)	60,000	100,000	160,000
Rate of increase in demand until project is fully utilized	5%	10%	20%
Construction costs (\$) *	\$3,000	\$4,500	\$6,100
Potential cost savings due to private development (%)	0%	15%	30%
Public bonds, interest rate and term	4% over 40 years	6% over 40 years	6% over 20 years
Private bonds, interest rate and term	7% over 20 years	10% over 20 years	15% over 20 years
Water availability (AF/yr)**	165,000	210,000	250,000
Annual operating cost (\$/AF)	\$450	\$500	\$584
Hydropower offset (as a % of operating costs)	0%	20%	50%
CRSP and USBR costs (\$/AF)	\$25	\$50	\$100
Impact of climate change, annual % reduction in water availability	0.1%	0.2%	0.3%
Frequency of priority calls	0	1/10 yrs	1/5 years

*Does not include engineering, legal, permitting, and administrative costs.

** This volume is lower than the volume proposed by Million, but may be considerably higher than the amount legally available.

Selling the Rafting Company Down the River

The Flaming Gorge Pipeline would impact both reservoir levels and flows in the Green River below the reservoir. This, in turn, would impact businesses that rely on the reservoir and river for recreation and tourism. The pipeline would divert, on average, 24% of the flow of the Green River — a larger portion in dry years and a smaller portion in wet years. By mid-century, Flaming Gorge Reservoir levels would be reduced, on average, by 10 feet. Of greater concern, reservoir levels would fluctuate more, with a higher likelihood that they fall to even lower levels. For example, in 2050 there would be a 10% chance that reservoir levels would be reduced by as much as 30 feet.

If reservoir levels and streamflows are reduced, recreation such as fishing, whitewater rafting, and camping is also projected to fall. This directly impacts the industries that depend on that recreation (such as commercial guides and outfitters) and indirectly impacts hotels, restaurants, stores, and other businesses that benefit from tourism. The annual economic cost of the project in the region would be an estimated \$59 million (2011 dollars).⁵

While these costs are small relative to the total cost of the pipeline, they represent a substantial impact on local economies. For example, the Bureau of Reclamation identified the “most affected sectors” in the three-county region⁶ surrounding Flaming Gorge Reservoir, including a range of retail and service-related industries. The value of annual regional output of these sectors was estimated to be approximately \$227 million in 1999 dollars, or about \$306 million in 2011 dollars. Fifty-nine million dollars represents an 19% reduction in revenues for those affected sectors — and a direct loss of jobs.

While marinas, docks, and other facilities could adapt to a moderate, steady decline in reservoir levels, adjusting to large fluctuations in reservoir levels would pose greater challenges. Similarly, for local businesses, more variable river flows and reservoir levels translates into variable annual revenues — a major challenge for managing a business.

All Coloradans Bear the Burden

The Flaming Gorge Pipeline would have far-reaching economic costs that would impact not just project proponents and the water utilities purchasing the water, but Coloradans throughout the state. The project would:

- Not be feasible without state subsidies, which would impact all taxpayers;
- Reduce revenues for businesses that rely on recreation and tourism, particularly in northwestern Colorado;
- Limit West Slope communities’ future opportunities to develop water from the Colorado River for economic growth; and
- Increase the risk of a compact call on the Colorado River, which would have a ripple effect on agricultural and municipal water users state-wide.

These problems, and the untold environmental costs, make the proposed Flaming Gorge Pipeline an unaffordable — and risky — gamble for Colorado.

⁵ Figure reflects the costs to recreation on the reservoir and on the river and the 50th percentile of impacts. The direct costs would be \$38.7 million; a conservative multiplier of 1.5 was used to estimate indirect and induced impacts.

⁶ Daggett and Uintah Counties in Utah and Sweetwater County, Wyoming.