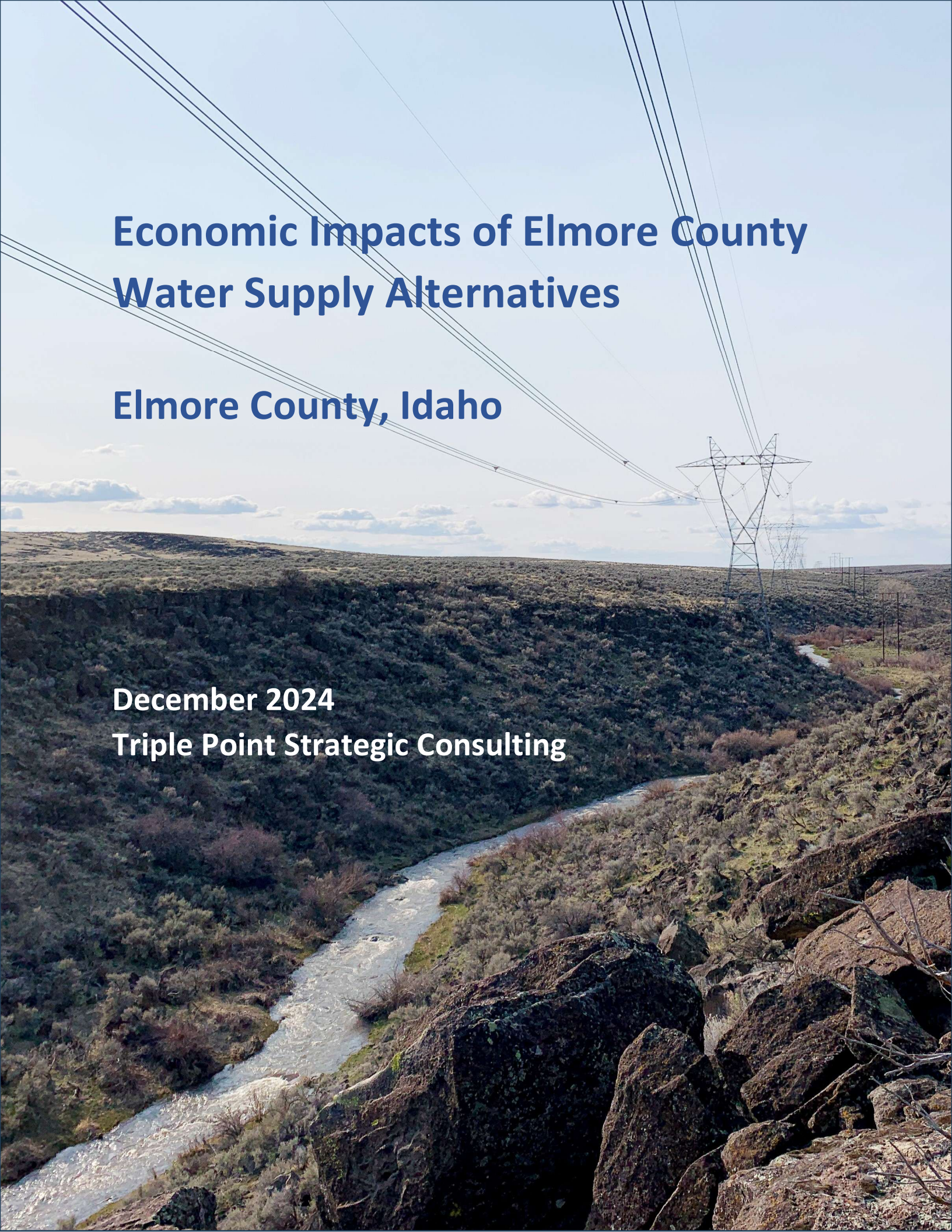
Economic Impacts of Elmore County Water Supply Alternatives

Elmore County, Idaho



December 2024

Triple Point Strategic Consulting

Economic Impacts of Elmore County Water Supply Alternatives Elmore County, Idaho

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Executive Summary

Elmore County currently uses approximately 80,000 acre-feet per year (AFY) of groundwater in spite of an estimated recharge rate of only 40,000 AFY. This deficit is covered by removing stored water from the aquifer, thus lowering groundwater levels. Eventually, if deficit pumping continues, all stored water supplies will be depleted.

Declining levels will ultimately cause irrigators to either cease pumping or the State to begin curtailing junior water rights in order to eliminate the deficit pumping and attempt to reverse the decline. Earlier this year the Idaho Department of Water Resources curtailed 74,100 AFY from the Eastern Snake Plain Aquifer, although implementation of the order was avoided at the last minute.

This analysis creates a model of Elmore County's "water economy" based on economic and environmental data. The amount of economic output per acre-foot of water used is determined for the 2022 base year for all of the individual industries operating in the county. As water supply and demand scenarios are simulated over future years, the changes in economic output are measured. The forecast period is through 2050. The model is calibrated using the 2017 Elmore County Water Supply Alternatives report (SPF Water Engineering 2017).

Five water supply alternative scenarios have been simulated. These represent a range from a total water use reduction of 40,000 AFY to a net increase of 20,000 AFY.

- A: Reduce groundwater by 40,000 AFY in 2029
- B: Reduce groundwater by 40,000 AFY in 2029, South Fork Boise River Diversion Project (SFBRDP) supplies water (10,000 AFY) beginning 2032
- C: Reduce groundwater by 40,000 AFY in 2029, pump from the Snake River (14,000 AFY) beginning 2032
- C2: Reduce groundwater by 40,000 AFY in 2029, pump additional quantity (36,000 AFY) from Snake River beginning 2038 (50,000 AFY total for C+C2)
- D: Reduce groundwater by 40,000 AFY in 2029, SFBRDP (10,000 AFY) and pumping from the Snake River (14,000 AFY) beginning 2032, followed by additional pumping from the Snake River (36,000 AFY) beginning 2045

The initial economic impact of a delivery call in 2029 is shown in Table ES-1. Significantly, employment would fall by 14 percent (more than 2,000 jobs) and total output would fall by $424 million. The annual loss would decline over time as water use shifts from lower value uses to higher. The cumulative loss over the 4 years from 2029 to 2032 would exceed $1 billion.

Table ES-1. Economic Impact of a 40,000 Acre-Foot Delivery Call in 2029

Description	2028	2029	Percent Change
Employment	14,808	12,727	−14.1%
Total labor income	$1,032,524,354	$882,501,545	−14.5%
Total output	$3,123,481,265	$2,699,319,901	−13.6%
Groundwater (acre-feet)	80,313	39,925	−50.3%
Surface water (acre-feet)	164,073	164,073	0.0%
Total water use (acre-feet)	244,386	203,998	−16.5%

Figure ES-1 portrays the changes in annual economic output over time for each scenario, assuming an annual average inflation rate of 1.5 percent. Notice that the initial impact of the 2029 delivery call is the same for each scenario. Further, the potential economic gains from developing new water supplies would far outweigh the initial loss over time and by a very wide margin for the larger supply scenarios.

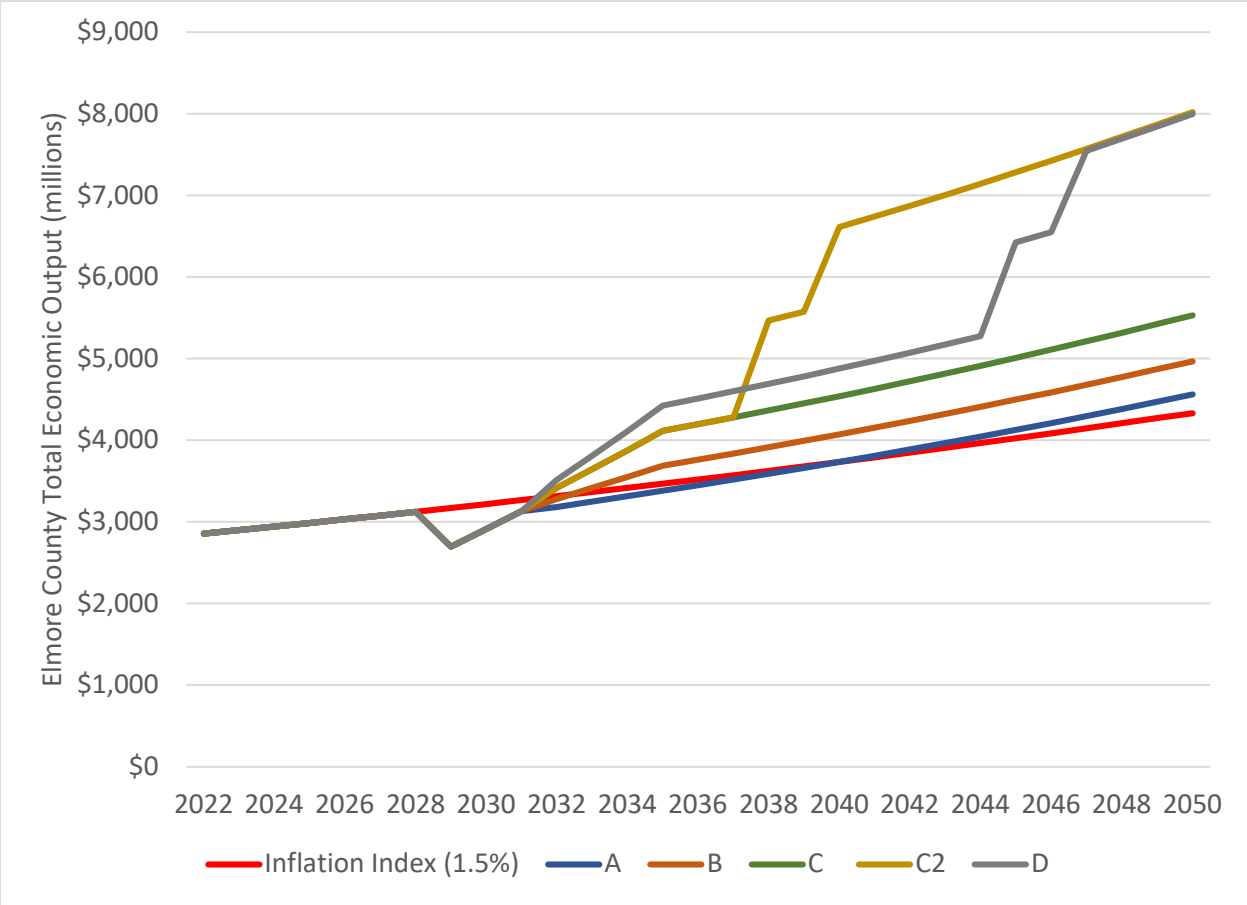


Figure ES-1. Total Annual Economic Output in Elmore County by Scenario, 2022 to 2050

A water resources survey conducted by the Elmore County commissioners found over half (55 percent) of the residents rated the severity of the groundwater problem as 4 or 5 on a scale of 0 to 5, with 5 being most severe.

Indeed, developing new water supplies will be expensive, costing tens if not hundreds of millions of dollars. However, given the potential economic losses of not developing new supplies and considering the potential advantages of developing new supplies are all estimated to be in the billions of dollars (as estimated by this analysis), it appears the cost of developing new water supplies in Elmore County would be beneficial.

Introduction

Elmore County currently uses approximately 80,000 acre-feet per year (AFY) of groundwater in spite of an estimated recharge rate of only 40,000 AFY. Without developing new water supplies, there is a likelihood that either a water-right delivery call, a chronic water-level decline, or both would reduce groundwater availability to 40,000 AFY.

The scarcity of water in Elmore County is a limiting factor for future development. Additional water supplies would contribute to sustained economic growth and development, especially in the area around Mountain Home and Mountain Home Air Force Base.

Several water development projects are being considered as Elmore County seeks solutions to declining groundwater levels, primarily the South Fork Boise River Diversion Project (SFBRDP), other Boise River sources, and incremental water from the Snake River.

Purpose

This study demonstrates the interconnectedness of the county's economy and its water supply by estimating the potential economic loss from a reduction to 40,000 AFY of groundwater supply, as well as estimating the economic benefits and future development potential likely to be supported by additional water supply. The purpose of estimating the costs and benefits to the county economy using various water supply alternatives is to allow the water development project costs to be evaluated in a broader context.

Triple Point Strategic Consulting created a custom model of the county's economy and water use in order to forecast future scenarios of the most likely water supply alternatives. As Elmore County's economy approaches $3 billion in total economic output, ranking 13th among the state's 44 counties in terms of GDP, there are many contributors and beneficiaries. By accounting for the water use and economic output of each of the county's industries, trade-offs and allocation decisions can be more easily evaluated at the conceptual level. Quantifying the value of water will help to sustain and grow Elmore County's economy in perpetuity.

Elmore County Groundwater Deficit

The Mountain Home Plateau Aquifer supplies groundwater for agricultural irrigation, along with irrigation, commercial, domestic, and industrial supplies to farms, dairies, and other businesses in Elmore County. The aquifer is also the primary source of municipal water supply for the city of Mountain Home and Mountain Home Air Force Base.

The Elmore County Water Supply Alternatives study estimated the county's annual groundwater deficit to be 43,000 AFY based on a comparison of groundwater levels in the 1970s to recent groundwater levels (SPF Water Engineering 2017). The study further quantifies groundwater level declines. In a 2021 presentation to the Idaho Water Resource Board, Terry Scanlan explained that pumping 80,000 AFY of groundwater when the aquifer recharge rate is 40,000 AFY results in a deficit of 40,000 AFY (Scanlan 2021). This deficit is covered by removing stored water from the aquifer, thus lowering groundwater levels. Eventually, if deficit pumping continues, all stored water supplies will be depleted. Since the late 1970s, several prominent wells in the Mountain Home Plateau Aquifer have been declining 1.5 to 3 feet per year on average (Stokes 2022).

As groundwater levels decline, deeper wells are required and pumping costs increase. Declining levels will ultimately cause irrigators to either cease pumping or the State to begin curtailing junior water

rights in order to eliminate the deficit pumping and attempt to reverse the decline. In either case, 40,000 AFY would no longer be a resource for the local economy to use. At that point, imported water would either allow junior water right holders to continue to pump or allow development of new high-value uses (supported by imported surface water or groundwater that is mitigated by recharge). Those who need mitigation water, either to keep pumping existing junior right or for new mitigated rights, would incur higher operational costs associated with importing additional water.

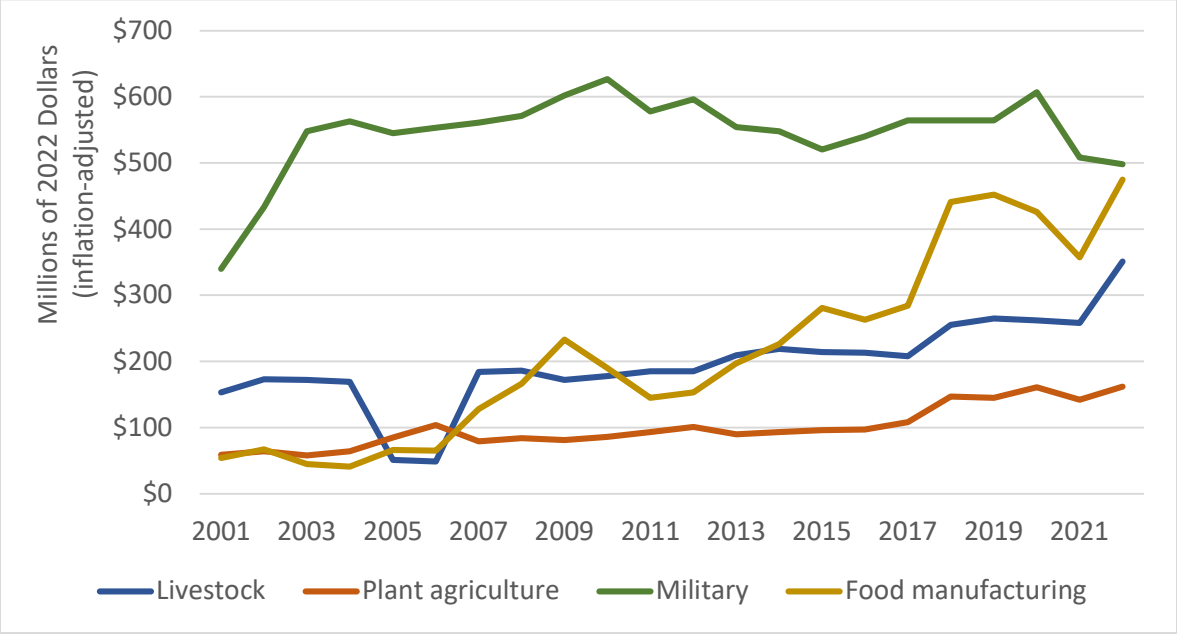
Eastern Snake Plain Aquifer

Under current water law and without additional water supply, in the event of a water right delivery call or depletion of the aquifer, water users and irrigators with junior water rights may be forced to source imported surface water at a cost or cease operations. The recent water right delivery call on the Eastern Snake Plain Aquifer is an example. In 2005, a group of canal companies and irrigation districts filed a delivery call against junior groundwater users. Then on May 30, 2024, the Idaho Department of Water Resources (IDWR) issued an order curtailing 74,100 acre-feet (AF) of junior water rights prior to March 31, 1954 (IDWR 2024). Curtailment was avoided at the last minute by a settlement reached by all parties agreeing to conform to the 2016 mitigation plan for the 2024 irrigation season. The plan collectively conserves 240,000 AF of groundwater and delivers 50,000 AF of water storage (IDWR 2024).

Given the Mountain Home Plateau Aquifer deficit, the likelihood of a similar occurrence in Elmore County is real. As the county's website characterizes the situation, "Without some sort of action, wells will continue to go dry and existing water uses will be curtailed" (Elmore County, Idaho 2024).

Long-Term Economic Trends

Figure 1 shows the real growth of the county's four primary economic drivers in 2022 dollars.

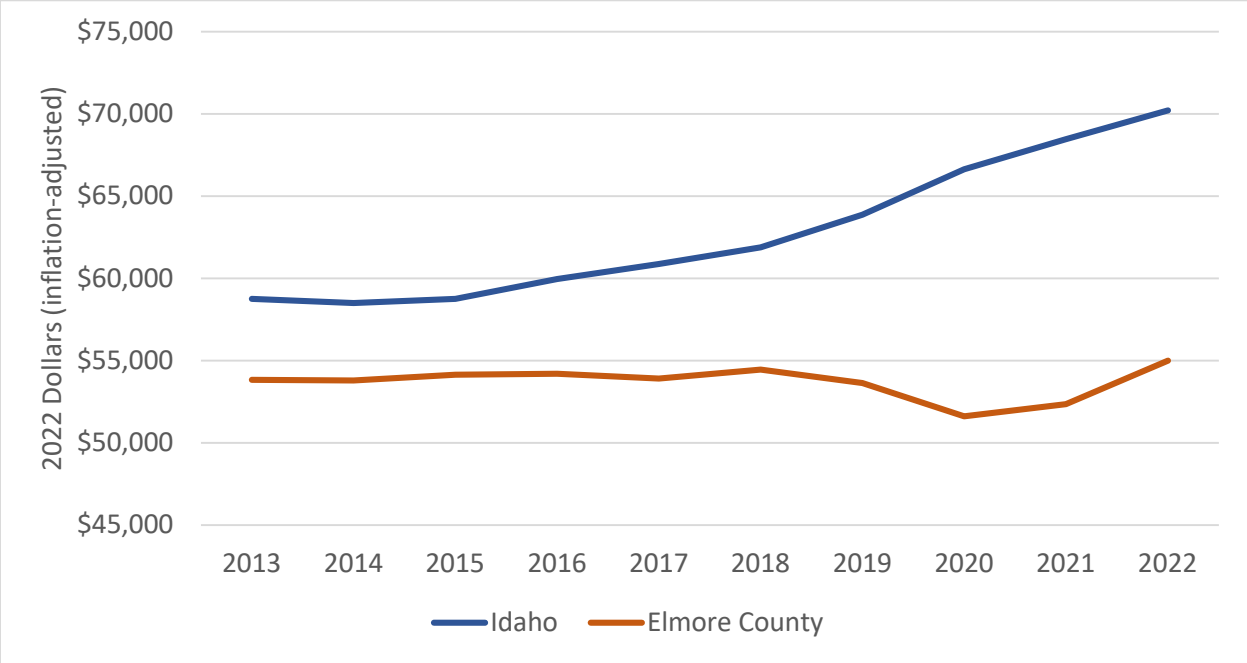


Source: IMPLAN.

Figure 1. Growth of Elmore County's Primary Economic Drivers in Real Terms

Food manufacturing has experienced the most growth, followed by livestock and plant agriculture. Mountain Home Air Force Base is the most significant driver, though this has declined from its peak in 2010.

Figure 2 shows the real trend of Elmore County's economy from the household perspective. For the past 10 years, the median household income has remained flat in real (inflation-adjusted) terms, except for a drop during the pandemic (Federal Reserve Bank of Minneapolis 2024). In contrast, Idaho's real median household income has increased at an annual average growth rate of 2.3 percent following the Great Recession.



Source: American Community Survey, Triple Point Strategic Consulting.

Figure 2. Median Household Income Trends of Elmore County and Idaho in Real Terms

Modeling Water Economics

This analysis correlates water use and economic output within Elmore County, thereby creating an abstract model of Elmore County's "water economy." The model groups economic and environmental data from IMPLAN into ten categories each for groundwater and surface water use. For each group, the amount of economic output per AF of water is determined for the 2022 base year. As water supply and demand scenarios are simulated over future years, the changes in economic output are measured. The model is structured to forecast employment, labor income, and tax revenues in addition to total output; however, for the purpose of this report, only economic output scenarios are presented. The forecast period is through 2050.

IMPLAN

The IMPLAN economic model uses annual, regional data to map buy-sell relationships to predict how specific changes would impact a regional economy. Employment and labor income data are sourced from the Bureau of Labor Statistics' Census of Employment and Wages, Census Bureau's County Business Patterns Reports, and Bureau of Economic Analysis' (BEA) Regional Economic Accounts

information, which also provides information on annual gross domestic product. Data regarding industry inputs, byproducts, margins, and spending patterns are sourced from BEA's Input-Output Benchmark Table and other sources. For estimating economic output, IMPLAN sources information from several federal surveys such as the Census' Annual Survey of Manufacturers and BEA's Output Series. Other sources include the National Agricultural Statistical Service, National Bureau of Economic Research, Internal Revenue Service, and Energy Information Administration.

IMPLAN estimates taxes on production and imports, which are mostly transaction taxes (refer to Table 7). Social insurance taxes are included in labor income, and profits taxes are estimated in other property income. These are included in the Elmore County model, but are not presented in this summary report.

U.S. Environmentally Extended Input-Output Model

In 2020, IMPLAN incorporated the U.S. Environmental Protection Agency's (EPA) U.S. Environmentally Extended Input-Output Model into its input-output framework (EPA 2024). This new technology allows various environmental impacts to be estimated from economic data. In the case of water use, there are 2,899 unique coefficients representing cubic meters of water use per dollar of output.

Model Calibration

The baseline data has been calibrated using the information presented in the 2017 Elmore County Water Supply Alternatives report. Table 1 shows the volume of groundwater pumping.

Table 1. Annual Elmore County Groundwater Use 2017

Groundwater Diverted per Use (Acre-Feet)	Acre-Feet	Percentage
Agricultural irrigation	67,660	85%
Municipal irrigation	3,980	5%
Municipal use	2,388	3%
Domestic, commercial, industrial, stock water	5,572	7%
Total groundwater diverted	**79,600**	**100%**

Source: SPF Water Engineering, 2017.

Table 2 shows the number of acres irrigated with surface water and the quantity of water assuming 3.1 AF per acre. We assume the amounts of surface water and groundwater for agricultural irrigation have not changed in recent years since IDWR has not been issuing any new water rights for such uses, similarly for domestic, commercial, industrial, and stock water. Since 2017, the county's population has grown about 9.5 percent, so an increase in residential water use on the order of a few hundred AF is likely to have occurred.

Table 2. Annual Elmore County Surface Water Use 2017

Surface Water Sources	Acres	Acre-Feet
Local drainages (Bennett, Cold Springs, King Hill)	15,000	46,500
Mountain Home Irrigation District (MHID)	4,400	13,640
Snake River	33,000	102,300

Surface Water Sources	Acres	Acre-Feet
Total	**52,400**	**162,440**

Source: SPF Water Engineering, 2017.

Baseline Conditions

The model groups Elmore County's 195 active industries into 10 economic sectors. Water use is estimated at the sub-industry level based on USEEIO coefficients. IMPLAN data provides economic output per industry. Table 3 shows the model estimates of 2022 baseline water use for each sector by water source along with each sector's total economic output.

Table 3. Elmore County Baseline Water Use and Economic Contribution by Sector, 2022

Water Use Category	Economic Sector	Groundwater (AFY)	Surface Water (AFY)	Economic Contribution
Agricultural irrigation	Grain and crop	43,605	107,517	$80,685,707
Agricultural irrigation	Sugar beet	15,057	39,734	$21,662,718
Agricultural irrigation	Vegetable, melon, fruit	9,288	14,750	$59,399,046
Municipal	City of Mountain Home	4,941	108	$216,509,698
Municipal	Mountain Home Air Force Base	1,636	175	$493,004,625
Industrial and commercial	Commercial	235	406	$1,114,570,058
Industrial and commercial	Manufacturing food	443	973	$475,137,563
Industrial and commercial	Dairy production	2,300	0	$190,693,501
Industrial and commercial	Electric utility	300	0	$44,750,225
Livestock	Livestock, animal products	2,510	410	$160,142,264
Total		**80,313**	**164,073**	**$2,856,555,405**

Source: IMPLAN, Triple Point Strategic Consulting.
Note: AFY=acre-feet per year

In the case of municipal use, approximately 70 to 73 percent of the groundwater is used for municipal irrigation. The City of Glenns Ferry has access to an ample supply of water from the Snake River and does not rely on groundwater; therefore, Glenns Ferry is not broken out in the model. Regarding electric energy production, water use from the evaporation of hydroelectric reservoirs is not included in the model. We assume both Mountain Home power plants use groundwater, as there is no surface water source available to them. The Danskin Plant has a water right authorizing 287 AFY for cooling and industrial use. The Bennett Mountain Power Plant does not have a water right but is within the service area of the City of Mountain Home municipal water system. In addition, within Mountain Home there are 6 water rights for industrial use and 12 water rights for commercial use.

Table 4 and Table 5 show baseline model estimates of current water use corresponding to Table 1 and Table 2, validating the model.

Table 4. Estimated Elmore County Baseline Groundwater Use by Category, 2022

Water Use Category	Groundwater (AFY)	Percent
Agricultural irrigation	67,950	85%
Municipal	6,576	8%
Industrial and commercial	3,277	4%
Livestock	2,510	3%
Total	**80,313**	**100%**

Note: AFY=acre-feet per year

Table 5. Estimated Elmore County Baseline Surface Water Use by Category, 2022

Water Use Category	Surface Water (AFY)	Percent
Agricultural irrigation	162,001	99%
Municipal	283	0%
Industrial and commercial	1,379	1%
Livestock	410	0%
Total	**164,073**	**100%**

Note: AFY=acre-feet per year

Water Supply Alternatives

This study simulates five alternative water supply scenarios representing a range from a total water use reduction of 40,000 AFY to a net increase of 20,000 AFY.

- A: Reduce groundwater by 40,000 AFY in 2029
- B: Reduce groundwater by 40,000 AFY in 2029, SFBRDP supplies water (10,000 AFY) beginning 2032
- C: Reduce groundwater by 40,000 AFY in 2029, pump from the Snake River (14,000 AFY) beginning 2032
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The following information was taken from the Elmore County Water Supply Alternatives report (SPF Water Engineering 2017):

> *Given the high cost of surface-water importation from the Snake River or Boise River, the preferred water strategy should be direct use of imported water for irrigation purposes. Two modes of irrigation are anticipated.*
>
> *First, irrigation with imported water can occur on lands currently irrigated with groundwater. Use of imported water will reduce the net use of groundwater from declining aquifers, and preserve high-quality groundwater for domestic, commercial, municipal, and industrial uses.*
>
> *Second, imported water could be used to supplement existing surface water supplies to the extent that such supplies are insufficient to raise high value crops. For example, willing landowners within MHID [Mountain Home Irrigation District] could participate in a program to obtain supplemental irrigation supplies so that a full water supply can be assured each year.*

The changes in water uses simulated in these scenarios are designed to follow this water strategy.

Delivery Call Reducing Groundwater Pumping to Annual Recharge (A)

This scenario assumes a delivery call against groundwater users is made that results in curtailment of groundwater pumping to 40,000 AFY. The timing assumes a call in the next few years followed by a year or two of litigation, with curtailment in 2029. The timing also coincides with the completion date for the Western Snake River Plain groundwater model scheduled for completion in 2028. The groundwater model would be used to estimate the impacts of mitigation efforts such as recharge or reductions in pumping.

The majority of the reductions in groundwater diversions would likely occur to irrigated agriculture. This is because other uses, such as domestic, commercial, municipal, and industrial (DCMI), typically produce more revenue per unit of water than irrigated agriculture. DCMI water users would likely acquire or lease senior priority agricultural irrigation water rights to avoid curtailment. Some minor reduction in municipal use through conservation should be expected, but municipal users will likely acquire rights from agricultural irrigation rather than cease supplying water. Similarly, dairies, feedlots, and commercial uses will likely persist for the most part by acquiring senior priority irrigation rights as needed. Overall, there would be a transition from lower unit revenue uses to higher unit revenue uses. Some livestock operations will go out of business or have reduced head due to lack of feed, but most will rely on feed grown locally with surface water or trucked in.

South Fork Boise River Diversion Project Completed by 2032 (B)

Elmore County is currently in the design and permitting phases for a 50 cubic feet per second (cfs) pump station and pipeline to bring water from the South Fork Boise River to the Mountain Home Plateau. The project will pump water to Little Camas Reservoir and will share the Mountain Home Irrigation District Canal that delivers water from Little Camas Reservoir to the Canyon Creek drainage. The canal has a capacity of slightly more than 50 cfs, although it could be upgraded to carry additional flow. Assuming that the canal would be shut down due to winter conditions from mid-December through mid-April, and that existing MHID water is conveyed for 4 months annually, the canal capacity would be available for the county project for 5 months per year. If operated at 50 cfs for 5 months per year, the project could potentially deliver up to 15,000 AFY for supplemental irrigation, groundwater recharge, and other uses on the Mountain Home Plateau. Authorization to divert up to 15,000 AFY would be obtained from the following sources.

1. The county has an existing water right permit to divert up to 200 cfs of water during flood-flow operations (SFBRDP 2022). Half of the water must be used for direct aquifer recharge while the other half can be used for agricultural irrigation. Given the junior priority date of the permit, water can be diverted only during spring runoff at times when Anderson Ranch Reservoir would otherwise spill water for flood control purposes. On average, this permit might allow diversion of approximately 2,000 AFY, assuming water is available 20 days per year on average.
2. The county is seeking to secure a 10,000 AFY portion of the 29,000 AF of new storage that will be created by raising Anderson Dam. Like the county's water right permit, water will be available to fill this space only during runoff years when Anderson Ranch Reservoir would otherwise spill water for flood control. It is anticipated that the space might fill on 50 percent of years, yielding an average volume of 5,000 AFY.
3. The county will seek to obtain other storage water from Anderson Ranch Reservoir through the Boise River Rental Pool. Rental pool availability varies from year to year, and availability has been low in recent years. If more rental pool water is available in future years due to new water supply projects in the Treasure Valley, the county might seek to rent up to 8,000 AFY. Rental pool water can be used for any purpose.

Project timing recognizes long lead times for the National Environmental Policy Act (NEPA) and other permitting, along with time required to secure funding. Given uncertainties regarding obtaining new Anderson storage space and annual rental pool water, a realistic annual volume for this scenario is probably 10,000 AFY.

Current Snake River Permit Application Supplies Water by 2032 (C)

The county has applied for a water right permit to import 20 cfs of surface water from the Snake River to the Mountain Home vicinity for groundwater recharge, supplemental irrigation, and municipal uses. Water in the Snake River has been available to supply for a junior priority water right permit more than 99 percent of the days in recent years. If a 20 cfs project is constructed, it could convey approximately 14,000 AFY operating nearly year-round. Approximately 50 percent of this water could be used to replace existing groundwater pumping for municipal and agricultural irrigation. The balance of the water could be used for groundwater recharge during winter months.

The project timing assumes a water right permit approval in 2025, followed by 5 years for permitting, design, and construction.

Current Snake River Permit Supplies by 2032 and Additional Water Supplied by 2038 (C2)

If the county's application for a water right permit from the Snake River is approved, it may signal willingness by IDWR to approve other permits proposing Snake River water as a replacement for existing groundwater pumping. Under this expanded Snake River scenario, it is assumed that an additional 36,000 AF of Snake River water could be developed to replace existing groundwater diversions for agricultural irrigation. Under this scenario, a total of 50,000 AF of Snake River water is developed, with 40,000 AF used to replace existing groundwater diversions and 10,000 AF used for new DCMI purposes.

The project timing assumes several years for private entities to coalesce to plan, permit, and finance one or more projects.

South Fork Boise River Diversion Project and Snake River Water Supplies Combined by 2032 and 2045 (D)

At some point, it might be possible to develop both the SFBRDP and expanded Snake River projects. In combination, these projects might yield 60,000 AFY, of which 40,000 AF would replace existing groundwater pumping and 20,000 AF would support new DCMI uses.

Results

This section presents the scenario simulation results in terms of changes to water supply and economic responses.

Water Use

Figure 3 presents the annual water use over time for each scenario. A simulated delivery call in 2029 occurs in every scenario, reducing total water use by just over 40,000 AFY or 17 percent.

As new water supply scenarios are simulated, most, but not all, industries begin using all of the new water supply immediately. From 2032 through 2037, Scenario D supplies the most water by developing SFBRDP and 14,000 AFY from the Snake River in 2032. From 2038 through 2044, Scenario C2 supplies the most water, and 10,000 AFY more than prior to the simulated delivery call. From 2045, Scenario D is supplying the most water, although in 2050 the economic output from D is just under that of C2.

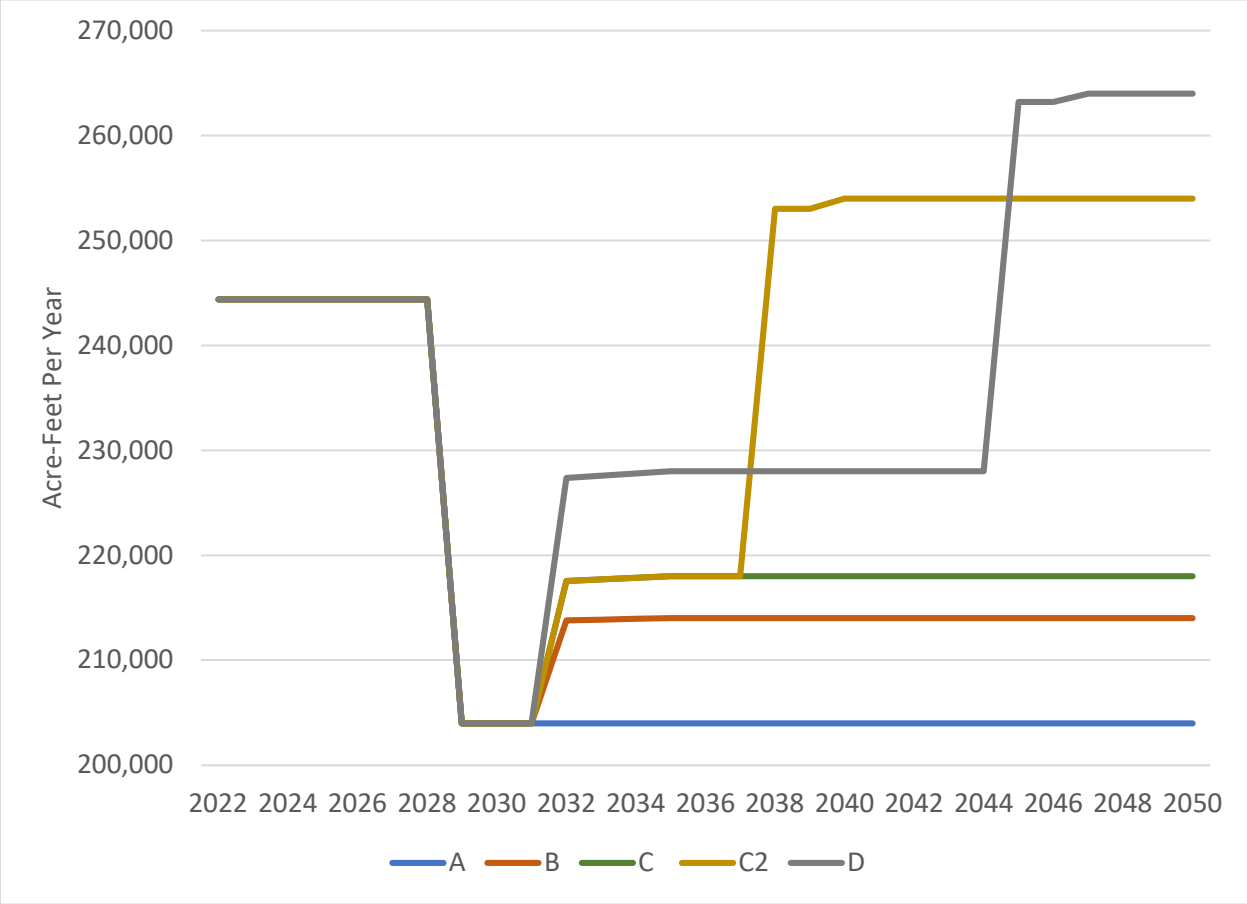

Figure 3. Total Annual Water Use in Elmore County by Scenario, 2022 to 2050

Economic Impact of a Groundwater Delivery Call

The initial economic impact of a delivery call in 2029 is shown in Table 6. Significantly, employment would fall by 14 percent (more than 2,000 jobs) and total output would fall by $424 million. The annual loss would decline over time as water use shifts from lower value uses to higher. The cumulative loss over the 4 years from 2029 to 2032 would exceed $1 billion.

Table 6. Economic Impact of a 40,000 Acre-Foot Delivery Call in 2029

Description	2028	2029	Percent Change
Employment	14,808	12,727	−14.1%
Total labor income	$1,032,524,354	$882,501,545	−14.5%
Total output	$3,123,481,265	$2,699,319,901	−13.6%
Groundwater (acre-feet)	80,313	39,925	−50.3%
Surface water (acre-feet)	164,073	164,073	0.0%
Total water use (acre-feet)	244,386	203,998	−16.5%

Economic Response to Delivery Call and Water Supply Development by 2050

Table 7 summarizes the results of each scenario in terms of annual conditions in 2050 and compares them to the baseline conditions in 2050.

In Scenario A, 40,000 AFY of groundwater is curtailed and no new supplies are developed. As a result, the economy grows at a slower rate than if new water supplies were developed. There is a disproportionate reduction in lower-paying agricultural jobs, which increases the average labor income per job. Groundwater use is maintained at the annual aquifer recharge rate of 40,000 AFY.

In Scenario B, total water use is maintained at 214,000 AFY, or 30,000 AFY less than 2022 total use. The aquifer deficit is alleviated and the economy grows more than without the additional supply.

By 2050, water use in Scenario C is only 4,000 more AFY than in Scenario B, yet the use of the new water supply over the 18 years following the development of the pumping project generates over $560 million more in annual economic output in 2050 than Scenario B.

Scenario C2 develops significantly more water supply than Scenarios B or C. Water is only sourced from the Snake River, with 14,000 AFY beginning in 2032 and an additional 36,000 AFY beginning in 2038. By 2050, employment is more than 50 percent greater than in Scenario C. By 2050, total output is almost double that of Scenario A (in which no additional water supply had been developed following the 2029 reduction). Also, by 2050, groundwater pumping is able to be 50,000 AFY (given recharge) and total water use is 10,000 AFY more than in 2022.

Scenario D develops all of these supplies, though the timing varies from C2. Initially, 24,000 AFY of new water supply is available in 2032, with an additional 36,000 AFY beginning in 2045. Although this scenario supplies the most water by 2050, the economic impacts in 2050 are slightly less than scenario C2, which delivered more water earlier. Put another way, at the margin (in 2050) there is no incremental economic benefit from having developed the SFBRDP.

Table 7. Results Summary of Elmore County Water Supply Alternative Scenarios

Description	Scenario					
	2022	A	B	C	C2	D
Employment	14,808	15,785	17,523	20,047	31,005	30,783
Average income/job	$63,770	$98,133	$96,035	$93,626	$87,726	$87,810
Transaction tax (thousands)	$24,424	$40,904	$42,016	$43,891	$51,572	$51,154
Total output (thousands)	$2,856,555	$4,562,776	$4,968,226	$5,531,125	$8,021,168	$7,997,276
Groundwater (acre-feet)	80,313	39,925	40,925	42,725	49,925	49,425
Surface water (acre-feet)	164,073	164,073	173,073	175,273	204,073	214,573
Total water use (acre-feet)	244,386	203,998	213,998	217,998	253,998	263,998

Figure 4 portrays the changes in annual economic output over time for each scenario, assuming an annual average inflation rate of 1.5 percent. Notice that the initial impact of the 2029 delivery call is the same for each scenario. Further, the potential economic gains from developing new water supplies would far outweigh the initial loss over time and by a very wide margin for the larger supply scenarios.

As the result of DCMI water users acquiring or leasing senior priority agricultural irrigation water rights to avoid curtailment, even the economic growth of Scenario A (in which no new water supplies are developed) exceeds the assumed rate of inflation, though by very little.

The economic implications of the timing of water development projects are most apparent in Figure 4. The addition of 36,000 AFY in 2038 (Scenario C2) compared to 2045 (Scenario D) generates roughly an additional $2 billion per year for 7 years.

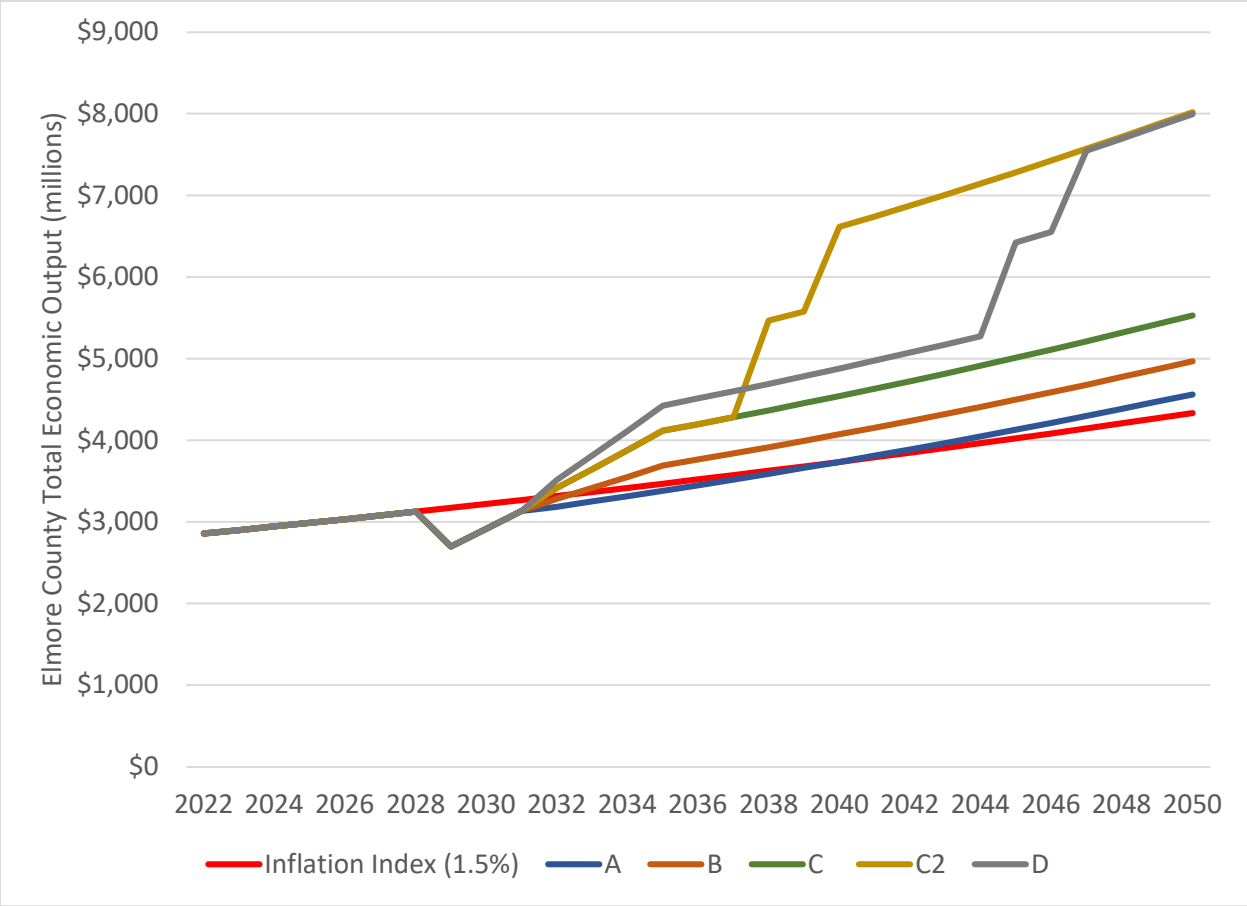

Figure 4. Total Annual Economic Output in Elmore County by Scenario, 2022 to 2050

Discussion

Elmore County is currently running a 40,000 AFY groundwater deficit as a result of pumping 80,000 AFY of groundwater from the Mountain Home Plateau Aquifer. Although a last-minute settlement was reached, the IDWR order curtailing 74,100 AFY from the Eastern Snake Plain Aquifer earlier this year demonstrates the possibility of a similar curtailment occurring in Elmore County. Aside from administrative action, chronic water-level decline over time could also reduce groundwater availability.

The loss of 40,000 AFY (17 percent) of total current water supply in 2029 would be significant, costing over $400 million in the first year. Overall, there would be a transition from lower unit revenue uses to higher unit revenue uses. By 2031, we assume municipal users will be using 11 percent less groundwater per year, whereas groundwater use for agricultural irrigation would be down 58 percent. This does not mean all lower unit revenue uses go away, however, if a significant reduction in groundwater pumping were to occur, the average unit revenue or economic output per AF would increase.

Prophetically, the 2017 Elmore County Water Supply Alternatives report pointed out that without new water sources, the Elmore County 2014 Comprehensive Plan predictions of 2024 population, acres farmed, and livestock inventory would “not come to fruition.” In fact, in 2024 the actual value of each metric is roughly 75 percent of the 2014 prediction. In the case of population, only 25 percent of the predicted growth actually occurred; in the case of farmed acres, the amount actually declined by

13 percent (National Agricultural Statistics Service 2017) (National Agricultural Statistics Service 2022). Indeed, without new water supplies, Elmore County's economic growth will be limited.

One limitation of this study is that the economic growth supported by the new water supplies is the expansion of existing industries, albeit at different rates. In its current form, the model does not introduce new industries to the region, although the Industrial and Commercial group does generally represent high value industries. Data Centers are an example of potential new industry. An $800+ million data center is currently under construction near Kuna (Meta n.d.). The center will be powered by a 200-megawatt (MW) solar facility that uses relatively little water to produce electricity. The project claims to be water-use neutral by developing other water projects. However, a 200 MW data center uses an average of 1,100 AF of water per year for cooling, depending on efficiency.

Similarly, the 2017 Elmore County Water Supply Alternatives report described an agricultural manufacturing proposal that would have invested $430 million in capital and created 450 full-time jobs; however, the project's water requirement was 5,000 AFY, which the City of Mountain Home was unable to provide.

Once operational, the Kuna data center would create 100 new jobs. The annual operating budget for a 200 MW data center ranges from $200 to $500 million. To put this into perspective, in Scenario D the county's economic output grows from $2.9 billion in 2022 to $5.3 billion in 2050 after netting out inflation. A data center with a $350 million annual operating budget would represent 15 percent of the economic growth created by the new water supplies and use approximately 1,100 AFY of the new supplies.

A water resources survey conducted by the Elmore County commissioners found over half (55 percent) of the residents rated the severity of the groundwater problem as 4 or 5 on a scale of 0 to 5, with 5 being most severe. The survey also showed strong support for the county's efforts to pursue recharge opportunities and a willingness to spend tax dollars on aquifer recharge (Elmore County n.d.).

Indeed, developing new water supplies will be expensive, costing tens if not hundreds of millions of dollars. However, given the potential economic losses of not developing new supplies and considering the potential advantages of developing new supplies are all estimated to be in the billions of dollars (as estimated by this analysis), it appears the cost of developing new water supplies in Elmore County would be beneficial.

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About Triple Point Strategic Consulting LLC

Triple Point specializes in developing custom economic and financial models. Founded in 2013, the company's focus areas are renewable energy, affordable housing, natural resources, health assessments, sustainable tourism, and economic development. Triple Point is active across the western United States and Canada, modeling for scenario planning, financial forecasting, permitting and approvals, optimal resource allocation, and improved decision-making. Economic impact studies are conducted using the IMPLAN model. Jeff Moffett has served as an expert witness before the Idaho Department of Water Resources and was recently appointed to the nonpartisan Committee for a Responsible Federal Budget's Advisory Board. Jeff earned his M.S. in Econometrics and Ph.D. in Applied Statistics at the University of Washington, Seattle. For more information visit www.tpsconsulting.net.