Socioeconomic Impact Study of Simsboro Aquifer Desired Future Conditions

A Study of Brazos and Robertson Counties

Prepared for

Brazos Valley Groundwater Conservation District

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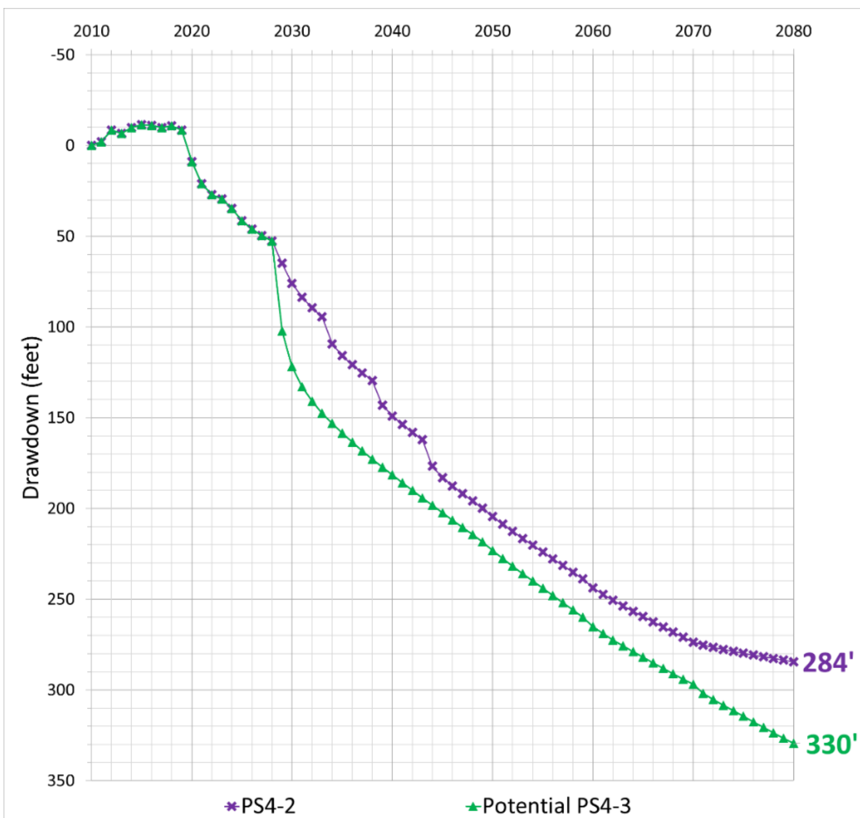
Executive Summary

The Brazos Valley Groundwater Conservation District (BVGCD) commissioned this report to evaluate the socioeconomic impacts of alternative groundwater management goals for the Simsboro Aquifer. Texas Water Code § 36.108 requires this evaluation as Groundwater Management Area 12 (GMA 12) considers new Desired Future Conditions (DFCs).

The analysis compares two DFC scenarios: PS4-2 (as of this report, anticipated to be around a 284-foot drawdown), which was approved by GMA 12 on November 20, 2025, and Potential PS4-3 (330-foot drawdown), which is not an official GMA 12 run but represents BVGCD's best estimate of local pumping demand layered on top of PS4-2 (**Figure 1**) and is treated as the locally preferred DFC. The study defines the "incremental water supply benefit" as the additional modeled Simsboro pumping unlocked under Potential PS4-3 relative to PS4-2 and measures impacts as the economic activity enabled by the additional groundwater volumes available under the locally preferred DFC. The UW Brazos Valley Farm LLC export project volume is the same under both scenarios, so it does not contribute to different results between the two model runs.

Figure 1: BVGCD Simsboro Drawdown for PS4-2 and Potential PS4-3



Methodologically, the analysis assumes continued reliance on the Simsboro Aquifer as the source of all future water-supply growth (i.e., the study does not credit speculative offsets from alternative supplies), and it uses Potential PS4-3 modeled pumping as the measure of incremental water demand. Total economic impacts are estimated using IMPLAN, a software used to estimate indirect and induced economic effects from direct economic impacts, and include direct, indirect, and induced effects as the additional modeled water supply available under Potential PS4-3 propagates through the regional economy.

Results indicate that the approximately ~1 million acre-feet of additional Simsboro pumping made available over 2030–2080 under Potential PS4-3 would support substantial economic activity in Brazos and Robertson Counties, with cumulative (annualized-sum) impacts of about $79.4 billion in total economic output, $38.4 billion in value added, $18.4 billion in labor income, and $9.8 billion in total tax revenue, alongside ~5,150 full-time equivalent jobs (267,547 job-years) and 4,439 single-family equivalent homes supported. The report characterizes average annual output enabled by the additional water supply as ranging from approximately $836 million to $3.5 billion per year depending on the period, driven primarily by modeled data center and power generation construction and operations and supplemented by residential development needed to support the associated workforce.

This study has been constructed in accordance with the requirements set forth by Texas Water Code § 36.108 and § 36.1083 using widely accepted scientific and technical approaches to quantifying the socioeconomic impacts of groundwater management goals.

1 Introduction

1.1 Purpose and Context

Groundwater Management Area 12 (GMA 12) is currently developing new Desired Future Conditions (DFCs) for the Simsboro Aquifer as part of the ongoing joint planning process. The DFC adopted through that process will have material consequences for Modeled Available Groundwater (MAG), future groundwater availability, and regional economic growth within Brazos Valley Groundwater Conservation District (BVGCD). Different DFC alternatives carry meaningfully different economic tradeoffs, and decision-makers require a clear, evidence-based understanding of those tradeoffs to fulfill their statutory obligations under Texas Water Code § 36.108.

BVGCD commissioned this analysis to support the joint planning process by providing a scenario-based evaluation of socioeconomic impacts within Brazos and Robertson Counties under plausible alternative DFC outcomes. The analysis is intended to inform GMA 12 decision-makers of the socioeconomic impacts of alternative DFCs under consideration and to ensure that the economic effects associated with more or less restrictive conditions are considered before a final determination is made.

1.2 Groundwater Conservation Districts and the BVGCD

Groundwater conservation districts (GCDs) are the state's preferred method of groundwater management in order to protect property rights, balance the conservation and development of groundwater to meet the needs of this state, and use the best available science in the conservation and development of groundwater. GCDs accomplish this statutory obligation by developing rules in accordance with the provisions of Chapter 36 of the Texas Water Code.[1]

BVGCD was created by the 77th Texas Legislature through House Bill 1784 on June 16, 2001, taking effect September 1, 2001.[2] The District operates within GMA 12 and has jurisdiction over five significant aquifers: the Carrizo-Wilcox, Queen City, Sparta, Yegua-Jackson, and Brazos River Alluvium.

On September 1, 2005, the Texas Legislature passed House Bill 1763, requiring joint planning among GCDs that share a GMA. Under this framework, GCDs within a GMA must collectively define DFCs for the aquifers in their jurisdiction based on the considerations set forth in TWC § 36.108(d). The Texas Water Development Board (TWDB) then translates adopted DFCs into MAG values using groundwater models where applicable,

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[1] Texas Water Code § 36.0015(b): https://statutes.capitol.texas.gov/Docs/WA/htm/WA.36.htm#36.0015

[2] Rules of the BVGCD, BVGCD, Retrieved from: https://brazosvalleygcd.org/governing-documents/

with MAG representing the estimated volume of annual groundwater pumping that will achieve the DFC. [3,4] Within GMA 12, most DFCs are defined as a maximum allowable artesian pressure decline over a specified period, and their corresponding MAGs represent the pumping threshold beyond which those targets would be exceeded. DFC and MAG values are generally updated every five years through the development of a new Groundwater Management Plan; the most recently approved plan, adopted in 2023, is based on 2021 DFCs and MAG values.

In practice, BVGCD does not manage to MAG values directly. Rather, the District evaluates progress toward DFC targets using data collected from its network of monitoring wells across each aquifer. Under current District rules and subject to District Rule 8.3, BVGCD may continue issuing permits to applicants who own requisite surface or groundwater estate rights and comply with spacing limitations, production limitations, and other District permitting criteria in the District's rules. However, should production cause DFC targets to be exceeded, the District has authority to curtail water use in accordance with District Rule 7.2.[5]

1.3 Regulatory Framework for Desired Future Conditions

Texas Water Code (TWC) § 36.108 establishes the legal framework governing how GMAs develop and adopt DFCs.[6] The statute requires the presiding officer or presiding officer's designee ("District Representative") for each district located wholly or partly in the GMA consider when establishing all DFCs the following (9) nine factors: (1) aquifer uses and geographic variability; (2) water supply needs and management strategies in the state water plan; (3) hydrological conditions in each aquifer, including total estimated recoverable storage and average annual recharge; (4) other environmental impacts, such as spring flow and groundwater-surface water interactions; (5) subsidence; (6) the socioeconomic impacts reasonably expected to occur as a result of the DFC; (7) the rights and interests of private property owners; (8) the feasibility of achieving the proposed desired future condition; and (9) any other information relevant to the specific DFC.

The statute also requires that GMA members balance competing public interests. TWC § 36.108(d)(2) explicitly directs GMAs to weigh the highest practicable level of groundwater production against the long-term conservation, preservation, protection, recharging, and prevention of waste of groundwater resources. This production-versus-conservation tradeoff is not merely a policy preference; it is a statutory obligation that requires substantive, evidence-based analysis to discharge responsibly.

Beyond the nine-factor requirement, TWC § 36.108(d-3)(2-5) impose a distinct affirmative obligation: the report accompanying a DFC adoption must provide the policy and technical justifications for each DFC, including documentation that the nine factors were considered by each District Representative and a discussion of how each factor impacts the adopted DFCs. This statute requires GMAs to document, in a transparent and defensible manner, the specific technical and policy reasoning that supports the adopted DFC—reasoning that must be grounded in scenario-specific analysis capable of withstanding scrutiny from regulators, stakeholders, and courts.

Should an "Affected Person" believe that an adopted DFC is unreasonable, TWC § 36.1083 details the process by which the Affected Person may petition for a hearing at the State Office of Administrative Hearings (SOAH) appealing the reasonableness of the DFC. As described in TWC § 36.1083(e), the process

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[3] The value of decline is calculated as an average over an observation period that can be different depending on the aquifer. An average is used because the extent of decline can range significantly based on cyclical hydrological conditions that may cause peaks or troughs in certain years.

[4] The Brazos Alluvium Aquifer is the only formation where the DFC is based on percent saturation instead of average annual decline.

[5] BVGCD Rules, Approved 10/9/2025: https://brazosvalleygcd.org/files/?upf=dl&id=23972

[6] Texas Water Code § 36.108: https://statutes.capitol.texas.gov/Docs/WA/htm/WA.36.htm#36.108

requires the Texas Water Development Board (TWDB) to determine whether the proposed DFC meets the statutory criteria of TWC § 36.108(d) and also to conduct a study containing scientific and technical analysis of the desired future condition, including consideration of, among other things, the explanatory report provided to the TWDB under TWC § 36.108, the factors described under TWC § 36.108 and any relevant information provided in the petition or available to TWDB. TWDB's study must be delivered to SOAH for consideration by a SOAH Administrative Law Judge ("ALJ") during a hearing on the reasonableness of the appealed DFC. In light of this statutorily mandated process, it is important that careful and meaningful consideration of the information relevant to each of the nine factors specified in TWC § 36.108(d) is conducted and memorialized: (i) by the District Representatives at the GMA level prior to proposal of a DFC; and (ii) after receipt of public comments prior to final adoption, by TWDB during both its administrative review and its substantive review, as well as the development of its report to be submitted to SOAH. Consequently, what is memorialized by the District Representatives and TWDB will be important evidence subject to review during SOAH's hearing.

After the conclusion of the SOAH hearing, SOAH's ALJ will issue a proposal for decision that includes findings of fact and conclusions of law. Should the district whose DFCs are on appeal vacate or modify the ALJ's proposal for decision, as contemplated by TWC § 36.1083(o), the district must issue a report describing in detail the district's reasons for disagreement with the ALJ's findings of fact and conclusions of law. The report shall provide the policy, scientific, and technical justifications for the district's decision.

1.4 The Need for This Analysis

Like most GMAs in Texas, GMA 12 has historically met the statutory requirement to consider socioeconomic impacts by presenting the TWDB's regional socioeconomic impact analysis for water planning groups during the joint planning process. While this approach has provided useful regional context, the TWDB's standard analysis has important limitations that constrain its usefulness for DFC decision-making in GMA 12's current planning cycle.

The TWDB analysis operates at a regional, water-planning-group scale and does not address the economic impacts associated with declining groundwater levels caused by increased pumping or the forgone economic activity associated with limited water production. It is not designed to evaluate the relative socioeconomic differences between alternative DFC scenarios—such as those under active consideration by GMA 12—and therefore provides no basis for comparing the economic consequences of one DFC option against another. Because it is not a comparative study of the socioeconomic impacts of alternative groundwater management goals, it cannot inform a determination of how to balance socioeconomic impacts of alternative DFCs alongside other competing public interests including the long-term integrity of the resource.

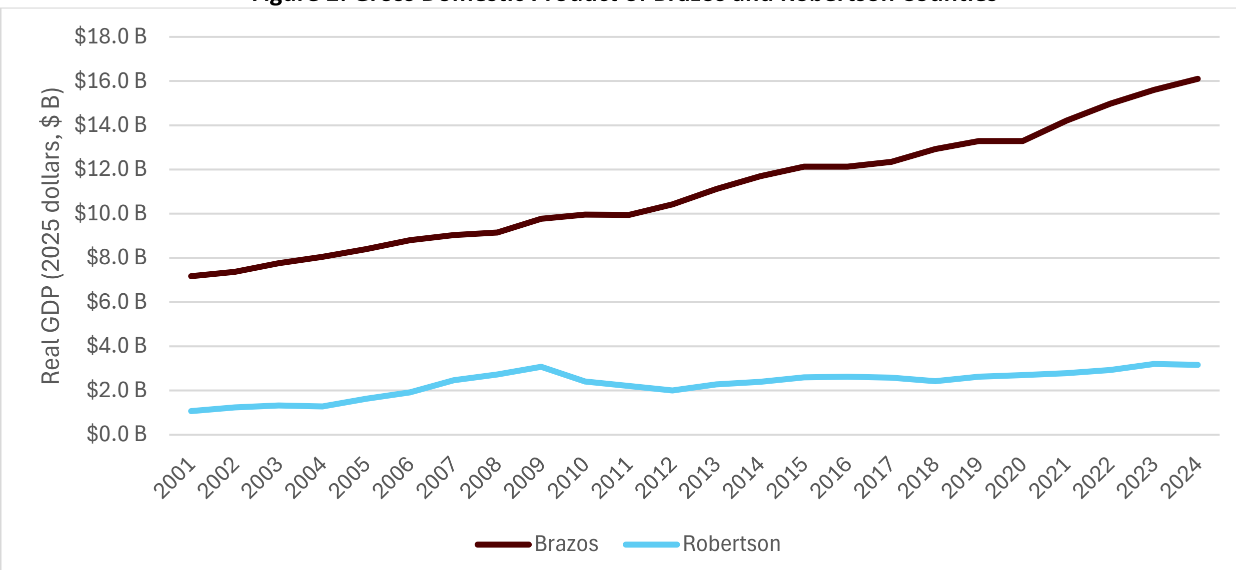
This study has been developed in accordance with the requirements set forth by TWC § 36.108 and § 36.1083 using widely accepted scientific and technical approaches to quantifying the socioeconomic impacts of groundwater management goals to support the statutorily required considerations set forth in TWC § 36.108. It provides the scenario-specific, aquifer-level, socioeconomic, scientific and technical assessments required to justify a proposed DFC, that TWC § 36.108(d) and § 36.108(d-3)(2) require, equipping GMA 12 with the evidentiary foundation needed to adopt a DFC for the Simsboro Aquifer that is both legally defensible and grounded in sound science and policy, in the event of an appeal under the standard of review and considerations set forth in TWC § 36.1083.

2 Regional Economic Profile

2.1 Gross Domestic Product & Population

The Brazos–Robertson study area combines two distinct county economies: a larger, faster-growing, and increasingly urbanized Brazos County, and a smaller, more rural Robertson County. In aggregate, the region has experienced substantial and sustained economic expansion. Using real GDP (2025 dollars), combined output increased from $8.24 billion in 2001 to $19.26 billion in 2024, a gain of approximately 133.7 percent (about 3.8 percent average annual growth) (**Figure 2**).[7] Brazos County is the primary driver of regional output throughout the period and accounts for approximately 83.6 percent of total 2024 real GDP ($16.1 billion of $19.26 billion). Robertson County remains much smaller in absolute economic scale, but its real GDP also increased materially over the same period, from approximately $1.07 billion to $3.16 billion. This regional GDP pattern is therefore best characterized by sustained long-run growth anchored by Brazos County, alongside a smaller Robertson County economy that can post strong percentage gains from a lower base. Because the GDP series is expressed in real (inflation-adjusted) terms, these trends reflect changes in economic output volume rather than changes driven primarily by price inflation.

Figure 2: Gross Domestic Product of Brazos and Robertson Counties



The demographic profile shows an even stronger concentration of growth in Brazos County. Census counts indicate that the combined two-county population increased from 168,944 in 2000 to 251,466 in 2020 (48.8 percent growth), with Brazos County increasing from 152,930 to 234,515 (53.3 percent) and Robertson County growing only modestly from 16,014 to 16,951 (5.9 percent) (**Figure 3**).[8] TWDB planning projections extend this divergence over the long term.[9] The combined population is projected to reach 313,322 by 2030 and 601,096 by 2080, with nearly all project growth occurring in Brazos County (586,922 by 2080), while Robertson County is projected to gradually decline to 14,174. Taken together, the economic and

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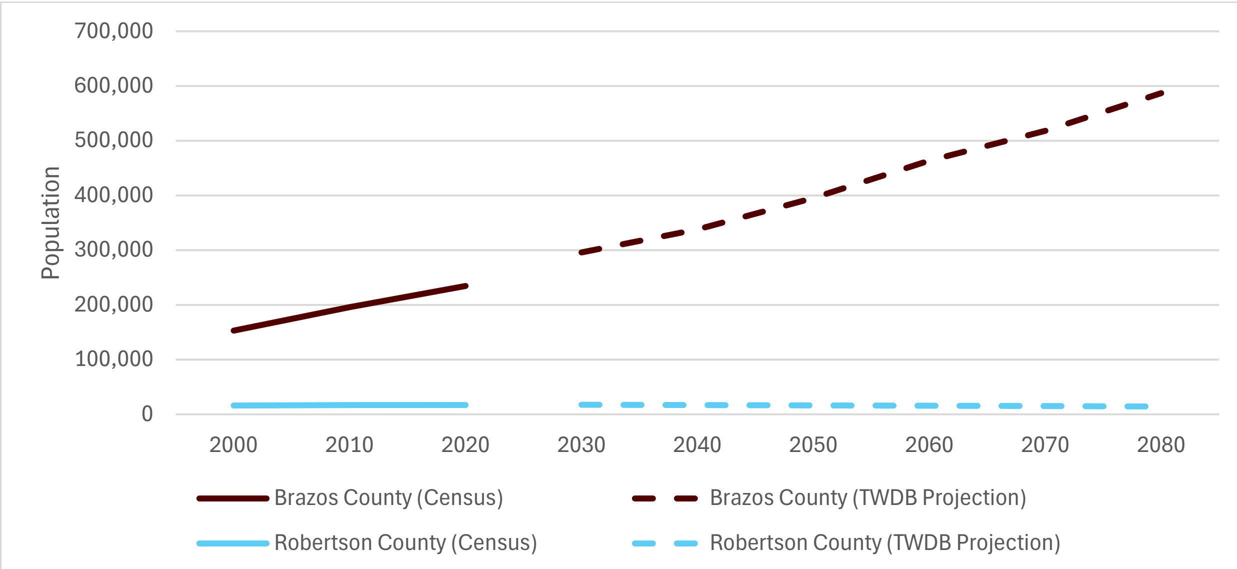
[7] U.S. Bureau of Economic Analysis, Real Gross Domestic Product [GDPCA], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/GDPCA

[8] U.S. Bureau of Economic Analysis, Resident Population, retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/data/TXBRAZ3POP

[9] Texas Water Development Board, 2027 State Water Plan Adopted Population Projections; https://www.twdb.texas.gov/waterplanning/data/projections/index.asp

demographic data indicate that future regional growth pressures, including municipal water-demand growth, are likely to remain heavily concentrated in Brazos County, while Robertson County's demand profile may continue to depend more on sector-specific activity than on population expansion.

Figure 3: Population of Brazos and Robertson Counties



2.2 Regional Groundwater Supplies

Groundwater is the dominant water-supply source within the Brazos Valley Groundwater Conservation District (BVGCD) and forms the operational backbone of municipal, agricultural, and other water uses in the district. Although tributaries of the Brazos River traverse both Brazos and Robertson Counties and the mainstem of the Brazos River lies along portions of the counties' southwestern boundary, surface water is used primarily for agricultural purposes and does not currently serve as a practical municipal supply source at scale within BVGCD. In economic and infrastructure terms, this reflects path dependence in the regional water system: most public water providers in the district have built treatment and distribution systems around groundwater production rather than surface-water treatment and conveyance.

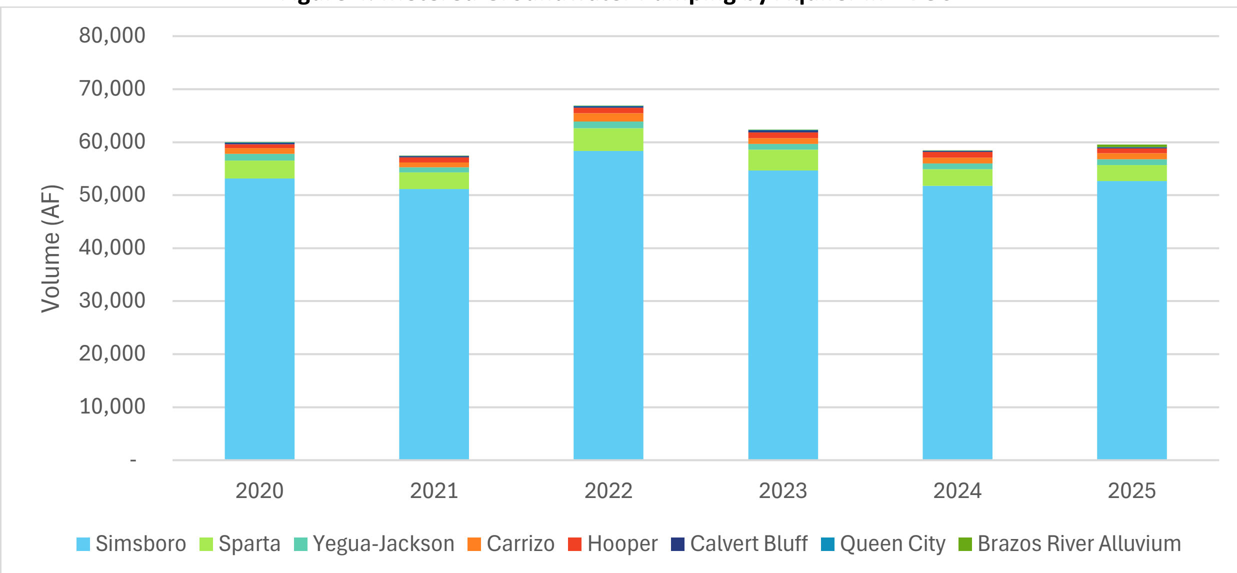
BVGCD overlies eight aquifer units with materially different yield characteristics, water quality, and geographic distribution. The Simsboro Formation (part of the Carrizo-Wilcox Aquifer) is the district's most productive groundwater source and supports the largest-capacity municipal and agricultural wells. The Sparta Aquifer also supports large-capacity use, but at substantially lower volumes than Simsboro. Other aquifers, including Queen City, Calvert Bluff, Hooper, and Yegua-Jackson, provide usable groundwater for domestic, livestock, irrigation, industrial, and limited municipal demand, but availability and production rates vary significantly by location. Aquifer access is also spatially uneven across the district (for example, Calvert Bluff production is concentrated in Robertson County, while Yegua-Jackson production is generally concentrated in Brazos County). Brazos River Alluvium wells are used primarily for irrigation, and water quality conditions in the alluvium are generally not considered suitable for municipal/public supply use.

Metered pumping data for 2020–2025 confirm a highly concentrated production profile (**Figure 4**).[10] The Simsboro Aquifer supplied approximately 51,128 to 58,313 acre-feet per year over this period and accounted for roughly 87–89 percent of total metered groundwater production annually (about 88.2 percent on average). By comparison, the Sparta Aquifer—the next-largest source—contributed 3,046 to

[10] 2025 BVGCD Annual Report; https://brazosvalleygcd.org/files/?upf=dl&id=25787

4,308 acre-feet per year (generally about 5–7 percent of total metered pumping), while all remaining aquifers each represented relatively small shares. From a socioeconomic-impact perspective, this concentration is a critical baseline condition: district-wide water availability, observed production trends, and the economic effects of future management actions are primarily determined by Simsboro Aquifer performance and related permitting/curtailment constraints. Secondary aquifers provide localized supply diversity, but they do not currently operate at a scale sufficient to serve as meaningful substitutes for the additional Simsboro volumes made available under a less restrictive DFC.

Figure 4: Metered Groundwater Pumping by Aquifer in BVGCD



2.3 Data Center and Power Development

Texas data center development increasingly looks like a joint electricity–water capacity problem rather than a pure real estate or tax-incentive story. Houston Advanced Research Center (HARC) (using Baxtel and Energy Information Agency (EIA)-based estimates) reports 464 operating facilities in Texas, with the footprint concentrated in Dallas–Fort Worth (197 sites), San Antonio (60), West Texas (59), Austin (53), and Houston (48), plus more than 70 additional sites under construction as of September 2025.[11] Existing facilities are estimated to require roughly 9,567 MW of power capacity, about 8% of the Electric Reliability Council of Texas' (ERCOT's) stated summer available generation capacity and, if operated continuously, could account for about 13% of Texas electricity production (2023 basis). The key economic signal is forecast dispersion: ERCOT-linked projections show 2030 data-center load ranging from 22,175 MW (adjusted realization case) to 77,965 MW (transmission-provider pipeline case), implying a very large wedge between announced demand and deliverable grid capacity. That wedge is what is driving alternative siting and procurement strategies, including co-location with generation and "behind-the-grid" power arrangements.

HARC estimates current statewide data-center water use (including indirect power-related use) at about 25 Bgal (77 kAF), with statewide total consumption equivalent to roughly 0.44% of Texas water demand. For 2030, direct cooling-water demand at data centers alone is estimated at 23–24 Bgal (71–74 kAF) under the 22,175 MW case and 81–87 Bgal (249–267 kAF) under the 77,965 MW case (roughly 0.4% to 1.4% of

[11] "Thirsty Data and the Lone Star State: The Impact of Data Center Growth on Texas' Water Supply", HARC, January 2026; https://harcresearch.org/wp-content/uploads/2026/01/Thirsty-Data-Water-Use-and-The-Projected-Data-Center-Boom-in-Texas.pdf

statewide annual demand). On the power side, if growth is served by more water-efficient grid additions, marginal power-plant water consumption falls to 6–20 Bgal (18–64 kAF)(0.1%–0.3% of total demand); if instead the "off-grid" residual load is served by onsite natural gas combined-cycle generation, HARC estimates 21–74 Bgal (64–227 kAF) of power-plant water consumption (0.4%–1.2%), with dry-cooled/solar/solar+storage pathways potentially reducing indirect cooling-water demand to near zero. In short, co-location with power solves a reliability/timing constraint, but whether it improves system welfare depends heavily on the water intensity of the chosen generation technology.

Potential PS4-3 was structured to capture the demand of the expected growth in these sectors. In this study, future incremental groundwater pumping under both scenarios was allocated to data center, power and associated increased residential demand as discussed in Section 4.2.

3 Study Approach

3.1 Overview

The purpose of this economic analysis is to quantify, monetize, and evaluate the tradeoffs between the adoption of alternative DFCs within BVGCD, with particular focus on the additional economic activity enabled by the incremental groundwater volumes available under the locally preferred Potential PS4-3 relative to PS4-2. The analytical framework is grounded in a direct comparison of two DFC scenarios—PS4-2 and Potential PS4-3—using modeled pumping files provided by BVGCD. The additional Simsboro pumping volumes available under Potential PS4-3 above PS4-2 constitute the study's measure of incremental water supply benefit, and all economic impacts are assessed in relation to that additional volume. Total economic impacts include direct effects (initial, immediate changes in economic activity resulting from a scenario), indirect effects (changes in expenditures within the region in industries supplying goods and services), and induced effects (changes in expenditures of household income).

3.2 Groundwater Availability Model Runs

The analysis draws on a series of Groundwater Availability Model (GAM) runs developed in connection with GMA 12's ongoing DFC process. This analysis estimates the economic impacts of pumping under Potential PS4-3 relative to PS4-2. Two earlier GAM runs provide background context but are not used in this analysis.[12]

Run PS4-2 corresponds to an anticipated 284-foot DFC and represents the scenario approved to be used as a base run in DFC planning by GMA 12 on November 20, 2025. It reflects a collaborative effort by the GCDs to estimate pumping volumes based on anticipated use but was not constructed to reflect full build-out to permitted amounts. PS4-2 serves as the constrained pumping scenario in this analysis and defines the upper bound on allowable Simsboro pumping under the associated DFC. PS4-2 includes production consistent with permitted pumping for transport outside the district. This pumping is associated with permits issued by BVGCD to UW Brazos Valley Farm LLC and a set of associated landowners, which is subject to a collective export volume limit of 50,000 acre-feet per year (AFY) under a Negotiated Settlement

[12] Run S-19 is associated with the Simsboro DFC adopted in 2022, which reflected a 262-foot drawdown threshold. S-19 was selected by GMA 12 in November 2021 following GAM simulations and served as the basis for the 2022 DFC and its accompanying explanatory report. Like most GMA 12 future pumping scenarios, S-19 was constructed using a combination of permitted and anticipated pumping volumes. Although S-19 was initially considered within this study, GMA 12 reached a general consensus during the study period to move toward a newer GAM run, and S-19 is no longer treated as a relevant reference point. Run PS4-1 is not included in this analysis or in any figures but serves as a reference point in the broader GMA 12 DFC selection process. It was constructed to include all permitted pumping volumes.

Agreement executed in June 2025.[13] The Negotiated Settlement Agreement was established between UW Brazos Valley Farm LLC and associated landowners, BVGCD, Texas A&M University System, Brazos County, City of Bryan and City of College Station.

Potential PS4-3 corresponds to a 330-foot DFC and is not an official GMA 12 run. Rather, it represents BVGCD's best estimate of local pumping demand layered on top of PS4-2. Potential PS4-3 includes pumping associated with UW Brazos Valley Farms LLC consistent with PS4-2. Potential PS4-3 adds pumping volumes in the Simsboro Aquifer (along with other aquifers not included in this study) and serves in this study as the proxy for incremental water demand. It is important to note that neither S-19 nor PS4-2 accounts for additional potential large-scale commercial and industrial water needs within Brazos and Robertson Counties—such as semiconductor facilities, modular nuclear reactors, data centers, or mining operations—whereas Potential PS4-3 incorporates additional pumping to serve these demands and related increases in municipal demands from the economic growth they create.

3.3 Stakeholder Engagement

The study incorporated a stakeholder engagement process intended to ground-truth TWDB regional water plan supply strategies, validate demand projections, and assess how water providers would respond under alternative DFC scenarios.

Working collaboratively with BVGCD, the team identified the five largest municipal water providers in the district; the Cities of Bryan and College Station, Texas A&M University, Wellborn SUD, and Wickson Creek SUD, and conducted individual 45-minute structured interviews with each during December 2025. The interviews were designed to validate supply strategies, clarify demand forecasts, understand expected development costs, and explore each entity's anticipated response to different DFC outcomes. Following the interviews, the study team decided to limit future supply availability to water users' existing supplies, augmented with supply growth from the Simsboro Aquifer.

The engagement process produced several substantive findings. Stakeholders identified a significant gap between regional water plan cost estimates and actual recent development costs and expressed considerable skepticism about the accuracy of regional plan demand projections. The availability and viability of alternative water supply sources proved more constrained than planning documents suggest, with multiple providers citing technical, economic, or regulatory barriers to nominally identified Simsboro alternative supply sources.

Stakeholders stated an intention to produce additional Simsboro supplies to meet growing demands. While the regional water plan identifies alternative (non-Simsboro) strategies, their technical and financial feasibility is unknown and considered speculative for this analysis. Based on these qualitative insights, the study was constructed to measure the change in economic output over the 50-year modeling period resulting from the volumetric difference in available Simsboro groundwater between Potential PS4-3 and PS4-2.

3.4 Scenario Definition

BVGCD has indicated, based on local knowledge of existing and anticipated water uses within its jurisdiction, that Potential PS4-3 represents the best available approximation of future groundwater demand in the area. For the purposes of this analysis, Potential PS4-3 is therefore treated as the incremental demand scenario, reflecting the pumping volumes that would occur if water users were able to meet their reasonably

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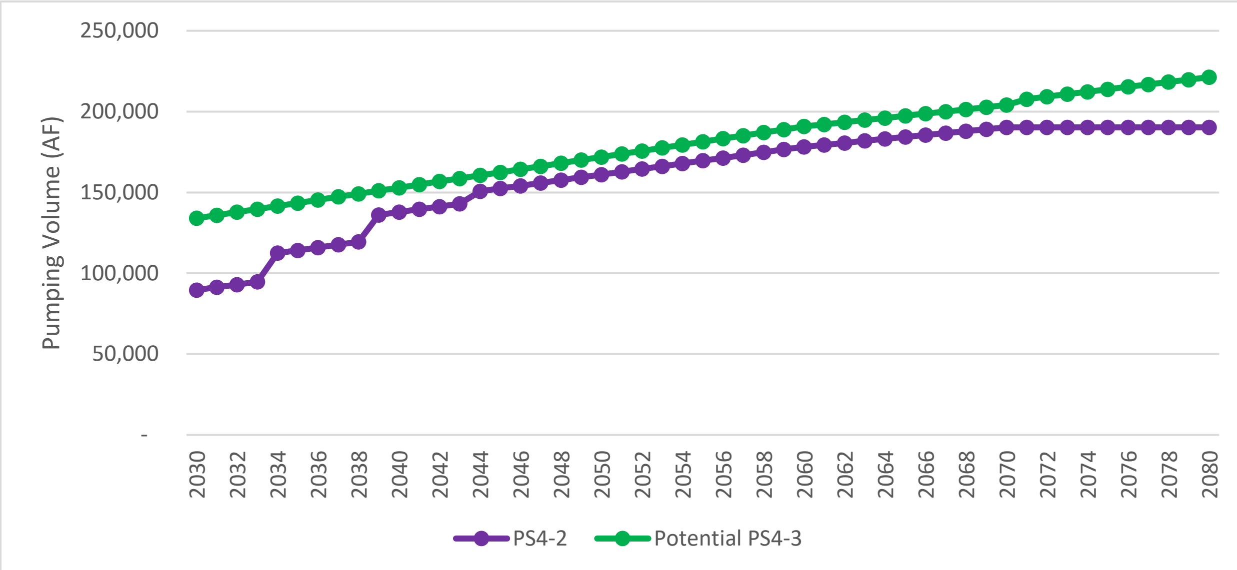
[13] 2025 Negotiated Settlement Agreement; https://brazosvalleygcd.org/wp-content/uploads/2025/06/Settlement-and-Release-Agreement-Execution-Version-June-24-2025.pdf

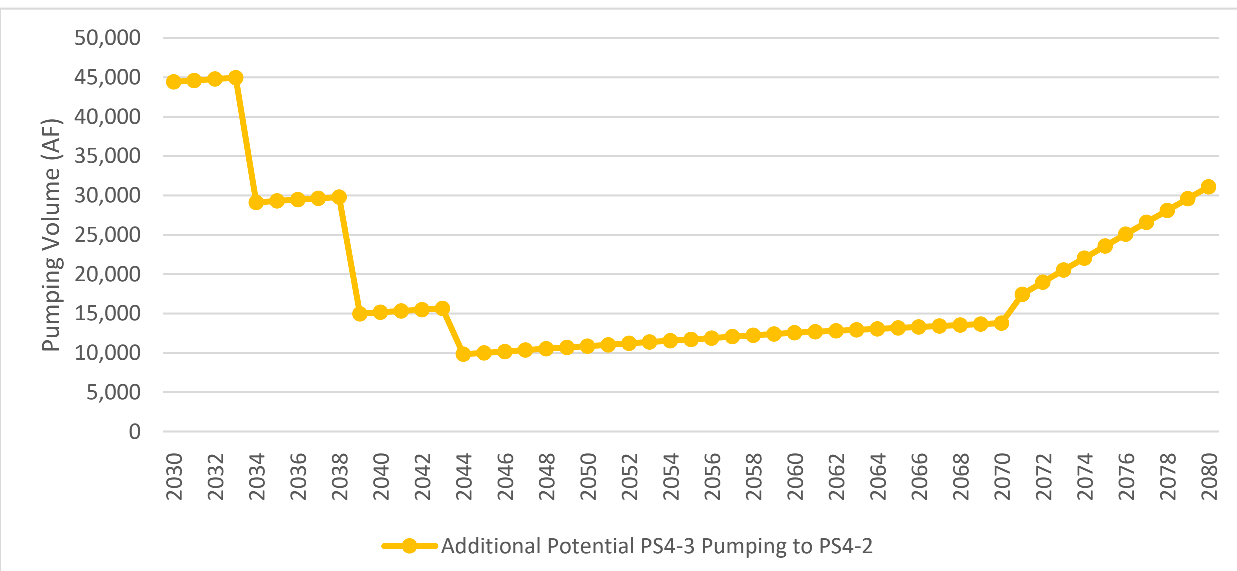
anticipated needs from the Simsboro Aquifer. PS4-2, by contrast, represents a more constrained DFC that limits allowable pumping to a lower threshold (**Figure 5**).

Figure 5: BVGCD Simsboro Annual Pumping Volumes



The incremental water supply benefit is defined in this study as the additional volumetric pumping available under Potential PS4-3 relative to PS4-2 over the study period of 2030 through 2080 (**Figure 6**). Over the fifty-year model horizon, this incremental water supply benefit is nearly 1 million acre-feet. Where Potential PS4-3 pumping exceeds PS4-2 pumping, the difference represents additional water supply unlocked by the less restrictive DFC and made available to support regional growth. Economic impacts are assessed as a function of this additional volume—specifically, the economic activity enabled when Simsboro pumping is permitted to reach the levels reflected in Potential PS4-3 rather than being held to PS4-2 levels.

Figure 6: Simsboro Pumping Difference (Potential PS4-3 minus PS4-2)



3.5 Demand Assumptions and Supply Sources

A key methodological decision in this study is the treatment of future water supply sources. Alternative water supply strategies, such as those that might be identified through regional water planning, were considered as a potential means of offsetting any shortage created by a more restrictive DFC. However, the feasibility of developing and deploying such alternative supplies within the study area is uncertain, therefore their inclusion in the analysis would be overly speculative. Accordingly, BVGCD and stakeholders agreed that this analysis should assume continued reliance on the Simsboro Aquifer as the source of all future water supply growth. This assumption is conservative in the sense that it does not credit users with access to substitute supplies that may not materialize, and it ensures that the full economic value of the additional water supply available under Potential PS4-3 is not understated by speculative offsets.

The water demand forecasts applied in the regional planning process likely underestimate commercial and industrial demand. The additional demand applied in Potential PS4-3 is intended to capture the reasonably expected increase in commercial and industrial water demands (data centers, power, etc.) as well as the associated population growth that will result from the increased economic activity.

3.6 UW Brazos Valley Farms LLC Project Considerations

The export project associated with UW Brazos Valley Farms LLC is a large, proposed export project of Simsboro groundwater sourced from Robertson County permitted to serve communities in Bell, Milam, Travis and Williamson Counties. Its production schedule and volumes are constrained by the 2025 Negotiated Settlement Agreement. The negotiated settlement ramp limits the project to 23,000 AFY for 2029–2033, 39,000 AFY for 2034–2038, and 50,000 AFY from 2039 onward. Under that settlement, the UW Brazos Valley Farms LLC project pumping volumes are fixed and treated identically under both PS4-2 and Potential PS4-3. As a result, the project does not contribute to the modeled shortage and is not a differentiating factor in this analysis.

3.7 Study Limitation: Curtailment Not Modeled

BVGCD uses three threshold drawdown levels (Levels 1–3) based on the BVGCD-wide average aquifer drawdown for an aquifer, calculated using a BVGCD-approved methodology, and measured as an average of the three consecutive years immediately prior to reaching the trigger.[14]

Table 1: BVGCD Curtailment Levels

DFC Threshold Level	Trigger	BVGCD Response / Actions	Notes
Level 1	BVGCD-wide average drawdown > 65% of the DFC drawdown amount for that aquifer	BVGCD may designate Study Area(s) (using best available science), increase monitoring/reporting, perform targeted meter checks in study areas, and advance conservation programs; may also conduct studies to improve GAMs/other methods	Early warning / monitoring and data refinement stage

[14] BVGCD Rules, Approved 10/9/2025: https://brazosvalleygcd.org/files/?upf=dl&id=23972

Level 2	BVGCD-wide average drawdown > 80% of the DFC drawdown amount for that aquifer	BVGCD may consider adopting Depletion Management Zone(s) (DMZs) in areas with significant drawdown and may adopt production limitations (including potential reductions to existing/future permits) and increased well spacing within DMZs; permit changes due to DMZ curtailment are subject to hearing procedures	BVGCD also calls for evaluating curtailment need as drawdown reaches 80% of DFC (or trends to exceed DFC), plus a public hearing and a response plan (targeted within 6 months after first public hearing)
Level 3	BVGCD-wide average drawdown > 90% of the DFC drawdown amount for that aquifer	BVGCD states it shall curtail as drawdown reaches 90% of DFC (or trends to exceed it), using a pro rata formula to be determined by the BVGCD Board by the time Level 3 is reached; formula may apply different ratios to historic vs. non-historic permits, is based on actual production / maximum beneficial use in any permitted year, and exempt wells cannot be reduced	After curtailment, new wells may still be permitted, but permit amounts are immediately reduced by existing curtailments (within non-historic permits); reductions may be reinstated if aquifer levels recover and average drawdown is < 90% of the adopted DFC

This study does not quantify the economic impacts of potential curtailment events. Two reasons support this boundary. First, any Depletion Management Zones that BVGCD might designate under DFC Threshold Level 2 are discretionary, and their geographic boundaries and specific operating conditions have not been defined. Second, the pro rata curtailment formula applicable under DFC Threshold Level 3 is explicitly reserved for determination by the BVGCD Board at such time as that threshold is approached. Because the spatial scope, proportional reductions, and permit-specific implications of curtailment cannot be specified at this time, incorporating curtailment into the economic model would require assumptions too speculative to be defensible. The analysis therefore focuses on the incremental water supply available under Potential PS4-3 above PS4-2 as the primary driver of economic benefit, with the understanding that avoided curtailment risk represents an additional, unquantified dimension of the benefits associated with a less restrictive DFC.

4 Direct Economic Impacts

This section describes the methodology for estimating the direct economic impacts of the additional water supply unlocked under the Potential PS4-3 pumping projection scenario. Direct impacts represent the initial, immediate economic benefits of the incremental water availability under the less restrictive DFC, before accounting for secondary, or ripple effects through supply chains and household spending that are captured in the indirect and induced impact analysis presented in Section 6.

The analysis evaluates direct economic benefits through three channels: (1) pumping cost differentials associated with groundwater elevation changes between scenarios; (2) additional economic activity enabled by sector-specific water allocations under the incremental volumes available in Potential PS4-3; and (3) residential housing development supported by induced population growth. For each category, both the Potential PS4-3 and PS4-2 scenarios are modeled independently, and the incremental benefit is derived as the difference between them.

The methodological basis for estimating these direct impacts follows a water to economic activity approach. Projected pumping volumes under each scenario are allocated across four distinct demand sectors-combined-cycle natural gas generation (70%), nuclear power generation (15%), hyperscale data centers (10%), and residential housing (5%), using fixed shares that reflect the anticipated composition of new development in the region. Within each sector, facility-specific engineering parameters convert acre-feet of water into generating or computing capacity, which determines quantifiable levels of capital investment, operational output, and employment. Construction spending is regionalized using local capture rates that account for differences in labor intensity and equipment sourcing across facility types, and all inputs are annualized within each analysis period to produce representative annual values consistent with the inputs requirements for the modeling applied to estimate secondary regional effects. The subsections that follow detail each component of the process.

4.1 Pumping Cost Estimation

Pumping costs were estimated for both PS4-2 and Potential PS4-3 across the 2030–2080 analysis period using projected pumping volumes and depth-to-water data provided by BVGCD. Because Potential PS4-3 unlocks greater pumping volumes and, in most locations, involves modestly deeper water levels than PS4-2, it carries somewhat higher associated pumping costs. These incremental costs are accounted for in the modeling framework as an offset against the broader economic benefits enabled by the additional water supply, and are modest in scale relative to the output, labor income, and tax revenue those supplies generate.

Annual pumping costs were estimated using a standard energy-based pumping cost formula:

$$Annual\ Pumping\ Cost = \frac{Pumping\ Volume\ x\ Total\ Dynamic\ Head\ x\ 1.024}{Pumping\ Efficiency\ x\ Motor\ Effieicnty}\ x\ \$/kwh$$

Where:

- Pumping Volume is expressed in acre-feet per year
- Total Dynamic Head (TDH) equals static lift plus friction losses plus pressure head, measured in feet
- Pressure head is calculated by multiplying system pressure (PSI) by 2.31 to convert to feet of head
- The constant 1.024 represents kilowatt-hours per acre-foot per foot of head at 100% efficiency
- Motor Efficiency and Pump Efficiency are expressed as decimals representing the percentage of energy converted to useful work at each stage
- Electric Rate is the cost per kilowatt-hour

To isolate the effect of the scenario-specific changes in pumping volume and depth to water, several inputs are held constant at values representative of a typical municipal well: friction losses of 15 feet, system pressure of 50 PSI, motor efficiency of 0.91, and pump efficiency of 0.65.

Electricity rates are drawn from Bryan Texas Utilities (BTU), whose service area covers a substantial portion of BVGCD. The analysis applies BTU's in-city commercial rate schedule for demand between 25 kW and 1,000 kW, which includes a monthly customer charge of $26.91, a demand charge of $4.14/kW, and an energy charge of $0.0142/kWh.[15] Rates are escalated at 3% annually over the analysis period to reflect expected electricity price growth.

Pumping costs were calculated individually for each BVGCD-permitted well using the scenario-specific depth-to-water values from the modeled runs and then aggregated across all permitted wells. This well-by-well approach captures spatial variation in drawdown across the aquifer and avoids the distortions that can arise from relying on a single representative well or district-wide average.

In the modeling framework, the incremental pumping cost associated with the additional water supply available under Potential PS4-3 vs. PS4-2 is modeled as a partial offset to household income, reflecting the pass-through of modestly higher utility costs to residential customers. This cost is mapped to the modeled household income category for households earning $70,000–$100,000 annually, consistent with median household income in Brazos and Robertson Counties.

While the average depth-to-water differential between scenarios fluctuates across the analysis horizon, incremental annual lift costs increase in later decades, driven by the combined effect of higher sustained pumping volumes and escalating electricity prices. **Table 2** presents the average additional depth-to-water change and corresponding average annual incremental lift cost by decade. The cost is included in the analysis for completeness and methodological rigor, but it does not materially alter the economic case for the additional volumes available under Potential PS4-3.

Table 2: Additional Pumping Costs (Potential PS4-3 minus PS4-2)

	2030	2040	2050	2060	2070	2080
Average additional change in depth to water	45	24	20	22	34	45
Average annual additional lift cost	$784,874	$557,211	$805,442	$1,341,847	$3,168,564	$5,040,263

4.1.1 Well Infrastructure Costs

In addition to ongoing pumping costs, deeper groundwater levels associated with increased Simsboro production require one-time capital expenditures to maintain the operational integrity of existing wells. As the water table declines, wells may require either pump lowering—repositioning the pump intake to remain below the water surface—or full redrilling to extend the well casing to a greater depth.

Well infrastructure cost estimates were developed by BVGCD in connection with the establishment of the Well Assistance Fund under the 2025 Negotiated Settlement Agreement. The estimates were prepared by reviewing all 612 BVGCD-permitted or registered Simsboro wells and assessing the need for redrilling or pump lowering based on simulated water levels. Where a well was estimated to require both interventions within its 30-year permit term, redrilling costs were applied in the year pump lowering would otherwise have been required. Detailed construction data were not available for all wells, so engineering assumptions were applied where necessary. Combined, total well infrastructure costs across all wells are estimated at approximately $94 million.

Because well infrastructure needs are driven primarily by long-run aquifer drawdown patterns that are broadly similar under both PS4-2 and Potential PS4-3, BVGCD directed that well assistance costs be treated as equivalent across both scenarios for the purposes of this analysis. Accordingly, well infrastructure costs are not included in the IMPLAN modeling and do not affect the incremental economic results. They are

[15] Bryan Texas Utilities Rate Schedule: https://btutilities.com/sites/default/files/ordinance-2498-1.pdf

presented here for completeness to provide a full accounting of the infrastructure obligations associated with Simsboro production at the district scale.

4.2 Economic Impact Methodology

Socioeconomic impacts are estimated using a counterfactual framework: the analysis asks what economic activity within Brazos and Robertson Counties would be foregone if Simsboro pumping is limited to PS4-2 rather than allowed to reach Potential PS4-3 levels. The incremental water supply volume—defined as the annual additional pumping available under Potential PS4-3 above PS4-2—serves as the primary input to the economic benefit assessment.

The analytical approach translates the incremental water supply available under Potential PS4-3 as compared to PS4-2 into economic benefits through three sequential steps. First, the incremental water volume in each analysis period is allocated across demand sectors reflecting the anticipated composition of new economic activity in the region. Second, sector-specific engineering and financial parameters convert water allocations into direct economic inputs: construction investment on an aggregate scale and operational revenue and employment for each facility type. Third, these direct inputs are applied in a regional input-output model to estimate the full direct, indirect, and induced economic effects further discussed in Section 5.1.

The incremental water supply available under Potential PS4-3 is allocated across four demand sectors using fixed percentage shares. These shares reflect the anticipated composition of future water demand based on regional development conditions, stakeholder intelligence, and the categories of large-scale commercial and industrial (C&I) projects under active consideration within Brazos Valley GCD:

- **Combined-cycle natural gas power generation (70%)** - reflecting the substantial cooling water requirements of thermal power production and the region's strategic proximity to the ERCOT grid infrastructure, including Texas A&M's RELLIS campus and proposed next-generation power facilities. The productive load of this generation is assumed to be split between on-grid power generation and off-grid generation co-located with data centers. It is assumed the domestic electrical systems can handle the power load under this split or will be improved to do so.
- **Nuclear power generation (15%)** - representing emerging interest in small modular reactor (SMR) and advanced nuclear deployment in Texas, supported federal and state legislative actions encouraging next-generation nuclear siting and stakeholder indication of nuclear power development associated with Texas A&M.
- **Hyperscale data center operations (10%)** - based on the ongoing expansion of data center development across Texas, driven by AI and cloud computing demand, and the joint electricity and water capacity requirements that favor locations with co-located power and water availability.
- **Residential Housing (5%) -** Capturing the population growth and housing construction associated with the workforce attracted by new development.

These allocated shares are held constant across all analysis periods and applied to the Potential PS4-3 and PS4-2 incremental Simsboro groundwater pumping in each period.

Each C&I sector's economic contribution is derived from a water-to-capacity conversion that translates acre-feet of water supply into megawatts of generating or computing capacity, which in turn supports quantifiable levels of capital investment, operational revenue, and employment. This approach avoids the use of generalized per-acre-foot economic multipliers and grounds each input in facility-specific water use and engineering relationships. Sector-specific parameter values, data sources, and conversion factors are presented in Appendix A.

Residential housing uses a per-unit water demand of 0.35 acre-feet per home per year[16], applied to pumping forecasts applied throughout the analysis. Construction value per home is based on regional building cost data for Brazos and Robertson Counties. Economic benefits from new housing, like other sectors, are estimated for construction spending, and annual operations, which reflect annual rents.

Capital investment estimates for each facility type are regionalized using facility-specific local capture rates that reflect differences in local construction labor intensity and equipment sourcing. Power generation construction is more labor-intensive and draws more heavily from domestic supply chains and local share accounts for approximately 57% of this.[17] The local share of construction labor and equipment intensity for data centers is assumed to be 25%.[18] Data center development involves significant imports of specialized cooling, electrical, and server equipment manufactured outside of the region. Calculated water values for construction and operation are included in **Table 3**. Additional metrics used to determine volumetric costing can be found in **Appendix A: Nuclear Power, Combined Cycle Natural Gas Generation, and Data Center Economic Input** Methodology**.**

Table 3: Volumetric Costing for C&I uses

Metric	Nuclear Power Generation	Combined Power Cycle Generation	Data Center Facilities
Construction Spend ($/AF)	$66,728	$13,783	$1,721,645
Annual Operating Spend ($/AF/Year)	$10,063	$4,207	$400,904
Generating/Computing Capacity Supported by 1 AF (MW)	0.034	0.031	0.77 (50% utilization)

For each period in the analysis, the model calculates direct economic inputs for both the Potential PS4-3 and PS4-2 scenarios independently and subsequently derives the incremental impact as the difference between the two. This dual-scenario approach ensures that the reported economic impacts represent only the marginal contribution of additional water supply under Potential PS4-3 pumping, rather than the total economic activity in the region. Direct inputs into IMPLAN are organized into six categories, each mapped to the appropriate IMPLAN industry sector and impact channel as displayed in **Table 4.**

Table 4: IMPLAN Input Categorization

Input Category	Represents	IMPLAN Industry
Construction	Total capital spending across all C&I and residential sectors	4 – 23 – Construction
Residential	Payments, rents and increased spending associated with enabled housing production	11 – 53 – Real Estate and Leasing
Data Center Operation	Operational spending associated with data centers	9 – 51 – Information
Power Generation Operations	Operational spending associated with Nuclear and Combined Cycle power generation	3 – 22 – Utilities
Pumping Costs	Increased pumping costs for deeper groundwater elevations under Potential	10006 – Households 70-100k (based on average household

16 Texas Water Development Board, Water Use of Texas Water Utilities, historical use estimates. https://www.twdb.texas.gov/waterplanning/waterusesurvey/estimates/

17 Regional Economic Development for East Idaho (REDI), Construction and operation of a small modular reactor electric power generation facility ant the Idaho National Laboratory Site, Butte County, Idaho.

18 (JLARC) Report to the Governor and General Assembly of Virginia, Data Centers in Virginia, 2024, Commission Draft.

	PS4-3. Affects water utility rates and household income.	income in Brazos and Robertson County.

Annualized inputs for each period are calculated by dividing the total period impacts by the number of years in each time interval. This annualized figure represents an “average” or “representative” year that IMPLAN models within each period, consistent with IMPLAN’s point-in-time analytical framework. IMPLAN then applies its regional multiplier structure to generate the full suite of direct, indirect, and induced effects reported in the following section.

4.3 Direct Economic Impacts

Table 5 shows additional economic output generated by new water supply development in in specific commercial and residential sectors by period under the Potential PS4-3 and PS4-2 scenario. These values are the average additional spending across construction, operations and pumping sectors that would flow into the Brazos and Robertson County economies relative to current levels of groundwater pumping. These annual figures serve as the direct inputs to the IMPLAN regional economic model, which then calculates the full suite of indirect and induced effects reported in the results.

The results reflect both the scale and composition of enabled economic activity from augmented water supplies. In the early periods (2029-2033), construction output dominates as new facilities are developed, contributing to over $900 million annually in the in the 2029-2033 period under Potential PS4-3. As facilities transition from construction to operations, data center and power generation operational spending increasingly drives the output profile.

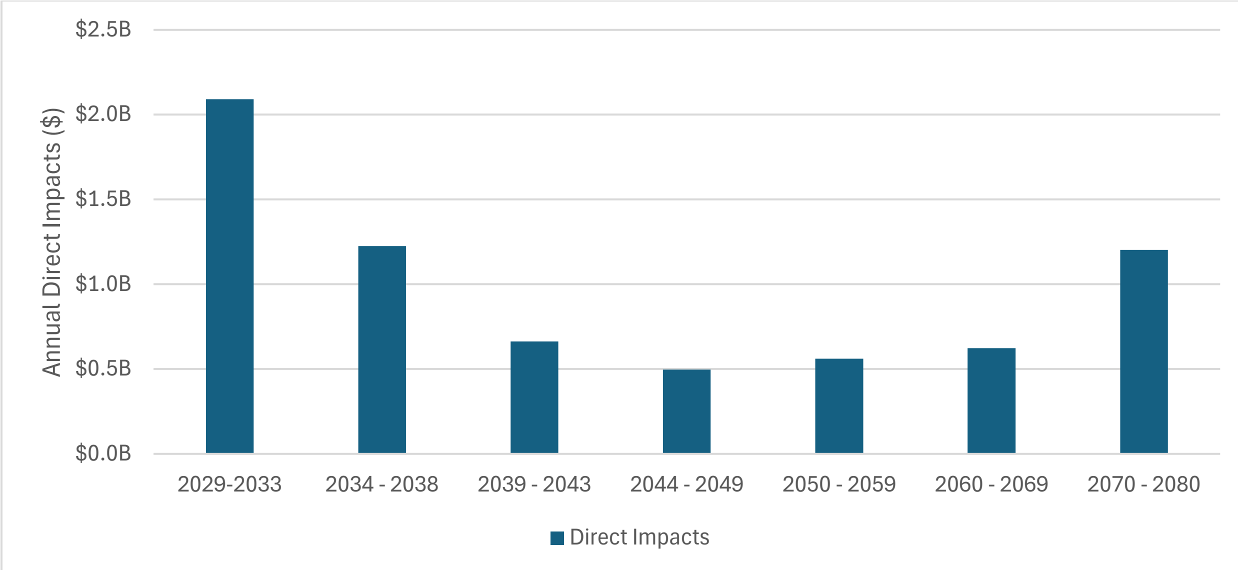
The difference between the two scenarios represents the direct economic impacts of additional water supply available under Potential PS4-3. By the 2040 decade, annual economic impact of increased pumping under Potential PS4-3 relative to PS4-2 is $0.5 Billion per decade. By the end of the study period the direct economic impact of additional pumping under PS4-3 relative to PS4-2 exceeds $1.2 billion.

Table 5: Annual Direct Economic Output by Sector

Scenario	Impact Sector	2029 - 2033	2034 - 2038	2039 - 2043	2044 - 2049	2050 - 2059	2060 - 2069	2070 - 2080
PS4-2	Construction	$0.54 B	$0.31 B	$0.19 B	$0.11 B	$0.11 B	$0.08 B	$0.00 B
	Residential Op	$0.06 B	$0.15 B	$0.23 B	$0.29 B	$0.33 B	$0.39 B	$0.41 B
	Data Centers Op	$0.68 B	$1.80 B	$2.74 B	$3.36 B	$3.92 B	$4.51 B	$4.78 B
	Power Op	$0.08 B	$0.20 B	$0.30 B	$0.37 B	$0.44 B	$0.50 B	$0.53 B
	Total	$1.35 B	$2.46 B	$3.47 B	$4.14 B	$4.80 B	$5.48 B	$5.72 B
Potential PS4-3	Construction	$0.92 B	$0.12 B	$0.12 B	$0.12 B	$0.12 B	$0.09 B	$0.10 B
	Residential Op	$0.18 B	$0.25 B	$0.29 B	$0.32 B	$0.37 B	$0.43 B	$0.49 B
	Data Centers Op	$2.11 B	$2.98 B	$3.36 B	$3.77 B	$4.38 B	$5.04 B	$5.71 B
	Power Op	$0.23 B	$0.33 B	$0.37 B	$0.42 B	$0.49 B	$0.56 B	$0.63 B
	Total	$3.44 B	$3.68 B	$4.14 B	$4.64 B	$5.36 B	$6.11 B	$6.93 B

These direct impacts serve as the foundation for the IMPLAN regional economic modeling presented in Section 5. As direct spending circulates through the regional economy, through supply chain purchasing and B2B sales (indirect effects) and household consumption and spending (induced effects), the total economic impact is substantially larger than the direct impacts alone. **Figure 7** displays total direct impacts for PS4-2 vs. Potential PS4-3 by period.

Figure 7: Average Annual Direct Impacts by Period (Potential PS4-3 minus PS4-2)



5 Indirect and Induced Impacts

In addition to direct benefits/impacts, this analysis also considers regional economic impacts, which are the effects of changes in the economy of a region. The size of regional economic impacts is determined by the linkages within the local/regional economy, and the leakages from this economy to the larger economy. Economic linkages are the relationships between industries, businesses, factors of production (labor and capital), and government created by trade and other exchange, such as taxes, within and among regions. Economic linkages create multiplier effects in a regional economy as money is circulated. The magnitude of impacts is a measure of the income shares spent outside of the region. The more economic leakage, the less the multiplier effect. Generally, the smaller the regional economy, the higher the economic leakage.

5.1 Input-Output Modeling & IMPLAN Methodology

Regional economic analysis modeling is completed using IMPLAN, the most widely used input-output (I-O) impact model system in the United States. IMPLAN is used by various federal and state agencies including the Texas Water Development Board. IMPLAN is an I-O database and modeling software used to estimate economic impacts of changes in demand or spending associated with project alternatives, using annual, regional data. An I-O analysis summarizes and analyzes the relationship among industries, the ripple effect of a given economic activity, and the contribution of some existing activity within a specific region.

Any given industry typically purchases goods and services from and sells goods and services to another industry within a given region, which in turn sells to or buys from other industries or supplies final consumers. IMPLAN uses these interindustry linkages and estimates the total economic effects within a region from a change in final demand associated with an economic sector. The industry linkages are estimated by economic multipliers. For example, a multiplier of 2.0 indicates that each dollar of direct sale generates another dollar of secondary sales in the regional economy.

Regional economic effects, estimated on an annual, point-in-time basis include:

- **Direct Effect**: the initial exogenous change in final demand in terms of Industry Output, Employment, and Labor Income Dollars.

- **Indirect Effect**: changes in the business-to-business purchases in the supply chain that stem from the initial industry input purchases.
- **Induced Effect**: changes in expenditures of household income (typically wages of employees working in the IMPLAN industries).

Changes in population are estimated based on the changes in employment that are produced in the economic model.

5.2 Methodology & IMPLAN Output Metrics

The IMPLAN results in these analyses are presented on a period-by period basis (2029-2033, 2034-2038, 2039-2043, 2044-2050, 2051-2060, 2061-2070 and 2071-2080) and report each metric broken out by direct, indirect and induced effects. These periods were selected to coincide with years exhibiting significant changes in modeled groundwater pumping between potential PS4-3 and PS4-2 IMPLAN shows the annualized average impact over a specified period in current dollars.

The output results should be interpreted as:

- **Output** is always the largest number because it captures the full value of production, including inputs purchased from other firms. It should not be confused with profit or net economic benefit.
- **Value Added** is always smaller than Output and is the most appropriate metric for comparison to GDP or for communicating net regional economic contribution.
- **Labor Income** is a subset of Value Added and represents the portion that flows directly to workers and business owners as compensation.
- **Tax Revenue** is reported separately by government level (federal, state, local). The local and state figures are most relevant for BVGCD stakeholders evaluating fiscal impacts within the region.
- **Employment** figures represent jobs sustained each year, not cumulative job creation over time.

Table 6: IMPLAN Output Metrics

IMPLAN Metric	What it Measures	What it Means
Output	The total value of goods and services produced across all industries in the regional economy. Broadest measure of economic activity and includes the dollar value of all production.	Represents the total scale of economic activity supported by the water supply. Output captures the full revenue impact across the supply chain, making it the most comprehensive measure of economic impacts.
Value Add	The contribution to regional Gross Domestic Product (GDP). Value Added equals Output minus the cost of intermediate goods and services purchased from other industries. It includes labor income, proprietary income, other property income, and indirect business taxes.	A meaningful measure of net economic contribution because it avoids counting inputs that are already captured in other sectors' output.

Labor Income	Total compensation paid to workers, including employee wages and salaries, all benefit (health insurance, retirement contributions), and proprietor income. A subset of value-add.	Directly reflects the income flowing to households in the region. Labor income drives consumer spending and is a tangible indicator of how water availability translates into paychecks and livelihoods for Brazos Valley Residents.
Tax Revenue	Federal, state, and local tax collections generated by the economic activity, including sales taxes, property taxes, income taxes, corporate taxes and fees. IMPLAN reports taxes at each level of government separately.	Quantifies the fiscal impact to local governments and the State of Texas. Additional tax revenue from water-enabled economic growth supports public services and infrastructure without requiring tax rate increases.
Employment	The number of full-time and part-time jobs supported by the economic activity. IMPLAN reports employment as annual job-equivalents, meaning one job sustained for one year.	Employment figures represent a human impact of water management decisions, the jobs that could exist in a region as a direct and indirect result.

6 Results

This section presents the economic benefits of the additional water pumping and utilization made available under the Potential PS4-3 pumping projections scenario relative to PS4-2. Results are categorized into three areas: direct economic benefits, which measure the immediate effects of the additional water supply; indirect and induced impacts, which capture the broader effects on regional economic activity as additional spending circulates through the economy; and employment, housing, and population impacts, which translate economic benefit into workforce and demographic outcomes. **All values are reported in real constant 2026 dollars unless otherwise noted.**

Both PS4-2 and Potential PS4-3 were modeled independently through IMPLAN and the results are reported as the difference between the two sets of outputs. This dual-scenario approach was necessary because PS4-2 is not a "no-development baseline"—it supports meaningful economic activity and growth under its pumping levels—and quantifying the PS4-2 economy through IMPLAN was required to isolate the incremental economic benefits delivered by the additional water supply available under Potential PS4-3.

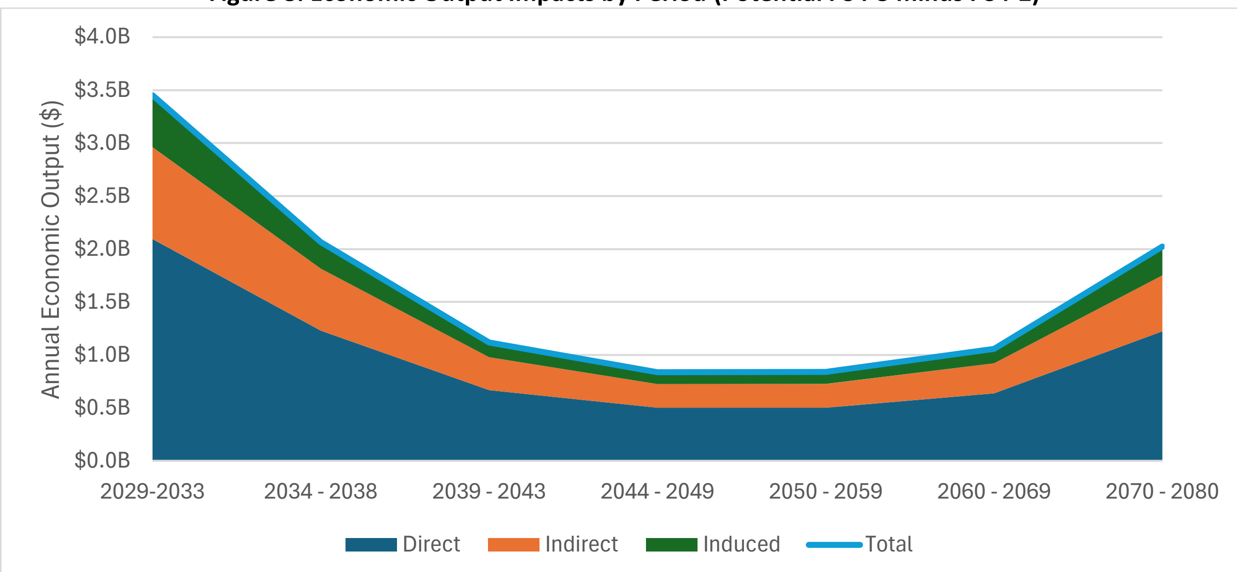
6.1 Economic Output

Total economic output measures the full value of goods and services produced across all industries in Brazos and Robertson Counties because of the incremental water supply. Output is the broadest measure of economic activity and includes direct spending, regional purchases from suppliers and household spending that occurs locally. Output is gross, not net: it includes the value of intermediate inputs so it is larger than value add and should not be interpreted simply as “profit” or net benefit. It counts multiple stages of production and accounts for value add as well as various other metrics, it is the largest level of impact aggregation. The Output difference is displayed in **Table 7**, and shown in **Figure 8.** Total economic output impacts for the period are calculated as approximately $79.4 Billion.[19]

Table 7: Total Output Difference by Period (Potential PS4-3 minus PS4-2)

Period	Direct $ Billions (2026)	Indirect $ Billions (2026)	Induced $ Billions (2026)	Total $ Billions (2026)
2029 - 2033	$2.09 B	$0.87 B	$0.49 B	$3.45 B
2034 - 2038	$1.23 B	$0.59 B	$0.25 B	$2.07 B
2039 - 2043	$0.67 B	$0.31 B	$0.14 B	$1.12 B
2044 - 2049	$0.50 B	$0.22 B	$0.11 B	$0.84 B
2050 - 2059	$0.50 B	$0.22 B	$0.11 B	$0.84 B
2060 - 2069	$0.64 B	$0.28 B	$0.14 B	$1.06 B
2070 - 2080	$1.22 B	$0.53 B	$0.27 B	$2.02 B

Figure 8: Economic Output Impacts by Period (Potential PS4-3 minus PS4-2)

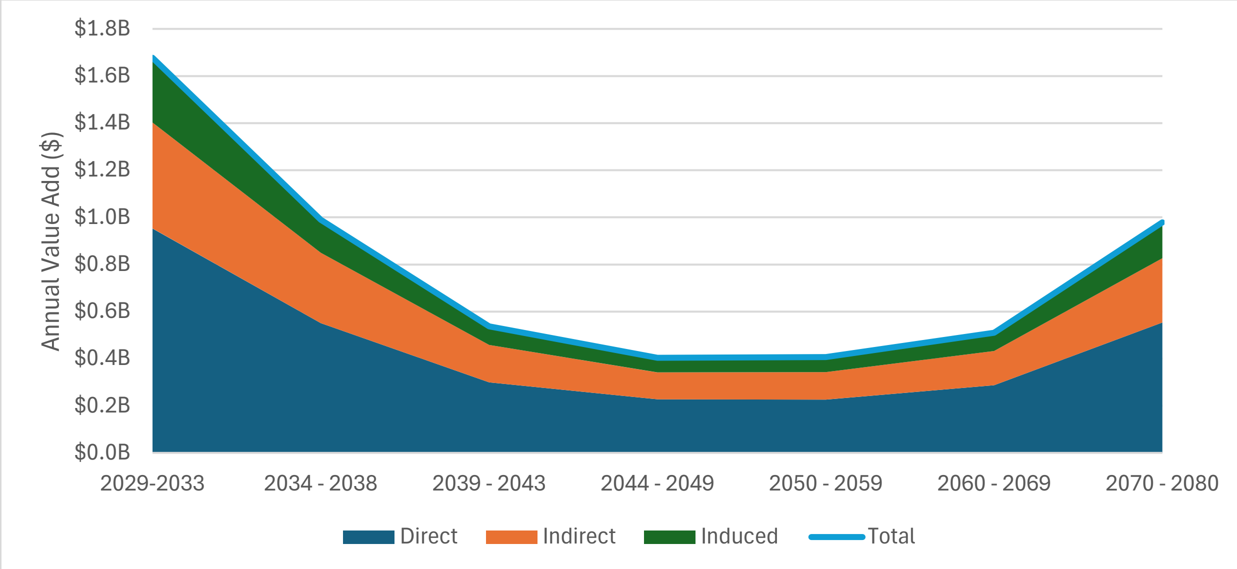


6.2 Value Added

Value added represents the contribution to regional GDP — the difference between total output and the cost of intermediate goods purchased from other industries. It is an appropriate metric for understanding the net economic contribution of the incremental water supply as it avoids double-counting intermediate inputs. Value added by period is displayed in **Figure 9.** Value added follows the same trend as total economic output but is approximately half of the value. Total additional value add throughout the period is approximately $38.4 billion.

[19] Because results are annual averages are presented over differing time periods, they should be viewed as average conditions for that period rather specific estimates for a single year. Actual impacts in any given year may vary depending on any number of un-modeled variables. Since results represent annual average impacts within each period, they should not be summed across period without converting to period totals (years in period × average year impact).

Figure 9: Value Added Impacts by Period (Potential PS4-3 minus PS4-2)



6.3 Employment and Labor Income

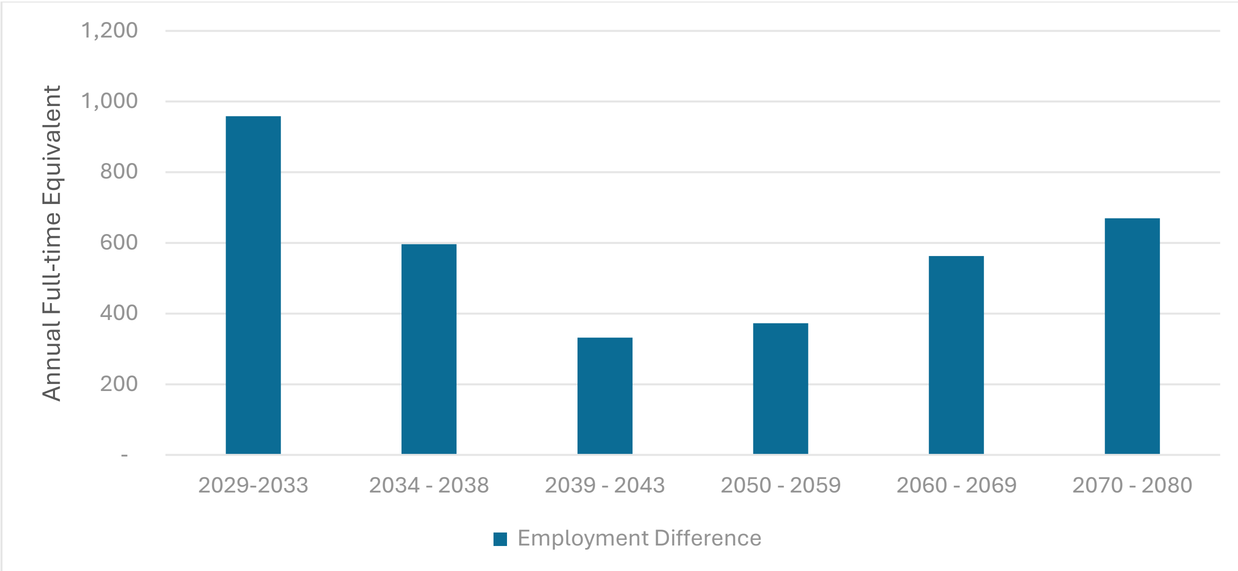
Positive economic impacts translate into augmented employment, additional housing development, and faster population growth. This section quantifies the demographic and labor market impacts.

The IMPLAN analysis estimates that the additional water supply unlocked under Potential PS4-3 would support an additional 268,000 job-years, translating to approximately 5,145 additional full-time equivalents within the district. Employment impacts grow strongly from 2029-2038 and slow until 2070, and increase greatly in 2070-2080. **Figure 10** shows the average annual full-time employment differential between the two modeled scenarios.

The additional employment enabled by Potential PS4-3 translates into faster population growth and additional housing development. Using a ratio of 0.35 AF/home, the additional water supply available under Potential PS4-3 supports approximately 4,440 new homes, or 11,100 new residents within the district (assuming 2.5 residents per home[20]), increasing spending and tax revenues throughout the region.

[20] Conservative rounded assumption, https://www.houstonstateofhealth.com/demographicdata?id=46&sectionId=936

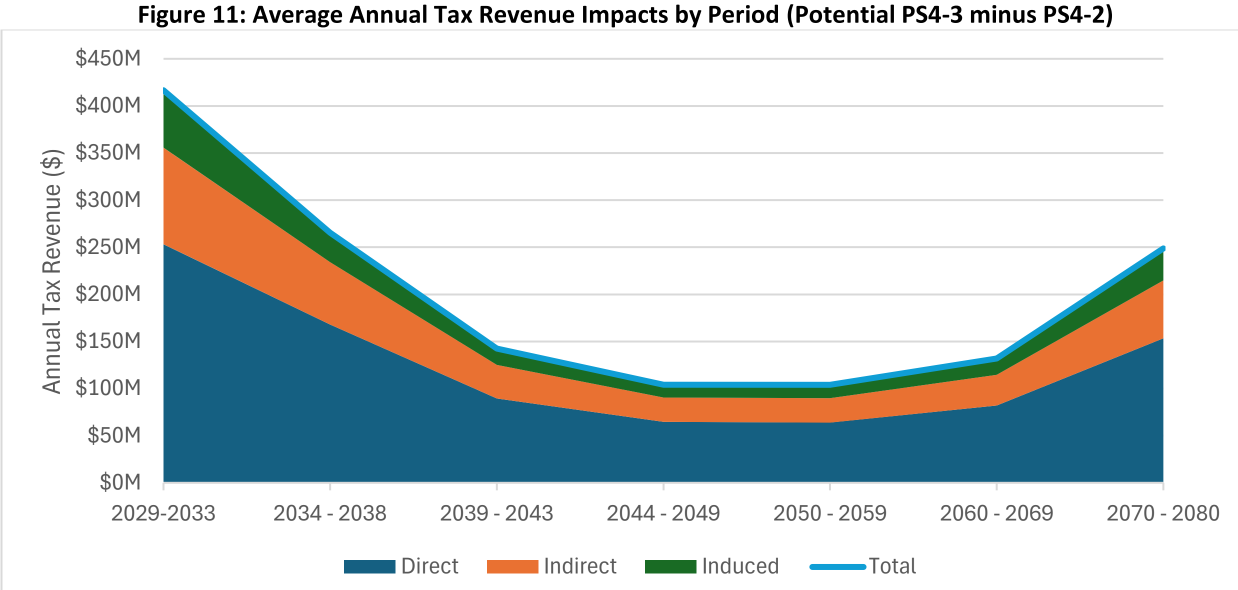
Figure 10: Annualized Employment Difference (Potential PS4-3 minus PS4-2)



6.4 Tax Revenue

The IMPLAN model estimates tax revenues generated at federal, state, and local levels by incremental economic activity. For the purposes of this analysis, tax impacts are aggregated across all levels to determine total additional tax revenue. Incremental tax revenue is $416 million annually in the 2029-2033 period and $249 million annually in 2070-2080. State and local tax revenues—including property taxes, sales taxes, and utility fees—support public services and infrastructure investment in Brazos and Robertson Counties without requiring any tax rate increases on existing residents. Throughout the period an additional total tax revenue of approximately $10 billion is calculated at all levels. **Figure 11** shows the average annual tax revenue impacts across each period. The trends track with outer impacts, as it follows additional water supplies in each period. The highest annual impacts are realized in the 2030 time period with additional incremental water and higher construction intensity.

Figure 11: Average Annual Tax Revenue Impacts by Period (Potential PS4-3 minus PS4-2)



6.5 Summary of Results

Table 8 summarizes key economic benefit metrics across the full analysis period. All figures represent the incremental economic value unlocked by Potential PS4-3 relative to PS4-2, derived as the difference between independent IMPLAN results for each scenario. The results demonstrate that the additional water supply made available under Potential PS4-3 supports substantial and sustained economic activity in Brazos and Robertson Counties across the full analysis horizon. These benefits are driven primarily by data center and power generation operations, which generate high levels of output, employment, tax revenue, and water utilization per acre-foot. The differential grows in early decades and continues to expand in later decades, reflecting the compounding value of the additional water availability enabled by the less restrictive DFC over time.

Table 8: Summary of Impacts (Potential PS4-3 minus PS4-2)

Metric	Value
Cumulative Total (2029 – 2080)	
Total Economic Output	$79.4 billion
Total Value Added	$38.4 billion
Total Labor Income	$18.4 billion
Total Tax Revenue	$9.8 billion
Cumulative Incremental Water Supply	~1 million acre-feet
Additional Jobs	~5,150 full time equivalents (267,547 job-years)
New Homes Supported	~4,400 Single-Family Equivalents (SFE)

7 Other Impacts not Quantified

The economic impacts presented in this report quantify the incremental value of economic activity enabled by Potential PS4-3 relative to PS4-2, as measured by the differential in IMPLAN outputs between two scenarios. This approach captures the marginal economic contribution of water. The impacts presented in this report are potentially conservative. Several categories of likely impacts have not been quantified due to data limitations or methodological complexity. In each case their omission understates the economic value of adopting Potential PS4-3 relative to PS4-2. Non-quantified impacts are as follows.

Curtailment Risk. This analysis does not model the economic consequences of potential curtailment events under BVGCD's tiered management framework. Under a more restrictive DFC such as PS4-2, the margin between actual pumping and the DFC drawdown threshold is narrower, increasing the probability that observed drawdown will trigger deeper management actions. Deeper curtailment requires pro rata reductions to all permit holders based on actual production, which would force existing users including municipalities, Texas A&M University, and industrial operations to reduce water use below current levels. Unlike the foregone development impacts modeled in this study, curtailment disrupts existing economic activity, potentially triggering production losses, contract defaults, and reputational harm that discourages future investment. Quantifying these impacts would require specifying the geographic scope and timing of Depletion Management Zones and the proportional reduction formula applicable under curtailment, neither of which has been defined by BVGCD at this time.

Alternative Water Supply Costs. Potential PS4-3 reduces the likelihood that water providers would need to develop higher-cost alternative supply sources to meet growing demand. During stakeholder interviews, multiple providers expressed skepticism about the feasibility and cost of alternatives identified in the

Regional Water Plan, noting that actual development costs significantly exceed plan estimates and that technical, regulatory, and financial barriers to non-Simsboro supplies are more substantial than planning documents suggest. To the extent that Potential PS4-3 allows providers to continue relying on the Simsboro Aquifer rather than pursuing higher-cost alternatives, the capital and operating expenditure savings represent an additional, unquantified economic benefit not captured in the differential IMPLAN analysis.

Water Market Development and Price Appreciation. This analysis does not model water market dynamics within the Brazos Valley region. Unlike more mature water markets in other states such as Arizona and California or within Edwards Aquifer Authority's boundaries, Texas groundwater markets are still developing, and transactional data is somewhat limited. However, as water scarcity increases under more restrictive DFC scenarios, the economic value of permitted groundwater rights is expected to increase. To the extent that PS4-2 constrains available supply and increases competition for limited water resources, it may drive up the cost of water for all users in the region, an effect not captured in the scenario differential.

8 Discussion and Conclusion

This study was commissioned by BVGCD to help GMA 12 fulfill its statutory obligation under TWC § 36.108 to consider the socioeconomic impacts of a proposed Desired Future Condition before adoption. The analysis quantifies the economic benefits unlocked by approximately one million additional acre-feet of Simsboro pumping made available over the 2030–2080 period under Potential PS4-3 (330-foot drawdown) relative to PS4-2 (~284-foot drawdown). Both scenarios were modeled independently through IMPLAN, and results are reported as the difference between the two sets of outputs, isolating the marginal economic contribution of the less restrictive DFC.

The results indicate that the additional water supply enabled by Potential PS4-3 supports substantial economic activity in Brazos and Robertson Counties. The additional water supply available under Potential PS4-3 enables average annual economic output ranging from approximately $836 million to $3.5 billion per year depending on the period, with a cumulative annualized total of $79.4 billion across the analysis horizon. The average incremental water supply supports between 2,771 and 12,462 additional job years annually equating to approximately 5,150 full time jobs in the district. The additional water supply generates $18.4 billion in cumulative labor income and produces $9.8 billion in cumulative tax revenue at all levels of government. These impacts are driven primarily by data center and power generation operations, which produce valuable economic output per acre-foot of water consumed, and are supplemented by residential housing development that supports the workforce attracted by new industrial activity.

The results may be conservative in that they exclude several categories of likely economic impact that could not be reliably quantified. Curtailment risk under BVGCD's tiered management framework, the cost of developing alternative water supplies if Simsboro access is constrained, and the institutional growth trajectory of Texas A&M University and the RELLIS campus each represent material economic considerations that would increase the estimated differential if included. These "omissions" reinforce that the reported figures potentially represent a lower-bound estimate of the socioeconomic consequences associated with DFC selection.

TWC § 36.108 directs GMAs to balance the highest practicable level of groundwater production against long-term conservation, preservation, and protection of groundwater. This analysis provides the evidentiary foundation for the production side of that balance. The findings demonstrate that a DFC under Potential PS4-3 delivers quantifiable economic benefits—not merely in the abstract, but in jobs, tax revenue, and regional economic output that are made possible when Simsboro pumping is permitted to reach the levels reflected in Potential PS4-3. These benefits accrue to communities, employers, and public institutions within BVGCD over a multi-decade horizon.

This report does not advocate for a particular DFC outcome. The statutory balancing test requires GMA 12 to weigh socioeconomic impacts alongside aquifer sustainability, environmental considerations, and the rights of private property owners. What this analysis provides is a defensible, scenario-specific quantification of one critical dimension of that decision: the additional economic activity that the incremental groundwater volumes available under Potential PS4-3 would enable, and the value of that opportunity relative to the more restrictive PS4-2 baseline. It is intended to ensure that when GMA 12 adopts a DFC for the Simsboro Aquifer, the socioeconomic consequences of that decision have been transparently evaluated and recorded.

Appendix A: Nuclear Power, Combined Cycle Natural Gas Generation, and Data Center Economic Input Methodology

This appendix provides the detailed engineering, financial, and data assumptions underlying the different sector inputs described in the Economic Impact Methodology section.

The incremental Simsboro water supply is allocated across four demand sectors at fixed percentage shares in every analysis period. **Table 9** presents the cumulative volumetric growth allocations by sector and period.

Table 9: Cumulative Water Demand Growth by Category

		2030 - 2033	2034 - 2038	2039 - 2043	2044 - 2050	2051 - 2060	2061 - 2070	2071 - 2080
PS4-2	Residential	4,213	11,204	17,106	29,665	49,697	56,873	59,575
	Data Center	8,427	22,408	34,213	59,330	99,394	113,746	119,150
	Power	71,625	190,464	290,806	504,303	844,846	966,841	1,012,775
Potential PS4-3	Residential	13,149	18,566	20,933	33,281	55,591	63,480	71,717
	Data Center	26,298	37,132	41,865	66,563	111,182	126,961	143,435
	Power	223,532	315,624	355,854	565,785	945,049	1,079,165	1,219,193

Table 10 inventories the values and sources utilized to calculate direct economic impacts that are used in the IMPLAN modeling. Ancillary calculations and non-utilized metrics are not displayed.

Table 10: Parameter Values, Units and Sources

Nuclear Power Generation	Value	Unit	Source/Notes
Nuclear Water Consumption	1,101[21]	Gal/MWh	NREL 50900[22]
Capital cost per kW	$3,465	$/kW	Techno-economic analysis[23]
Construction CapEx per AF	$117,066	$/AF	Calculated
Regionalized construction	57%	%	REDI EIR[24]
Annual construction Spend/AF	$66,728	$/AF/Year	Calculated
ERCOT Wholesale Price (avg)	$51	$/MWh	EIA Forecast, Utility Dive[25]
Annual O&M	$34	$/MWh/Year	Nuclear Energy Cost Estimates[26]
Net Operating Cost/AF	$10,062	$/AF	Calculated
Natural Gas Power Generation	**Value**	**Unit**	**Source/Notes**
Natural Gas Water Consumption	1,203	Gal/MWh	NREL 50900

[21] The water consumption rate of 1,101 gal/MWh reflects recirculating cooling tower technology, which is the expected configuration for new nuclear facilities in Texas. This rate represents consumption rather than withdrawal. Simsboro groundwater withdrawal allocation represents a consumptive use in this model.

[22] Review of Operational Water Consumption and Withdrawal Factors for Electricity Generating Technologies. https://docs.nrel.gov/docs/fy11osti/50900.pdf

[23] Techno-economic analusis of advanced small modular nuclear reactors. https://www.sciencedirect.com/science/article/abs/pii/S0306261923000338

[24] Economic Impact Report for Modular Reactor Electric Power Generation Facility https://line.idaho.gov/wp-content/uploads/2019/02/smr-economic-impact-report.pdf

[25] Electricity Prices to continue rise in 2026: EIA. https://www.utilitydive.com/news/electricity-prices-demand-to-continue-rising-in-2026-eia/805395/

[26] Nuclear Energy Cost estimates for Net Zero World Initiative. https://www.energy.gov/sites/default/files/2024-10/NZW09%20Nuclear%20Energy%20Cost%20Estimates%20for%20Net%20Zero%20World%20Initiative.pdf

Capital Cost per kW	$782	$/kW	EIA Construction data[27]
Regionalized Constriction	57%	%	REDI EIR
Annual Construction Spend/AF	$13,783	$/AF/Year	Calculated
ERCOT Wholesale Price (avg)	$51	$/WMh	EIA Forecast, Utility Dive
Annual O&M	$15.53	$/MWh/Year	EIA Capital Cost, Performance[28]
Net Operating Cost/AF	$4,207	$/AF	Calculated
Data Center Computing	**Value**	**Unit**	**Source/Notes**
Water Allocation (2) 1 GW Facilities	4,468	AFY	Water Availability to support 2 GW facilities ~20% additional water for contingency.
Water to MW Ratio (at 50% utilization rate)	1.3	AF/MW Computing	Energy usage Report[29]
Data Center Water Use Rate (on-sit)	2,000	AFY	Internal Water Use Estimates[30]
Facility MW Capacity (IT Load)	1,538	MW	Calculated
Power Usage Effectiveness (PUE)	1.59	Ratio	Nlyte Software[31]
Total Facility Power (1) facility	2446	MW	Calculated
Total IT Load	3,077	MW	Calculated
Total Facility Power	4,892	MW	Calculated
Total CapEx/MW IT Load	$10M	$/MW	Building Costs[32]
Local regional Construction Share of CapEx	25%	%	Virginia study[33]- conservative to account for non-local equipment
Annual Construction Spend/AF	$1,721,645	$/AF/Year	Calculated
Colocation Lease Rate	$150	$/KW/Mo	CBRE H2 2024 avg $184[34]; TX markets typically lower.
Annual Electricity cost (2) facilities	$1,285,968,462	$/Year	Texas electric Utility Industrial Retail Price I:TEUI73M4
Infrastructure Maintenance	$461,538,462	$/Year	Cost Structure[35]

27 EIA Construction cost data for electric generators installed in 2023. https://www.eia.gov/electricity/generatorcosts/

28 Capital Cost and Performance Characteristics for Utility-Scale Electric Power Generating Technologies https://www.eia.gov/analysis/studies/powerplants/capitalcost/pdf/capital_cost_AEO2025.pdf

29 Berkeley Lab, 2024 United States Data Center Energy Usage Report. https://eta-publications.lbl.gov/sites/default/files/2024-12/lbnl-2024-united-states-data-center-energy-usage-report.pdf?utm_medium=email&utm_source=substack

30 WMI. Estimating Data Center Water Demand. https://westwaterresearch.com/wp-content/uploads/2025/03/2025-Q2-Water-Market-Insider-Data-Centers.pdf

31 What is PUE and how is it calculated? https://www.nlyte.com/blog/data-center-energy-efficiency-pue-dcie/#:~:text=It%20measures%20the%20total%20power,federal%20data%20center%20energy%20efficiency.

32 How much does it cost to build a data center? https://dgtlinfra.com/how-much-does-it-cost-to-build-a-data-center/#:~:text=$2%2C200%20per%20NRSF.-,Megawatts%20(MW),companies%20%E2%80%93%20vary%20greatly%20from%20enterprises.

33 Data Centers in Virginia, 2024. https://jlarc.virginia.gov/pdfs/reports/Rpt598-2.pdf

34 CBRE: Silicon Valley Data Center Leasing Doubled in 2024 Amid Growth in AI https://www.cbre.com/press-releases/silicon-valley-data-center-leasing-doubled-in-2024-amid-growth-in-artificial-intelligence

35 Deconstructing the Data Center https://www.alpha-matica.com/post/deconstructing-the-data-center-a-look-at-the-cost-structure-1#:~:text=Unpack%20the%20cost%20structure%20of%20a%20100,efficiency%20strategies%2C%20and%20risks%20at%20Alpha%20Matica.

Staffing	$44,000,000	$/Year	Morrow County Study[36]
Annual Operating Cost/AF	$400,904	$/AF/Year	Calculated

[36] Economic Impact Analysis of Prospective Exascale Data Center Development in Morrow County, Oregon. https://www.morrowcountyor.gov/sites/default/files/fileattachments/planning_commission/page/16917/exhibit_08_-_economic_impact_analysis.pdf

Appendix B: List of Acronyms

Table 11: List of Acronyms

Acronym	Full Term
AF	Acre-Feet
AFY	Acre-Feet per Year
ALJ	Administrative Law Judge
BTU	Bryan Texas Utilities
BVGCD	Brazos Valley Groundwater Conservation District
C&I	Commercial and Industrial
CapEx	Capital Expenditure
DFC	Desired Future Condition
DMZ	Depletion Management Zone
EIA	Energy Information Agency
ERCOT	Electric Reliability Council of Texas
GAM	Groundwater Availability Model
GCD	Groundwater Conservation District
GDP	Gross Domestic Product
GMA	Groundwater Management Area
GMA 12	Groundwater Management Area 12
HARC	Houston Advanced Research Center
IMPLAN	Impact Analysis for Planning (Input-Output Modeling Software)
I-O	Input-Output
kW	Kilowatt
kWh	Kilowatt-Hour
MAG	Modeled Available Groundwater
MW	Megawatt
MWh	Megawatt-Hour
NREL	National Renewable Energy Laboratory
O&M	Operations and Maintenance
PSI	Pounds per Square Inch
PUE	Power Usage Effectiveness
SFE	Single-Family Equivalent
SMR	Small Modular Reactor
SOAH	State Office of Administrative Hearings
SUD	Special Utility District
TCEQ	Texas Commission on Environmental Quality
TDH	Total Dynamic Head
TWC	Texas Water Code
TWDB	Texas Water Development Board