"WATER, WATER EVERYWHERE, AND NOT A DROP TO DRINK": A FRESH LOOK AT PRODUCED WATER AND A PROPOSAL FOR ECONOMICALLY VIABLE BENEFICIAL REUSE IN TEXAS

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ABSTRACT

When asked where water comes from, the first basic thought of many is: "From the faucet." As most Texans do, you expect water to be available whenever you need it. Although taken for granted, water-on-demand is not a natural occurrence and is only kept possible through the combined efforts of municipal planners and the State of Texas. However, Texas's available natural water supply is rapidly dwindling while demand continues to rise due to consistent population growth. This has necessarily caused Texas to pursue conservation efforts or alternative water sources, with the future of the state being dependent on a solution now. At the same time, Texas's oil and gas industry is dealing with the exact opposite problem—an overabundance of "produced water" that has nowhere left to go. Disposal reinjection of produced water, the traditional and most common practice, continues to have costs rise while carrying other problems such as removing water from the water cycle permanently and creating liability concerns by inducing earthquakes and creating "zombie" wells due to over-pressurizing disposal formations.

To address these issues simultaneously and to ensure water security for all Texans, immediate action needs to be taken. "Beneficial reuse" of produced water, where the substance is treated and then applied to offset current water uses, is an available alternative. However, it is not economically feasible to pursue beneficial reuse as opposed to disposal reinjection without additional incentives. A framework of a franchise tax exemption for the companies doing the collecting, treatment, and application

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of the produced water, would serve to bridge the gap and make beneficial reuse more economically feasible. These "water midstream" companies would be those targeted to incentivize the beneficial reuse of produced water, increasing beneficial reuse potential immediately.

Thus, to protect the future of Texas, the Texas Legislature should take action to create a franchise tax exemption for water midstream companies solely engaged with the beneficial reuse of produced water. This novel solution allows immediate application to readily identifiable beneficial applications, specifically in the agriculture industry. These efforts would not only create a purpose for the burgeoning "waste" from production but also greatly alleviate the strain on Texas's existing water supply. In pursuing this, Texas saves more money in the long run, continues to encourage innovation, and establishes a framework that avoids impending water-shortage emergencies in the future. With water scarcity looming and produced water in abundance, a unique overlap exists to solve both issues at once. The Texas Legislature should pass a targeted exemption to the state franchise tax to incentivize the beneficial reuse of its best readily available alternative water source—produced water.

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I. INTRODUCTION

The future of ensuring water availability in Texas has never been more vital.[1] As the biggest state in the contiguous United States, and home to vastly different climates and water sources scattered throughout, Texas faces specific challenges in fulfilling water demands for all Texans.[2] Inconsistent rainfall, a steady rise in demand due to population increase, and consistent widespread usage by the agriculture industry are depleting water storages at a rate faster than natural replenishment.[3] Projections for water shortages have already led emergency planning to commence, with drastic measures being highly probable if nothing more is done.[4]

As the United States' leading oil and gas producer, Texas is also currently in a stalemate with what to do with its biggest by-product of production—produced water.[5] This substance accompanies oil and gas in underground formations and travels to the surface alongside the desired hydrocarbons[6] in drilling operations.[7] Defined broadly, produced water is a highly saline mixture that is often accompanied by a slew of other constituent elements that vary largely based on location.[8] This potent concentration makes untreated application of produced water undesirable.[9]

Historically, produced water has been a liability that the operator had to contend with as a cost of doing business.[10] Thus, the common and most economic route has been reinjection of the produced water back into the Earth via disposal wells.[11] However, with rising costs and increasing seismic

1. *See* TEX. WATER DEV. BD., STATE WATER PLAN 1, 3 (2022), http://www.twdb.texas.gov/waterplanning/swp/2022/docs/SWP22-Water-For-Texas.pdf [hereinafter STATE WATER PLAN].

2. *See* TEX. COMPTROLLER OF PUB. ACCTS., TEXAS WATER: PRESENT AND FUTURE NEEDS 2023 1, 3 (2023), https://comptroller.texas.gov/economy/in-depth/special-reports/water/96-1903.pdf.

3. STATE WATER PLAN, *supra* note 1.

4. *Id.* at 40.

5. Mella McEwen, *PWS Speaker Warns Permian Approaching Injection Limits*, MIDLAND REP.-TELEGRAM (Aug. 17, 2024), https://www.mrt.com/business/oil/article/permian-water-injection-limits-19658434.php (describing a statement by Robert Crain, the Executive Vice-President for Texas Pacific Water Resources, that "Texas pore space could reach injection limits by 2030").

6. PATRICK H. MARTIN & BRUCE M. KRAMER, MANUAL OF OIL AND GAS TERMS 581 (LexisNexis, 19th ed. 2024) (defining hydrocarbons as "[a]n organic chemical compound of hydrogen and carbon, called petroleum"). For the purposes of this Comment, oil, gas, and hydrocarbons will be used interchangeably to identify the same collective substance.

7. Amy Hardberger, *The Challenges and Opportunities of Beneficially Reusing Produced Water*, 34 DUKE ENV'T L. & POL'Y F. 1, 1 (2023).

8. *What Is Produced Water?*, AM. GEOSCIENCES INST., https://www.americangeosciences.org/critical-issues/faq/what-produced-water (last visited Feb. 20, 2025) (noting how produced water "[i]n the Bakken (North Dakota) and Marcellus (Pennsylvania and neighboring states) formations, produced waters can be over 10 times more saline than seawater" while "[i]n California and Wyoming, many produced waters are much less saline than seawater").

9. *See* Hardberger, *supra* note 7, at 2.

10. *See* JOHN VEIL, VEIL ENV'T, LLC, GROUNDWATER RSCH. & EDUC. FOUND., U.S. PRODUCED WATER VOLUMES AND MANAGEMENT PRACTICES IN 2017 8 (2020), https://www.gwpc.org/wp-content/uploads/2020/02/pw_report_2017___final.pdf.

11. *Class II Oil and Gas Related Injection* Wells, U.S. ENV'T PROT. AGENCY, https://www.epa.gov/

activity, the sustainability of this traditional practice is in doubt.[12] Regardless of this trend, sending produced water to be disposed of by reinjection still remains the far more economic option for operators as opposed to beneficial reuse.[13]

Produced water is primarily handled by the "water midstream" sector in the oil and gas industry.[14] These companies take the produced water from operators and conduct the disposal reinjection, treatment, and beneficial reuse, or transport it between these stages.[15] Additionally, the water midstream market also includes companies engaging in produced water treatment and applications in the limited avenues currently available.[16] This sector assumes the task of handling produced water and thus also reflects the costs associated with the business.[17]

With these two distinct issues looming over Texas, a unique opportunity is presented to reconcile both simultaneously—the beneficial reuse of produced water to offset or replace current water needs.[18] To be sure, various challenges exist in the current implementation of beneficially reused produced water.[19] Regardless, Texas has remained water conscious, and there are currently some state efforts being taken in the research and development of produced water treatment and beneficial reuse.[20]

The issue of water scarcity has drastic impacts on Texas *now*, as the state is not currently equipped to handle a severe drought were it to occur today.[21] Despite this, there does not currently exist enough economic incentive and encouragement for the beneficial reuse of produced water to be vigorously sought.[22] Even without a present severe drought, Texas's current water supply is not enough to support the state into the future.[23] Modeling for the economic impact of water shortages includes billions of dollars of costs,

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uic/class-ii-oil-and-gas-related-injection-wells (last visited Feb. 20, 2025).

12. *See generally* Matthew Weingarten et al., *High-Rate Injection Is Associated with the Increase in U.S. Mid-Continent Seismicity*, 348 SCI. 1336, 1336 (2015), https://www.science.org/doi/10.1126/science.aab1345 (studying the recent increase in seismic activity and attributing it to disposal reinjection).

13. *See, e.g.*, GROUNDWATER PROT. COUNCIL, PRODUCED WATER REPORT 29–30 (2019), https://www.gwpc.org/wp-content/uploads/2019/06/Produced_Water_Full_Report___Digital_Use.pdf (providing information on how much produced water is reinjected in various basins).

14. *See id.* at 41, 43.

15. *Id.* at 31.

16. *See id.* at 42.

17. *See id.*

18. *See* discussion *infra* Part III (viewing the overlap of issues with a legislative solution to rectify both).

19. Hardberger, *supra* note 7, at 7–9 (identifying one such issue—the lack of tests for constituent elements in the produced water).

20. Tex. S.B. 601, 87th Leg., R.S. (2021) (describing Texas's creation of the Produced Water Consortium aimed towards this kind of research and development).

21. *See* TEX. PRODUCED WATER CONSORTIUM, BENEFICIAL USE OF PRODUCED WATER IN TEXAS 7–8 (2024), https://www.depts.ttu.edu/research/tx-water-consortium/TXPWCFINALDRAFT.pdf [hereinafter TxPWC 2024].

22. *Id.*

23. STATE WATER PLAN, *supra* note 1, at 12.

massive job losses, and a vast majority of Texans facing water shortages.[24] While this issue is not lost in Texas governmental action, the severity of the issue is one that will require creative solutions and strategic planning to ensure demand is met.[25]

The Texas Legislature should create a franchise tax exemption targeted at these water midstream companies to establish an economically feasible framework for beneficial reuse by driving down expenses.[26] This route pursues produced water as an alternative water source by driving prices for beneficial reuse down directly at the source of cost.[27] Part II examines the history and associated issues of both water scarcity and produced water in Texas while also further exploring Texas's current franchise tax landscape.[28] Part III argues for proposed model legislation that the Texas Legislature should pass to grant a franchise tax exemption for business solely engaging in produced water collection, treatment, or beneficial application.[29] Part III further argues that the potential for offsetting existing water use is high, and the proposed model is likely to have the most success in Texas by saving future costs and promoting innovation in the long run.[30] Part IV explains why this limited intervention is necessary, as a standard market analysis does not consider all relevant factors, such as addressing reinjection availability and seismic liability.[31] Finally, Part V concludes with a call for Texas Legislative action.[32]

II. Water Scarcity and Produced Water in Texas: Then and Now

Texas has been facing concerns regarding water availability for over a century.[33] Currently, projections for water demand are far outpacing the rate of natural supply replenishment.[34] Additionally, issues regarding produced water disposal are just as historically established and date back to the advent of oil and gas production in Texas.[35] Without incentives, the cost of sending produced water to disposal reinjection remains substantially more

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24. *Id.*
25. *See* GROUNDWATER PROT. COUNCIL, *supra* note 13, at 41.
26. *See* discussion *infra* Section III.0 (offering model legislation language to achieve this aim).
27. *See* discussion *infra* Section III.0 (explaining the impacts of the model legislation on costs).
28. *See* discussion *infra* Part 0 (examining the history of these now interconnected issues).
29. *See* discussion *infra* Section III.0 (describing the language and model implementation).
30. *See* discussion *infra* Section III.0–0 (viewing the immediate impact of the proposed amendment's application).
31. *See* discussion *infra* Part 0 (addressing the holistic market analysis taken and considering all relevant factors).
32. *See* discussion *infra* Part V (proposing the Texas Legislature act toward this end).
33. STATE WATER PLAN, *supra* note 1, at 4.
34. *Id.*
35. *Injection and Disposal Wells FAQs*, TEX. R.R. COMM'N, https://www.rrc.texas.gov/about-us/faqs/oil-gas-faq/injection-and-disposal-wells-faqs/ (last visited Feb. 20, 2025).

economical for oil and gas operators as opposed to beneficial reuse.[36] In viewing the current landscape for the beneficial reuse of produced water, there are no sufficient tax incentives to promote these actions, and specifically, no existing franchise tax exemption.[37]

A. Texas's Water Demands Are Outpacing Supply

Since Texas's entry into the United States as a state in 1845, the Lone Star State has been rapidly growing.[38] Population growth in Texas is expected to continue to grow steadily through 2070, with over half of the growth occurring in the "Dallas-Fort Worth metropolitan area and Houston, respectively."[39] Regardless of the reasons for this robust population growth, water demand will necessarily increase, "as there will simply be many more Texans needing water."[40]

As the largest continental state per land area with distinct climate and landscape regions, Texas is also faced with diverse issues in providing consistent water access across the state.[41] The primary category of water usage is irrigation, which accounts for around 53% of the state's total water use.[42] However, in areas such as West Texas and the Panhandle, irrigation accounted for as much as 94.5% of usage in 2020.[43] Even for the Permian Basin, Texas's center for oil and gas production, irrigation accounted for about 75% of usage.[44]

Water demand is currently supplied from one of three sources: (1) groundwater, (2) surface water, or (3) reused water.[45] In 2020, these sources supplied 55%, 42%, and 3% of the state's water supply, respectively.[46] However, projections of continued availability from these traditional sources are constantly in flux.[47] Texas's history reveals times of significant droughts, with the most severe droughts becoming measuring

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36. TEX. PRODUCED WATER CONSORTIUM, BENEFICIAL USE OF PRODUCED WATER IN TEXAS: CHALLENGES, OPPORTUNITIES AND THE PATH FORWARD 18 (2022), https://www.depts.ttu.edu/research/tx-water-consortium/downloads/22-TXPWC-Report-Texas-Legislature.pdf [hereinafter TxPWC 2022].

37. *See infra* Section II.C (identifying the lack of any existing tax incentives for beneficial reuse).

38. STATE WATER PLAN, *supra* note 1, at 48.

39. *Id.*; *see also* Shonel Sen, *National 50-State Population Projections: 2030, 2040, 2050*, UNIV. OF VA. WELDON COOPER CTR. (July 22, 2024), https://www.coopercenter.org/research/national-50-state-population-projections-2030-2040-2050 (corroborating Texas's growth).

40. STATE WATER PLAN, *supra* note 1, at 49.

41. TEXAS WATER, *supra* note 2, at 3.

42. STATE WATER PLAN, *supra* note 1, at 55, 56.

43. *Id.* at 53–55.

44. TxPWC 2024, *supra* note 21, at 29.

45. Astrid Alvarado et al., *Texas' Water Demands Could Outpace Supply in Parts of Texas by 2070*, TEX. COMPTROLLER OF PUB. ACCTS. (Sept. 2023), https://comptroller.texas.gov/economy/fiscal-notes/archive/2023/sep/water.php.

46. *Id.*

47. The Nature Conservancy, *Texas Water Basics*, TEX. WATER EXPLORER, https://texaswaterExplorer.tnc.org/texas-water-basics.html (last visited Feb. 20, 2025).

benchmarks as "droughts of record."[48] Every part of Texas has been impacted by drought at some point in time.[49] While droughts are a natural phenomenon in Texas, levels of scarcity grow more stark with increased demand.[50]

The primary issue for Texas is available water supply as compared to current and future demand.[51] Projections calculate that "[b]y 2070, 51.5 million people are anticipated to live in the state, all requiring water to work and thrive."[52] Without state efforts, "approximately one-quarter of Texas's population in 2070 would have less than half the municipal water supplies they will require during a drought of record," with "approximately four out of five Texans [facing] at least a 10 percent water shortage in their cities and residences."[53] In terms of economic implications, failing to act "could cause $110 billion of economic damages in 2020, increasing to $153 billion per year by 2070."[54] Texas's economy would not only suffer in costs to supplement water but would also face hundreds of thousands of job losses.[55]

Texas has faced state-wide water concerns of this kind for over a century.[56] Beginning in 1913 with the legislature's creation of the Board of Water Engineers, Texas adopted a proactive stance regarding efforts to ensure water availability in the state.[57] After the most severe drought in Texas's history from 1954 to 1956, Texas voters approved a constitutional amendment to create the Texas Water Development Board (TWDB).[58] The original purpose of the TWDB was to study state-wide water usage, availability, and conservation in order "to prepare plans and provide funding to address the state's future water needs."[59] The TWDB has undergone development since its inception, yet its focus has remained "long-range planning and water project financing."[60] In furtherance of this purpose, the TWDB issues a new "State Water Plan" every five years as a "guide to state water policy."[61]

48. STATE WATER PLAN, *supra* note 1, at 35 (explaining Texas's use of "the 1950s drought, known as the drought of record, as a fundamental benchmark for statewide water planning").

49. *Id.* (regarding the drought from 2010–2014, "during which 100 percent of the state was affected by drought for many weeks").

50. *Planning for Drought*, TEX. WATER DEV. BD., https://www.twdb.texas.gov/drought/planning/index.asp (last visited Feb. 20, 2025) (describing that the threshold to establish a drought of record is "natural hydrological conditions provide[] the least amount of water supply").

51. STATE WATER PLAN, *supra* note 1, at 4.

52. *Id.*

53. *Id.* at 3, 12.

54. *Id.* at 3.

55. *Id.* at 12 (projecting that "[j]ob losses could have totaled approximately 615,000 in 2020 and could total 1.4 million in 2070").

56. *About the Texas Water Development Board*, TEX. WATER DEV. BD., https://www.twdb.texas.gov/about/index.asp (last visited Feb. 20, 2025).

57. *Id.*

58. Tex. H.B. 161, 55th Leg., R.S. (1957).

59. STATE WATER PLAN, *supra* note 1, at 17.

60. TEX. WATER DEV. BD., *supra* note 56.

61. *State Water Planning*, TEX. WATER DEV. BD., https://www.twdb.texas.gov/waterplanning/swp/index.asp (last visited Feb. 20, 2025) (listing State Water Plans back to 1961).

The 2022 Texas Water Plan provides abundant information predicting water shortages, identifying why shortages will likely occur, and what areas would be most impacted.[62] Droughts are recognized as an expected natural event and are projected to continue being so.[63] Thus, in looking to plan for water demands, it is necessary for Texas to account for periodic seasons of drought.[64] Recent memory for Texans may serve to remind of severe occurrences within the past ten years, specifically the drought from 2010 to 2014, which "ranks as the second worst and the second-longest statewide drought."[65] The prospect of statewide droughts, as well as regional droughts in more susceptible regions, shapes Texas's emphasis on collective state action to ensure everyone is accounted for.[66]

1. Texas's Current Efforts to Combat Scarcity

In responding to times of drought when Texas cannot meet the demand for water, solutions exist only by lessening current use or increasing available supply.[67] In enforcing the former, one such measure is the Texas Legislature's authorization of the Texas Commission on Environmental Quality (TCEQ) to require drought contingency plans of certain entities, including municipal water providers.[68] The TCEQ requires these entities to submit plans for the purpose of "conserv[ing] available water supply in times of drought . . . by limiting the water available for non-essential uses . . . and maintain[ing] supplies for essential uses, such as drinking water, sanitation, and fire protection, in order to protect and preserve public health, welfare, and safety."[69] Such plans are then approved and implemented on a local level, with conservation efforts including practices such as mandatory grass-watering schedules, banning charity car washes, and not serving water to a restaurant customer unless specifically requested.[70]

Alternatively, Texas has also begun to broaden the horizon for other available sources of water.[71] This includes a significant portion of the State Water Plan, with water management strategies analyzed to determine the

62. STATE WATER PLAN, *supra* note 1, at 4.
63. *Id.* at 36.
64. *Id.* at 4–6.
65. *Id.* at 36.
66. *Id.* at 3, 41.
67. *See id.* at 8.
68. 30 TEX. ADMIN. CODE § 288.20–.22.
69. TEX. COMM'N ON ENV'T QUALITY, DROUGHT CONTINGENCY PLANS: WHAT IS A DROUGHT CONTINGENCY PLAN? 1 (2022), https://www.tceq.texas.gov/downloads/permitting/water-rights/drought/what-is-a-drought-contingency-plan-gi-630.pdf.
70. *Id.* at 2; *see, e.g.*, *Find Your Watering Day*, CITY OF AUSTIN, https://www.austintexas.gov/department/find-your-watering-day (last visited Feb. 20, 2025) (providing the list of conservation efforts taken by the city of Austin).
71. STATE WATER PLAN, *supra* note 1, at 75–76.

implications of utilizing various alternative water resources.[72] In addition to broad planning, the Texas Legislature has also created organizations to study specific potential sources for viability pursuant to the State Water Plan, with one such being the Texas Produced Water Consortium (TxPWC).[73] The TxPWC's stated purpose "is to identify viable beneficial use alternatives for treated produced water as a potential new water source to address availability and demand shortfalls outlined in the Texas Water Plan."[74] Pursuant to its legislative aims, the TxPWC has created and submitted a report to the legislature in both 2022 and 2024 with the aim "to bring together information resources to study the economics of and technology related to, and the environmental and public health considerations for, beneficial uses of fluid oil and gas waste."[75]

As Texas stands today, it does not have enough water to fulfill projected needs into the future.[76] In current application, the Texas Water Plan indicates that if "the drought of record had occurred in 2020, the state would have faced an immediate need for 3.1 million acre-feet per year in additional water supplies."[77] These issues exemplify the importance of action *today*, and reveals that this challenge is not one that can be ignored or deferred to the future.[78]

B. Produced Water Is in Abundant Supply and Has Nowhere to Go

Dating back to the exploration of Texas by Spanish explorers, oil has been a defining feature of Texas for its entire known history.[79] With the first oil production accidentally occurring in 1894 in East Texas, exploration efforts soon began with more frequency starting in the early 1900s.[80] In 1901, the famous Texas well at Spindletop began "the birth of the modern petroleum industry."[81] Today, Texas is a globally-known player in the energy industry and is individually a global leader in the production of oil and gas.[82]

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72. *Id.* at 98–108.

73. *See* Tex. S.B. 601, 87th Leg., R.S. (2021) (providing the enacting legislation of the TxPWC); TxPWC 2024, *supra* note 21, at 29.

74. TxPWC 2024, *supra* note 21, at 29.

75. *Id.* at 2.

76. STATE WATER PLAN, *supra* note 1, at 7 (stating "the existing water supply is not enough to meet the future demand for water during times of drought, Texas would need 6.9 million acre-feet of *additional* water supplies, including in the form of water savings through conservation, to meet the demand for water in 2070").

77. *Id.* at 7–8.

78. STATE WATER PLAN, *supra* note 1, at 8.

79. *Oil Production in Texas*, STATEIMPACT, https://stateimpact.npr.org/texas/tag/oil-production-in-texas/ (last visited Feb. 20, 2025).

80. *Id.*

81. Robert Wooster & Christine M. Sanders, *Spindletop Oilfield*, TEX. ST. HIST. ASS'N (Apr. 2, 2019), https://www.tshaonline.org/handbook/entries/spindletop-oilfield.

82. Mark J. Perry, *The Texas Miracle: Only Five Countries Now Produce More Oil Than the Lone Star State*, AMER. ENTER. INST. (Feb. 9, 2018), https://www.aei.org/carpe-diem/the-texas-miracle-only-

Texas also leads the United States in both the production and refining of crude oil and natural gas—accounting for 25% of the nation's total energy production.[83]

Associated with oil and gas industry operations is an extensive list of other impacts beyond just hydrocarbon production.[84] Secondary impacts of the oil and gas industry's presence in an area serve as wider contexts for overall operations, from substantial contributions to local economies and job markets to ecological regulations that need to be enacted for land preservation.[85] However, a primary effect, and the main focus of this Comment, concerns a historic production "waste": produced water.[86]

On a very general level, oil and gas production is made possible by drilling into hydrocarbon-rich geological formations underground.[87] These formations are comprised of unique characteristics, varying widely based on location.[88] In addition to the oil and gas, there also exists a proportionately large amount of water within the formations.[89] As a formation is drilled into, pressure is equalized, and the contents within the formation travel through the wellbore up to the Earth's surface.[90] Along with the oil and natural gas the operators seek, this "produced water" inevitably arrives at the surface along with them.[91]

It should also be noted that the production volume of produced water, as well as the oil and gas industry's demand for water, have both substantially grown due to the advent of hydraulic fracturing.[92] This technology has been defined as "[a] mechanical method of increasing the permeability of rock, and thus increasing the amount of oil or gas produced from it."[93] Hydraulic fracturing is heavily dependent on water usage, as the actual "fracturing" of

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83. *Texas State Energy Profile*, U.S. ENERGY INFO. ADMIN., https://www.eia.gov/state/print.php?sid=TX (last visited Feb. 20, 2024).

84. *2023 Environmental, Economic, & Industry Report*, TEX. OIL & GAS ASSOC. (Jan. 30, 2024), https://www.txoga.org/2023eeir/.

85. *Id.*; *Primary Regulation of Oil and Gas Production*, TEX. COMM'N ON ENV'T QUALITY, https://www.tceq.texas.gov/permitting/other-jurisdiction/oil-and-gas-production.html (last visited Feb. 20, 2025).

86. *Management of Oil and Gas Exploration and Production Waste*, U.S. ENV'T PROT. AGENCY, https://www.epa.gov/hw/management-oil-and-gas-exploration-and-production-waste (last visited Feb. 20, 2025).

87. JOHN S. LOWE ET AL., CASES AND MATERIALS ON OIL AND GAS LAW 8 (West Academic, 8th ed. 2021).

88. *Id.*

89. *Id.*

90. *Id.*

91. *See id.*

92. GROUNDWATER PROT. COUNCIL, *supra* note 13, at 37 (noting "a single horizontal [shale gas] well can use an average of about 12 million gallons of water").

93. MARTIN & KRAMER, *supra* note 6, at 543; *see also id.* at 860 (defining permeability as "[a] measure of the resistance offered by rock to the movement of fluids through it").

the rock is achieved with high-pressure water being pumped down the well.[94] Through this methodology, previously disregarded formations suddenly became extremely viable options for production.[95] Thus, widespread implementation of hydraulic fracturing has risen production rates for oil, gas, and produced water to an all-time high in Texas.[96]

In the oil and gas industry, produced water is defined as "any water originating from subsurface formations that is brought to the surface along with oil or natural gas."[97] This broad definition is meant to also encompass water that has been injected into wells as part of primary or secondary oil and gas recovery, including hydraulic fracturing, with this subset of produced water sometimes also referred to as "flowback water" or "frack water."[98] This latter substance can include chemicals added during the fracking process, including proppants, "friction reducers, biocides, and scale inhibitors."[99] However, for purposes of this Comment, the distinctions between these types of produced water are not relevant.

1. Texas's Current Efforts in Managing Produced Water

As a byproduct of drilling, produced water is recognized as a waste in every stage of exploration and production.[100] This classification is held because produced water, although technically water, often has an extremely high concentration of salt and other constituent chemicals that alter the substance beyond any practical surface use.[101] The exact composition varies highly, often as a result of the formation it was in, but often includes "varying amounts of oil residues, sand or mud, naturally occurring radioactive materials, chemicals from frac fluids, bacteria, and dissolved organic compounds."[102] Thus, the oil and gas industry tends to view dealing with

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94. *See* Coastal Oil & Gas Corp. v. Garza Energy Tr., 268 S.W.3d 1, 6–7 (Tex. 2008) (providing the Texas Supreme Court's description of fracking).

95. *See generally* Dennis Denney, *Unconventional Shale Play: Multilateral Technology and Selective Fracturing*, J. OF PETROLEUM TECH. 65, no. 5, 138–41 (2013) (describing the methodology by which fracking allowed for production in unconventional shale plays).

96. *See Crude Oil Production and Well Counts Since 1935*, TEX. R.R. COMM'N, https://www.rrc.texas.gov/oil-and-gas/research-and-statistics/production-data/historical-production-data/crude-oil-production-and-well-counts-since-1935/ (last visited Feb. 20, 2025) (corroborating how the "shale revolution" dramatically increased oil and gas production in Texas).

97. MARTIN & KRAMER, *supra* note 6, at 930.

98. *Id.* at 449, 467 (recognizing the terms as synonyms of each other).

99. Hardberger, *supra* note 7, at 5 (citing KATIE GUERRA ET AL., U.S. DEP'T OF THE INTERIOR, BUREAU OF RECLAMATION, OIL AND GAS PRODUCED WATER MANAGEMENT AND BENEFICIAL USE IN THE WESTERN UNITED STATES, SCIENCE AND TECHNOLOGY PROGRAM REPORT NO. 157 at 36 (Sept. 2011)). Although beyond the scope of this Comment, these added chemicals can play an important role in the rate of treatment and setting of standards for reuse application.

100. *See* U.S. ENV'T PROT. AGENCY, *supra* note 86 (describing the Well Drilling and Completion, Simulation, and Production stages).

101. *See* AM. GEOSCIENCES INST., *supra* note 8 (listing the variability of salinity and constituent elements).

102. *Id.*

produced water largely as a nuisance and an undesired cost of doing business.[103] Due to this nature of the water, it "must be either disposed of or treated and reused."[104]

Historically, produced water has primarily been either repurposed for further oil and gas operations or disposed of by reinjecting it back into the ground.[105] Produced water is repurposed[106] for oil and gas activities through "hydraulic fracturing, waterflooding, and enhanced oil recovery."[107] In Texas, the oil and gas industry is governed in large part by the Railroad Commission (RRC).[108] The RRC issues regulatory permits for both oil and gas production and produced water reinjection disposal wells.[109] The RRC, however, does not track the amount of produced water repurposed by operators.[110] This allows no comparable figure for the amount of Texas-specific repurposing of produced water within oil and gas operations.[111] Despite this, "[t]he RRC recognizes that a significant volume of produced water is reused by oil and gas companies in their own operations."[112] These repurposing efforts comprise a close second of produced water usage in the United States.[113]

The alternative option, and where most produced water has historically gone, is disposal reinjection.[114] This occurs simply as a function of cost, as "companies operating in a free market will generally favor those methods that offer the lowest cost and highest reliability."[115] In the produced water

103. GROUNDWATER PROT. COUNCIL, *supra* note 13, at 32.

104. *Using Produced Water*, AM. GEOSCIENCES INST., https://profession.americangeosciences.org/reports/petroleum-environment-2018/using-produced-water/ (last visited Feb. 20, 2025).

105. *See* TEX. R.R. COMM'N, *supra* note 35 (providing RRC authority for historic produced water practices).

106. In identifying the appropriate term to use, the oil and gas industry recognizes different connotations with the terms "recycle" and "reuse" of produced water. Telephone Interview with Dr. W. Shane Walker, Director, Tex. Produced Water Consortium (Nov. 14, 2024). The "recycling" of produced water often carries the association that the water is being repurposed in continued operations, while "reuse" implies a use applied outside of the oil and gas industry. *Id.* This latter term may be a misnomer, as the produced water being "reused" may have never been originally "used," yet serves as the appropriate industry term. *Id.* To avoid confusion, in this Comment, produced water in continued oil and gas operations will be referred to as "repurposed" and produced water applied outside of oil and gas operations will be referred to as "beneficially reused."

107. *See generally* Kerry H. Bouton, *Reuse of Produced Water Grows in the Oil and Gas Industry*, 72 J. PETROLEUM TECH. 60 (2020) (describing current oil and gas industry uses for produced water).

108. *About U*s, TEX. R.R. COMM'N, https://www.rrc.texas.gov/about-us/ (last visited Feb. 20, 2025) (explaining that despite its name, "[t]he Railroad Commission of Texas no longer has any jurisdiction or authority over railroads in Texas," but instead "is the state agency with primary regulatory jurisdiction over the oil and natural gas industry").

109. *Id.*

110. VEIL, *supra* note 10, at 112.

111. *Id.*

112. *Id.*

113. *Id.* at 8.

114. TxPWC 2022, *supra* note 36.

115. *Id.*

context, disposal reinjection is the more economical and reliable option.[116] In estimated figures, treatment or reinjection of produced water is calculated per barrel.[117] Within the Permian Basin in Texas, reinjection cost ranges from $0.40−1.99 per barrel.[118] The largest variable cost with disposal reinjection is transportation costs, either by trucking or pipeline.[119] Treatment of produced water averages $2.55–10.00 per barrel.[120] The large range in this latter figure is due to the varying levels of treatment required for different types of produced water, correlating directly with the energy requirement for the treatment process.[121]

The discrepancy in cost of these two options becomes starkly evident when viewing the volume of the daily produced water production.[122] In viewing the ratio of produced water to oil and gas produced in Texas, "[e]stimates put the production ratio of water barrels to hydrocarbons barrels anywhere from 2:1 to 8:1."[123] Additionally, the production of produced water *increases* over the life of the well.[124] Late stages of production can see "10−20 times or up to 50 times more produced water relative to produced oil."[125]

When viewing the overall volumes in the Midland and Delaware Oil Basins in Texas, the "*daily* water production . . . is 12 MMBbls" (i.e., twelve million barrels or 504,000,000 gallons).[126] While it can be easy to glaze over these figures, that is the equivalent of filling over 760 Olympic-size swimming pools *daily* from produced water produced just from the Midland and Delaware Basins.[127] These volumes put the stark cost differences between disposal reinjection and beneficial reuse into perspective, with even estimating on the low end of costs and with only one-quarter of the

116. *See id.*

117. *Id.* One oil field barrel (bbl.) is forty-two U.S. gallons. MARTIN & KRAMER, *supra* note 6, at 95.

118. Carolyn M. Cooper et al., *Oil and Gas Produced Water Reuse: Opportunities, Treatment Needs, and Challenges 2*, *ACS ES&T ENG'G* 347, 350 (2022).

119. *Id.*

120. TxPWC 2022, *supra* note 36.

121. *See id.*

122. TxPWC 2024, *supra* note 21, at 8.

123. *Produced Water Report*, GROUNDWATER PROT. COUNCIL 1, 40 (2023), https://www.gwpc.org/wp-content/uploads/2023/06/2023-Produced-Water-Report-Update-FINAL-REPORT.pdf.

124. B.R. Scanlon et al., *Comparison of Water Use for Hydraulic Fracturing for Unconventional Oil and Gas versus Conventional Oil*, 48 ENV'T SCI. & TECH. 12386, 12387 (2014).

125. *Id.*

126. TxPWC 2024, *supra* note 21, at 8 (emphasis added).

127. 504 million gallons equals 763.64 Olympic-size (660,000 gallons) swimming pools. Clare Mulroy, *How Many Gallons Are in an Olympic Swimming Pool? A Look at the Volume*, USA TODAY (July 19, 2024, 6:02 AM), https://www.usatoday.com/story/sports/olympics/2024/07/19/how-many-gallons-olympic-swimming-pool/74411859007/; *see* Martha Pskowski, *Recycled Oilfield Water Could Aid Drought-Stricken West Texas*, TEX. TRIB. (Dec. 10, 2024, 5:00 AM), https://www.texastribune.org/2024/12/10/west-texas-oil-gas-wastewater-recycling-produced-water/.

aforementioned daily production, the price differences could be in the multi-millions of dollars spent.[128]

The role of actually conducting the treatment and beneficial reuse of produced water is currently fulfilled by the "water midstream" sector.[129] This sector broadly handles the transportation, reinjection disposal, and treatment of produced water.[130] The fractionalized nature of business within the oil and gas industry allows for a more specialized company to handle the produced water.[131] This takes the job off of the operators' hands, whose main focus is producing oil and gas, and ultimately allows for more cost-effective handling of the substance.[132]

The costs associated with handling produced water are substantial, whether through disposal reinjection or beneficial reuse.[133] In context with the volume of produced water being produced daily, the role of this sector is essential for oil and gas operations.[134] This importance has led to an increase in investments in water midstream companies, creating high valuations for the services.[135] Although the specifics of what goes into the costs are beyond the scope of this Comment, the main emphasis taken should be the high costs associated with the activities performed by the water midstream companies, with potential for later measures to drive them down.[136]

2. Associated Issues With Disposal Reinjection—Induced Seismicity and "Zombie" Wells

With disposal injection as the destination for the majority of produced water, additional negative effects have resulted.[137] First, Texas is running out of economic disposal injection space.[138] This has been viewed by some scholars to be the main push for produced water treatment simply because

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128. For example, the disposal reinjection of 3 million barrels at $0.40 is $1.2 million, and the beneficial reuse of 3 million barrels at $2.55 is $7.65 million. *See generally* TxPWC 2022, *supra* note 36, at 8 (noting that "beneficial reuse outside of the oil and gas industry is not currently more economical than disposal or reuse within the industry").

129. Mark Patton, *The Art of a Water Midstream Deal*, WORLD OIL (Nov. 2019), https://www.worldoil.com/magazine/2019/november-2019/special-focus/the-art-of-a-water-midstream-deal.

130. *Id.*

131. *See id.*

132. Syed A. Ali, *Water Management—2016*, J. PETROLEUM TECH. (Nov. 30, 2016), https://jpt.spe.org/water-management-2479.

133. Cooper et al., *supra* note 118.

134. *See* STATE WATER PLAN, *supra* note 1, at 41–43.

135. Patton, *supra* note 129 (valuating WaterBridge at $2.89 billion and viewing the purchase of Oilfield Water Logistics for $489 million).

136. *See id.*

137. *See, e.g.*, Weingarten, *supra* note 12 (citing examples of disposal reinjection inducing earthquakes); Scanlon, *supra* note 124 (examining the potential for depletion in groundwater sources).

138. Martha Pskowski and Dylan Baddour, *Companies Aim to Release More Treated Oilfield Wastewater into Rivers and Streams*, TEX. TRIB. (Apr. 29, 2024), https://www.texastribune.org/2024/04/29/texas-treated-produced-water-disposal-discharge-rivers/ (interviewing Texas Tech School of Law Professor Amy Hardberger).

Texas is "running out of disposal opportunities."[139] The issue is exacerbated when accounting for the fact that Texas also receives about one-third of New Mexico's produced water.[140] Texas is also not planning on slowing operations, with estimates showing an almost 70% increase in Texas's own production of produced water by 2034.[141]

With reinjection space diminishing and the amount of produced water growing, another factor has entered the scene—induced seismic events.[142] A strong majority of scientific authority directly correlates seismic events with produced water disposal reinjection.[143] This injection most likely induces earthquakes due to a variety of documented factors, depending on the specific circumstances at each disposal reinjection site, with the overriding contributing factor being the reinjection pressures.[144]

Seismic events present new concerns for the oil and gas industry.[145] Both public outrage and legal action have been observed to grow proportionately to the frequency and magnitude of these induced earthquakes.[146] In Texas, the RRC holds legislative authority to oversee disposal reinjection wells while also having the ability to respond and adapt amid seismic events.[147] When an area has seismic activity "likely to be or determined to be contributing to seismic activity," the RRC steps in and responds.[148]

In response to induced earthquakes, the RRC has thus far issued disposal reinjection restrictions in three areas.[149] This response entails curtailing

139. *Id.*

140. TxPWC 2024, *supra* note 21, at 74 (stating that this is primarily due to New Mexico's stringent regulations for disposal reinjection, setting projections that the amount received by Texas will almost double by 2034).

141. *Id.* at 8.

142. Weingarten, *supra* note 12.

143. *See* Justin L. Rubinstein & Alireza B. Mahani, *Myths and Facts on Wastewater Injection, Hydraulic Fracturing, Enhanced Oil Recovery, and Induced Seismicity*, SEISMOLOGICAL RES. LETTERS 1060, 1063–64 (2015).

144. *Id.* ("Fluid injection can induce earthquakes in four different ways: (1) the injection of fluids raises pore-fluid pressure within a fault, (2) the injection of fluids fills and compresses fluids within pore spaces causing deformation (poro-elastic effects), (3) the injection of fluid that is colder than the rock into which it is being injected into causes thermoelastic deformation, and (4) fluid injected adds mass to the injection formation.").

145. *See* Julia Falcon et al., *Scurry County Judge Seeks State Aid After 61 Earthquakes in 7 Days, the Latest Friday*, CBS NEWS (July 26, 2024, 6:00 PM), https://www.cbsnews.com/texas/news/earthquake-west-texas-dallas-fort-worth/ ("Scurry County Judge Dan Hicks officially declared a disaster . . . after the 61st earthquake in the past seven days struck his county.").

146. *Id.*

147. 16 TEX. ADMIN. CODE §§ 3.46(d)(1)(f), 3.9(a)(vi).

148. TEX. R.R. COMM'N, *Seismicity Response*, https://www.rrc.texas.gov/oil-and-gas/applications-and-permits/injection-storage-permits/oil-and-gas-waste-disposal/injection-disposal-permit-procedures/seismicity-review/seismicity-response/ (last visited Feb. 20, 2025) (allowing the RRC to "modify, suspend, or terminate an injection permit to dispose of waste for just cause after notice and opportunity for hearing, if injection is likely to be or determined to be contributing to seismic activity").

149. *Id.* (indicating the areas as "North Culberson-Reeves[,] Stanton[,] [and] Gardendale (Midland-Odessa)").

reinjection volumes or ceasing disposal reinjection altogether.[150] The current practical response from the oil and gas industry is to take produced water originally designated for disposal reinjection in these areas and "divert[] it to currently tremor-free areas."[151] Although additional analysis is beyond the scope of this Comment, the potential of civil liability for induced seismic activity remains a highly motivating factor that pushes the industry to contemplate other methods for produced water disposal.[152]

A final major issue with current disposal reinjection is produced water unintentionally returning back to the surface.[153] This occurs when produced water travels up through abandoned and improperly sealed oil and gas wells that are still tapped into the formation where the produced water is injected.[154] The produced water then migrates to the area of least resistance, arriving back at the surface.[155] An additional source of major liability concerns, these so-called "zombie" or "orphan" wells are most often undocumented wells that the RRC is unaware of.[156] Because Texas was home to oil and gas activities long before the creation of the RRC and other regulatory agencies, hundreds of prior-drilled wells are undocumented.[157] When produced water does arrive back to the surface, the land it touches is often left decimated, leading to more claims for damages against the oil and gas industry.[158]

C. Texas's Current Franchise Exemptions Do Not Promote Beneficial Reuse

In Texas, there exists a wide array of taxes that go to create the overall state tax revenue.[159] One such is the franchise tax, owed exclusively by Texas businesses.[160] Enacted in 1907, the "franchise tax is imposed on each taxable entity that does business in this state or that is chartered or organized in this

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150. *Id.*

151. Paul Wiseman, *So the Rocks Don't Roll*, PERMIAN BASIN PETROLEUM ASS'N MAG. (Oct. 16, 2023), https://pboilandgasmagazine.com/so-the-rocks-dont-roll/.

152. *See generally* Monika U. Ehrman, *Earthquakes in the Oilpatch: The Regulatory and Legal Issues Arising Out of Oil and Gas Operation Induced Seismicity*, 33 GA. ST. U.L. REV. 609 (2017) (identifying induced seismicity as a source of liability for the oil and gas industry).

153. Carlos Nogueras Ramos & Martha Pskowski, *"Nobody Really Knows What You're Supposed to Do": Leaking, Exploding Abandoned Wells Wreak Havoc in West Texas*, TEX. TRIB. (Feb. 29, 2024, 10:00 AM), https://www.texastribune.org/2024/02/28/abandoned-oil-wells-west-texas-railroad-commission/.

154. *Id.*

155. *Id.*

156. *Id.*

157. Elliott Woods, *Despite Texas' "Aggressive" Well-Plugging Program, There's Still a Backlog of Orphaned Oil and Gas Wells*, TEX. TRIB. (June 4, 2024, 5:00 AM), https://www.texastribune.org/2024/06/04/texas-orphan-well--plugging-oil-and-gas/ ("Texas has no solid estimate of the number of unplugged wells within its borders that may one day become wards of the state.").

158. *Id.*

159. TEX. COMPTROLLER OF PUB. ACCTS., FIELD GUIDE TO THE TAXES OF TEXAS 3 (2024) [hereinafter Field Guide].

160. *Id.* at 3, 12.

state," unless other exemptions apply.[161] This tax weighs against the state's aim to "maintain[] Texas' business-friendly reputation."[162]

As a notable exception to the franchise tax, the Texas Legislature created a "no tax due" threshold in order to apply the tax only on businesses with a total revenue above a certain figure.[163] As of January 1, 2024, the threshold was raised to $2.47 million dollars.[164] However, despite this high revenue threshold, this amount represents more of a "gross revenue" figure (i.e., the sum of all income before costs are deducted).[165] The Texas Comptroller of Public Accounts maintains a public database of every paying businesses' "Franchise Tax Account Status."[166] This allows a public search of businesses operating in Texas and specifically allows viewing of which are subject to pay the franchise tax.[167] This status can also be corroborated by searching the comptroller's tax-exempt entity database.[168]

When governments desire to promote certain activities or incentives, exceptions to certain taxes are often granted.[169] In Texas, the legislature uses tax incentives in a variety of circumstances, with their application aimed to further the interests of the state.[170] Exceptions and incentives held against the franchise tax, for eligible businesses, can serve as a substantial motivating factor to promote investment in a specific sector.[171]

Texas has a history of utilizing franchise tax exceptions in both prospective and retrospective applications.[172] In exemplifying the former, effective in 1982, the Texas Legislature enacted a total franchise tax exemption for "corporation[s] engaged solely in the business of manufacturing, selling, or installing solar energy devices."[173] In a historical context, this enactment came at a time before any large solar plants were

161. TEX. TAX CODE ANN. § 171.001(a).

162. *The History of the Texas Franchise Tax*, TEX. COMPTROLLER OF PUB. ACCTS. (May 2015), https://comptroller.texas.gov/economy/fiscal-notes/archive/2015/may/franchisetax.php.

163. TEX. TAX CODE § 171.002.

164. *Id.* § 171.002(d).

165. *Id.* § 171.1011; *see also Franchise Tax Overview*, TEX. COMPTROLLER OF PUB. ACCTS., https://comptroller.texas.gov/taxes/publications/98-806.php (last visited Feb. 20, 2025) (stating the calculation as "determined from revenue amounts reported for federal income tax minus statutory exclusions").

166. *Franchise Tax Account Status*, TEX. COMPTROLLER OF PUB. ACCTS., https://comptroller.texas.gov/taxes/franchise/coas-instructions.php (last visited Feb. 20, 2025); *Franchise Tax Account Status Search*, TEX. COMPTROLLER OF PUB. ACCTS., https://mycpa.cpa.state.tx.us/coa/search.do (last visited Feb. 20, 2025).

167. *Id.*

168. *Texas Tax-Exempt Entity Search*, TEX. COMPTROLLER OF PUB. ACCTS., https://comptroller.texas.gov/taxes/exempt/search.php (last visited Feb. 20, 2025).

169. TJ Costello & Greg Conte, *Tax Incentives and GASB 77*, TEX. COMPTROLLER OF PUB. ACCTS. (Nov. 2016), https://comptroller.texas.gov/economy/fiscal-notes/archive/2016/november/gasb77.php.

170. *Id.*

171. *Id.*

172. *See, e.g.*, TEX. TAX CODE ANN. §§ 171.056, 171.085 (regarding the prospective and retrospective exemptions aimed at addressing or redressing issues faced by the state).

173. *Id.* § 171.056.

present in Texas.[174] However, soon after the exemption was enacted, the first large-scale solar power plant was built in Austin in 1986.[175] Because of the nature and "no ceiling on this exemption . . . it can be a substantial incentive for solar and wind businesses."[176]

In retrospective application, the Texas Legislature has also placed an emphasis on businesses engaged solely in dealing with specific kinds of recycling and waste processing.[177] For example, effective in 1991, total franchise tax exemption status was granted to "corporation[s] engaged solely in the business of recycling sludge."[178] The waste aimed to be recycled, "sludge," is a "waste generated from a municipal, commercial, or industrial wastewater treatment plant . . . ."[179] This by-product of wastewater treatment requires a permit from the Texas Commission on Environmental Quality to handle.[180] Sludge has potentially beneficial uses for supplementing nutrients "that may be limited or missing from the soils of a particular site."[181] Additionally, when sludge management became prevalent enough for the Texas Legislature to take action in the 1980s, fears existed about "the use of sludge on lands that may produce food-chain crops."[182]

In both forward-looking and remedial terms, the Texas Legislature has created franchise tax exemptions for businesses in certain sectors to promote business activity in areas of need for the state.[183] This has been present when the state has sought to promote a certain activity and has had the effect of incentivizing growth in those sectors.[184]

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174. John G. Bordie, *Solar Energy*, TEX. STATE HIST. ASS'N, https://www.tshaonline.org/handbook/entries/solar-energy (last updated Mar. 16, 2022).

175. *Id.* (describing the funding and creation of the Decker solar power plant).

176. *Solar and Wind Energy Business Franchise Tax Exemption*, DATABASE OF STATE INCENTIVES FOR RENEWABLES & EFFICIENCY, https://programs.dsireusa.org/system/program/detail/82 (last updated July 16, 2021).

177. *See* TEX. TAX CODE ANN. § 171.085.

178. *Id.*

179. TEX. HEALTH & SAFETY CODE ANN. § 361.003(33).

180. *Sludge Permits and Registrations*, TEX. COMM'N ON ENV'T QUALITY, https://www.tceq.texas.gov/permitting/sludge.html (last updated Nov. 6, 2024).

181. *Sludge Beneficial Land-Use Permits: Learning More*, TEX. COMM'N ON ENV'T QUALITY, https://www.tceq.texas.gov/agency/decisions/participation/permitting-participation/sludge-land-use (last updated Jan. 6, 2025).

182. *Solid Waste Management Plan for Texas 1980-1986*, TEX. DEP'T WATER RES. (Jan. 1981), https://www.twdb.texas.gov/publications/reports/limited_printing/doc/LP-137.pdf.

183. *See* TEX. TAX CODE ANN. §§ 171.056, 171.085 (viewing a prospective and retrospective approach by the state).

184. *See* Costello & Conte, *supra* note 169 (recognizing the purpose and method for incentivizing growth).

III. A TEXAS LEGISLATIVE MEASURE ENABLES GREATER ECONOMIC FEASIBILITY

With the backdrop of water scarcity and traditional sources being outpaced by demand, produced water is the best alternative water source for Texas to pursue to "kill two birds with one stone."[185] To effectively pursue this route, action from the State of Texas is essential to establish a framework of greater economically viable reuse.[186] As this Part will argue, the immediate codification of a targeted franchise tax exemption is Texas's best bet,[187] the potential for beneficial application of reused produced water is incredibly high,[188] and addressing the issue now saves money while promoting innovation.[189]

A. The Proposed Amendment to Texas Tax Code § 171

This Comment is the first to argue that § 171 of the Texas Tax Code should be amended to exempt companies that are solely aimed at beneficially reusing produced water from state franchise taxes.[190] This would be the first exemption relating to promoting the beneficial reuse of produced water in any capacity.[191] As this Comment will argue, a legislative action, framed to incentivize action to combat a growing issue, is needed to secure immediate water security in Texas.[192]

On a very basic level, the purpose of a tax exemption in this context is to make the cost of beneficially reusing produced water comparable to disposal reinjection *today*.[193] The tax incentive would drive down the costs for the water midstream companies conducting the beneficial reuse, allowing the cost to drop to a level that operators would consider economically feasible.[194]

The proposed franchise tax exemption would be not only be aimed to benefit existing companies beneficially reusing produced water, but would also be prospective to incentivize the growth of new businesses.[195] A

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185. *Kill Two Birds With One Stone*, MERRIAM-WEBSTER DICTIONARY (11th ed. 2025); TxPWC 2024, *supra* note 21, at 29.

186. *See* TxPWC 2024, *supra* note 21, at 30.

187. *See infra* Section III.0 (identifying why immediate passage is needed).

188. *See infra* Section III.0 (listing the current and most efficient applications of beneficially reused produced water).

189. *See infra* Section III.0 (describing the savings and innovation that would occur).

190. *See* TEX. TAX CODE ANN. § 171.

191. *See id.* §§ 171.056, 171.085.

192. *See infra* Section III.0–0 (framing the proposal with the future implications of water security).

193. *See generally* Cooper et al., *supra* note 118 (exemplifying the stark cost price discrepancy).

194. *See id.* at 351.

195. *See generally* NORTON FRANCIS, STATE TAX INCENTIVES FOR ECONOMIC DEVELOPMENT, URB. INST. (2016), https://www.urban.org/sites/default/files/publication/78206/2000636-state-tax-incentives-

secondary impact of incentivizing new businesses would be increased competition, also helping to drive down the relative cost to beneficially reuse produced water.[196] A franchise tax exemption would serve as a much-needed "push" to allow for beneficial reuse to become more economically feasible *immediately*.[197]

As identified, water scarcity is a serious issue that only continues to grow.[198] Texas is kept from a serious water shortage due to sporadic natural replenishment, but models indicate that if a drought of record occurred today, the implications could be catastrophic.[199]

Thus, to effectuate the necessary change, the Texas Legislature should add the following provision to the tax code under Chapter 171, Subsection B:

> Sec. 171.089. EXEMPTION—CORPORATION WITH BUSINESS INTEREST IN BENEFICIAL RESUSE OF PRODUCED WATER. A corporation engaged solely in the business of collecting, treating, selling, or implementing a beneficial reuse of produced water, as defined by Section 171.089(a) of this Code, is exempted from the franchise tax.
> (a) In this section, "beneficial reuse" means an application or series of applications designed primarily to offset existing uses of potable water outside of the oil and gas industry. The term includes but is not limited to:
> i. beneficial land application in forms such as irrigation, rangeland rehabilitation, and ice and dust suppression;
> ii. permitted water discharges such as streamflow augmentation, aquifer recharge, and wetland restoration; and
> iii. industrial uses such as the cooling of power plants.[200]

The scope of this language is purposefully broad to open incentives for companies engaged in produced water treatment, beneficial reuse, and application in a variety of ways.[201] Utilizing the previously recognized Texas regulatory databases for franchise tax compliance,[202] many existing water

for-economic-development.pdf (discussing the government's use of tax incentives to spur development in specific industries).

196. *See id.* at 5 (stating that those in favor of tax incentives "argue that they lower business costs and make the state more competitive for business investment").

197. *See id.*

198. *See supra* notes 51–55 and accompanying text (quantifying water scarcity in Texas).

199. TxPWC, *supra* note 21 (stating the impact that a "drought of record" would have had on Texas in 2020).

200. This proposed amendment's structure is largely based on TEX. TAX CODE ANN. § 171.056.

201. *Id.*

202. *See supra* note 166 and accompanying text (describing the Comptroller-maintained databases).

midstream companies produce enough income to pay the franchise tax.[203] In comparing a random base sample of eight water midstream companies in Texas,[204] each is listed in the Texas Comptroller's database with an "active" franchise tax account status.[205]

In terms of the economic impact of the exemption on Texas's tax revenue, the overall impact would be relatively small for the state.[206] The franchise tax already only accounts for around 8.3% of the state's total tax collection.[207] The franchise tax primarily goes toward two funds, the General Revenue Fund and the Property Tax Relief Fund.[208] The franchise tax makes up the majority of the revenue for the Property Tax Relief Fund, causing this fund to have the biggest adverse impact from the proposed exemption.[209] While the exact impact of the proposed exemption on Texas's franchise tax revenue cannot be calculated due to the revenues of the majority of water midstream companies remaining unknown, research does not reveal any glaring adverse deficits.[210]

B. Potential for Offsetting Existing Water Usage Is Extremely High

The potential for application of beneficially reused produced water is high.[211] This is especially true with the largest existing uses of potable water, with already substantial research and development being conducted to explore this horizon.[212] Without an end-use application of the beneficially reused produced water, the practicality of the economic feasibility becomes moot.[213]

Texas has already taken legislative action to address water scarcity by funding research into what kinds of investments can and should be made to

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203. *See supra* note 166 and accompanying text (describing the Comptroller's database of Franchise Tax Account Status).

204. The companies viewed included XRI Water Services, H20 Midstream Intermediate, Layne Water Midstream, Martin Water Midstream, Water Bridge Operating, Aris Water Solutions, Goodnight Midstream, and Mustang Extreme Environmental Services.

205. *See supra* note 166 and accompanying text (describing the searchable databases for all companies in Texas paying the franchise tax).

206. Field Guide, *supra* note 159, at 12.

207. *Id.*

208. *2024 State of Texas Annual Cash Report*, TEX. COMPTROLLER OF PUB. ACCTS., https://comptroller.texas.gov/transparency/annual-cash/2024/ (last visited Feb. 20, 2025). Respectively, the franchise tax contribution to the net revenue of these funds for 0.00000043% to the General Revenue Fund and 73% to the Property Tax Relief Fund in fiscal year 2024. *Id.*

209. *See id.*

210. Apart from publicly traded companies like Aris Water Solutions, the revenue of private water midstream companies is not publicly available to create an accurate holistic assessment.

211. STATE WATER PLAN, *supra* note 1, at 53, 55 (accounting agriculture usage for well over half of water usage state-wide, and up to 80% in the Texas panhandle).

212. TxPWC 2024, *supra* note 21, at 49.

213. Telephone Interview with Amy Hardberger, George W. McCleskey Professor of Water L. & Dir., Ctr. for Water L. & Pol'y, Tex. Tech Univ. Sch. of L. (Sept. 18, 2024).

ensure water security.[214] This research, conducted by various state water agencies such as the TxPWC, helps direct the potential applications of treated produced water.[215] With this research, key targeted areas emerge to have the greatest potential to offset current freshwater usage.[216]

The primary and most evident user of freshwater is the agriculture industry.[217] To be sure, the attractiveness of using beneficially reused produced water to irrigate crops is not readily apparent to the agriculture industry.[218] The crops are some farmers' entire livelihood, and many would not want to gamble their harvest by irrigating with a never-before-used substance.[219] Additionally, concerns of those seeking to offset agricultural use of freshwater also recognize that farming is a vital industry for our society, especially in Texas.[220]

However, this planning is arising out of sheer necessity, and the path of least resistance is pursuing beneficially reused produced water application towards crops.[221] Extensive regulatory standards exist regarding water used for human consumption directly and for water to be used to irrigate crops.[222]

In viewing the treatment of produced water on a continuum, from its original state to potability, the further efforts go towards potability, the more energy and time are required.[223] Yet, the standards for getting water to desirable treated levels for crops are much lower than the standard for human consumption.[224] This standard also varies based on the actual crop being grown, as food-bearing crops naturally have a higher standard than industrial crops like cotton.[225]

Utilizing the most cost-effective and least energy dependent course is essential for the application of the proposed tax incentive to have the greatest effect.[226] Although the proposed tax exception would improve the economic feasibility of beneficially reusing produced water, other factors within the

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214. *See* Tex. S.B. 601, 87th Leg., R.S. (2021) (providing the enacting legislation of the TxPWC).

215. *Id.*

216. *Id.*

217. STATE WATER PLAN, *supra* note 1, at 53, 55 (accounting agriculture usage for well over half of water usage state-wide, and up to 80% in the Texas panhandle).

218. TxPWC 2024, *supra* note 21, at 49.

219. *See id.*

220. *Id.*

221. *See id.*

222. *See, e.g.*, Clean Water Act, 33 U.S.C. § 1251 (outlining the government's role in protecting water purity); *Pilot Projects*, TEX. R.R. COMM'N, https://www.rrc.texas.gov/oil-and-gas/applications-and-permits/environmental-permit-types/pilot-projects/ (last visited Feb. 20, 2025) (describing the permit process for produced water land application).

223. Telephone Interview with Rusty Smith, Former Director, Texas Produced Water Consortium (Sept. 18, 2024).

224. *See* 33 U.S.C. § 1251 (containing legislation that sets such standards).

225. TxPWC 2024, *supra* note 21, at 19 (comparing the quality limits of constituents for varying crops).

226. TxPWC 2022, *supra* note 36, at 52–54.

system must also be cost-effective.[227] If a company was able to take raw produced water and could put in less time and energy but still have a practical application, every dollar would have gone as far as possible.[228] The goal of incentivizing the activity is to create the greatest beneficial offset or freshwater usage at the lowest cost.[229]

Within agriculture, the use of beneficially reused produced water for irrigation of industrial crops has the most potential for beneficial offset.[230] Any use of beneficially reused produced water towards irrigation frees up previously-accounted-for freshwater that would have been used.[231] This would simultaneously reduce the strain on existing natural water supplies and increase the amount available for alternative uses.[232] In areas of Texas dependent on aquifers, such as the Ogallala Aquifer, this trade-off would prove vital for water availability in the future.[233]

Finally, there are also other non-staple crops that may be irrigated and grown in Texas with beneficially reused produced water even more effectively.[234] This largely turns on the crops' salinity tolerance, as often the most detrimental constituent in produced water to plant life is the high salt levels.[235] However, the TxPWC has promulgated pilot projects that have found commercial plants with higher salt tolerances, thus requiring less salinity treatment.[236] This lesser treatment means more time and cost saved without an adverse impact on the plant itself.[237] One such plant identified was the "guayule (*Parthenium argentatum* Gray) [which] stands out as a unique alternative rubber crop."[238] Although further analysis of specific crop application is beyond the scope of this Comment, research like this taken by the TxPWC reveals the practical and economic applicability of recycled produced water to the agricultural industry.[239]

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227. *See id.*
228. *See id.*
229. Cooper et al., *supra* note 118.
230. *See* TxPWC 2024, *supra* note 21, at 49 (stating "[t]he Consortium previously estimated that the volume of treated produced water potentially available for use could be as high as 2 billion barrels [i.e., 63,000,000,000 gallons] per year depending on the technological recovery rate").
231. *Id.*
232. *Id.*
233. *Id.* at 29; Dylan Baddour, *To Ease Looming West Texas Water Shortage, Oil Companies Have Begun Recycling Fracking Wastewater*, TEX. TRIB. (Dec. 19, 2022, 8:00 AM), https://www.texastribune.org/2022/12/19/texas-permian-basin-fracking-oil-wastewater-recycling/ (stating "people are drawing from the Ogallala at 6.5 times its recharge rate").
234. TxPWC 2024, *supra* note 21, at 9.
235. *Id.*
236. *See id.*
237. *See id.* at 50 (explaining that the less salt that must be removed through treatment, the cheaper the process becomes).
238. *Id.*
239. *Id.*

C. A Framework Making Beneficial Reuse the Most Economically Viable Option Will Have the Most Support and Success in Texas

A framework that allows an operator to reroute produced water from disposal reinjection towards beneficial reuse without a significant added cost is a goal desired by both the oil and gas industry and the State of Texas.[240] Implementing the proposed franchise tax exemption achieves this goal for both.[241]

For beneficial reuse to be successfully implemented in Texas, the cooperation of the oil and gas industry is essential.[242] After all, produced water is sourced from oil and gas operations, giving the oil and gas industry the current say of where it goes.[243] Thus, a framework to promote the beneficial reuse of produced water should address the biggest concern of the oil and gas industry with getting on board—economic feasibility.[244]

A franchise tax exemption implemented *now* for businesses solely engaged in the transportation, treatment, and application to end-use consumers establishes greater economic feasibility for oil and gas operators.[245] Without this economic incentive, beneficial reuse simply does not make business sense to pursue compared to the cost of disposal reinjection.[246]

The proposed franchise tax incentive also follows Texas's generally favorable stance towards oil and gas activities.[247] Texas actively seeks to find favorable solutions to issues that utilize the oil and gas industry's participation rather than demanding a result through exercising the state's police powers.[248]

To be sure, some authorities argue that the oil and gas industry should be forced to bear this cost themselves without any financial incentive from

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240. *See supra* Section II.0–B (identifying the overlapping issues of scarcity and overabundance).

241. *See supra* Section II.0–B (similarly noting the overlapping issues of scarcity and overabundance).

242. GROUNDWATER PROT. COUNCIL, *supra* note 13, at 43.

243. Although it is not entirely settled whether produced water belongs to the surface or mineral estate, the Texas Legislature has decided that one taking produced water for the purpose of beneficially reusing it becomes its owner. TEX. NAT. RES. CODE § 122.002 (granting that "[produced water] is considered to be the property of the person who takes possession of it for the purpose of treating the waste for subsequent beneficial use"). *See also* Peter Hosey et al., *Mine: All Mine? Texas Ownership of Produced Water and Its Constituent Parts (Lithium)*, Jackson Walker LLP (Mar. 29, 2024), https://www.jw.com/news/texas-produced-water-ownership/ (viewing produced water ownership in the context of allocating the constituent minerals within).

244. *See* Cooper et al., *supra* note 118 (identifying the large importance of costs).

245. *See id.*

246. *See id.*

247. *See, e.g.*, Coastal Oil & Gas Corp. v. Garza Energy Tr., 268 S.W.3d 1, 33–34 (Tex. 2008) (Willett, J., concurring) (observing the impact of the court's decision on Texas overall through oil and gas production).

248. *See id.*

the state.[249] However, forcing this requirement on operators would drastically increase post-production costs, disincentivizing exploration and production.[250] This would cause many individual operations to be considered un-economical, and does not follow Texas's precedent to follow industry-friendly approaches.[251]

D. Addressing the Issue Now Is More Economical in the Long Run and Promotes Innovation

Recognizing the wisdom in the adage "a stitch in time saves nine," a framework for economically feasible beneficial reuse implemented now saves the significant time and money that would be expended in addressing the issue later.[252] As seen, the issue of water scarcity is not an "if" but a "when," so an investment in Texas's water security is vitally needed as soon as possible.[253]

The sooner a beneficial reuse framework is implemented in Texas, the more money the state will save over time.[254] Many commentators agree with the view that action *may* be taken now or action *must* be taken later due to scarcity.[255] A member of the Produced Water Society, a non-profit organization seeking to enhance produced water treatment, stated his belief that "We don't have time for the free market to handle that challenge[.] If we can land a rocket on a platform in the middle of the ocean, we can clean up water. It's just a matter of cost and whether we're willing to do it."[256]

In addition to efforts now, future innovation remains an uncertain factor that could potentially be game-changing regarding the beneficial reuse of produced water.[257] The TxPWC identified as much in its 2022 Report, stating that "although treating produced water for beneficial use is not currently the

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249. Martha Pskowski, *Texas Eyes Marine Desalination, Oilfield Water Reuse to Sustain Rapid Growth*, INSIDE CLIMATE NEWS (Apr. 15, 2023), https://insideclimatenews.org/news/15042023/texas-water-legislation-desalination-oilfield-wastewatereyes-marine-desalination-oilfield-water/.

250. MARTIN & KRAMER, *supra* note 6, at 900–01.

251. Stephen Whitfield, *Permian, Bakken Operators Face Produced Water Challenges*, J. OF PETROLEUM TECH. (May 31, 2017), https://jpt.spe.org/permian-bakken-operators-face-produced-water-challenges.

252. Befekadu G. Habteyes & Frank A. Ward, *Economics of Irrigation Water Conservation: Dynamic Optimization for Consumption and Investment*, J. OF ENV'T MGMT. 258, at 2 (2020); Merriam Webster, *A Stitch in Time (Saves Nine)*, https://www.merriam-webster.com/dictionary/a%20stitch%20in%20time%20%28saves%20nine%29 (last visited Feb. 20, 2025).

253. *See supra* notes 51–55 and accompanying text (revealing the near-certain likelihood of scarcity if nothing is done).

254. *See* TxPWC 2024, *supra* note 21, at 31 (viewing trends of end-use application towards municipalities with a beneficial outlook due to increasing costs of water portfolios).

255. *See* Baddour, *supra* note 233 (interviewing a commentator that advocates for current implementation).

256. *Id.* (giving the statements of Ira Yates, "the fourth-generation beneficiary of an 8,000-acre family oil lease in the West Texas town of Iraan").

257. TxPWC 2022, *supra* note 36.

most economical method, continued growth in technological efficiencies paired with external constraints such as water shortages . . . could result in market forces that favor a system of beneficial use over other water management strategies."[258] Recent improvements in technologies are attributable to research and development efforts poured into the field, all aimed at increasing the economic viability of a model already known to work and ensure profits.[259]

The dominant method of disposal reinjection does not leave any chance for innovation, as it is a method with a purposeful "dead end" or final stop through forever disposing of the produced water.[260] By choosing to pursue the beneficial reuse of produced water, innovation is reintroduced into the equation as a fluctuating factor that could change the field entirely.[261] As the leadership at the TxPWC has indicated, they feel confident in stating that with enough time and energy, produced water can be turned into any quality water desired, even potable drinking water.[262] The controlling cost of these methodologies remains high, yet it has dropped recently and is expected to continue dropping into the future.[263]

The proposed franchise tax would incentivize innovation through incentivizing investment into a field that is already recognized as one of the most rapidly developing sectors in the oil and gas industry.[264] Passing the proposed franchise tax incentive now would be an investment, but ensuring the water outlook on the state will require expenditures regardless.[265] This continued focus increases the importance of pursuing beneficial reuse and innovation in the face of drastic scarcity.[266]

In order to keep innovation possible, the beneficial reuse of produced water must be pursued.[267] English poet William Blake summed up innovation in his phrase, "What is now proved was once only imagined."[268] With the

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258. *Id.*

259. *See, e.g.*, TxPWC 2024, *supra* note 21, at 8 (reviewing "many treatment systems, both established and novel" including "reverse osmosis/ultra high pressure reverse osmosis (RO/UHP-RO) and mechanical vapor compression/recompression (MVR)").

260. *See id.* at 16.

261. *See generally id.* (focusing on produced water recycling for beneficial reuse).

262. Telephone Interview with Rusty Smith, Former Director, Texas Produced Water Consortium (Sept. 18, 2024).

263. *Id.*

264. Patton, *supra* note 129.

265. *See* Peter H. Gleick & Meena Palaniappan, *Peak Water Limits to Freshwater Withdrawal and Use*, PROCS. OF THE NAT'L ACAD. OF SCIS. 107.25, at 11155 (discussing the shortfalls of solely conservation efforts in the face of population growth).

266. *See* STATE WATER PLAN, *supra* note 1, at 83 (stating that "[w]ithout *additional* supplies being developed . . . approximately one-quarter of Texas'[s] population would have less than half of the municipal water supplies they will require in 2070") (emphasis added).

267. *See, e.g.*, GROUNDWATER PROT. COUNCIL, *supra* note 13, at 74–75 (describing the National Alliance for Water Innovation and its innovative steps such the creation as desalination hubs, with the "Conventional Produced Water" section located at the University of Texas).

268. WILLIAM BLAKE, THE MARRIAGE OF HEAVEN AND HELL 16 (Oxford University Press, 1975), https://www.gutenberg.org/files/45315/45315-h/45315-h.htm.

current crossroads Texas is at, choosing to reinject produced water completely stifles innovation.[269] In order to allow the potential for the cost of beneficial reuse to keep falling through innovation, disposal reinjection must cease.[270]

IV. TEXAS'S INTERVENTION THROUGH A TAX INCENTIVE IS NECESSARY

Without economic incentives such as the proposed franchise tax exemption, beneficial reuse is not currently economically feasible on its own.[271] While some commentators argue the beneficial reuse of produced water should be something the market sorts out, this fails to account for the shortfalls in a standard market analysis in this context.[272] Additionally, implementing the franchise tax exemption addresses benefits for Texas not considered in the same analysis, such as depleting disposal reinjection availability and induced seismicity.[273]

A. A Standard Market Analysis Does Not Adequately Account for All Relevant Factors

Texas's economy, through a standard market analysis, does not have the ability to serve as the measuring rod for the success of implementing a franchise tax exemption to incentivize the beneficial reuse of produced water.[274] A market analysis in this context does not properly account for the extreme impact of scarcity and demand, or that of limited alternatives to the solution.[275]

This author concedes that the beneficial reuse of produced water would likely not currently survive a "sink-or-swim" approach under a traditional market analysis.[276] While select oil and gas companies are choosing to take measures regarding produced water at an economic loss,[277] the penultimate

269. *See* MED. NAT'L ACADS. OF SCIS. & TECH., *Flowback and Produced Waters: Opportunities and Challenges for Innovation: Proceedings of a Workshop*, 43–44 (Ed J. Dunne ed., 2017) (viewing Colorado and its current dependence on saltwater reinjection as being combatted with research and development, fostering innovation).

270. *See id.*

271. *See* TxPWC 2024, *supra* note 21, at 30.

272. *See infra* Section 0.A (discussing the impact of scarcity and how it is not accounted for in a traditional analysis).

273. *See infra* Section 0.B (analyzing the additional impacts not contemplated by a traditional market analysis, such as decreasing induced earthquakes and "zombie" wells).

274. *See* Michael Boyles, *7 Financial Forecasting Methods to Predict Business Performance*, HAR. BUS. SCH. ONLINE (June 21, 2022), https://online.hbs.edu/blog/post/financial-forecasting-methods.

275. *Id.*

276. *See id.* (explaining how standard market concerns are primarily two-dimensional, with objective considerations about sound business practices in the here and now).

277. Mella McEwen, *XRI Holdings Announces Large-Scale Water Infrastructure Network*, MIDLAND REP.–TELEGRAM (Dec. 10, 2022), https://www.mrt.com/business/oil/article/XRI-Holdings-announces-large-scale-water-17640679.php (describing promises of Exxon and Chevron for produced water

concern of the oil and gas industry is their profit margin and bottom dollar.[278] While the typical judge for whether an investment should be made is under this traditional market framework, it does not take into account all of the relevant factors.[279]

Texas should view investing in the beneficial reuse of produced water with a franchise tax exemption through a holistic market analysis.[280] The economic factors of beneficially reusing produced water, especially regarding scarcity and demand, can impact each other in both inverse and proportional ways.[281] For example, as scarcity increases, demand follows in a linear fashion.[282] Regardless of this, the actual cost of beneficially reusing produced water remains the same, but by simply changing the context by adding scarcity, demand makes that cost irrelevant because water is a necessity of life.[283] This factor makes the demand in the water scarcity context act differently than a normal market demand, as scarcity will drive the demand for water to surpass most every other commodity.[284]

The effectiveness of past alternative measures in place of investing in new sources, such as lessening existing uses, is also quickly becoming unavailable.[285] This factor is not weighed in a standard market analysis.[286] The effectiveness of decreasing consumption diminishes the more that overall demand from the population increases.[287] As identified, this is especially relevant in Texas, where overall demand continues to steadily increase.[288]

B. Promoting Beneficial Reuse Is the Best Viable Fix to Reinjection Availability and Avoiding Seismic Liability

In addition to the motivating factors above, the industry is simultaneously facing a large amount of pressure due to the repercussions of

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investment).

278. GROUNDWATER PROT. COUNCIL, *supra* note 13, at 44 (identifying costs as a key concern with the companies interviewed as they have to consider their "legal obligation to conduct operations in a cost-effective way that delivers value to their stockholders").

279. *See generally* Rodrigo Lozano, *Sustainable Business Models: Providing a More Holistic Perspective*, 27 BUS. STRATEGY & ENV'T 1159 (2018) (describing new holistic approaches taken to valuate business decisions).

280. *Id.*

281. *See* TxPWC 2022, *supra* note 36, at 8 (identifying how scarcity can make the economics of beneficial reuse feasible).

282. *See id.*

283. *See id.*

284. *See id.*

285. *See* Gleick, *supra* note 265, at 11159.

286. *See id.*

287. *Id.* at 11160.

288. STATE WATER PLAN, *supra* note 1, at 48 (identifying that "Texas['s] population [is] projected to increase by more than 70 percent . . . from 29.7 million in 2020 to more than 51.5 million in 2070").

disposal reinjection—quickly depleting reinjection availability and seismic liability.[289]

As recognized, the RRC holds authority over the management of disposal reinjection wells.[290] However, their recognized practice in response to seismic activity is not a long-term solution.[291] Although injection into differing levels of underground formation may prolong the availability of disposal reinjection in certain areas, there is nothing stopping injections into new formations or areas chosen from inducing earthquakes.[292]

Additionally, injection into shallow formations also "correlates strongly with orphaned wells that are or have been actively leaking to the surface."[293] As a related but distinct area of liability, disposal reinjection to the point of seismic activity or orphan well blowouts are extreme pressure points for the oil and gas industry when assessing the continuing practice of disposal reinjection.[294] Although the liability for seismic events and orphan well blowouts would primarily be held by the oil and gas industry, Texas actively works to prevent these events, too.[295]

A cost-efficient beneficial reuse framework, brought on by the proposed franchise tax exemption, would cause both the issues of disposal reinjection-induced seismicity and orphan wells to cease almost entirely.[296] Although produced water disposal reinjection may need to continue in select instances, in the proposed framework, the overall volume requiring disposal would fall drastically.[297]

Overall, it is evident the traditional market factors do not accurately account for all relevant considerations in Texas pursing a beneficial reuse framework through the proposed franchise tax exemption.[298] The precarious situation faced by Texas currently makes a strict market analysis unworkable, as more relevant factors need to be considered.[299] The goal of Texas in

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289. *See* Weingarten, *supra* note 12 (identifying disposal reinjection as inducing earthquakes).

290. *See* Hardberger, *supra* note 7, at 25.

291. *See* Wiseman, *supra* note 151 (recognizing the current practice of re-routing produced water to tremor-free areas when directed).

292. *Id.*

293. *Id.* (quoting "[r]esearch Scientist Katie M. Smye [who] co-leads the Center for Injection and Seismicity Research (CISR)").

294. *Id.*

295. *See generally Seismicity Response*, TEX. R.R. COMM'N, https://www.rrc.texas.gov/oil-and-gas/applications-and-permits/injection-storage-permits/oil-and-gas-waste-disposal/injection-disposal-permit-procedures/seismicity-review/seismicity-response/ (last visited Feb. 20, 2025); *see also State Managed Well Plugging*, TEX. R.R. COMM'N, https://www.rrc.texas.gov/oil-and-gas/environmental-cleanup-programs/state-managed-plugging/ (last visited Feb. 19, 2025) (evidencing the RRC's stance of prevention through plugging orphan wells).

296. *See* GROUNDWATER PROT. COUNCIL, *supra* note 13, at 40–42.

297. *See id.*

298. *See supra* Section 0.A–B (identifying the impact of scarcity and impacting factors such as reduced instances of induced seismicity and "zombie" wells).

299. *See supra* Section 0.A–B (viewing the more relevant factors, such as the role of scarcity, that are not traditionally analyzed in a standard market analysis).

ensuring water for future generations is in conflict with current water scarcity, assured future demand, limited disposal reinjection availability, and seismic liability.[300] This issue can be best addressed through Texas legislative action with the passage of a targeted franchise tax exemption for companies actively beneficially reusing produced water to combat all of these issues.[301]

V. CONCLUSION

Texas is at a crossroads regarding two major issues facing the state.[302] Texas does not have water security into the future, while Texas's oil and gas industry is facing an overabundance of produced water.[303] Therefore, in order to combat both issues at once, Texas should adopt a franchise tax exemption to incentivize an activity the state desperately needs—the pursuit of water security for every Texan.[304] The proposed targeted franchise tax exemption works to combat both problems by making beneficial reuse more economically feasible *now*, leading Texas to pursue its best alternative water source to offset current freshwater uses.[305] Action by the State of Texas through a franchise tax exemption is necessary, having been shown to weigh accordingly under a holistic market analysis that revealed traditionally non-traditional factors in play, such as limited reinjection availability and avoiding induced earthquakes.[306]

Water, a necessity of living, will be demanded as long as Texas exists.[307] Oil and gas operations in Texas continue to hit record high production, projecting an even greater increase in produced water into the future, leaving both needs to be addressed.[308] Therefore, Texas legislation in the form of a franchise tax exemption for water midstream companies is the solution.[309] In accounting for every citizen of the Lone Star State, it is essential to remember: "Water, not oil, is the lifeblood of Texas."[310]

300. STATE WATER PLAN, *supra* note 1, at 4.

301. *See supra* Section III.0 (identifying the targeted proposed legislation that would implement the change sought).

302. *See supra* Part 0 (viewing Texas's history of water scarcity and recent produced water overabundance).

303. *See supra* Section 0.A–B (identifying the specific dilemma Texas is facing on these two fronts).

304. *See supra* Section 0.C (examining Texas's franchise tax precedent regarding incentivization).

305. *See supra* Section III.0–0 (addressing the overall necessity and benefits of the proposed legislation to current application).

306. *See supra* Part 0 (recognizing the factors that should be considered that are not part of a traditional market analysis).

307. STATE WATER PLAN, *supra* note 1, at 49.

308. *See supra* note 96 and accompanying text (revealing the impact of hydraulic fracturing and the "shale revolution").

309. *See supra* Section III.0 (proposing model Texas legislation to solve the overlapping issues identified).

310. Coastal Oil & Gas Corp. v. Garza Energy Tr., 268 S.W.3d 1, 26 (Tex. 2008) (Willett, J., concurring) (quoting JAMES A. MICHENER, TEXAS: A NOVEL (Dial Press Trade Paperback, 2002)).