



Carl Vinson
Institute of Government
UNIVERSITY OF GEORGIA

Tax Incentive Evaluation

Georgia's Sales Tax Exemption on Natural Gas Used in the Manufacture of Electricity

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**Tax Incentive Evaluation: Georgia's Sales Tax Exemption on Natural Gas Used in the
Manufacture of Electricity**

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Executive Summary

This study is a review of Georgia's sales tax exemption on natural gas used in the manufacture of electricity (O.C.G.A. § 48-8-3(70)) conducted in accordance with the Tax Expenditures Transparency Act of 2024, also known as Senate Bill 366 (SB366). Georgia has exempted the sale of natural gas used in the manufacture of electricity from state sales tax since 1999. Only state sales tax is exempted; local sales and use taxes are not exempt. The research team compared the ROI of the exemption to an alternate use scenario in which the state collects sales tax on natural gas used in the manufacture of electricity.

Although the purpose of the tax exemption was not explicitly stated, the implied purpose was assumed to be that of shifting Georgia's electricity consumption toward natural gas. Based on this implied purpose, the tax exemption was successful. In 1999 when the exemption was created, natural gas made up 12.5% of electricity consumed in Georgia and coal made up 28.2%.¹ Terminating the exemption would increase the price of electricity very slightly, approximately \$1.50/month or \$18/year for the average Georgia household assuming 1,620 kWh of monthly electricity use.

The study methodology assumes that under the current, tax exempt, scenario, the exempted sales tax on natural gas remains in consumers' pockets and is spent in a manner similar to all other household or business income. It further assumes that, under an alternate scenario, electricity providers pay the sales tax on natural gas and pass the additional cost along to consumers as a cost recovery item. In this situation, the electricity provider essentially functions as a tax collector, collecting and remitting the sales tax on natural gas to the state, which in turn, spends it on the same budget items as all other state revenue. As a side effect of imposing the tax, and consequently increasing the price of electricity, both household and business consumers demand slightly less electricity.

The ROI of Georgia's sales tax exemption on natural gas used in the manufacture of electricity was estimated to range from -0.15 in 2025 to less than -0.01 in 2029 as consumers of electricity gradually adapt to the higher electricity prices (Table A). Institute researchers modeled two separate impacts: the impact of households and businesses spending the exempted, and hence uncollected, tax and the impact of increased power generation due to the exemption's implicit subsidization of natural gas as a fuel source for generating electricity.

¹ US Energy Information Administration 2024.

Table A. ROI of Georgia’s sales tax exemption on natural gas used in the manufacture of electricity and alternate use of forgone revenue, 2024-2029.

	2024	2025	2026	2027
Gross Forgone State Rev.	\$52,874,305	\$70,881,776	\$78,164,086	\$84,998,115
Net Forgone State Rev.	\$50,471,327	\$67,818,378	\$74,555,761	\$80,840,449
Exemption Value-Added³	\$44,254,092	\$57,578,402	\$66,416,292	\$75,253,054
ROI of Exemption¹	-0.12	-0.15	-0.11	-0.07
Alt. Use Value-Added	\$70,570,768	\$94,605,146	\$104,324,767	\$113,446,072
ROI of Alternate Use²	0.33	0.33	0.33	0.33
	2028	2029		
Gross Forgone State Rev.	\$93,612,857	\$102,676,465		
Net Forgone State Rev.	\$88,820,665	\$97,210,954		
Exemption Value-Added³	\$85,741,434	\$96,951,392		
ROI of Exemption¹	-0.04	<-0.01		
Alt. Use Value-Added	\$124,944,075	\$137,041,176		
ROI of Alternate Use²	0.33	0.33		

Source: Institute of Government Projections based on EIA Data & IMPLAN 2022.

1. ROI of the tax exemption is calculated based on Net Forgone State Revenue (e.g. gross forgone revenue less additional state taxes collected).
2. ROI of the alternate use is calculated based on Gross Forgone State Revenue
3. Exemption Value-Added is the sum of household spending value-added and additional electricity generation value-added.

Background

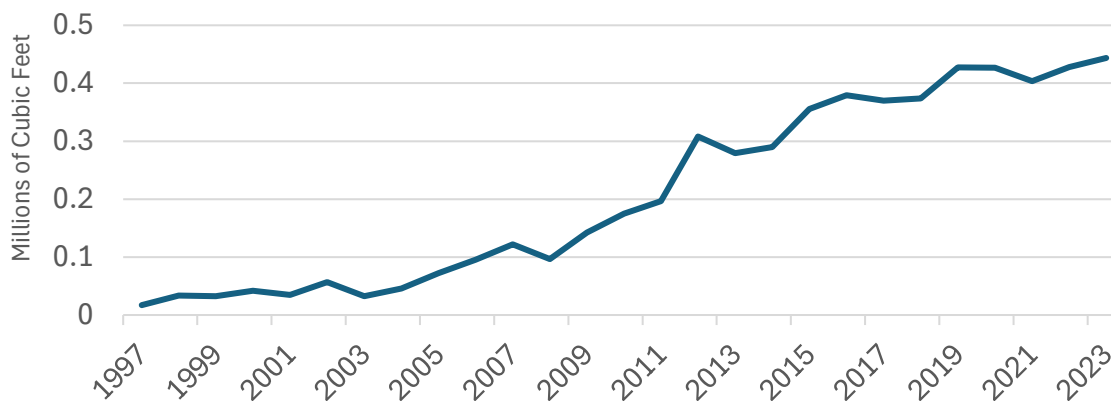
This study is a review of Georgia’s sales tax exemption on natural gas used in the manufacture of electricity (O.C.G.A. § 48-8-3(70)) conducted in accordance with the Tax Expenditures Transparency Act of 2024, also known as Senate Bill 366 (SB366). SB366, passed during the 2024 legislative session, expands on the requirements of its predecessor, SB6. SB6 required the calculation forgone tax revenue, the economic impact of the tax incentive on the state economy, and the overall return on investment (ROI) of the credit or exemption. SB366 expands this list to include an assessment of the exemption’s efficiency, ancillary impacts, the likely impact of modifying or terminating the exemption, and recommendations for improving ROI. This report is one of three tax incentive evaluations produced under contract with the Georgia Department of Audits and Accounts by the University of Georgia’s Carl Vinson Institute of Government.

HISTORY & PURPOSE

In Georgia, the sale of natural gas used in the manufacture of electricity has been exempt from state tax since 1999. The implied purpose of this sales tax exemption is to subsidize the cost of producing electricity using natural gas, which is cleaner-burning and produces less CO₂ emissions than coal or petroleum. Other major sources of electricity in Georgia include nuclear and renewable sources such as geothermal, hydropower, solar, wind, wood and waste energy, and biofuel.

The amount of natural gas used to manufacture electricity in Georgia increased by 25x from 1997 to 2023, though the state’s population only grew by 47% over the same period. The largest period of growth occurred between 2009 and 2012. From 2010 to 2023, the amount of natural gas used to manufacture electricity in Georgia increased by 153%.

Figure 1. Georgia Natural Gas Deliveries to Electric Power Consumers 1997-2023 (Annual total, Millions of Cubic Feet)

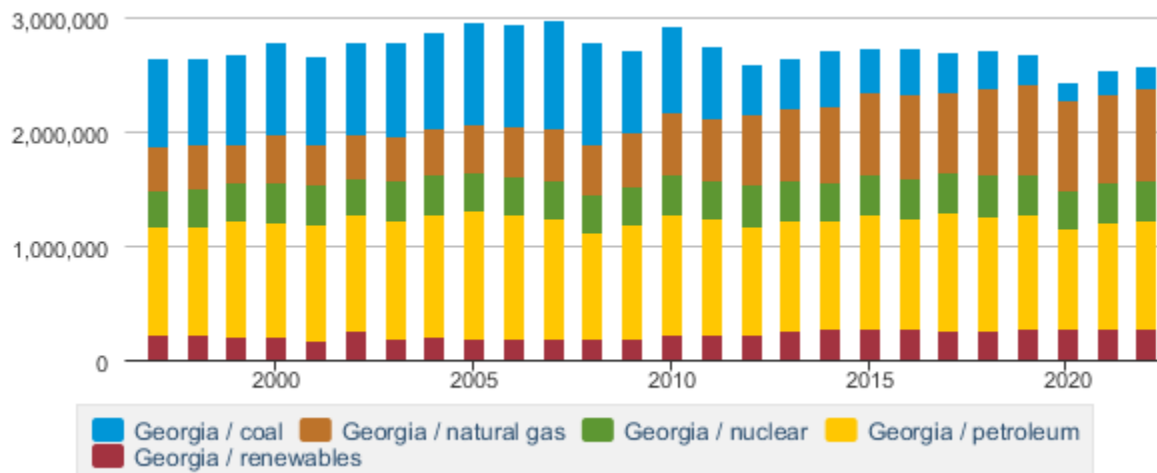


Source: US Energy Information Administration 2024.

Natural gas has been the fastest-growing source of electricity in Georgia over the past two decades, largely replacing coal. Since 1997, the proportion of Georgia’s electricity generated from natural gas doubled. As of 1997, 14.1% of Georgia’s electricity came from natural gas, growing to 17.4% in 2010 and peaking at 28.6% in 2022, which is the most recent annual estimate for this series of data.

Electricity consumption in Georgia fluctuates with extreme seasonal temperatures. In 2010, the state consumed 3.12 billion Btu. In 2022, total electricity consumption was 2.84 billion Btu, for a decrease in total consumption of 9% despite a 12.4% increase in population over the twelve-year period. Shrinking total electricity consumption in Georgia despite the growing population coincides with the trend of falling per capita residential electricity consumption across the US. Per capita declines in electricity consumption are largely due to increased adoption of energy-efficient products such as heat pumps as well as more energy-efficient practices.²

Figure 2. Georgia Total Energy Consumption by Source 1997-2022 (Annual total, Billion Btu (British Thermal Units))



Source: US Energy Information Administration 2024.

HOW IT WORKS

Georgia’s tax exemption on natural gas used in the manufacture of electricity is utilized by Georgia Power, and Electric Membership Corporations (EMCs). When utility companies purchase natural gas to produce electricity, they do not pay sales tax to the state. One key factor of natural gas pricing in Georgia is the Fuel Cost Recovery (FCR) rider, which requires utility

² Per Capita Residential Electricity Sales in the US have Fallen since 2010. July 26, 2017. US Energy Information Administration. <https://www.eia.gov/todayinenergy/detail.php?id=32212>

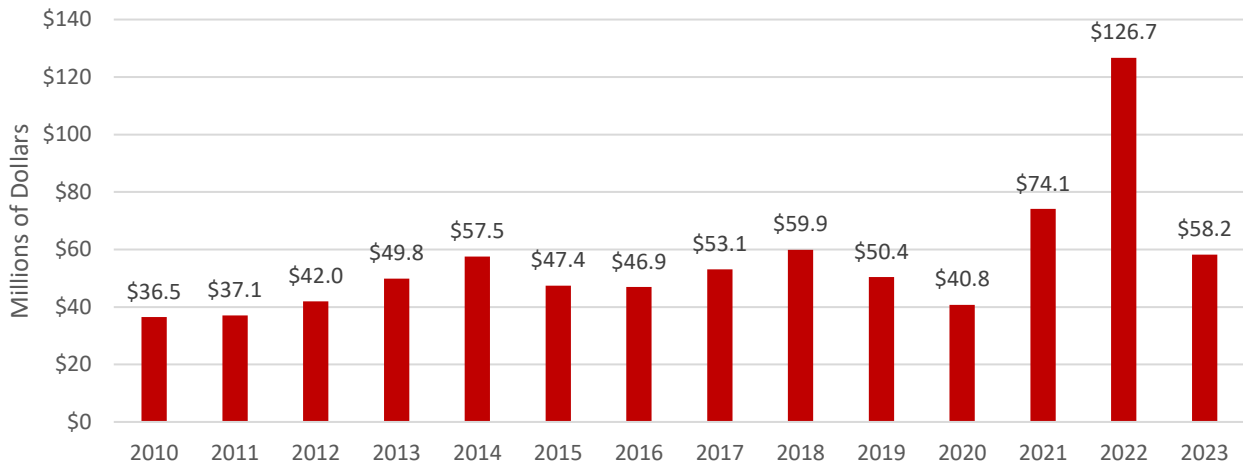
companies to pass the cost of generating electricity directly to their customers. Each year, utility companies project the cost of generating electricity from different sources and recoup those costs via riders when billing all customers. Riders are added on a per-kWh basis to all electric service, regardless of which type of fuel was used to generate the electricity used by the customer. If Georgia removed the sales tax exemption on natural gas, utility companies would be required to raise rates to recoup the additional 4% cost of generating electricity.

UTILIZATION

Institute researchers calculated forgone state sales tax revenue due to the exemption on natural gas used in the manufacture of electricity from 2010 to 2023. Over the 14-year period since the exemption began, forgone revenue totaled \$780.3 million. Forgone revenue ranged from a low of \$36.5 million in 2010 to a high of \$126.7 million in 2022 and averaged \$55.7 million per year.

Natural gas prices have become more volatile since 2020 as exports have increased exponentially and as natural gas has consumed an increased share of US electricity generation. 2022 was a standout year for natural gas prices due to weather-driven demand, a decline in natural gas production in 2021, a subsequent drop in storage inventories, and record US liquefied natural gas exports to Europe amid the Russia-Ukraine conflict.³

Figure 3. Forgone Revenue due to Georgia’s Sales Tax Exemption on Natural Gas Used in the Manufacture of Electricity (2010-2023)



Source: Institute of Government Projections & IMPLAN 2022.

OTHER STATES

³ US Natural Gas Price Volatility at All-Time High in 2022. Jamison Cocklin. August 16, 2022. Natural Gas Intelligence. <https://www.naturalgasintel.com/news/us-natural-gas-price-volatility-at-all-time-high-in-2022/>

According to the Federation of Tax Administrators, 2017 Services Taxation Survey, 10 states offer full sales tax exemptions for natural gas for industrial uses.⁴ Additionally, other states including Georgia offer more specific exemption based on manufacturing operations. Georgia is part of a smaller group of states that offers a specific sales tax exemption for natural gas that is used in the manufacturing or production of electricity. Several states offer tax exemptions on natural gas used for electricity generation including Oklahoma, Missouri, Florida, North Carolina, and Texas.

In Oklahoma, production supplies like natural gas and electricity used to generate power are exempt from sales and use taxes if they support manufacturing operations. Incidental use of natural gas and electricity metered through a single meter are also sales and use tax exempt if the predominant use is manufacturing operations.⁵

Missouri adopted a sales tax exemption for utilities used to generate as of August 2024 that is similar to Georgia's.⁶ The exemption includes electrical energy, all forms of gas, and any machinery or equipment used to generate, transmit, or distribute electricity. Missouri stipulates that any public utility that saves money due to the exemption must report their savings to the Public Service Commission during the next general rate proceeding. The public utility must also pass through their saving to their customers via rate revenue requirement.

Florida exempts all fuels, including natural gas, used by utility companies from sales tax when they are used in the generation of electric power or energy for sale.⁷ As of 2013, Florida also offers a sales tax exemption for natural gas used to generate electricity, but the exemption is

⁴2017 FTA Services Taxation Survey 34- Natural gas – Industrial Use.

<https://www.statetaxissues.org/services/2017/services.php>

⁵ OAC 710:65 Sales and Use Tax. Oklahoma Tax Commission.

<https://oklahoma.gov/content/dam/ok/en/tax/documents/resources/rules-and-policies/agency-rules/Chapter65-2022.pdf>

⁶ Section 144.058 RSMo 2024 <https://revisor.mo.gov/main/OneSection.aspx?section=144.058>

⁷ F.S. Section 212.08(4)(a). 2024.

[http://www.leg.state.fl.us/statutes/index.cfm?App_mode=Display_Statute&URL=0200-0299/0212/Sections/0212.08.html#:~:text=\(a\)%20There%20shall%20be%20exempt,syringes%3B%20chemical%20compounds%20and%20test](http://www.leg.state.fl.us/statutes/index.cfm?App_mode=Display_Statute&URL=0200-0299/0212/Sections/0212.08.html#:~:text=(a)%20There%20shall%20be%20exempt,syringes%3B%20chemical%20compounds%20and%20test)

specific to electricity produced in a non-combustion fuel cell used in stationary equipment. To receive the exemption, a utility provider must be issued an exemption certificate.⁸

In North Carolina, imposes a sales and use tax exemption for electricity, fuel, and piped natural gas sold to manufacturers if they are used in manufacturing operations. While North Carolina does not specifically define manufacturing, the exemption does indicate that the facility needs to be “primarily engaged” in manufacturing to qualify. North Carolina also offers a sales and use tax exemption for raw materials that are ingredients or components that are part of a manufactured product or tangible personal property.⁹ With no additional information on qualifying materials, Institute researchers assume that natural gas for electricity generation is covered by these two exemptions.

Texas provides a state sales and use tax exemption on tangible personal property that is an ingredient or component of an item manufactured, processed, or fabricated for sale.¹⁰ The exemption also includes tangible personal property used to make a chemical or physical change in the product being manufactured. Due to this exemption and its wording, natural gas used for electricity generation qualifies for sales tax exemption. on some purchases of natural gas, including by utility companies or for residential use. To qualify for an exemption, one must itemize all equipment and appliances using electricity or natural gas, their associated consumption, and the percentage of exempt use.¹¹ Natural gas and electricity use in single-family residences does not require an exemption certificate.

⁸Tax Information Publication: Sales Tax Exemption for Natural Gas Used to Generate Electricity in a Non-Combustion Fuel Cell Used in Stationary Equipment. (June 17, 2013). Florida Department of Revenue. https://floridarevenue.com/taxes/tips/Documents/TIP_13A01-08.pdf

⁹ Tax & Other Cost Savings: Manufacturing. North Carolina Department of Commerce. <https://www.commerce.nc.gov/grants-incentives/tax-other-cost-savings#Manufacturing-298>

¹⁰ Texas Manufacturing Exemptions. March 2021. <https://comptroller.texas.gov/taxes/publications/94-124.php>

¹¹ Tex. Admin. Code Rule §3.295

[https://texreg.sos.state.tx.us/public/readtac\\$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=34&pt=1&ch=3&rl=295](https://texreg.sos.state.tx.us/public/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=34&pt=1&ch=3&rl=295)

Economic Impact

This section presents the economic activity attributed to Georgia's sales tax exemption on the purchase of natural gas for the manufacture of electricity. The analysis begins with estimates of gross economic activity generated by the exemption projected from 2024 to 2029. Next, this section presents calculations of net economic activity generated by the exemption and calculates the return on investment for the exemption. These results are compared with the economic activity that would have been generated under an alternate-use scenario in which the state collects taxes on natural gas and spends that revenue in a manner similar to all other tax revenues.

The economic impact of the exemption arises from two sources. First, the sales tax that is not collected (foregone tax revenue) remains in consumers' and businesses pockets and is subsequently spent creating additional economic impact. Since households, unlike businesses, do not directly produce output, their impact is limited to induced effects as they spend the uncollected tax on goods and services. Second, the reduced cost of electricity attributed to the exemption spurs increased demand and thus increased production of electricity. This results in a secondary economic impact from increased electricity production. The sum of these two separate impacts represents the total impact of the exemption to the state economy.

For more information on the methodology and IMPLAN, see Appendix A.

GROSS ECONOMIC ACTIVITY

Georgia's sales tax exemption on natural gas used in the manufacture of electricity implicitly subsidizes the cost of all electricity generated in the state. If the exemption did not exist, the price of electricity generated via natural gas would be 4% higher, however, the increased cost would be spread across customers of electricity generated from all sources. Demand for electricity is inelastic. An increase (decrease) in the price of electricity results in a relatively small decrease (increase) in the quantity demanded, especially over a short period of time. However, over a longer period of time, consumers find ways to limit their electricity consumption through more energy-efficient appliances, manufacturing methods, or attention to unnecessary usage. Thus, the elasticity of demand for electricity increases slightly over time when prices remain higher. For more discussion on price elasticity of demand, see Appendix B.

First, institute researchers projected the amount of electricity generated in Georgia from 2024-2029 based on data from the US Energy Information Administration (Table 1). The research team estimated that under the current scenario in which the tax is exempted, 142.63 billion kWh of electricity would be generated in Georgia in 2024, increasing to 156.48 billion kWh in 2029. Based on estimates of the price elasticity of demand for electricity, the research team modeled how much demand for electricity would change due to an imposition of state sales tax on natural gas. If the exemption was removed, it is projected that 142.57 billion kWh of electricity

would be generated in Georgia in 2024, increasing to 156.29 billion kWh in 2029. This amounts to a reduction of 59.59 million kWh in 2024, increasing to 196.14 million kWh in 2029. Over the six-year period, the total reduction in electricity generation in Georgia would amount to 695.62 million fewer kWh generated. The annual percent change in electricity generated is projected to increase from -0.04% to -0.13% to reflect the assumption that demand for electricity would become slightly more elastic over time as consumers adjust to a fractionally higher price.

Table 1. Projected electricity generated in Georgia (kWh), modeled with and without exemption (2024-2029) and value added from additional generation.

Year	Total Electricity Generated w/ Exemption (kWh)	Total Electricity Generated w/o Exemption (kWh)	Additional Electricity Generated Due to Exemption (kWh)	Additional Electricity Generated (\$)	Value Added from Addtl Generation
2024	142,627,427,558	142,567,834,964	59,592,594	\$6,952,460	\$5,966,272
2025	145,286,393,118	145,225,689,554	60,703,563	\$7,222,264	\$6,205,822
2026	148,000,082,612	147,907,326,517	92,756,095	\$11,254,545	\$9,684,979
2027	150,769,701,046	150,643,711,849	125,989,198	\$15,590,443	\$13,438,832
2028	153,596,481,200	153,436,041,990	160,439,211	\$20,248,300	\$17,487,027
2029	156,481,684,289	156,285,540,749	196,143,540	\$25,247,486	\$21,850,777
Total	896,761,769,823	896,066,145,622	695,624,201	\$86,515,498	\$74,633,709

Source: Institute of Government Projections.

Table 2 displays details of the economic impact of the tax exemption by the electricity generation industry for the sample year 2024. According to IMPLAN estimates, the additional \$6.95 million in additional electricity generated would support four direct jobs, nine indirect jobs, and eight induced jobs for a total of 21 additional jobs and add \$5.97 million in impact to the state economy. The difference in the value of additional electricity generated (output) and the value-added impact to the state’s may be attributed to economic leakage, primarily due to the fact that natural gas is purchased from outside the state.

Table 2. Economic impact of \$6.9 million in reduced power generation if tax exemption on natural gas was removed (2024).

IMPACT	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
DIRECT	4	\$819,360	\$3,302,592	\$6,952,460
INDIRECT	9	\$809,967	\$1,767,765	\$3,617,716
INDUCED	8	\$465,923	\$895,915	\$1,520,920
TOTAL	21	\$2,095,250	\$5,966,272	\$12,091,096

Source: Institute of Government Projections & IMPLAN 2022.

In order to provide perspective on the impact to households, institute researchers also simulated an average residential summer and winter electricity bill from Georgia Power with and without Georgia’s sales tax exemption on the purchase of natural gas for the manufacture of electricity (Table 3). The research team assumed that summer rates, winter rates, and the fuel cost recovery rider would all increase uniformly by 0.043 cents per kWh. As of November 2024, Georgia Power’s summer rates are 8.3 cents per kWh for the first 650 kWh (Tier 1), 13.7 cents for the next 350 kWh (Tier 2) and 14.2 cents for power usage over 1,000 kWh (Tier 3). Georgia Power’s winter rates are a consistent 7.7 cents per kWh across Tiers 1-3. The simulated electricity bills assume that the residence is located inside of city limits, for a franchise fee of 3.07% of total revenue.

If Georgia’s sales tax exemption on the purchase of natural gas for the manufacture of electricity were removed, based on an increased cost of \$0.00043 per kWh and the monthly average power usage of 1,620 kWh, the average Georgia Power customer’s bill would increase by approximately \$1.50/month, or \$18 per year. That amounts to a 0.4% increase in electricity cost. Simulated residential summer and winter bills are displayed in table 3 below.

Table 3. Average residential summer and winter power bills, with and without the sales tax exemption on natural gas (assuming 1,620 kWh, increased tier 1-3 rates & FCR of \$0.00043/kWh)

Average Residential Power Bill	Summer w/ NG Exemption	Summer w/o NG Exemption	Winter w/ NG Exemption	Winter w/o NG Exemption
Base Charge	\$13.81	\$13.81	\$13.81	\$13.81
<i>Tier 1 Component (650 kWh)</i>	\$53.71	\$53.99	\$50.27	\$50.54
<i>Tier 2 Component (350 kWh)</i>	\$48.03	\$48.18	\$27.07	\$27.22
<i>Tier 3 Component (620 kWh)</i>	\$88.07	\$88.33	\$47.95	\$48.21
Base Bill Subtotal	\$203.62	\$204.31	\$139.10	\$139.78
Fuel Cost Rider	\$74.32	\$75.02	\$69.43	\$70.13
Demand Side Management Residential Rider	\$2.74	\$2.74	\$1.87	\$1.87
Current Service Subtotal	\$280.68	\$282.07	\$210.40	\$211.78
Environmental Compliance Cost Recovery Rider	\$23.88	\$23.88	\$16.32	\$16.32
Franchise Fee	\$9.35	\$9.35	\$6.96	\$6.96
Total (excluding tax)	\$313.91	\$315.30	\$233.68	\$235.06
TOTAL (w/ 7% tax)	\$335.88	\$337.37	\$250.04	\$251.52

Source: State of Georgia Public Service Commission Georgia Power Bill Calculator (https://psc.ga.gov/utilities/electric/georgia-power-bill-calculator/#DSM_note)

In addition to the economic impact of generating slightly more electricity, households and businesses have more money to spend (the equivalent of uncollected sales tax revenue) as a result of the tax exemption. For households, this additional spending results in induced impacts only, since households neither produce output, nor purchase inputs to production. Additional spending by businesses generates direct, indirect, and induced impacts. Net forgone tax revenue, exemption value-added (the value-added impact of additional spending), and ROI of the exemption, are shown in Table 4. Although consumers and businesses are assumed to spend the gross amount of forgone tax revenue, the ROI of the exemption is calculated based on net forgone revenue to account for the offset to gross forgone tax revenue of additional tax collections by the state.

The additional value added to the state economy from households and businesses retaining and spending the exempted sales tax ranges from \$38.3 million in 2024 to \$75.1 million in 2029. The value added to the state economy is consistently less than the amount of additional spending in all years due to the economic concept of “leakage”. Economic leakage occurs when money spent in the state “leaks” from the state’s economy because it is used to purchase goods or services that originate outside its boundaries. For example, a significant amount of consumer goods and raw materials used in manufacturing in Georgia are imported from outside the state. Consequently, a portion of the money used to purchase those products goes to farmers, suppliers of raw materials and equipment, and trucking companies outside the state, resulting in economic leakage. The ROI of additional spending was estimated to be between -0.23 and -0.24%, indicating that for each \$1 of forgone state tax revenue, approximately 76 cents in economic impact accrues to the state economy.

Table 4. Value-Added and ROI of Additional Spending Resulting from Georgia’s sales tax exemption on natural gas used in the manufacture of electricity, 2024-2033.

	2024	2025	2026
Net Forgone State Rev.	\$50,471,327	\$67,818,378	\$74,555,761
Exemption Value-Added	\$38,287,820	\$51,372,581	\$56,731,313
ROI of Exemption¹	-0.24	-0.24	-0.24
	2027	2028	2029
Net Forgone State Rev.	\$80,840,449	\$88,820,665	\$97,210,954
Exemption Value-Added	\$61,814,222	\$68,254,407	\$75,100,615
ROI of Exemption¹	-0.24	-0.23	-0.23

Source: Institute of Government Projections & IMPLAN 2022.

1. ROI of the tax exemption is calculated based on Net Forgone State Revenue (e.g. gross forgone revenue less additional state taxes collected).

Table 5 displays details of the combined economic impact of the tax exemption due to additional spending by households and businesses for the sample year 2024. According to IMPLAN estimates, additional spending of \$52.9 million in forgone revenue is projected to generate an additional \$38.29 million in value-added impact to the state’s economy. The loss is, again, attributable to leakage as consumers and businesses purchase goods and services that originate outside the state.

Table 5. Economic impact of forgone revenue if spent by households and businesses (2024).

IMPACT	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
DIRECT	323	\$14,159,812	\$12,915,980	\$18,077,461
INDIRECT	31	\$1,802,372	\$3,107,438	\$6,064,136
INDUCED	205	\$11,651,147	\$22,264,402	\$37,762,489
TOTAL	559	\$27,613,331	\$38,287,820	\$61,904,086

Source: Institute of Government Projections & IMPLAN 2022.

The combined impacts of additional household spending and expanded electricity generation are shown in Table 6. The projected ROI for the combined impacts ranges from -0.12% in 2024 to less than -0.01 in 2029.

Table 6. ROI of Georgia’s sales tax exemption on natural gas used in the manufacture of electricity, 2024-2033.

	2024	2025	2026
Net Forgone State Rev.	\$50,471,327	\$67,818,378	\$74,555,761
Addt'l Spend Value-Added	\$38,287,820	\$51,372,581	\$56,731,313
Elec. Gen. Value-Added	\$5,966,272	\$6,205,822	\$9,684,979
Total Value-Added	\$44,254,092	\$57,578,402	\$66,416,292
ROI of Exemption¹	-0.12	-0.15	-0.11
	2027	2028	2029
Net Forgone State Rev.	\$80,840,449	\$88,820,665	\$97,210,954
Addt'l Spend Value-Added	\$61,814,222	\$68,254,407	\$75,100,615
Elec. Gen. Value-Added	\$13,438,832	\$17,487,027	\$21,850,777
Total Value-Added	\$75,253,054	\$85,741,434	\$96,951,392
ROI of Exemption¹	-0.07	-0.04	<-0.01

Source: Institute of Government Projections & IMPLAN 2022.

1. ROI of the tax exemption is calculated based on Net Forgone State Revenue (e.g. gross forgone revenue less additional state taxes collected).

ALTERNATE USE OF FORGONE REVENUE

Georgia’s sales tax exemption on natural gas used in the manufacture of electricity was signed into law in 1999. As part of this tax incentive evaluation, the research team modeled the value-added impact to the state if the exemption did not exist and state sales tax on natural gas was collected and spent by the state of Georgia.

To compare the ROI of the alternate use scenario to the tax exemption scenario, the research team modeled the economic impact of the state collecting and spending a 4% tax on natural gas purchased for the manufacture of electricity. For the purposes of this evaluation, the research team assumed that the state would spend this additional revenue on the same combination of goods and services that it typically provides to taxpayers. Under this alternate use scenario, forgone revenue is modeled in IMPLAN as the direct output of state spending from 2024 to 2029.

Table 7 displays the economic impact of the state collecting and spending \$52.9 million in taxes on natural gas in 2024. According to IMPLAN estimates, an additional \$52.9 million in taxes would support 1,057 state jobs, 99 indirect jobs, and 265 induced jobs for a total of 1,421 jobs. For each additional \$1 million in state spending, 20 state jobs are created. Each additional \$1 million in state spending also supports two indirect jobs and five induced jobs. Based on IMPLAN modeling, \$52.9 million in state spending would add \$70.6 million to Georgia’s GDP.

Table 7. Economic impact of \$52.9 million in state taxes on natural gas (2024).

IMPACT	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
DIRECT	1,057	\$40,362,995	\$37,679,719	\$52,874,305
INDIRECT	99	\$5,087,417	\$8,658,788	\$16,742,652
INDUCED	265	\$12,747,160	\$24,232,261	\$41,487,501
TOTAL	1,421	\$58,197,571	\$70,570,768	\$111,104,458

Source: Institute of Government Projections & IMPLAN 2022.

Forgone state revenue is estimated at \$52.9 million in 2024, increasing to \$102.7 million in 2029 (Table 8). Over the six-year period from 2024 to 2029, total forgone state revenue amounts to \$483.2 million. Table 8 also displays the value-added economic impact (GDP) of the state collecting and spending taxes collected on natural gas from 2024 to 2029. The value-added impact of the additional state revenue collected by eliminating the natural gas tax exemption is modeled to grow from \$70.6 million in 2024 to \$137 million in 2029.

The alternate use scenario would yield a positive ROI of 0.33, meaning that for every \$1 in tax revenue collected and spent by the state, \$1.33 accrues to the state’s economy, even after accounting for the value-added impact of reduced power generation via natural gas.

Table 8. Forgone state revenue due to the sales tax exemption on the purchase of natural gas for the manufacture of electricity and value-added economic impact of alternate use scenario, 2024-2029.

YEAR	NG EXEMPTION FORGONE STATE REVENUE	VALUE-ADDED ECONOMIC IMPACT TO STATE ECONOMY	ROI ALTERNATE USE SCENARIO
2024	\$52,874,305	\$70,570,768	0.33
2025	\$70,881,776	\$94,605,146	0.33
2026	\$78,164,086	\$104,324,767	0.33
2027	\$84,998,115	\$113,446,072	0.33
2028	\$93,612,857	\$124,944,075	0.33
2029	\$102,676,465	\$137,041,176	0.33
TOTAL	\$483,207,604	\$644,932,005	AVERAGE 0.33

Source: Institute of Government Projections & IMPLAN 2022.

NET ECONOMIC ACTIVITY

The research team calculated the ROI of Georgia’s tax exemption on natural gas used in the manufacture of electricity and the alternate use scenario. ROI is calculated as the gain from the investment—in this case the value added by the tax exemption—minus the cost of the investment—in this case forgone state revenue—divided by the cost of the investment.

The ROI of Georgia’s sales tax exemption on natural gas used in the manufacture of electricity was estimated to range from -0.15 to less than -0.01 between 2024 to 2029 (Table 9). For every \$1 in tax exempted on natural gas, between \$0.85 and \$0.99 in value-added impact accrues to the state’s economy. In the case of the alternate use of forgone revenue, institute researchers modeled the impact of the state of Georgia collecting and spending sales tax revenue from natural gas. Under the alternate use of forgone revenue, for each \$1 collected and spent by the state, \$1.33 in value-added impact accrues to the state’s economy.

Table 9. ROI of Georgia’s sales tax exemption on natural gas used in the manufacture of electricity and alternate use of forgone revenue, 2024-2033.

	2024	2025	2026	2027
Gross Forgone State Rev.	\$52,874,305	\$70,881,776	\$78,164,086	\$84,998,115
Net Forgone State Rev.	\$50,471,327	\$67,818,378	\$74,555,761	\$80,840,449
Exemption Value-Added³	\$44,254,092	\$57,578,402	\$66,416,292	\$75,253,054
ROI of Exemption¹	-0.12	-0.15	-0.11	-0.07
Alt. Use Value-Added	\$70,570,768	\$94,605,146	\$104,324,767	\$113,446,072
ROI of Alternate Use²	0.33	0.33	0.33	0.33
	2028	2029		
Gross Forgone State Rev.	\$93,612,857	\$102,676,465		
Net Forgone State Rev.	\$88,820,665	\$97,210,954		
Exemption Value-Added³	\$85,741,434	\$96,951,392		
ROI of Exemption¹	-0.04	<-0.01		
Alt. Use Value-Added	\$124,944,075	\$137,041,176		
ROI of Alternate Use²	0.33	0.33		

Source: Institute of Government Projections & IMPLAN 2022.

1. ROI of the tax exemption is calculated based on Net Forgone State Revenue (e.g. gross forgone revenue less additional state taxes collected).
2. ROI of the alternate use is calculated based on Gross Forgone State Revenue
3. Exemption Value-Added is the sum of household spending value-added and additional electricity generation value-added.

Fiscal Impact

Tax incentive evaluations are required to calculate the fiscal impact of tax incentives as well as the economic impact. The fiscal impact of a tax exemption sums forgone state revenue, increased state tax collections, and any cost to the state of administering the exemption. The research team modeled increased state tax collections generated by the exemption using IMPLAN. The research team determined that, in the case of Georgia’s sales tax exemption on natural gas used in the manufacture of electricity, there is no additional cost to the state in administering the exemption.

Forgone state revenue was projected to range from \$52.9 million in 2024 to \$102.7 million in 2029 for a total of \$483.2 million in forgone revenue over the six-year period (Table 10). Increased state tax collections attributed to the exemption were estimated to grow from \$2.4 million in 2024 to \$5.5 million in 2029. Increased state tax revenues derive from two sources; consumer spending of the uncollected (i.e. forgone) sales tax on natural gas and taxes generated by marginally higher electricity generation. The fiscal impact represents the net of forgone revenue and increased state tax collections due to the exemption. The fiscal impact of Georgia’s sales tax exemption on natural gas for use in the manufacture of electricity ranges from a low of -\$50.5 million in 2024 to a high of \$97.2 million in 2029. Consequently, for every \$1 of forgone revenue, it is estimated that the state recoups approximately five cents in taxes due to a combination of increased consumer spending and a marginally higher demand for electricity.

Table 10. Forgone state revenue due to the sales tax exemption on natural gas for the manufacture of electricity, increased state tax collections due to the exemption, and total fiscal impact of the exemption, 2024-2029.

YEAR	FORGONE STATE REVENUE	INCREASED STATE TAX COLLECTIONS	FISCAL IMPACT
2024	\$(52,874,305)	\$2,402,978	\$(50,471,327)
2025	\$(70,881,776)	\$3,063,398	\$(67,818,378)
2026	\$(78,164,086)	\$3,608,325	\$(74,555,761)
2027	\$(84,998,115)	\$4,157,666	\$(80,840,449)
2028	\$(93,612,857)	\$4,792,192	\$(88,820,665)
2029	\$(102,676,465)	\$5,465,511	\$(97,210,954)
TOTAL	\$(483,207,604)	\$23,490,070	\$(459,717,534)

Source: Institute of Government Projections & IMPLAN 2022.

Ancillary Impacts

Providing a sales tax exemption on the purchase of natural gas for the manufacture of electricity subsidizes natural gas as a fuel source. Although the purpose of the tax exemption was not explicitly stated, the implied purpose was to shift Georgia's electricity consumption toward natural gas. Based on this implied purpose, the tax exemption was successful. In 1999 when the exemption was created, natural gas made up 12.5% of electricity consumed in Georgia and coal made up 28.2%¹². As of 2022, only 6.4% of electricity in Georgia came from coal and 28.6% came from natural gas.

In addition to shifting electricity production from other fuel sources to natural gas, the tax exemption reduces the cost of generating electricity. Since Georgia provides for a Fuel Cost Recovery (FCR) rider, utility companies must directly increase the cost of electricity across all ratepayers based on their costs of generating power. The existence of the tax exemption on natural gas effectively reduces the price of generating power using natural gas by 4%. In other words, the exemption reduces utility bills for all Georgians and keeps more money in their pockets to spend on other goods and services. Removing the tax exemption on natural gas used in the manufacture of electricity would increase utility costs for the average family in Georgia, albeit very slightly (approximately \$1.50 per month or \$18 per year).

Removing the sales tax exemption on the purchase of natural gas for the manufacture of electricity would increase the effective price of the fuel source for utility companies and their ratepayers, which would decrease demand for natural gas in the state. Institute researchers estimate that demand for electricity would decrease by a small amount in the first year of the exemption's absence (-0.04%) increasing to a -0.13% reduction in demand by 2029 based on the price elasticity of demand for electricity. Just as Georgians have used less electricity per capita since 2010, they would likely respond to an increase in the price of electricity by further limiting their consumption.

¹² US Energy Information Administration 2024.

Appendix

A. ECONOMIC MODELING USING IMPLAN

Economic impact modeling is a technique used to estimate how a new firm, facility, or policy change will affect a region's economy. Such estimates are often produced using an input-output model that first calculates a baseline forecast of economic activity for the geographic region and then estimates how shocks (inputs) to the economy alter economic activity (output). In this report, Institute of Government researchers estimated the economic impact of Georgia's sales tax exemption on the purchase of natural gas used in the manufacture of electricity.

Institute researchers use IMPLAN, a widely used county-level economic model of the United States, to estimate the economic impact of the natural gas sales tax exemption¹³. This model produces a baseline economic forecast using data from the US Census Bureau, the North American Industry Classification System (NAICS), the Bureau of Economic Analysis, and the Bureau of Labor Statistics as well as other data from the US Department of Commerce.

In IMPLAN, an input, or change to the economy, is added to the model. Inputs can be new jobs, labor income, increased production of goods and services, or policy changes, such as tax deductions. IMPLAN estimates the increase or decrease in economic activity resulting from the change. The economic measures reported by the model include the number of jobs supported, the labor income associated with those jobs, the value added (or lost) to the economy in the geographic region being studied, and the total economic output added (or lost) resulting from the change. IMPLAN provides estimates of the direct, indirect, and induced effects of an economic event – in this case, the natural gas sales tax exemption. Direct, indirect, and induced effects are estimated for employment, labor income, value-added impact, and total output impact.

¹³ IMPLAN® model, 2022 Data, using inputs provided by the user and IMPLAN Group LLC, IMPLAN System (data and software), 16905 Northcross Dr., Suite 120, Huntersville, NC 28078 www.IMPLAN.com

B. PRICE ELASTICITY OF DEMAND

The pivotal question in most tax exemption studies is commonly referred to as the “but for” question. It seeks to answer the question, “but for” the tax exemption, how would taxpayers behave, and subsequent collections, be different? In the case of the sales tax exemption on the purchase of natural gas for use in the manufacture of electricity, researchers approached the question by means of a counterfactual example. In other words, researchers asked how power generation using natural gas in Georgia might change over time if the effective price of natural gas were to increase by 4% (the amount of state sales tax.)

Two economic assumptions are necessary to evaluate a counterfactual scenario. The first is that, in the absence of a tax exemption on natural gas, the cost of the tax would ultimately be passed on to consumers who purchase electricity from Georgia Power and EMCs. The second is that, in the face of higher electricity prices, consumers would increase efficiency in their homes and businesses and purchase less electricity over time (i.e. the demand curve for electricity is downward sloping as the price of electricity increases). On average, Georgia residents have increased efficiency in their use of electricity over time, as the population of the state increased by 12.4% from 2010-2022 and total electricity consumption decreased by 9.4%¹⁴.

In the field of economics, modeling the effect of a change in tax policy requires estimating the price elasticity of demand for the good or service being taxed. The price elasticity of demand for any good is the percentage change in the quantity demanded given a 1% change in its price. To apply this terminology to the case of electricity prices, if the price of electricity were to rise by 1% in the absence of the sales tax exemption on the purchase of natural gas in the manufacture of electricity, demand could logically be expected to either fall or stay the same depending on buyer sensitivity to price (i.e. elasticity). If the demand for electricity were to fall in response to rising prices, the demand for electricity would be termed elastic, and if it were to stay the same, it would be termed inelastic. In short, answering the question of “but for” is synonymous with estimating the price elasticity of demand.

The price elasticity of demand for electricity refers to how much the quantity of electricity demanded changes in response to a change in price. Electricity is typically considered to be relatively inelastic; meaning that even large price increases often lead to only a small decrease in electricity consumption, especially in the short run. Electricity is considered a necessity with limited substitutes available to consumers; however, the elasticity can be higher in the long run as people may have more options to adjust their consumption habits or switch to alternative energy sources.

¹⁴ Georgia Total Energy Consumption by Source 1997-2022 (Annual total, Billion Btu). US Energy Information Administration 2024.