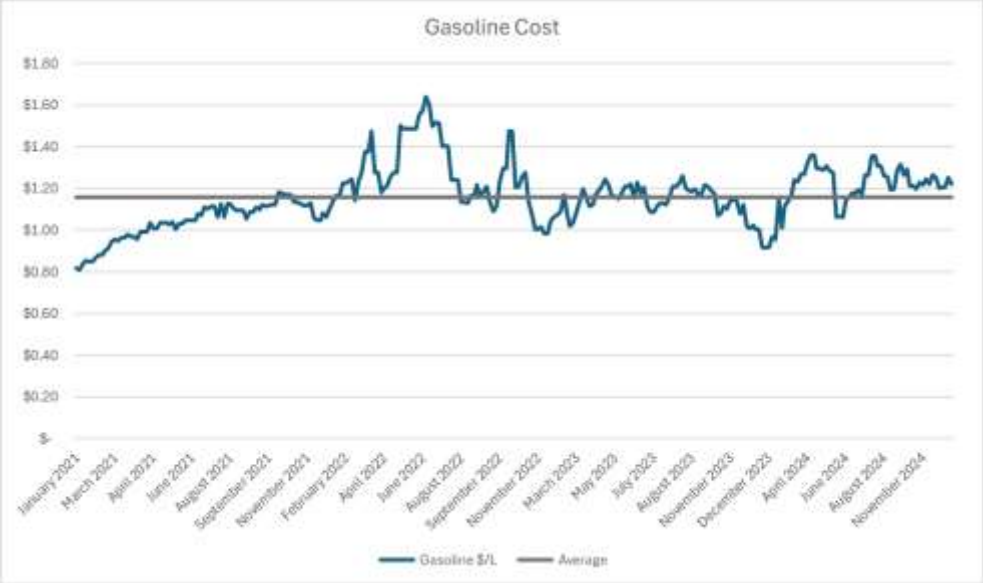
2024 Year End Report

County Natural Gas Vehicle Fleet

February 25, 2025

Gasoline Prices

Gasoline prices have a significant impact on financial performance of CNG conversions and fleet costs. At the outset of the project, and throughout, we have seen projections from credible sources of gasoline over $2/L. But we have not yet seen any sustained increases in gasoline prices. As such all projections in this report are based on current gasoline price with no projected increases.



An increase of $0.01/L in gasoline price can effect the cost by $300-$600 over the life of a vehicle.

Conversion Costs

Conversion costs are increasing approximately 5% per year with a current total conversion cost of just over $20,000. Reusing tanks has worked well and we anticipate averaging 3 vehicles per tank. As such we are projecting an average conversion cost of $20,000 over 3 conversions and 15-20 years from 2025 forward.

CNG Utilization | Savings

This report provides statistics only for vehicles from 2021 and forward. 2021 was the first full year of operation for the CNG refueling station, which provides fuel metering by unit. 2021 was also the first year of CNG vehicles in departments outside of the gas utility.

County fleet vehicles are typically ran to 225-250,000km. As such the breakeven savings per km is $0.08. To achieve a savings of $0.08 a minimum CNG utilization ratio of 75-85% is required for ½ ton vehicles and 65-75% for ¾ ton vehicles. Fuel efficiency of ½ ton vehicles was greatly increased in the 14th generation F150 model starting in 2021. As fuel efficiency increases the ratio of CNG used needs to increase to maintain savings of over $0.08/km.

Average annual mileage is 32,000 km in Gas Utility and 28,000 km in Public Works.

CNG Usage/ Fuel Cost Savings by Dept & Year

	Units/Year	KM	Gasoline Usage	CNG Usage	CNG/Gas Ratio	Fuel Savings
Ag	**3**	**80,642**	**3,268**	**7,577**	**72%**	**$4,604**
2022	1	16,222	342	1,929	85%	$1,203
2023	1	32,382	1,260	3,004	70%	$1,865
2024	1	32,038	1,667	2,643	61%	$1,536
Gas	**23**	**741,811**	**30,343**	**121,384**	**80%**	**$82,493**
2021	1	45,323	3,988	4,828	55%	$2,615
2022	5	114,442	5,529	16,696	73%	$14,043
2023	7	263,910	8,535	47,250	85%	$30,145
2024	10	318,136	12,291	52,611	82%	$35,691
PW	**19**	**539,434**	**67,926**	**39,481**	**48%**	**$25,217**
2021	1	13,054	1,001	1,721	63%	$877
2022	5	109,668	6,657	9,134	52%	$7,065
2023	6	177,374	13,827	13,857	46%	$8,573
2024	7	239,338	46,441	14,769	45%	$8,702
Grand Total	**45**	**1,361,887**	**101,538**	**168,442**	**66%**	**$112,315**

CNG Usage by Unit

	2021	2022	2023	2024	Grand Total
Ag		**85%**	**70%**	**61%**	**72%**
2021 F150		85%	70%	61%	72%
Gas	**55%**	**73%**	**85%**	**82%**	**80%**
2022 F250		70%	91%	83%	81%
2022 F250		76%	78%	77%	77%
2023 F150				90%	90%
2021 F150		61%	82%	66%	70%
2021 F150		82%	84%	75%	80%
2023 F250			87%	89%	88%
2023 F150				97%	97%
2023 F150				85%	85%
2022 F150			95%	91%	93%
2020 F250	55%	78%	76%	67%	69%
PW	**63%**	**52%**	**46%**	**45%**	**48%**
2023 F150				26%	26%
2023 F150			62%	83%	73%
2020 F150		39%	46%	45%	43%
2020 F250	63%	46%	2%	2%	28%
2022 F150		73%	56%	38%	56%
2022 F150		85%	82%	44%	70%
2022 F150		16%	25%	78%	40%
Grand Total	**59%**	**65%**	**67%**	**67%**	**66%**

Net Savings by Unit (@250,000 km and current fuel prices)

Unit	Total KM	CNG/Gas Ratio	Fuel Savings to Date	Conversion Cost	Est. Net Savings
GasUT F250	122,420	81%	$19,243	$19,404	$ 19,892
GasUT F250	80,742	77%	$7,618	$18,663	$ 4,925
GasUT F150	34,912	90%	$3,941	$18,647	$ 9,575
GasUT F150	71,616	70%	$5,200	$18,679	$ (528)
GasUT F150	74,392	80%	$6,127	$18,684	$ 1,905
GasUT F250	76,308	88%	$11,095	$14,566	$ 21,783
GasUT F150	28,269	97%	$2,646	$14,935	$ 8,468
GasUT F150	7,918	85%	$728	$20,013	$ 2,977
GasUT F150	66,613	93%	$6,780	$18,663	$ 6,781
GasUT F250	178,620	69%	$19,116	$17,372	$ 9,383
PW F150	49,434	26%	$1,168	$20,013	$ (14,106)
PW F150	16,877	73%	$1,221	$20,018	$ (1,935)
AG F150	80,642	72%	$4,604	$18,684	$ (4,411)
PW 150	123,131	43%	$6,546	$17,378	$ (4,088)
PW F250	64,138	28%	$2,178	$17,380	$ (8,890)
PW F150	190,148	56%	$8,458	$13,661	$ (2,541)
PW F150	72,399	70%	$4,743	$13,528	$ 2,850
PW F150	23,307	40%	$904	$13,828	$ (4,128)

½ Ton vs ¾ Ton

Gas Utility has found the F250 to be a better performing option from a cost-saving perspective due to higher fuel usage. However, it is important to note that the capital cost of F250's is typically $15-20,000 higher than an F150. So, selection of the larger truck should not be made solely to improve financial performance of the CNG vehicle program. Where Gas Utility has found the major benefit of F250's is in operations and cost-savings vs. med-duty diesel vehicles. Gas Utility typically employed 2-3, ¾ ton trucks for construction support and gasfitters. Increasing to 4, F250's has allowed us to utilize CNG vehicles for transporting pipe and RMO stations. This results in a large cost savings vs diesel F550's and increased productivity with less staff.

Emissions Reduction

The second key benefit of CNG vehicles is emissions reduction. We have relatively few opportunities for emissions reduction in our County operations that can be effected without challenge or cost to our operations. CNG vehicles have given us the ability to reduce our carbon footprint without increasing required resources or reducing services:

Emissions Reduction Dept & Year (kgCO2)

Department	Emissions Reduction
Ag	**3,892**
2022	991
2023	1,543
2024	1,358
Gas	**62,347**
2021	2,480
2022	8,575
2023	24,269
2024	27,023
PW	**20,279**
2021	884
2022	4,691
2023	7,117
2024	7,586
Grand Total	**86,518**

Ancillary Benefits

Gas Utility has been able to utilize CNG trucks as temporary gas supply, which we have found to be a great asset in operation of our utility and cost savings. Uses of CNG vehicles in operations:

- Emergency Gas Supply
  - Averaging 2/Year
  - Eliminates need for CNG Trailer (~$20,000 per use)
  - Immediate Response - No loss of service to customer
- Gas Supply for Repair/Maintenance
  - Multiple Uses/Year
  - Eliminates Loss of Service
  - Allows for Year-Round Maintenance
  - Reduces Staff Time in customer re-lights
- External CNG Services
  - Supply of Gas for Emergency Backup, Equipment Testing, Pipeline Leak Detection
  - Invoiced out over $5,000 in 2024 for CNG Supply
  - Gas BBQ supply for community events

Heavy Duty CNG Trucks

Heavy Duty trucks are the big opportunity for reduction of emissions and cost savings. If we can implement a heavy duty CNG fleet (gravel haulers, plow trucks, gas utility construction pull trucks) without limiting our operational and maintenance capabilities, and at a similar capital/operational cost, major fuel cost savings are possible due to the high fuel usage of these units. Also, as the heavy duty CNG truck industry is growing, there are less viability risks due to manufacturer support, than light-duty CNG vehicles. As the newest Cummins X15N engine is now available, Gas Utility is working with suppliers on information for Management and Council, a Heavy Duty CNG report will be brought prior to 2026 budgeting.

Third Party Fills | CNG Station Profitability

Third Party Fills at our CNG station are increasing each year. Although, delays in new engine development have resulted in slower than expected growth, we now have many of the major CNG fleets signed up (Mullen, KAG (Westcan), GFL, Integrity). And recent meetings with CNGVA and the Canadian Trucking Association, have given indications that our station will become much busier in the coming few years. Heavy Duty CNG Trucks (internal and external) will be the major user of the CNG station throughout its lifespan. CNG station remains in excellent condition and has a large majority of its duty cycle remaining, so we don't recommend any changes to the station at this time.

	Original Projection				Actual and Current Projection				
Year	Hours	Hours Cumulative	Capital Cost	Annual Profit	Hours	Hours Cumulati	Capital Cost	Annual Profi	Milestones
2021	200	200	$ 650,000	$ -	200	200	$ 650,000	$ -	
2022	300	500		$ 8,000	300	500		$ 7,910	12 CoVR Vehicles / 1 Commercial Customer / 3-5 CNG Trailer Fills
2023	400	900		$ 15,000	400	900		$ 9,167	
2024	500	1400		$ 30,000	500	1400	$ 20,500	$ 13,900	20 CoVR Vehicle / 3 Commercial Customers / 3-5 CNG Trailer Fills
2025	500	1900		$ 40,000	500	1900		$ 30,000	
2026	700	2600	$ 50,000	$ 55,000	700	2600		$ 55,000	30 CoVR Vehicles / 5 Commercial Customers / 3-5 CNG Trailer Fills
2027	700	3300		$ 56,375	700	3300		$ 56,375	
2028	700	4000		$ 57,503	700	4000	$ 35,000	$ 57,503	
2029	700	4700		$ 58,653	700	4700		$ 58,653	
2030	700	5400		$ 59,826	700	5400		$ 59,826	
2031	700	6100	$ 65,000	$ 61,022	700	6100		$ 61,022	
2032	700	6800		$ 62,243	700	6800	$ 50,000	$ 62,243	
2033	700	7500		$ 63,487	700	7500		$ 63,487	
2034	700	8200		$ 64,757	700	8200		$ 64,757	
2035	700	8900		$ 66,052	700	8900		$ 66,052	
2036	700	9600		$ 67,373	700	9600		$ 67,373	
2037	700	10300	$ 80,000	$ 68,721	700	10300	$ 80,000	$ 68,721	
2038	700	11000		$ 70,095	700	11000		$ 70,095	
			$ 845,000	$ 904,107			$ 835,500	$ 872,084	

Risks and Challenges

The biggest risk, and unknown, for CNG light-duty vehicles remains manufacturer support. Market and political factors affect availability and performance of CNG vehicles. We are unable to control, and if can be difficult to predict, manufacturer model/engine changes. But it is important that we continuously monitor developments so we can respond and plan accordingly.

Loss of box space is a reality of CNG light trucks, as there are no longer options for alternate tank configurations. Gas Utility has not found significant challenges associated with lost box space. But PW has indicated that the lost space is challenging for some applications.

Install, maintenance and repair capabilities are limited locally. And the additional fuel system does come with some additional maintenance. However, we have not seen significant repair requirements on CNG systems, and we have not had any issues with warranty. Leaks do occur, particularly in extreme cold, but they are usually quickly and easily repaired. Cold weather starts can be an issue with CNG ½ tons. For future models we are looking at adding a shut-off that allows operators to shut down the CNG before shutting down for the night and turning on after startup. Alternatively, simply plugging the vehicle in below -20c eliminates the issue.

Vehicle procurement, repair and maint, and operation of the CNG station have put additional pressure and workload on Gas Utility staff. But the additional workload has not been more than anticipated and is manageable.

Recommendation

Gas Utility Light Duty – No change recommended. Even at lower than anticipated gasoline prices, we are seeing good cost savings to our fleet through CNG. Staff are able to arrange fills to ensure high CNG ratio without additional trips back to the shop. And the operational benefits of CNG trucks have far outweighed challenges.

Other Departments Light Duty – To maximize cost savings, other departments should select vehicles that are good candidates, operationally, for CNG. Particularly, vehicles that cannot be filled daily should not be converted. Developing understanding amongst staff of the benefits of CNG and the requirement to maximize CNG usage would also be helpful to success.

Heavy Duty Vehicles – The County should look closely into utilizing CNG for heavy vehicles. If we can ensure that our operations do not suffer, we believe there could be huge cost savings to the County in CNG vehicles.

Other – We do not recommend additional spending on repair and maintenance capabilities or expanding fueling capabilities unless and until required for expansion (ex: Heavy Duty Vehicles).