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Montney Proppant Demand—A Look Ahead

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Summary

Overall Montney proppant use has grown in lockstep with total Montney production since 2020. As of the end of 2024, Montney operations accounted for approximately 69% of Western Canadian proppant demand (*figure 1*). With demand for Montney gas expected to grow significantly over the next several years, due to new and upcoming LNG export opportunities and increased power requirements for potential AI data centers, operators will be required to upscale drilling and completions operations accordingly. A direct correlation between new production and proppant use can reduce many of the uncertainties associated with traditional proppant forecast techniques.

Theory / Method / Workflow

Montney daily gas production has grown consistently since horizontal production began in earnest in 2010 (*figure 2*). With LNG Canada in operation, Ksi Lisims on Canada's Major Projects List, and two other LNG export projects (Woodfibre and Cedar) under construction, the demand for natural gas feedstock for west coast export facilities could climb by as much as 6.5 bcf/d by 2032 (CDL, 2025). Much, if not all, of this demand could be filled by the Montney. *Figure 2* also includes High, Low, and Expected case forecasts for Montney gas production between 2025 and 2032; Each case assumes that the aforementioned LNG projects will all become operational, but varies in the timing of their start up and full capacity dates, with some capacity not reached until after 2032. The forecast cases also include varying amounts and timing of gas demand for AI data centres, as well as other LNG projects that are at lower states of readiness/planning, such as Tilbury and Summit Lake.

One major concern for operators intending to meet this growing gas demand is sourcing proppant for fraccing operations and forecasting future requirements. An array of variables can come into play for proppant forecasting, often wellbore-related (well counts, lateral length, and frac intensity, for a few examples). But some of these variables can be eliminated, in a matter of speaking, if proppant use is tied directly to production.

The first step in this process is to determine the amount of proppant required to release once bcf of gas. The method used here is to, on a per-well basis, divide the tonnage of proppant used for a frac by the same well's initial one-year cumulative gas production (in bcf). The annual average of this value in the Montney, from 2010 to 2024, is shown in *figure 3*. This value represents the average amount of proppant required to produce one bcf of "new" gas each year. Values for 2025 to 2032 in this case are forecast by following the historical growth trend from recent years. To convert this to a rate-based metric (tonnes per bcf of "new" gas /day), the values shown in *figure 3* would be multiplied by 365, as they would signify the proppant required to maintain one bcf of "new" production every day over an entire year.

The “new” gas rate for a given year is defined as the difference in the daily rate from the previous year (positive or negative), PLUS the gas rate required to make up for the decline in legacy production, which for Montney gas has averaged 28% in recent years. Over a given forecast period, multiplying this combined “new” gas rate by the proppant required per “new” bcf/day will provide an estimate of the total proppant demand for a given year.

Results, Observations, Conclusions

Figure 4 shows historic annual Montney proppant use from 2010 to 2024, and three forecast cases from 2025 to 2032 (based on the aforementioned production variations), using the above methodology. At first glance, the growth in proppant use may seem unrealistic even considering potential LNG demand; the Expected case results in a near-tripling of Montney proppant tonnage between 2025 and 2032, with a total annual demand of over 17.7 Mt at the end of the projection period. However, the compound annual growth rate (CAGR) of the Expected case over the forecast period, at 16.0%, is only slightly higher than the historic CAGR between 2019 and 2024 (14.3%). The longer term historic CAGR, between 2010 and 2024, is 21.6%, higher than that of even the High case 2025–2032 projection.

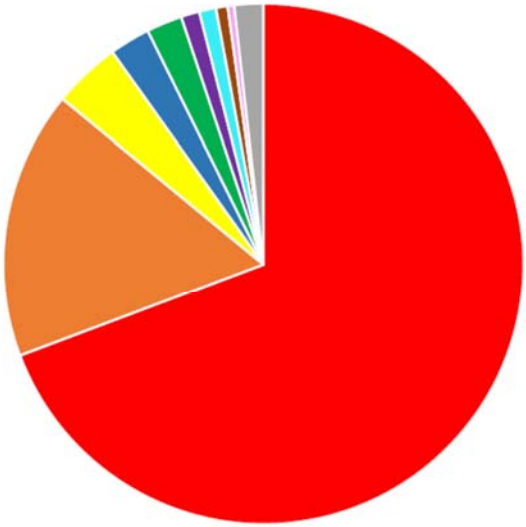
This sharp growth in forecast Montney proppant use is due to the combination of strong predicted gas demand growth and a continuing increase in the proppant required per new bcf of gas. Another way to illustrate this second factor is provided in *figure 5*. A plot of completion intensity versus 12-month cumulative production for all Montney wells since 2005 reveals a positive, but non-linear relationship between the two metrics; as intensity increases, the concomitant growth in production gets smaller.

Novel/Additive Information

The use of bcf as a base production unit for this exercise, instead of boe (barrels of oil equivalent) for a liquids-rich play such as the Montney may be called into question, as it does not take into account any liquids which make up a very large proportion of the play’s production stream. A gas unit is used in this case because of the assumption that LNG projects will be the primary driver for future Montney development, and LNG demand can only be filled by natural gas feedstock. Montney liquids content will of course play a strong role in well economics, and liquids-rich areas will be preferentially targeted (as they are now), but will not in any way reduce the amount of natural gas required for LNG operations.

To further support the argument that there is room for Montney proppant use to grow, particularly on a per well basis, *Figure 6* shows a year-by-year plot of average proppant intensity (tonnes proppant per metre of lateral length) between 2010 and 2024 for the Montney, Duvernay, and nine major US plays. The Montney has historically been among the lowest frac-intensive plays in North America, finally breaching the 2.0 t/m mark in 2024, when most comparable US plays are using closer to 3.5 t/m.

Figure 1: 2024 Western Canada Proppant Tonnage by Formation

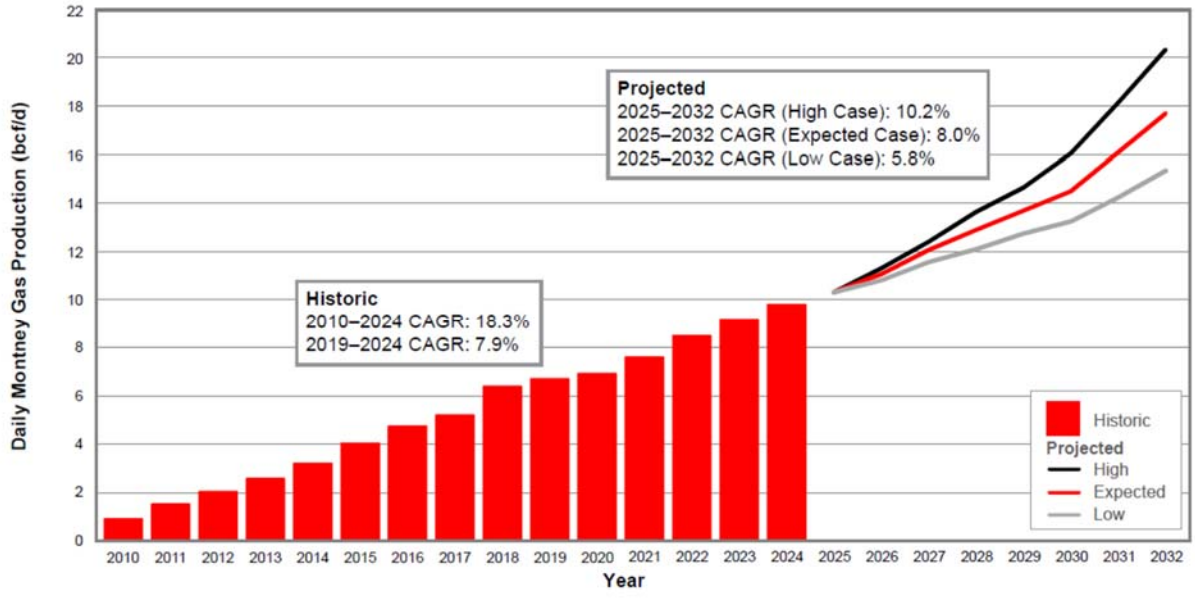


Zone	Tonnage (000 t)	%
Montney	6,108	69.3
Duvernay	1,470	16.7
Spirit River	371	4.2
Viking	222	2.5
Cardium	196	2.2
Bluesky-Glauc	101	1.1
Dunvegan	92	1.0
Charlie Lake	64	0.7
Ellerslie-Gething	36	0.4
Others	158	1.8
Total	**8,817**	**100**

Data supplied by geoLOGIC

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Figure 2: Average Daily Montney Gas Production by Year, Historic and Forecast



Data supplied by geoLOGIC

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Figure 3: Montney Proppant per bcf of New Gas, Annual Historic Median

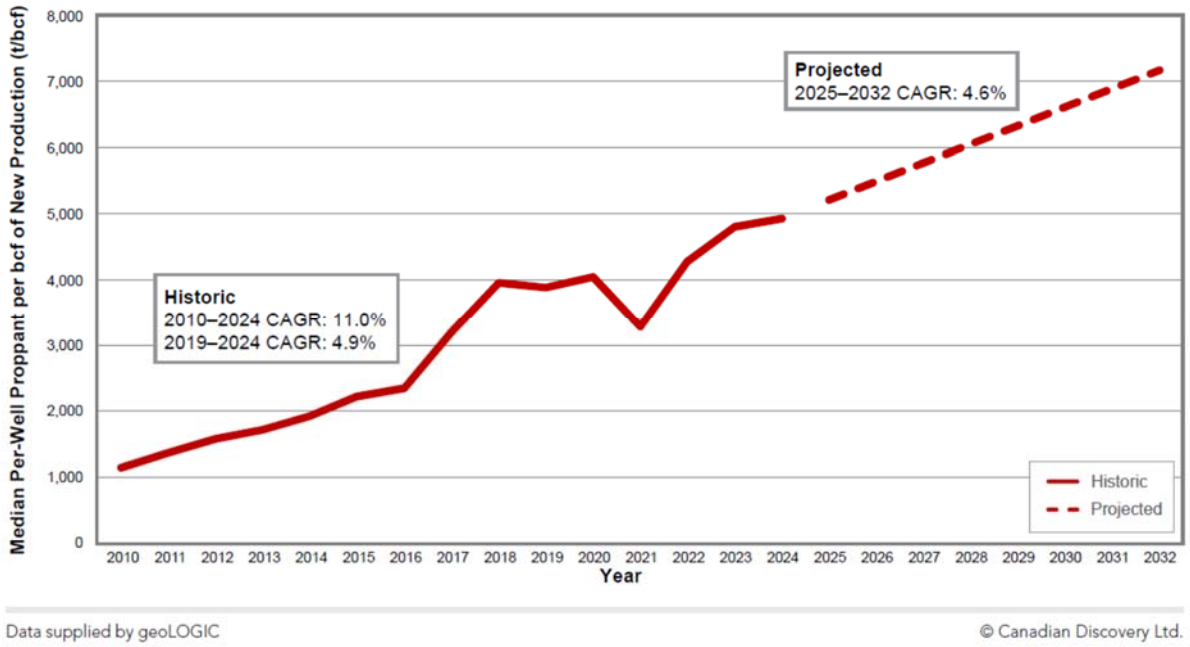


Figure 4: Montney Proppant per Year, Historic and Forecast

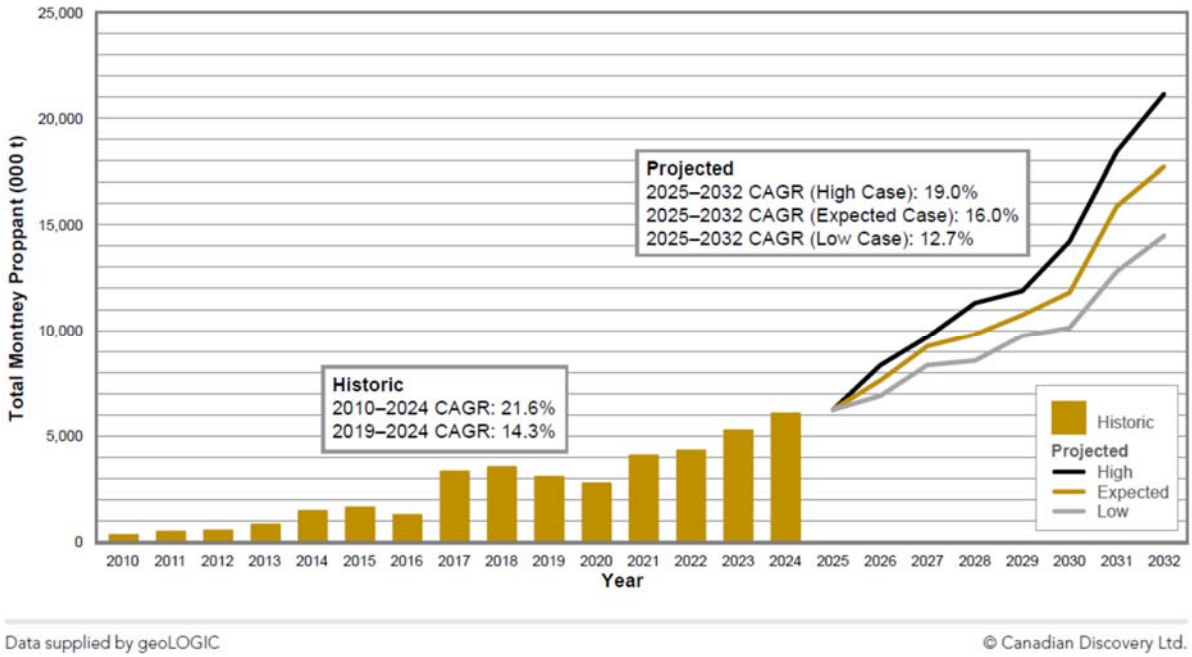


Figure 5: Completion Intensity vs Normalized 12-Month Cumulative Production, Montney Wells 2005–2024

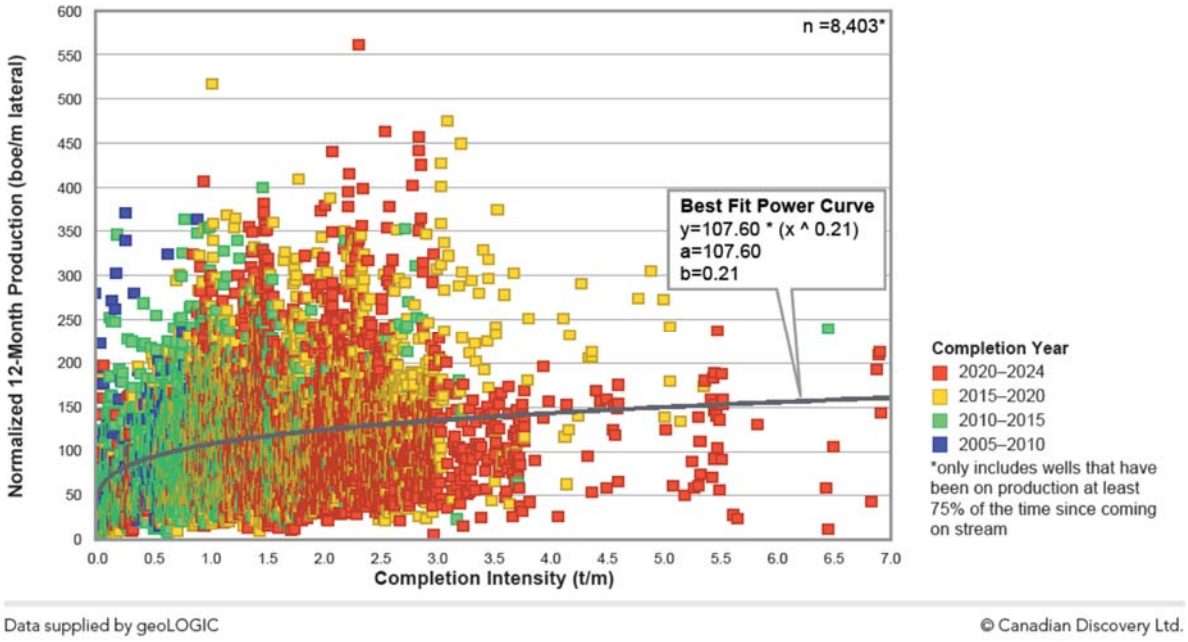


Figure 6: Historical Proppant Intensity Comparison Between Canadian and US Plays

