

DUVERNAY

Pushing the boundaries

Higher oil and gas prices, coupled with new players with new development ideas, are driving renewed interest in the Duvernay shale.

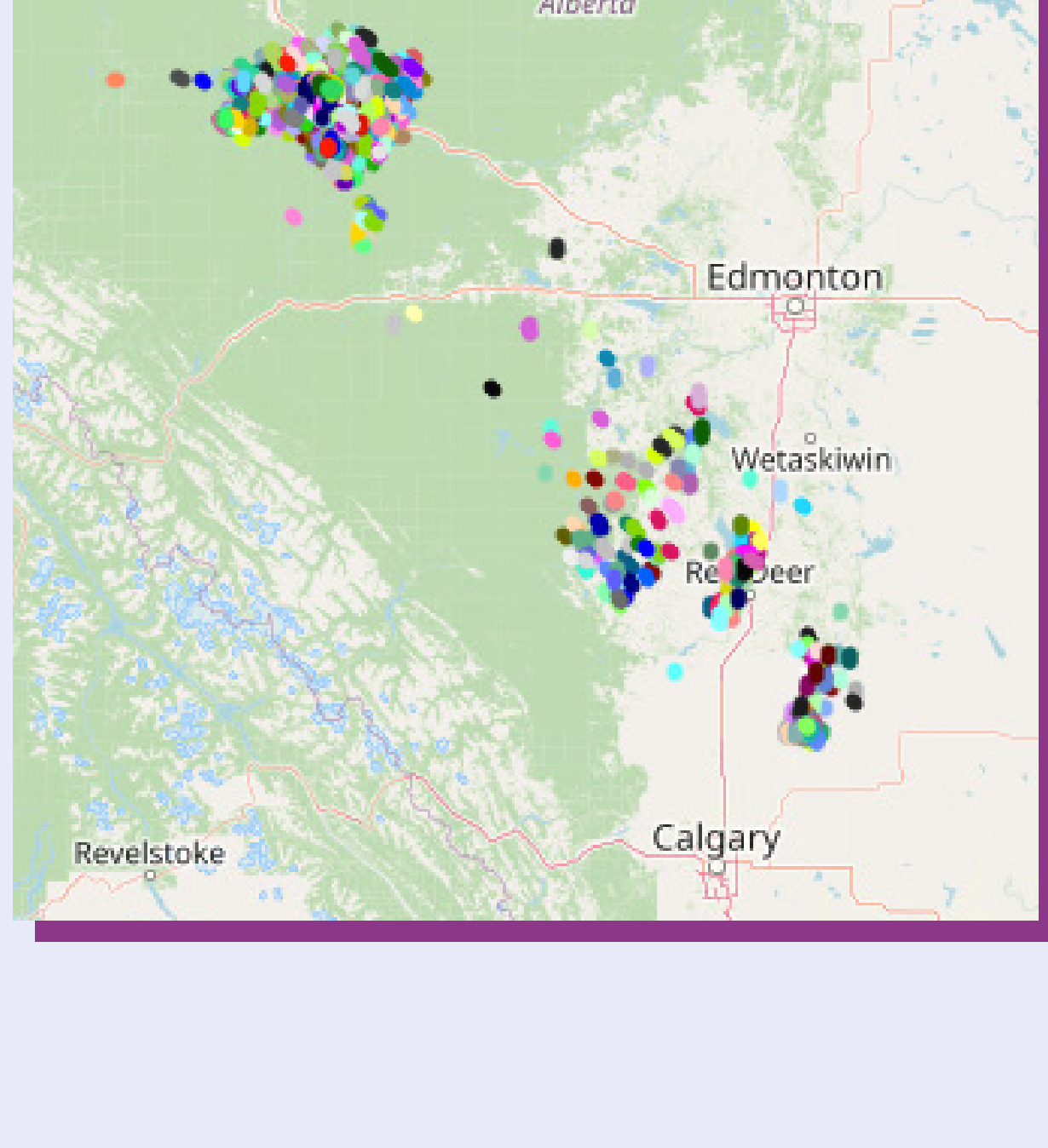
Drilling has increased in early 2022. At the same time, operators are pushing the Duvernay's geological and geographical boundaries while testing drilling and completion technology limits.

Some operators are now outlining longer-term development plans with sustained production stretching decades into the future.

Daily Oil Bulletin

Data provided by: Evaluate Energy, gDCdashboards, DIOB Docs, geoEXPLORER

Drilling increases substantially

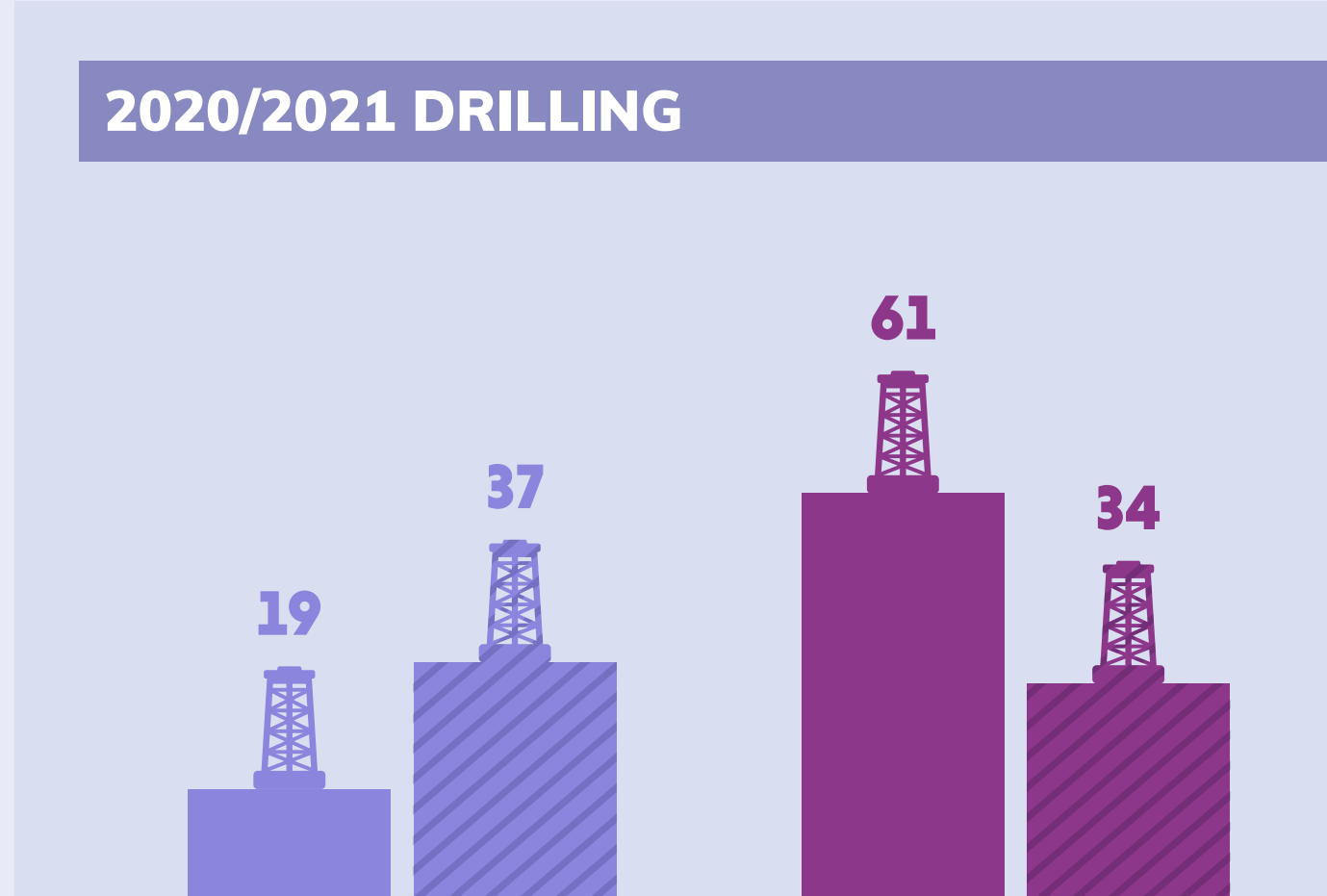
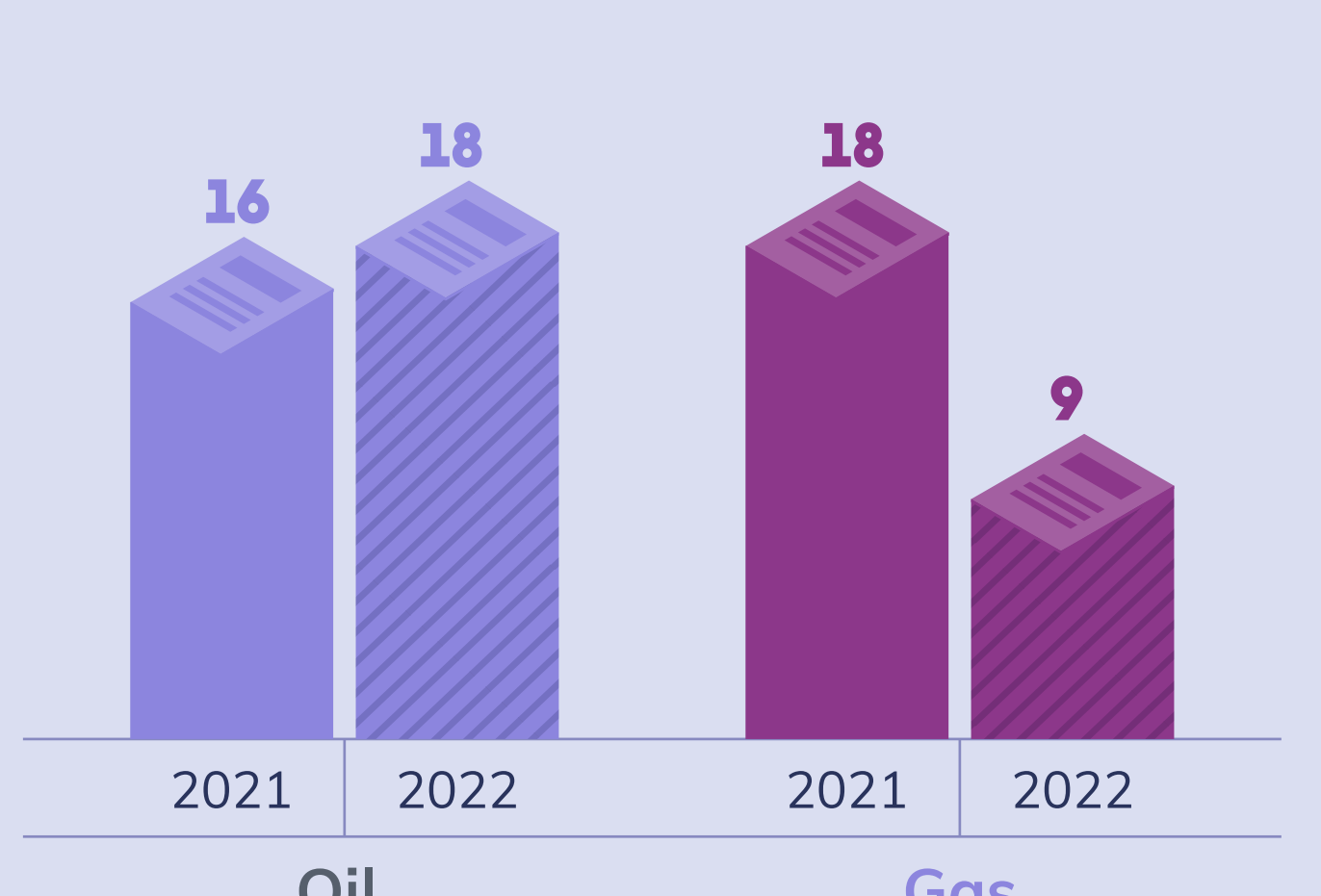
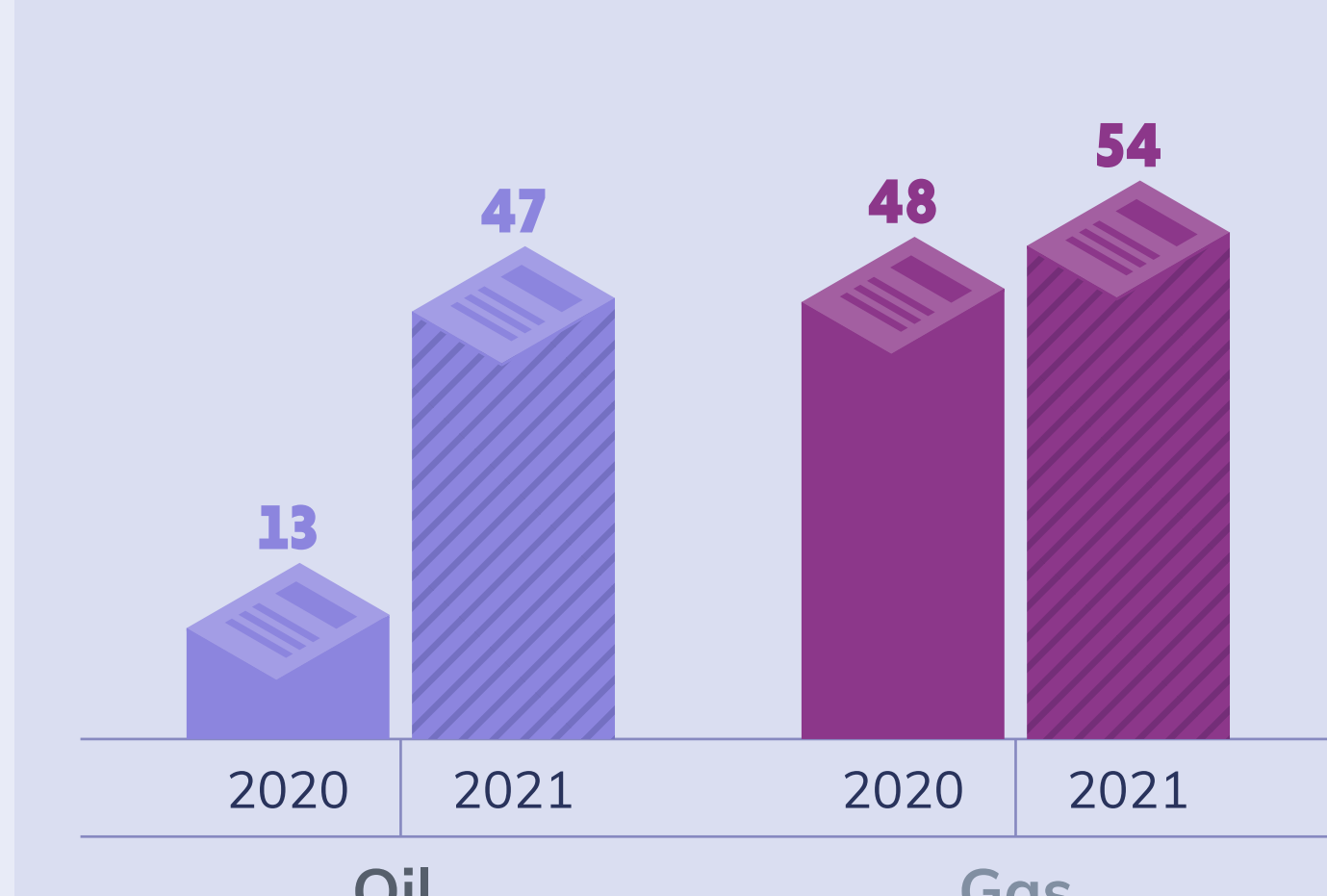


Rising commodity prices throughout 2021 resulted in increased Duvernay well licensing with 101 wells licensed in 2021 compared to 61 in 2020. Licensing declined somewhat in Q1 2022, with **27 wells licensed** compared with 34 in the same period last year.

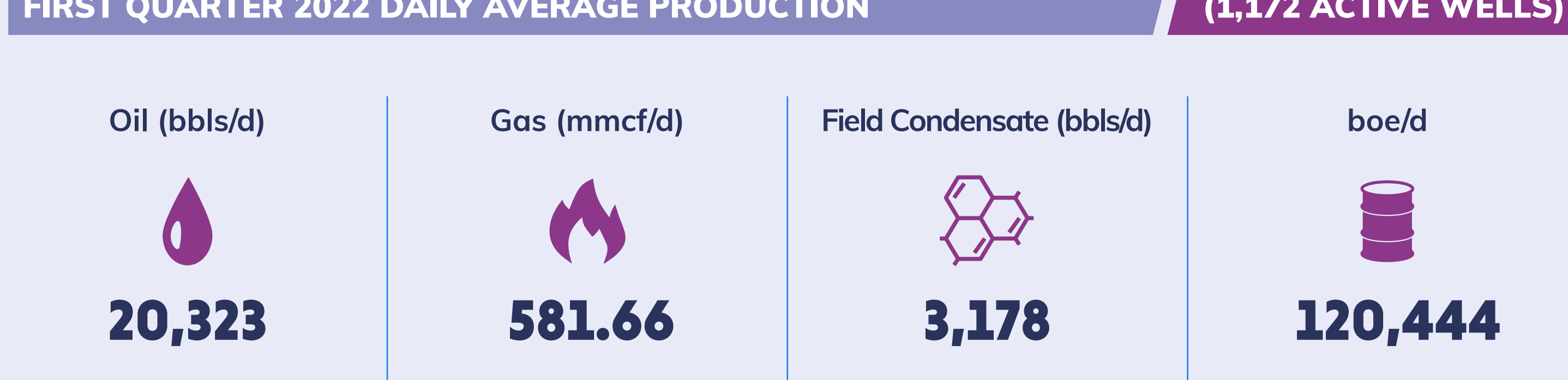
Drilling activity declined from 80 wells in 2020 to 71 wells in 2021, driven by a large decline in natural gas drilling. Oil well drilling doubled from 19 wells in 2020 to 37 wells in 2021.

Forty-five wells were spud in the first quarter of 2022, up from 17 in Q1 last year. Twenty-seven wells targeting oil were drilled with 18 wells targeting gas.

Production has remained relatively flat at around **120,000 boe/d** in the post-pandemic era, down from around 135,000 boe/d in early 2020, although production levels can be skewed due to operators targeting liquids-rich sweet spots where liquids are separated out at processing facilities.



FIRST QUARTER 2022 DAILY AVERAGE PRODUCTION (1,172 ACTIVE WELLS)



Source: gDC Dashboards

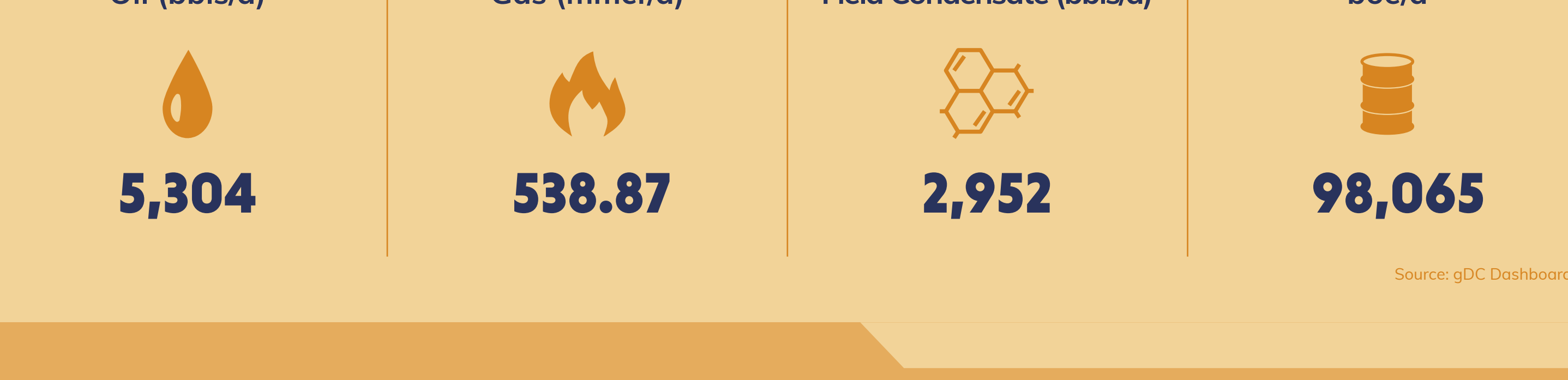
Greater Kaybob displays positive signs

Activity in the Greater Kaybob area is picking up with **26 wells spud** in the first quarter of 2022. Only 34 wells were drilled at Kaybob during 2021.

geoExplorer analysis shows recent land sales and exploration drilling are testing whether the Duvernay oil window expands to the north. **B-32 Energy** is a new operator focused on this expansion.

Wellhead production exited the first quarter at around **98,000 boe/d**, up 4,500 boe/d from year-end 2021. Production will climb in the second quarter as a cold January slowed well completions across the WCSB.

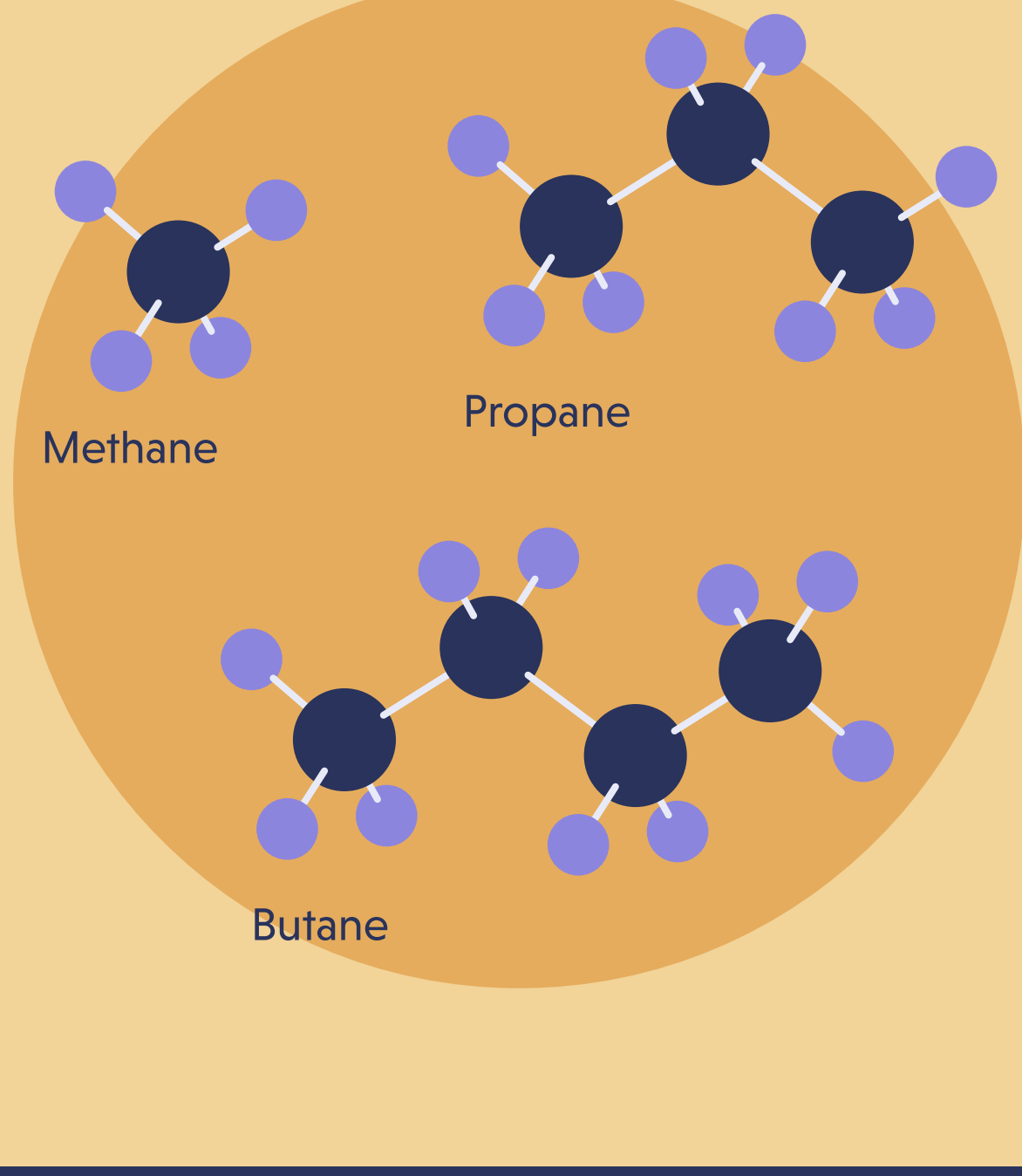
KAYBOB FIRST QUARTER 2022 DAILY AVERAGE PRODUCTION (848 ACTIVE WELLS)



Source: gDC Dashboards

Condensate, NGLs, Driving Kaybob Activity

Extremely high liquids content in certain areas of Kaybob is driving natural gas activity. Crescent Point reported gas composition of **74% condensate, 6% NGLs** and **20% shale gas** during initial production from its first two wells drilled on assets recently acquired from Shell.



FIRST QUARTER 2022 REALIZED GAS AND NGL PRICING (KIWETINOHK ENERGY)

Condensate (\$/bbl) **115.77**

NGLs (\$/bbl) **66.03**

Natural Gas (\$/mcf) **6.35**

Source: DOB Documents, Kiewitnohk Energy, Crescent Point Public Disclosures

East Duvernay oil steady

Production from operators Vesta Energy and Artis Exploration has recovered after being shut-in during the early phase of the Covid pandemic and exited 2021 at **15,305 bbls/d**. Production declined to **12,300 bbls/d** at the end of Q1 2022, likely due to weather-induced delays in completions.

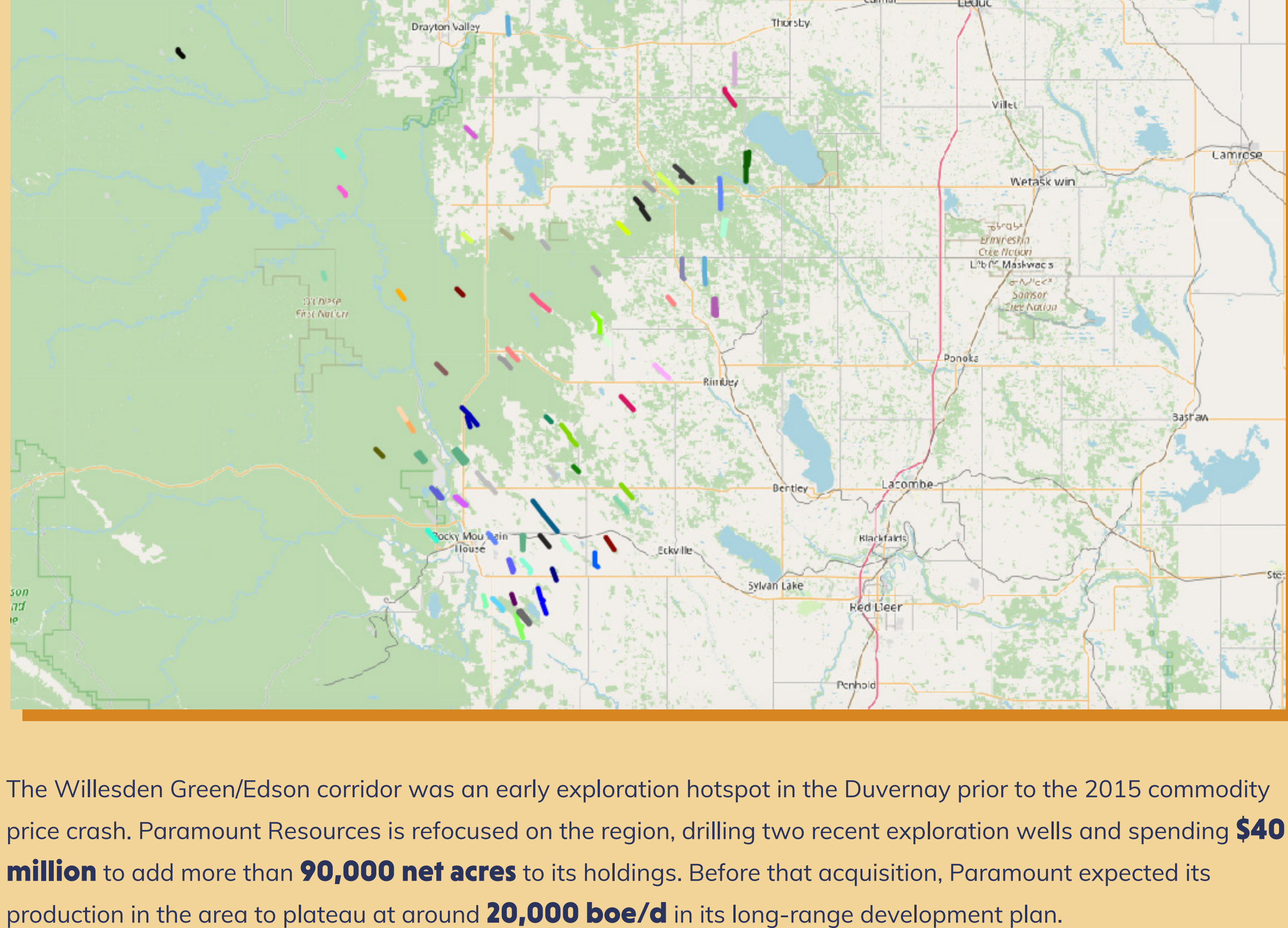
Overall, Q1 2022 drilling in the East Duvernay mirrors activity in the same quarter of 2021, with **11 and nine wells** drilled, respectively.

FIRST QUARTER 2022 DAILY AVERAGE PRODUCTION (215 ACTIVE WELLS)



Source: gDC Dashboards

Return of the South Duvernay

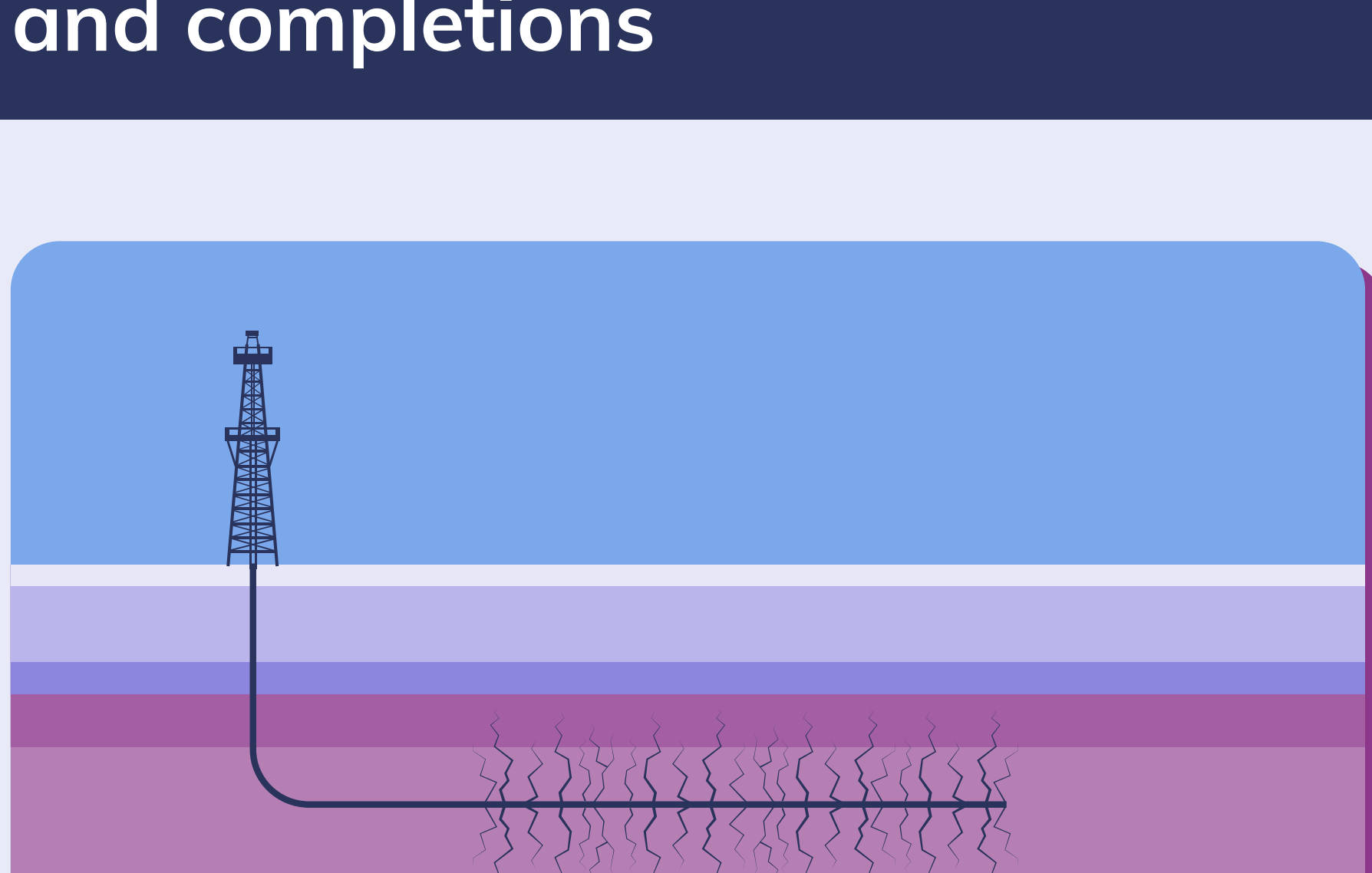


The Willesden Green/Edson corridor was an early exploration hotspot in the Duvernay prior to the 2015 commodity price crash. Paramount Resources is refocused on the region, drilling two recent exploration wells and spending **\$40 million** to add more than **90,000 net acres** to its holdings. Before that acquisition, Paramount expected its production in the area to plateau at around **20,000 boe/d** in its long-range development plan.

Is the Pembina field next?

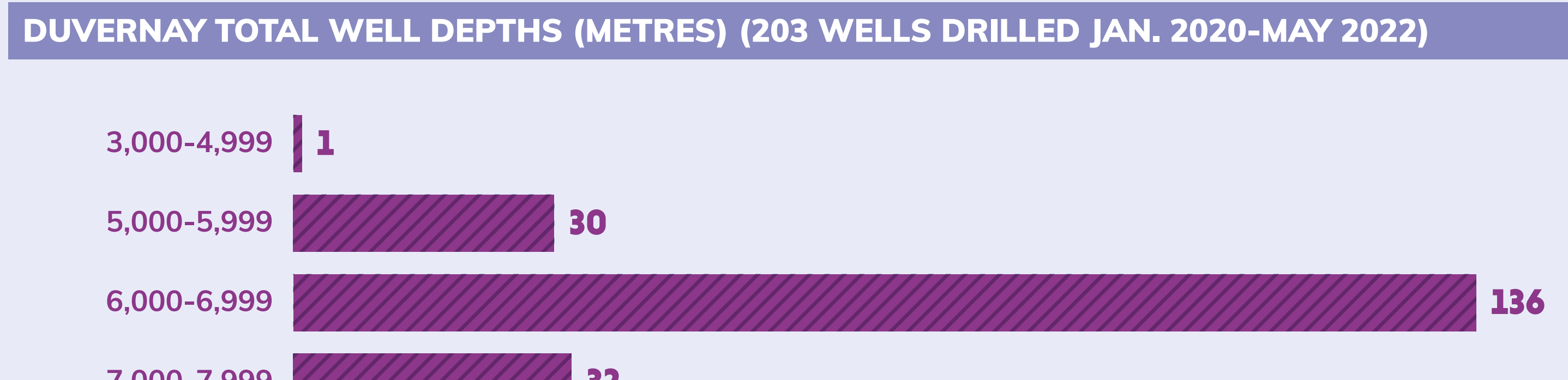
Baytex Energy is taking a measured approach to exploring its **200 net sections of land** in the Pembina field. The company currently has **11 active wells** in the Pembina producing around **2,000 boe/d**. It has a three-well pad underway in the play using a walking rig as it works to drive down costs.

Bigger is better when it comes to drilling and completions



Duvernay wells are some of the deepest drilled in the WCSB, with around **85% of wells** reporting a total depth greater than **6,000 metres**.

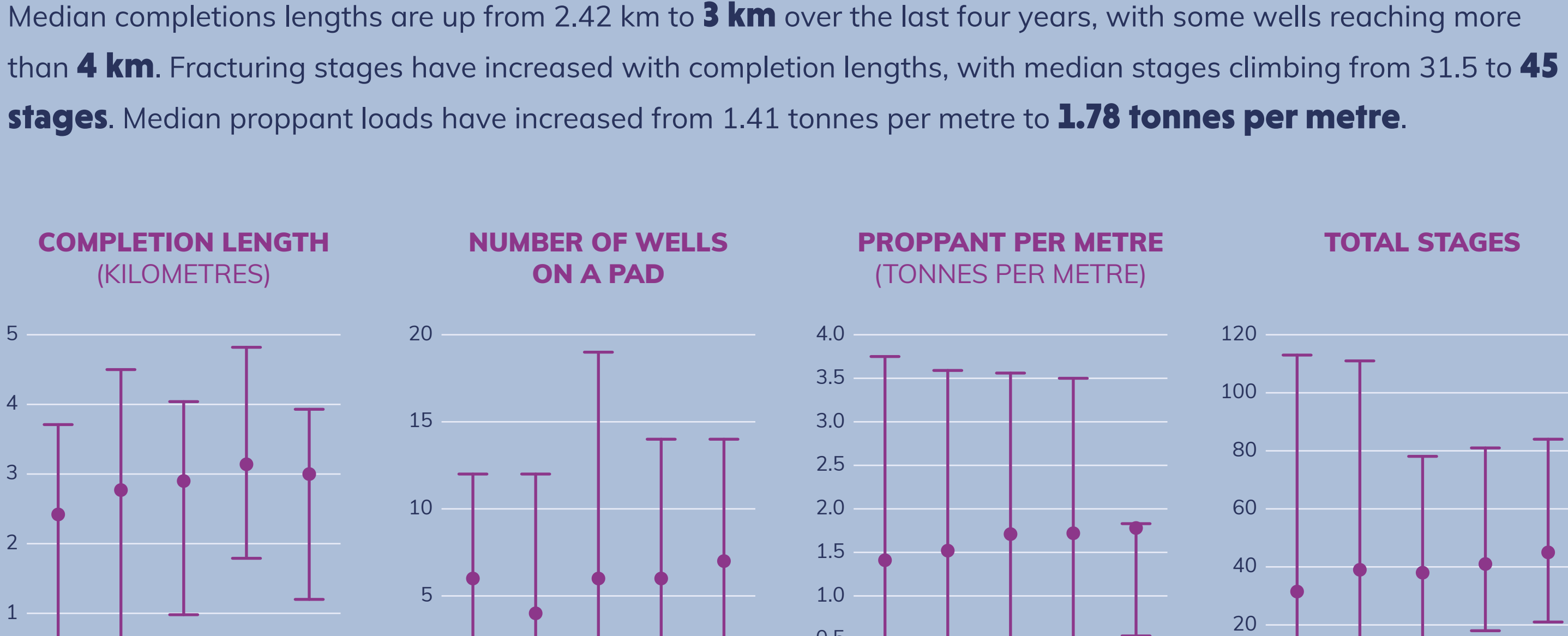
DUVERNAY TOTAL WELL DEPTHS (METRES) (203 WELLS DRILLED JAN. 2020-MAY 2022)



Source: Daily Oil Bulletin Drilling Dashboard

Completions intensity is increasing

Median completions lengths are up from 2.42 km to **3 km** over the last four years, with some wells reaching more than **4 km**. Fracturing stages have increased with completion lengths, with median stages climbing from 31.5 to **45 stages**. Median proppant loads have increased from 1.41 tonnes per metre to **1.78 tonnes per metre**.



Source: gDC Dashboards

Trend in 2022 is for even bigger wells, while driving down costs

Crescent Point has reduced drilling days by **over 30%** since entering the play, averaging fewer than **15 days per well**. Two-mile well costs are down approximately **20%** compared to initial expectations. It is also using larger fracture stimulations, expecting increased recoveries as a result.

Kiwitnohk Energy is focused on stretching lateral lengths while increasing spacing between laterals. It is also ramping up frac volumes and pump rates to increase fractures and ultimately drive higher production.

Both companies are working to increase the number of wells per pad to drive efficiencies further.