NORTH AMERICAN NATURAL GAS FULL CYCLE COST AND RESOURCES

APRIL 2025

SUMMARY

This report provides an analysis of full cycle costs of new natural gas wells drilled during the period Q1 2022 through to Q3 2024 for major growth basins in both the US and Canada, including updated resource cost curves for both North America and Western Canada. Key findings:

- Full-cycle cost of natural gas produced from US wells drilled during Q1 2022 through to Q3 2024 ranges from USD $1.92/Mcf in Utica to $5.66/Mcf in Permian.
- Full-cycle cost of gas produced from Marcellus basin wells was USD $3.39/Mcf. Full cycle cost in Haynesville was USD $3.43/Mcf.
- Liquids uplift significantly affects full cycle costs in major US and Canadian basins. Liquids rich Duvernay in western Canada has the highest liquids uplift of USD $2.31/Mcf followed by US Utica at USD $1.53/Mcf.
- Total remaining resources for five major US gas basins (Marcellus, Utica, Haynesville, Permian, and Eagle Ford) are estimated at 1,413 Tcf, 83% at full cycle costs of USD $4/Mcf and below.
- Western Canada Sedimentary Basin (WCSB) resources in the main producing plays (Montney, Duvernay, and Alberta Deep Basin) are 587 Tcf, 80% at or below USD $4/Mcf. Most WCSB resources (484 Tcf) are in the Montney.
- Incorrys analysis shows North America has around 556 Tcf of associated gas resource.
- Total North American natural gas resource life is 66 years at full cycle costs of USD $5/Mcf or less, 53 years at full cycle costs of USD $4/Mcf or less, and 23 years at USD $3/Mcf or less.
- Total US natural gas reserves are 691 Tcf as at year-end 2022. “Reserves” are quantities of gas that are already discovered, recoverable, and commercial, while “Resources” are an estimate of the potential amount of natural gas that can be produced.

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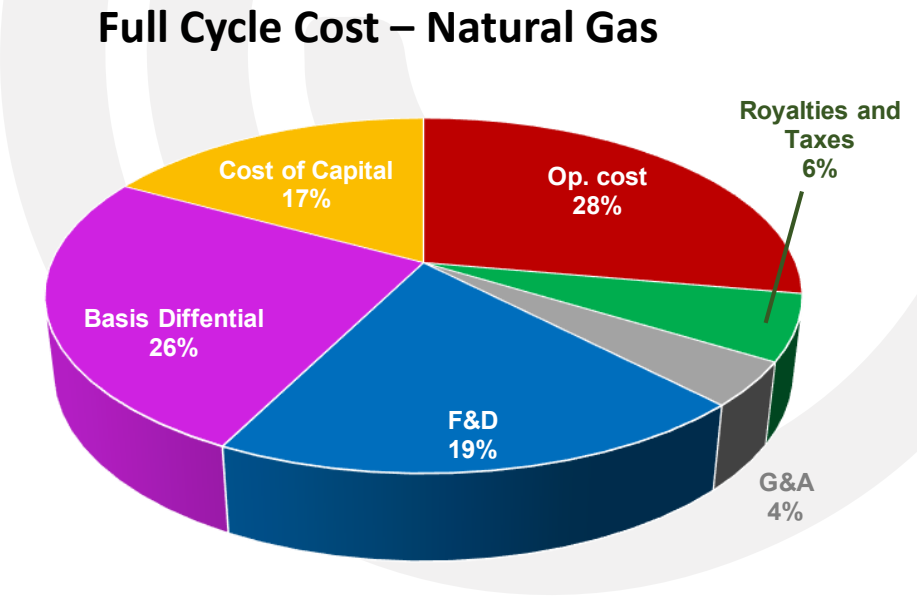
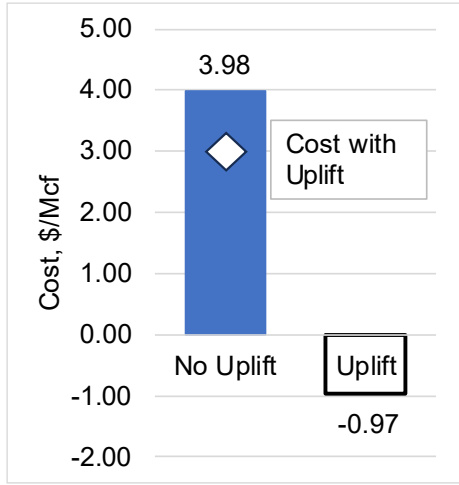
FULL CYCLE COST COMPONENTS

- **Producer Return or Cost of Capital** – Calculated based on rate of return (15%) before income tax; equivalent to cost of capital. Individual producers' actual rates of return may be higher or lower depending on commodity price.
- **Basis Differential** – Differential between the gas price at the point of sale (in the producing basin) and Henry Hub Natural Gas price benchmark.
- **Operating Cost** – Lifting and field processing costs. The cost is calculated based on information reported by producers and Incorrys proprietary data. In most cases, producers report total operating cost per project. It is then divided by total resources for the project. Operating cost is generally very similar for different basins. Operating cost per unit of production increases if initial productivity decreases.
- **Royalties & Production Taxes** – Taxes for government and royalties for freehold owners and others. Taxes include severance, conservation, and other taxes and are different for different jurisdictions.
- **Overhead** – Includes all general and administrative (G&A) expenditures (head office); these costs are necessary expenses for doing business. Producers usually report overhead for the whole operation rather than a particular project.
- **Finding & Development (F&D)** – Capital costs calculated based on producers' disclosure and proprietary Incorrys data. F&D cost includes:
  - Drilling
  - Completion including casing, cementing, fracking
  - Land and seismic
  - Tie-in, facilities, and other incremental infrastructure costs
  - Dry hole rate is included in the F&D cost calculation. Average dry hole rate is assumed to be 3% for unconventional basins.
- **Liquids uplift** – proceeds from sales of natural gas liquids (NGL) produced as part of raw gas. Liquids uplift reduces the full cycle cost of natural gas. It is calculated based on volume of extracted NGL multiplied by NGL price.



Full cycle cost components of US Gas (liquids uplift is not included)



Impact of Liquids uplift: Average Full Cycle Cost without uplift vs. Liquids uplift. The average cost illustrates relative impact of Liquids uplift on gas full cycle cost.

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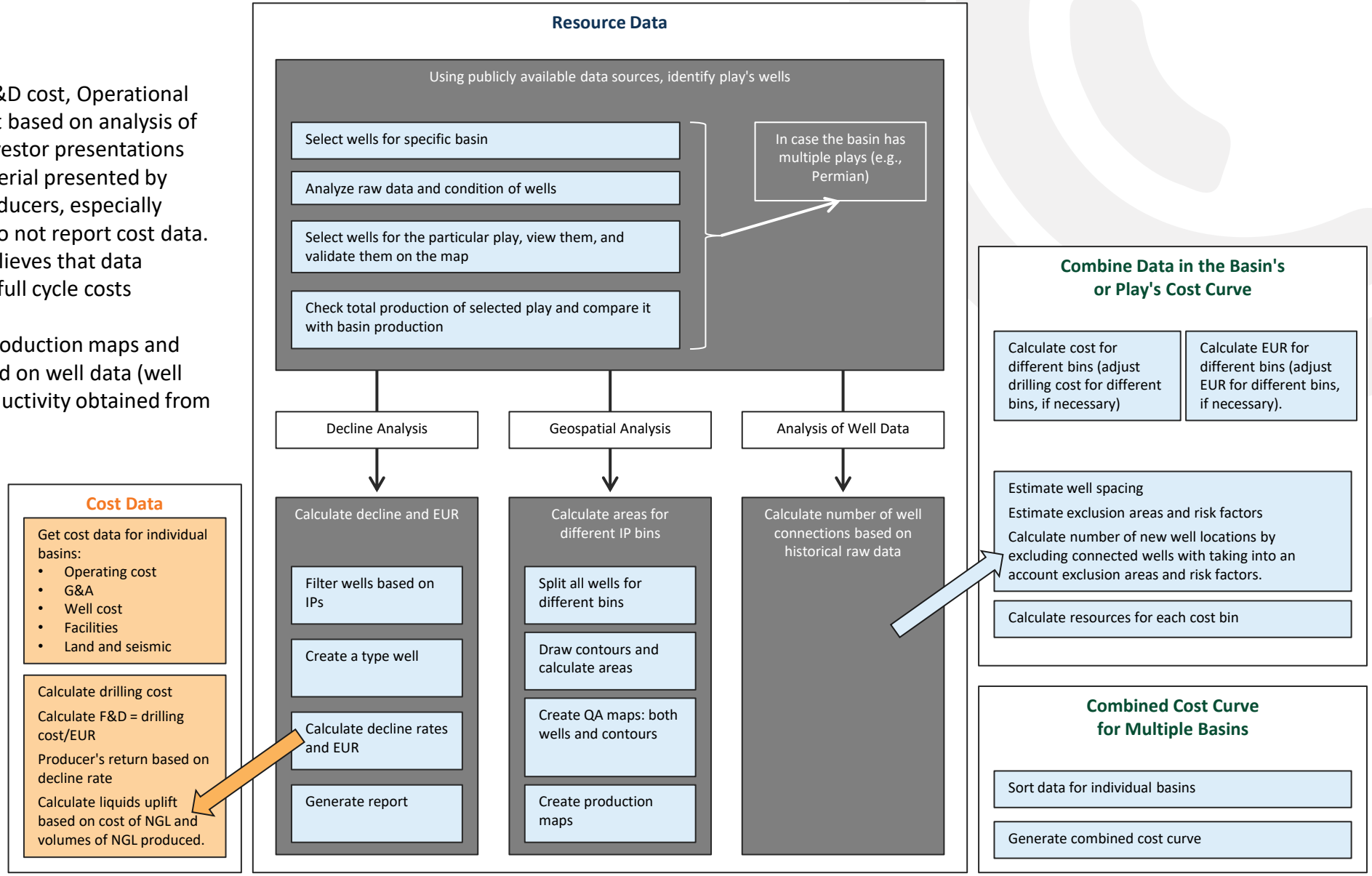
INCORRYS COST ANALYSIS METHODOLOGY

Main Assumptions:

- Incorrys estimated F&D cost, Operational cost, and Capital Cost based on analysis of 275 projects from investor presentations and other public material presented by producers. Many producers, especially private companies, do not report cost data. However, Incorrys believes that data collected represents full cycle costs accurately.
- Incorrys generates production maps and calculates areas based on well data (well coordinates and productivity obtained from public databases).

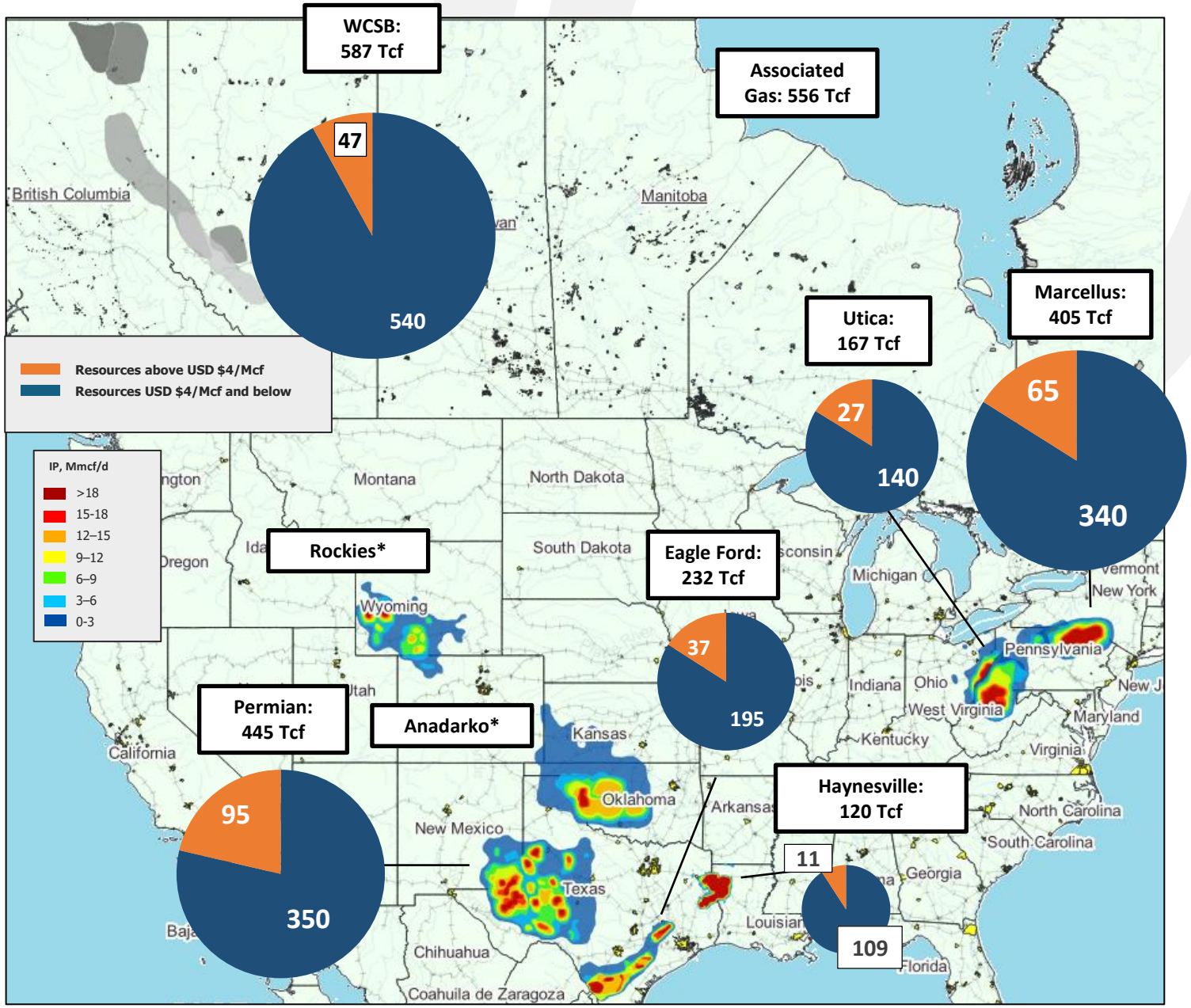


NORTH AMERICAN NATURAL GAS RESOURCES

This chart shows Incorrys' assessment of North American remaining natural gas resources in major producing basins.

- Total remaining natural gas resource for five major US gas basins (Marcellus, Utica, Haynesville, Permian, and Eagle Ford) is estimated at 1,413 Tcf, of which 83% (1,134 Tcf) are at full cycle costs of USD $4/Mcf and below.
- Canada resources in main producing plays (Montney, Duvernay, and Alberta Deep Basin) are 587 Tcf, of which 80% are below USD $4/Mcf. Most of the reserves (484 Tcf) are in the Montney.
- Largest remaining natural gas resources in the US are in the Permian basin (445 Tcf), however Permian development is currently focused on oil. Permian associated gas currently competes with Permian gas-focused activity for available pipeline takeaway capacity. Ranking a close 2nd is Marcellus with a resource of 405 Tcf.
- Total US natural gas resource below $4/Mcf is 1,134 Tcf. Low-cost resources are available in liquids rich basins, such as Utica, Marcellus SW, and certain areas in Eagle Ford.
- Total US natural gas reserves are 691 Tcf as at year-end 2022*.
- Note: "Reserves" are quantities of natural gas that are already discovered, recoverable, and commercial. "Resources" are an estimate of the amount of natural gas with the potential of being produced.
- In addition, there are 556 Tcf of associated gas resources.

*Source: U.S. Crude Oil and Natural Gas Proved Reserves, Year-end 2022



* Drilling in Rockies and Anadarko is limited over the period Q1 2022 through to Q3 2024, with producers not reporting full cycle cost data. Incorrys estimates that total remaining natural gas resources in Anadarko is 145 Tcf. Total remaining natural gas resources in Rockies is 416 Tcf, however most of these resources have full cycle cost over $5/Mcf.

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NORTH AMERICAN NATURAL GAS RESOURCE LIFE

This chart shows resource life in years for major US and Canadian producing basins for full cycle cost below USD $3/Mcf, $4/Mcf and $5/Mcf. Resource life is calculated as resources divided by 2023 production. Resource life is different from reserves life, which is lower.

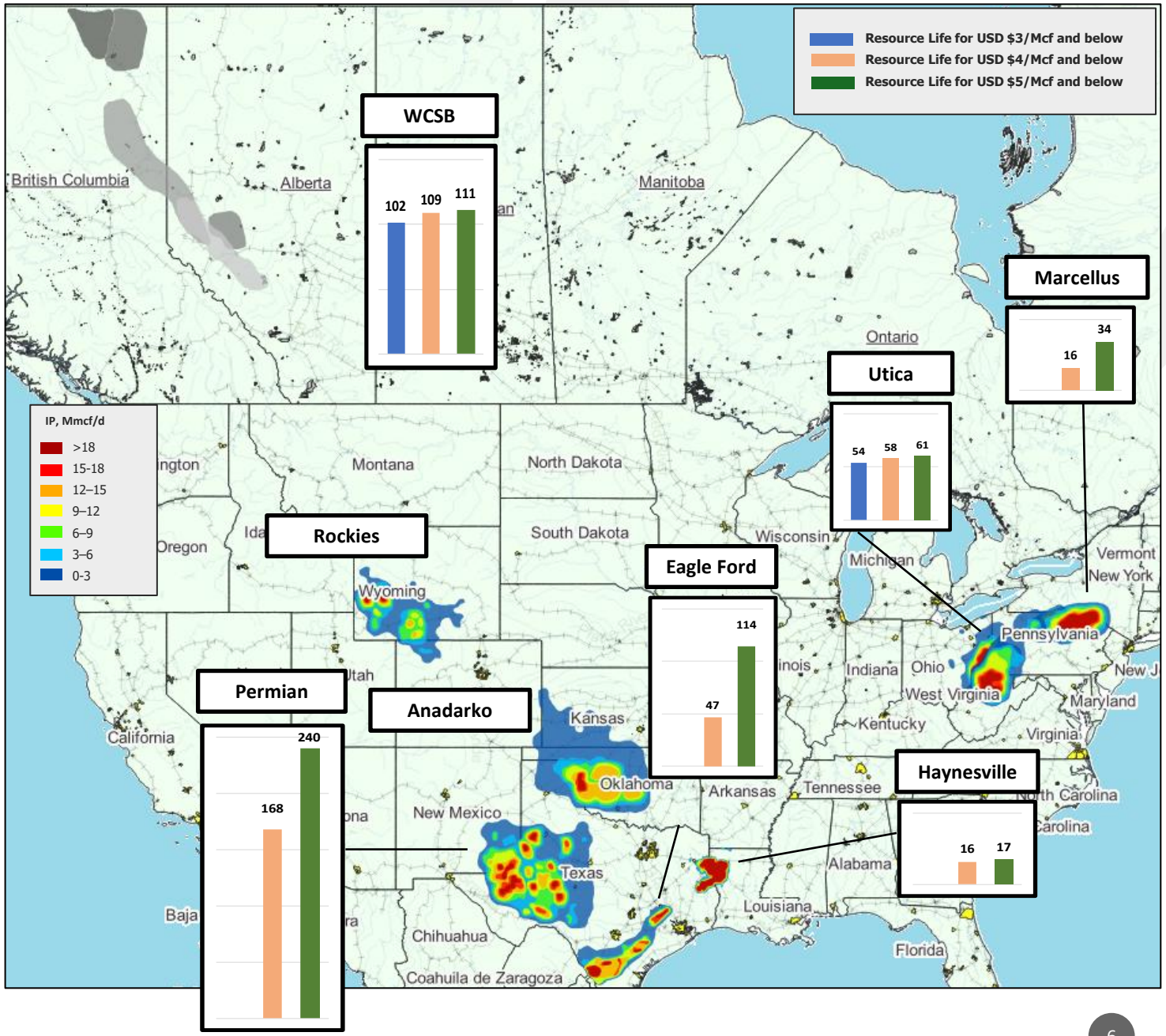
Actual resource life could vary from Incorrys' results for several reasons:

- Higher gas prices may sustain drilling in lower productivity areas of a play or basin;
- Access to new pipeline capacity could impact the rate of production from a basin or play.

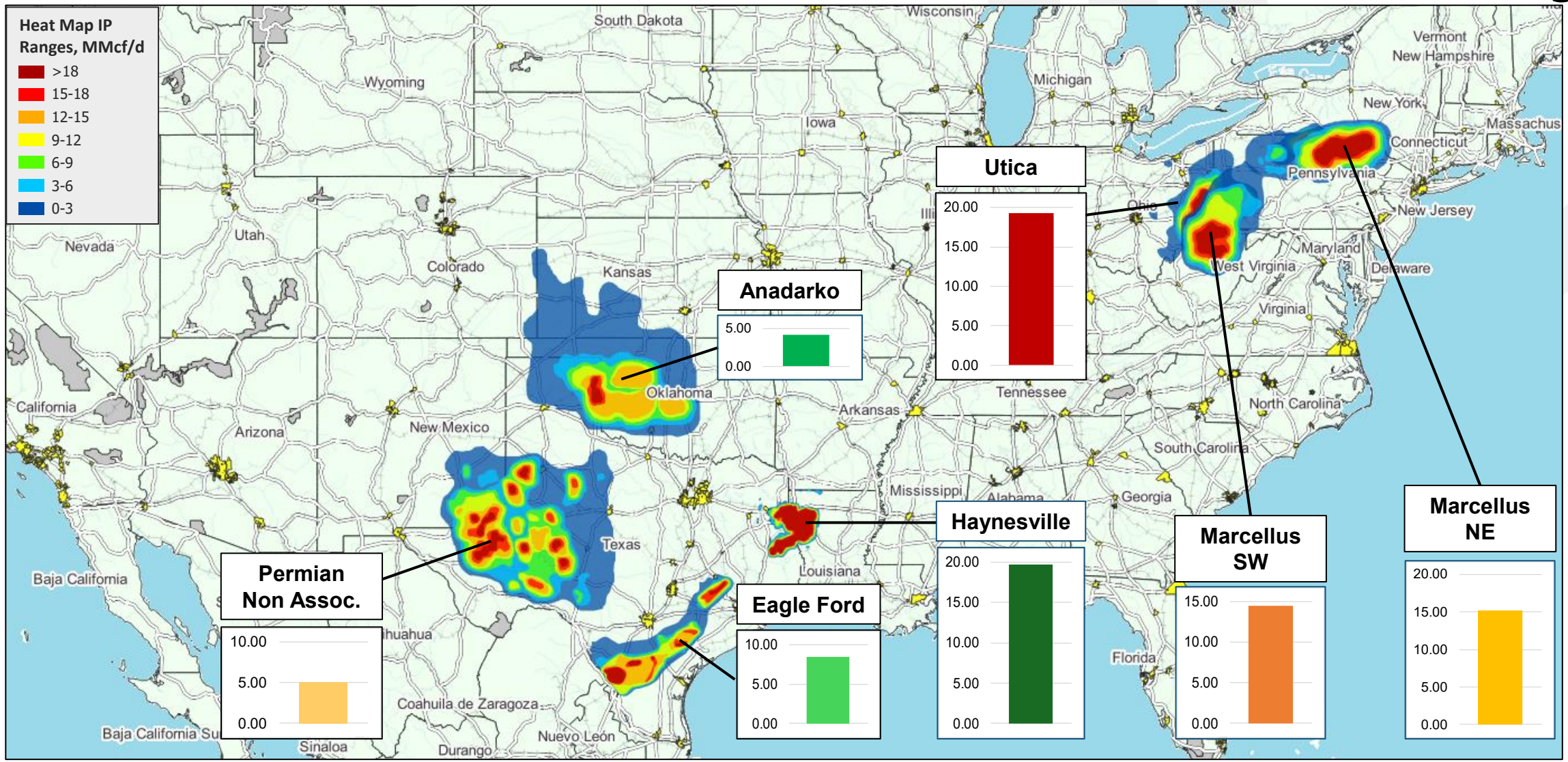
The Permian has the highest resource life compared to other basins at 168 years for a cost of USD$4/Mcf and below.

Canadian resource life is 102 years at a cost of USD$3/Mcf and driven mainly by the significant resources in Montney play.

Total North American resource life is 23 years at a cost of USD$3/Mcf and below and 52 years at a cost USD$4/Mcf and below.

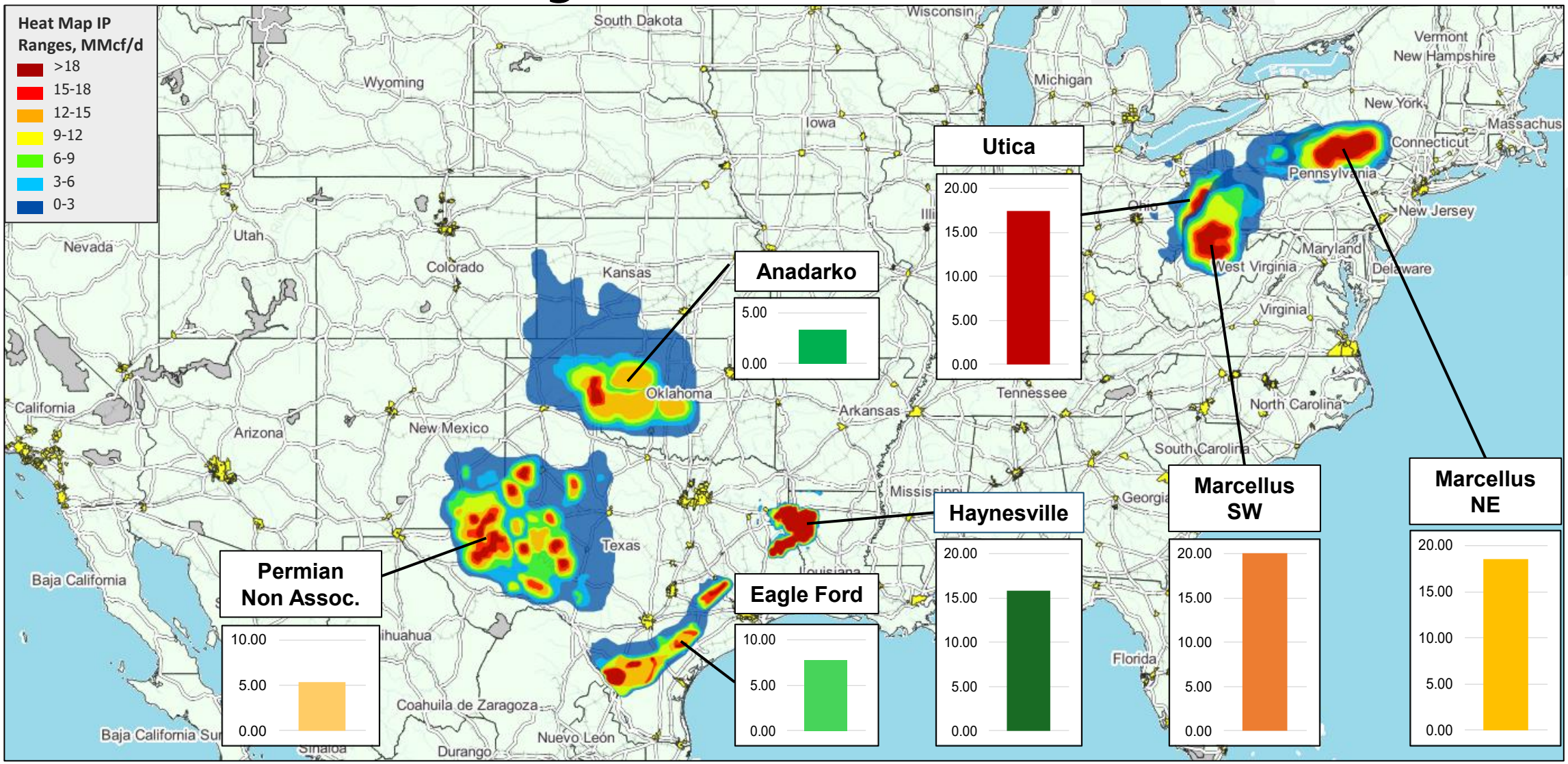


INITIAL PRODUCTIVITY (IP) MAJOR US GAS BASINS FOR 2023



New well 30 days initial productivity in MMcf/d

ESTIMATED ULTIMATE RECOVERY (EUR) OF MAJOR US GAS BASINS FOR 2023



New well estimated ultimate recovery in Bcf

NORTH AMERICAN NATURAL GAS RESOURCE COST CURVE

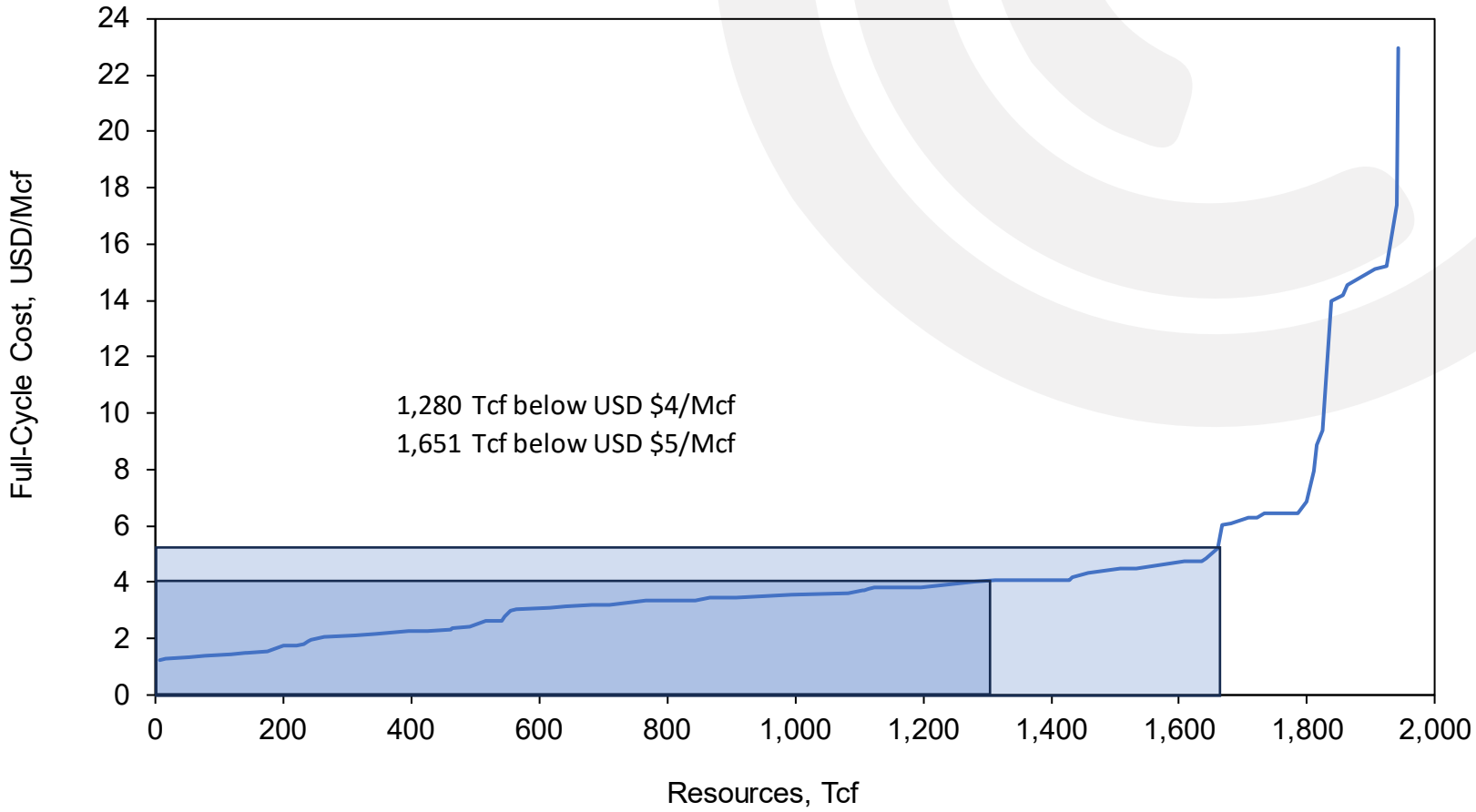
The chart shows North American natural gas full cycle cost vs. resources for all major producing basins in US (Permian, Marcellus, Eagle Ford, Haynesville and Utica), as well as western Canadian plays (Montney, Alberta Deep Basin, and Duvernay). Other basins, such as Anadarko, Rockies, as well as conventional gas, CBM, and associated gas are not included.

Most basins or plays have up to 7 data points associated with 7 well productivity ranges (from 0 to 3 MMcf/d, 3 to 6 MMcf/d, etc.). Duvernay has 5 data points. The North American resource cost curve has 75 data points in total.

Incorrys estimates resources and full cycle cost for each data point in each basin.

The resource cost curve helps to estimate total gas resource available at various full cycle cost levels.

In total, major US and Canadian basins have almost 2,000 Tcf of natural gas resources of which almost 1,300 Tcf are available at costs below USD $4/Mcf.



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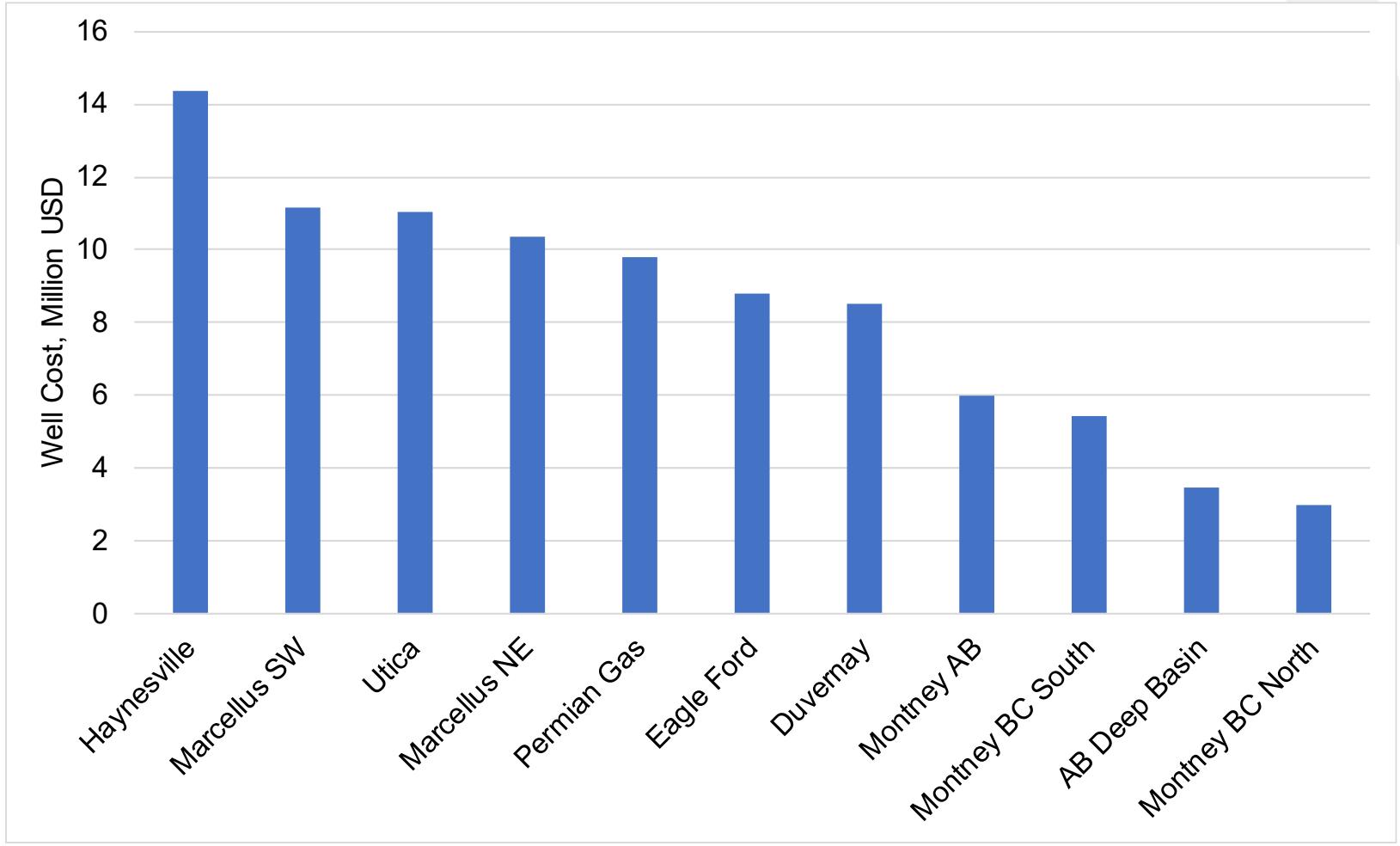
NATURAL GAS WELL COSTS BY BASIN / PLAY



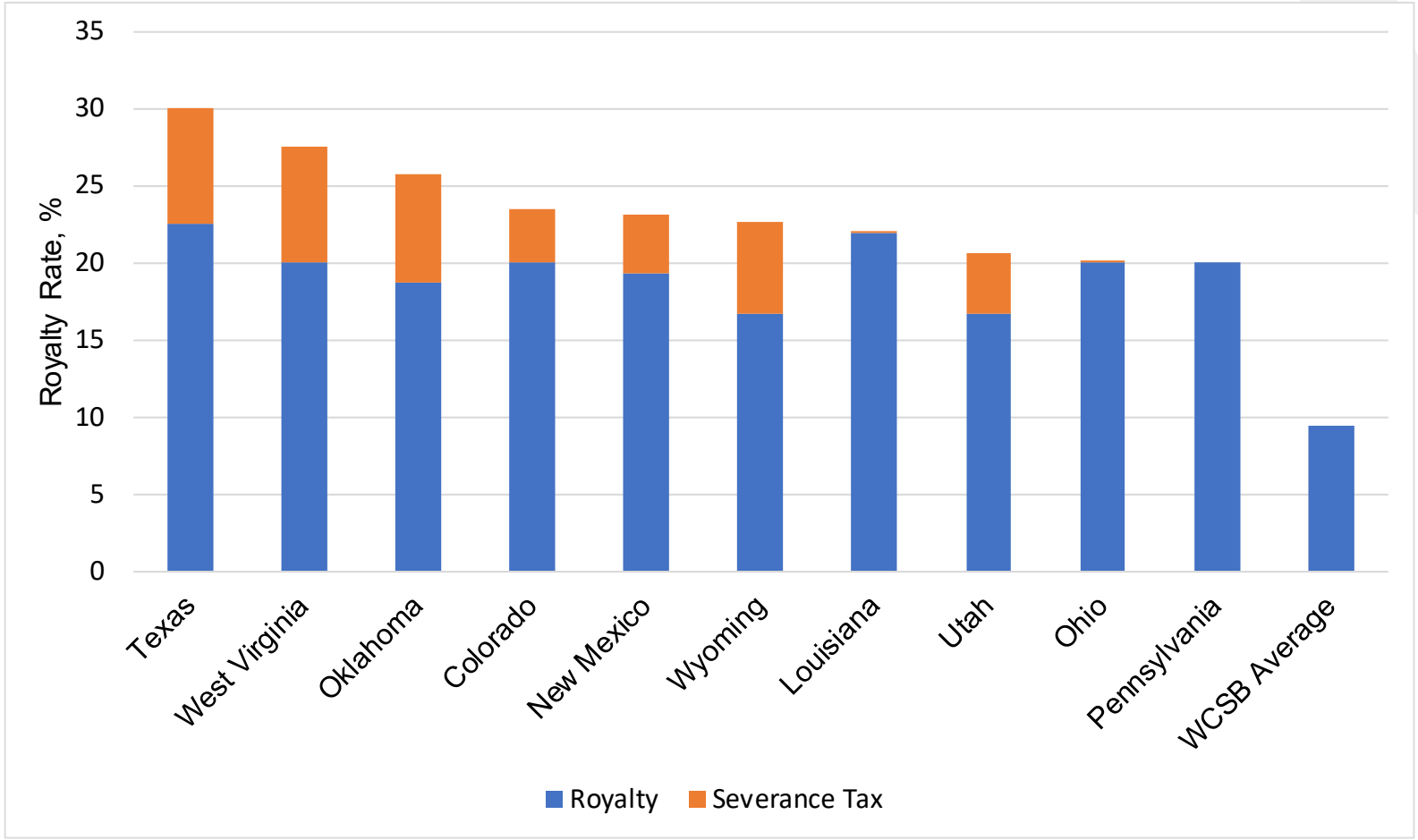
* Includes drilling, completion, and tie-in costs.

The chart shows the Cost per Well (Million USD) across different gas basins and plays for the period Q1 2022 through Q3 2024*. The well cost includes drilling and completion costs (fracking, casing, cementing, land, etc.), as well as cost of land.

Well cost is used to calculate Finding and Development (F&D) costs. In many cases, low well cost does not translate to lower F&D cost, as lower cost wells can also be less productive (i.e. Canadian conventional plays). At the same time, well costs in US Shale Gas plays can be more expensive because of depth, length of lateral and the significant number of frack stages, however these wells are typically more productive. Producers constantly seek to reduce well costs as it is one of the major factors contributing to full cycle costs.

- Haynesville has the highest well cost at over USD $14 million per well. However, new well IP is high which makes Haynesville gas economic.
- On average, Canadian well costs are lower than in US, partially due to the lower Canadian dollar.
- Well costs can vary significantly between different projects and operators. For example, Marcellus NE costs range from USD $5.3 million, as reported by Cheasepeake Energy, and $13.8 million as reported by Southwestern Energy. The difference can be attributed to the depth and the length of laterals in different areas.

US ROYALTY RATES AND SEVERANCE TAX (GAS) BY STATE



This chart shows royalty rates and severance taxes* across different U.S. states and western Canada (average), which include all the main gas producing basins. These rates are a component in the calculation of the full cycle cost for gas. The rates reflected are an average as each individual project can have different rates.

- Texas and West Virginia have the highest total taxation rates, both nearing 30%, with a significant contribution from severance tax.
- Oklahoma has a total tax rate of about 26%, with a relatively higher severance tax component than most states.
- Colorado, New Mexico, and Wyoming and Louisiana show combined royalty and severance tax rates of 22-23%.
- Ohio and Pennsylvania have the lowest total rates in the US of about 20% as they don't have severance taxes.
- Canadian royalties are calculated using more complex formulas than the US, which includes capital cost recovery mechanisms, gas prices, and various incentives. Canadian royalties are calculated based on producer's disclosure.

* Royalties are paid by oil and gas producers to mineral rights owners. Severance Tax is imposed on producers by individual states. In addition, there may be ad-valorem taxes imposed by local authorities. These are not included.

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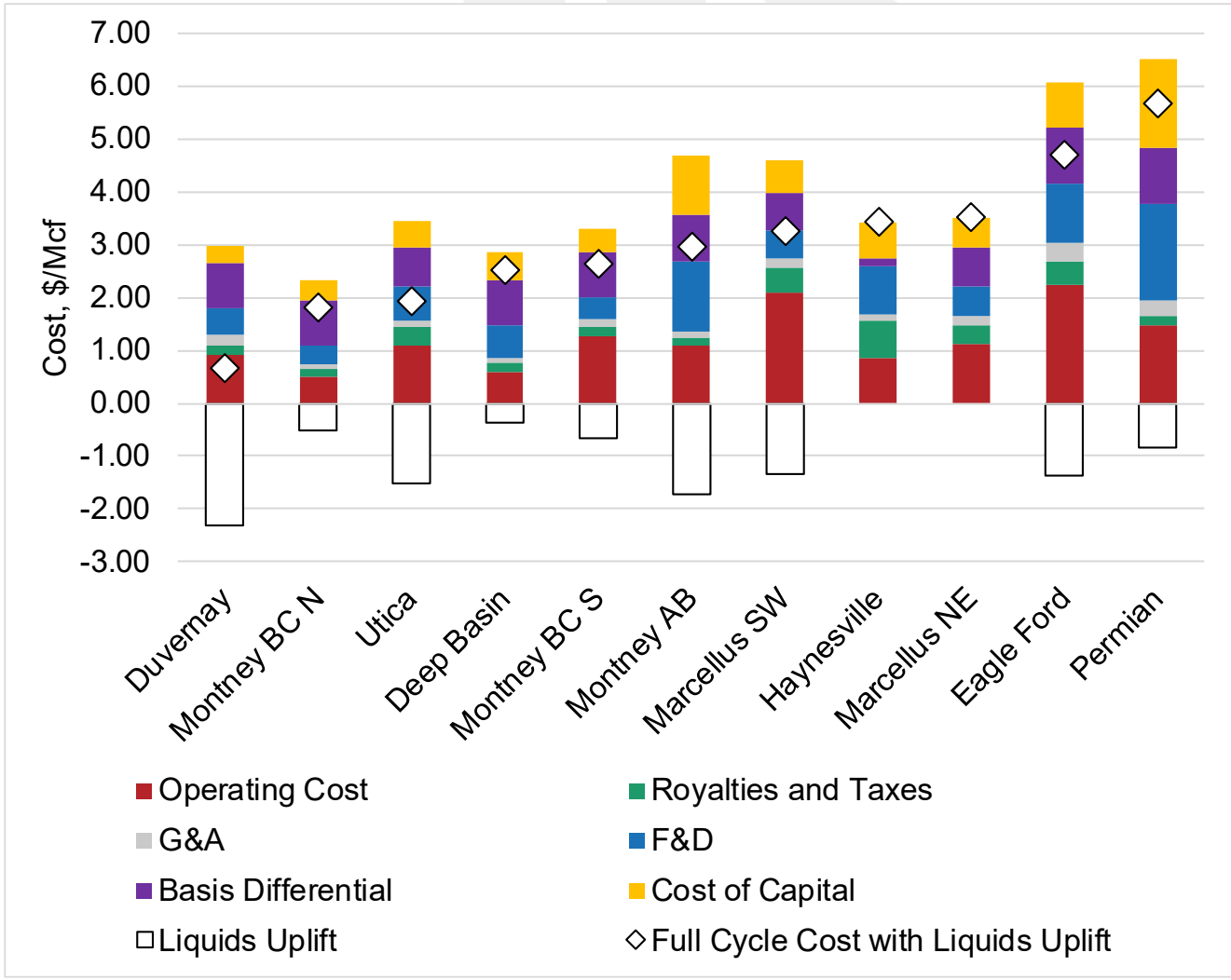
NORTH AMERICAN NATURAL GAS FULL CYCLE COST BREAKDOWN BASED ON AVERAGE WELL PRODUCTIVITY

The chart shows full cycle costs of North American natural gas by component(s) for wells drilled from Q1 2022 through Q3 2024. The chart includes all major producing basins in the US (Permian, Marcellus, Utica, Eagle Ford, Haynesville), as well as Canadian plays.

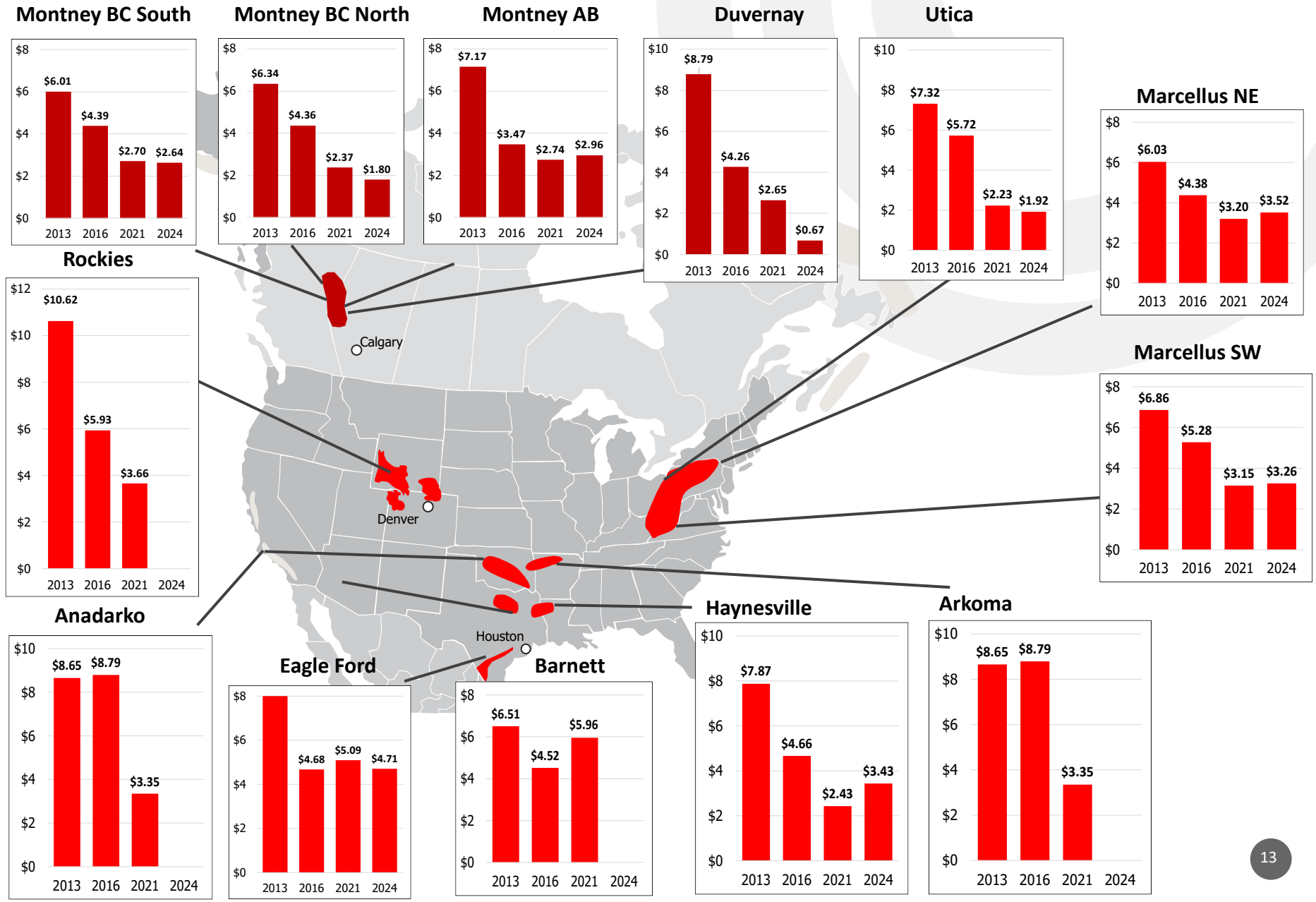
- Duvernay has the lowest fully cycle cost at just USD $0.67/Mcf due to having the highest liquids uplift at $2.31/Mcf. However, Duvernay does not have significant resources in liquid rich and superrich areas compared to other basins.
- Utica has the lowest full cycle cost in the US at $1.92/Mcf, again mainly attributable to liquids uplift of $1.53/Mcf.
- With exception of Utica, Canadian plays have lower full cycle cost versus US basins due to lower F&D and operating costs and, on average, lower royalties and taxes. The CAD/USD exchange rate also contributes.
- Although Haynesville and Marcellus NE wells are highly productive, these basins mainly produce dry gas, and therefore, they don't benefit from liquids uplift. Marcellus NE full cycle cost is $3.52/Mcf while Haynesville full cycle cost is $3.43/Mcf.
- Permian has highest full cycle cost at $5.66/Mcf due to less productive natural gas wells. Permian development is currently focused on oil wells that also produce associated gas.
- Other basins and plays such as Anadarko, Green River, and San Juan in the US and Canadian conventional gas, among others, currently have very limited drilling. Full cycle cost in these basins is higher than the major basins and plays.



Note: All costs are in USD/Mcf.

NATURAL GAS FULL CYCLE COST CHANGES (2024 US DOLLARS)

- The chart shows how full cycle cost of major North American basins and plays change over time. Incorrys analyzes full cycle cost for more than 12 years using the same methodologies. The results for 2013, 2016 and 2021 are adjusted for inflation so the data is compatible for all years.
- Some basins such as Rockies Anadarko, Barnett, and Arkoma do not have data for 2024 since these is no significant drilling in these basins. Permian does have historical data before 2024.
- In general, full cycle cost decline over time mainly driven by technological improvements. In certain cases, particularly in Marcellus and Haynesville, full cycle cost increased slightly due to the maturity of the basins.
- The largest decline of full cycle cost is in Duvernay where operators focus of liquids rich sweet spots that provide significant liquids uplift.



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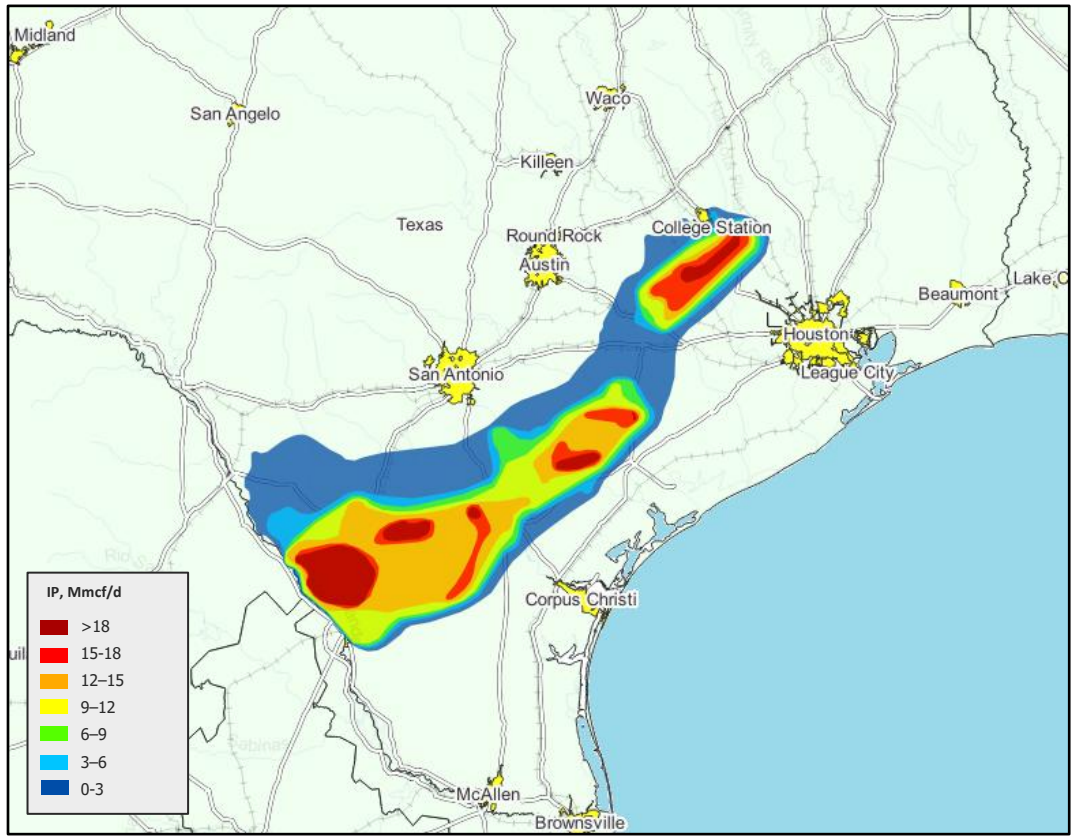
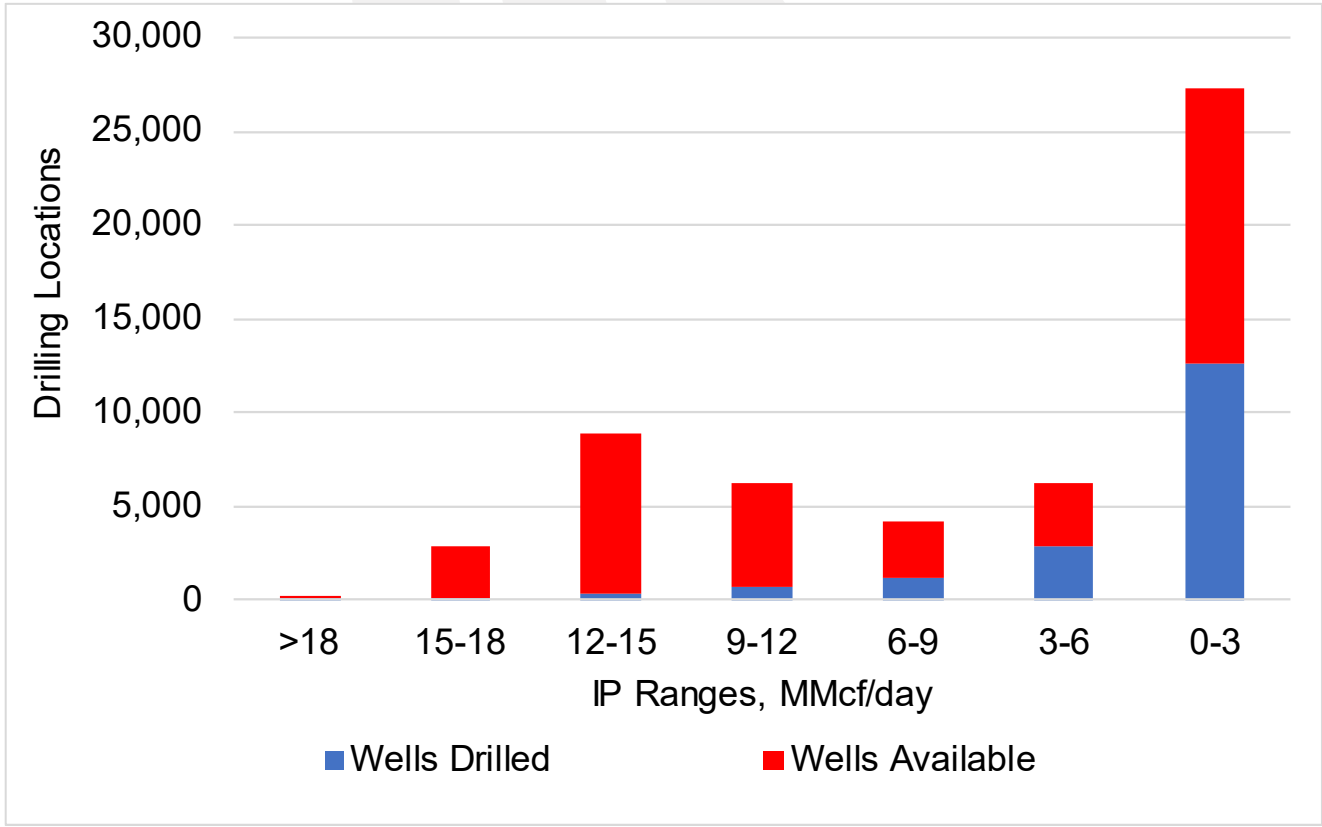
EAGLE FORD GAS INITIAL PRODUCTIVITY (IP) MAP

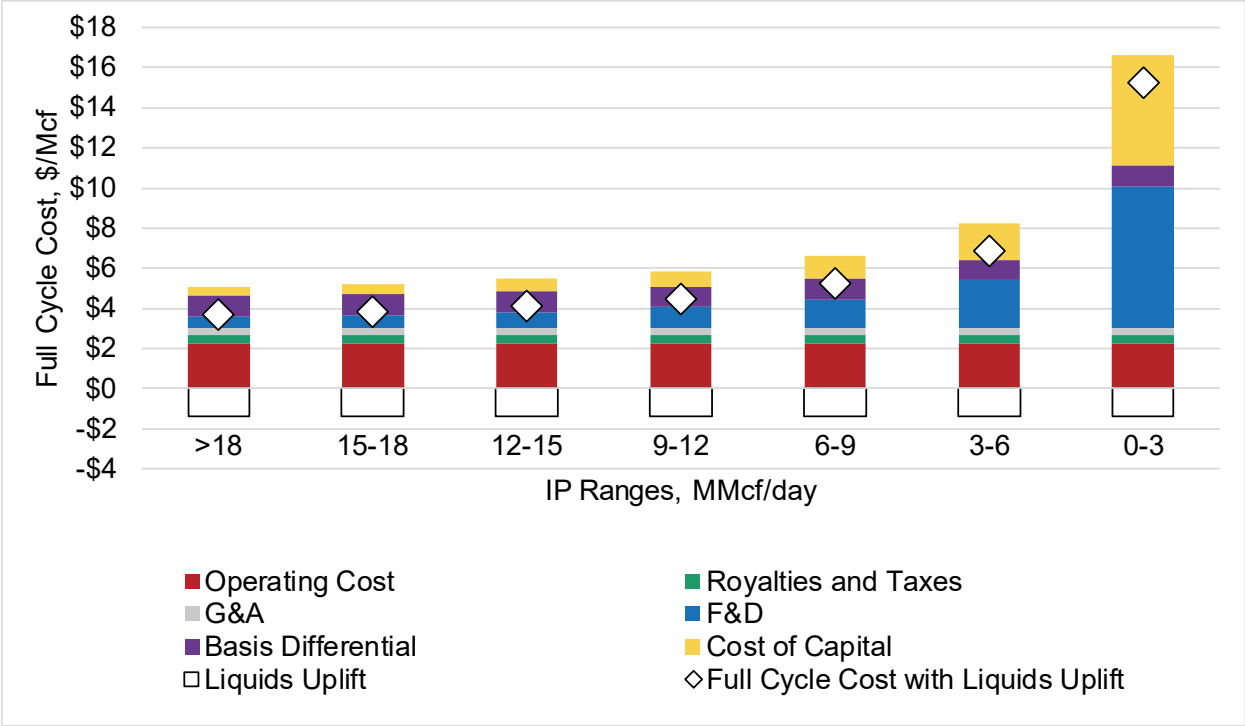


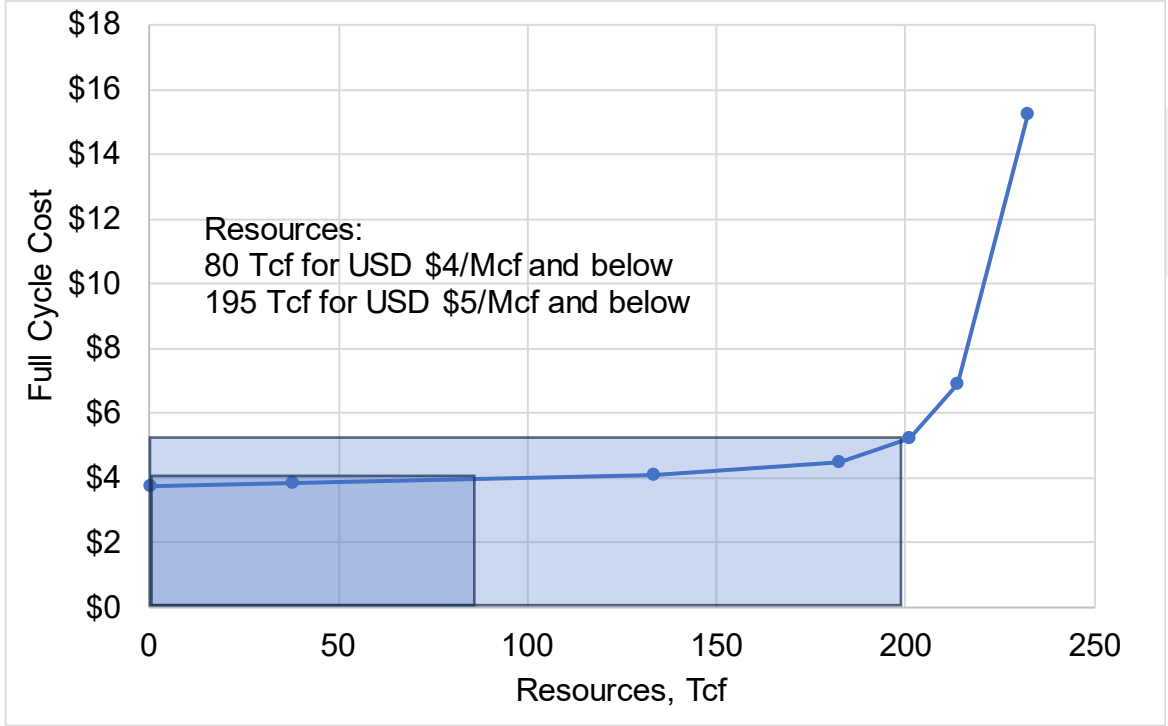


Eagle Ford is located in Texas. Eagle Ford has oil, condensate and natural gas areas. Currently, drilling is conducted towards oil and liquids rich gas although drilling is expected to shift toward areas with smaller liquids yield during the forecast period as liquids rich sweet spots are drilled out.

Incorrys estimates that Eagle Ford has over 23,000 remaining drilling locations with initial productivity above 3 MMcf/d and 15,000 drilling locations with initial productivity below 3 MMcf/d. Over 12,000 wells were drilled in the condensate portion of the basin, with lower natural gas initial productivity, but are classified as natural gas wells.

EAGLE FORD FULL CYCLE GAS NATURAL COST

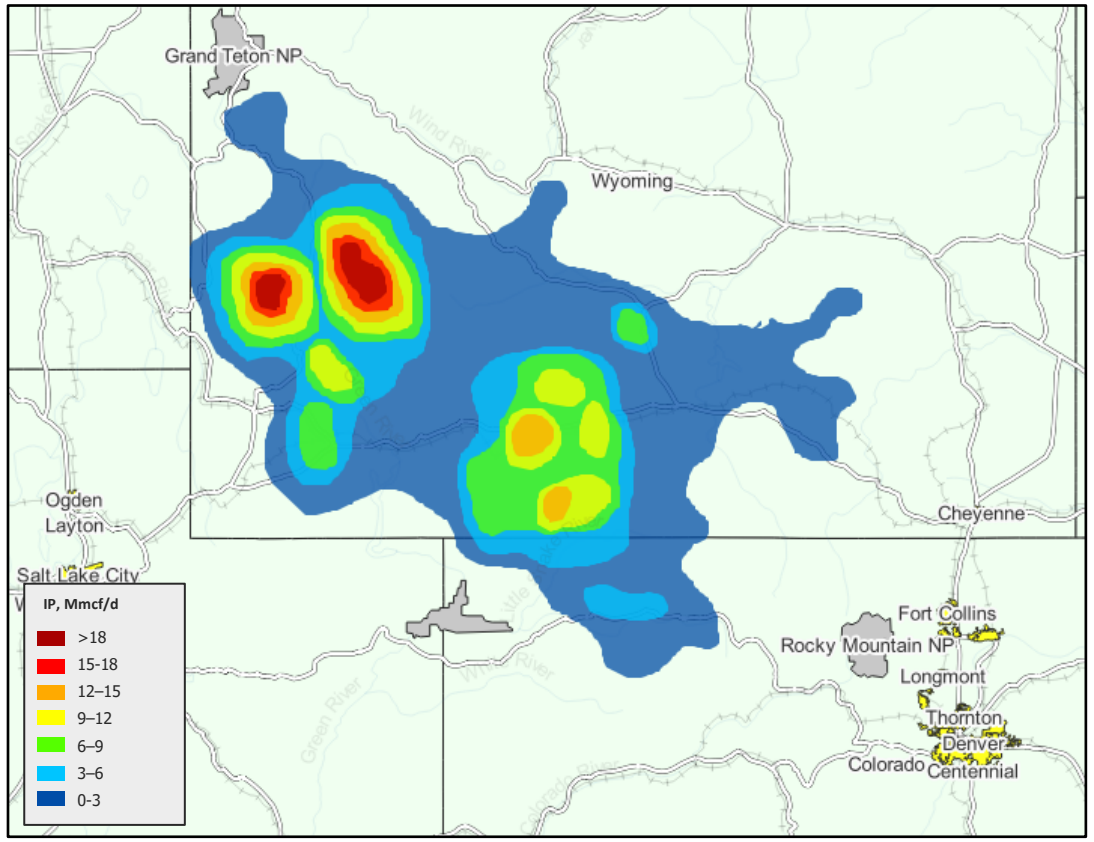


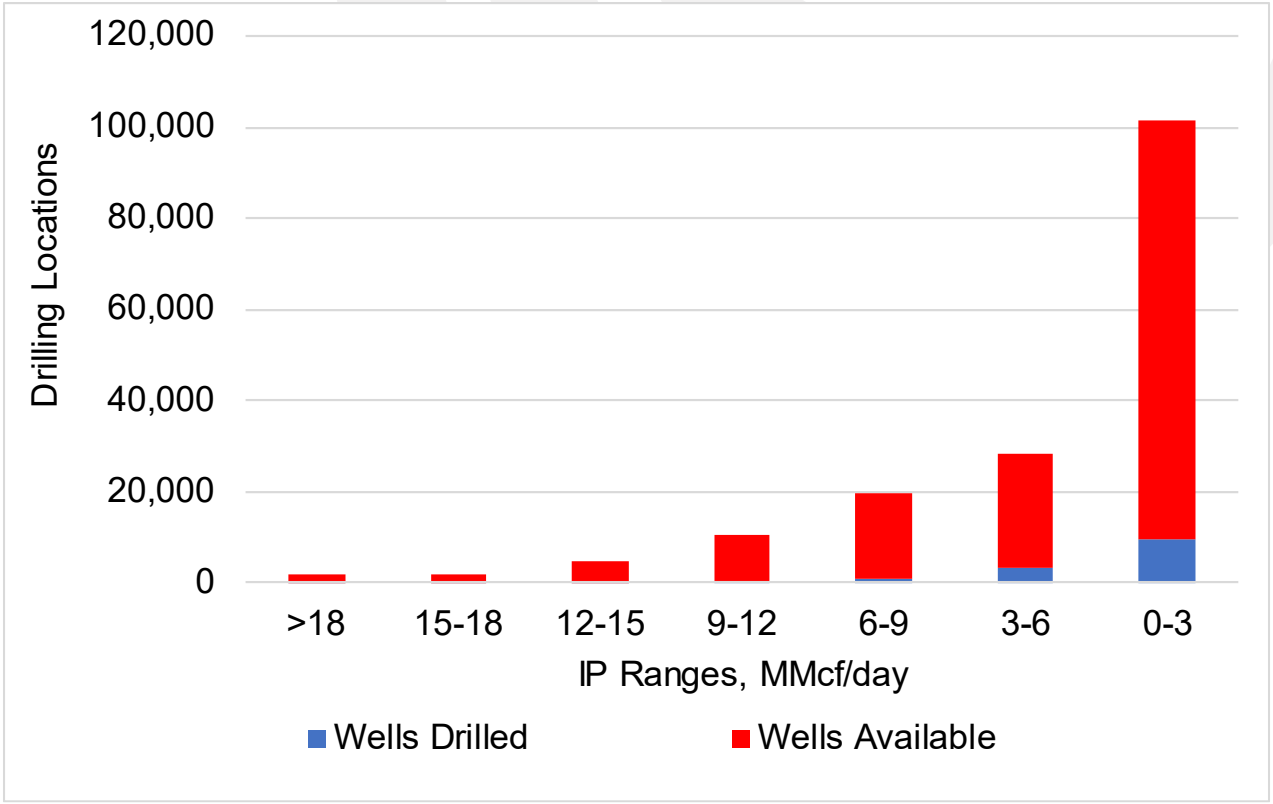


Eagle Ford natural gas full cycle costs at Henry Hub (HH) equivalent range from a low of USD $5.10/Mcf for wells with an Initial Productivity (IP) greater than 18 MMcf/d to a high of USD $16.62/Mcf for wells with an IP of under 3 MMcf/d without taking into account liquids uplift. Average Operating costs are USD $2.23/Mcf while royalties & taxes and overhead are USD $0.81/Mcf. Eagle Ford liquids uplift is USD $1.38/Mcf. F&D costs range from USD $0.57-$7.04/Mcf and the 15% producer return ranges from USD $0.45-$5.49/Mcf. The assumed HH differential is USD $ 1.04/Mcf.

Incorrys analysis shows 80 Tcf of gas resource available below USD $4/Mcf and 195 Tcf available below USD $5/Mcf. Current production (2023) was almost 4.7 Bcf/d (1.7 Tcf/yr).

GREEN RIVER GAS INITIAL PRODUCTIVITY (IP) MAP

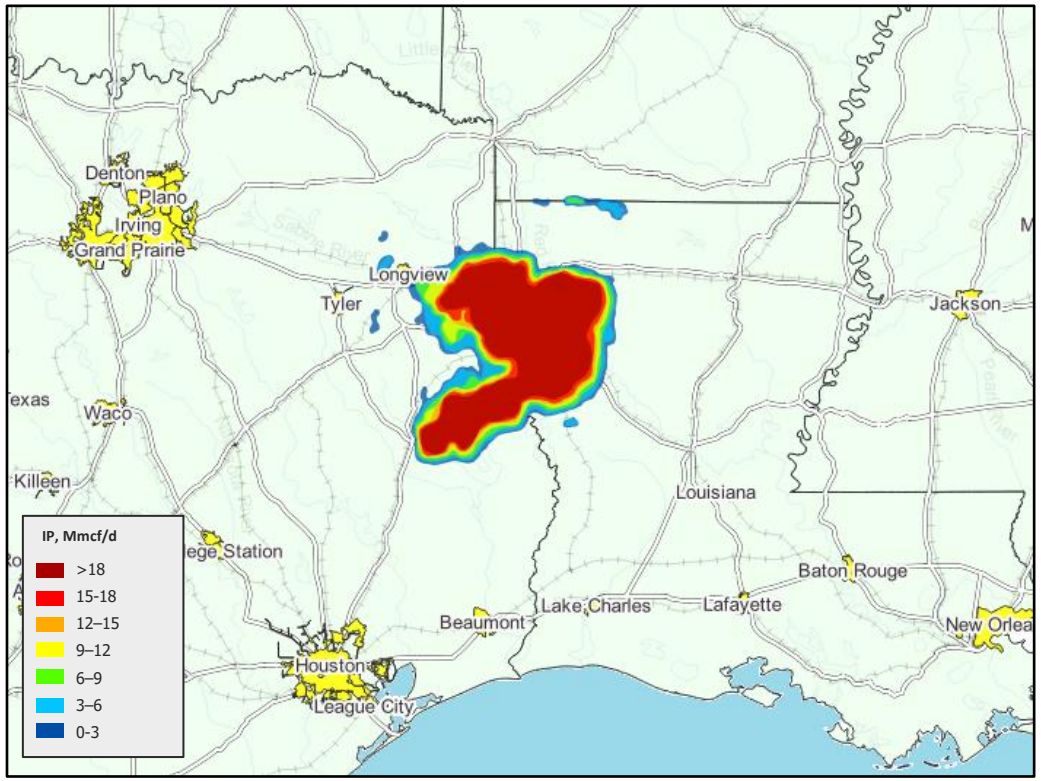


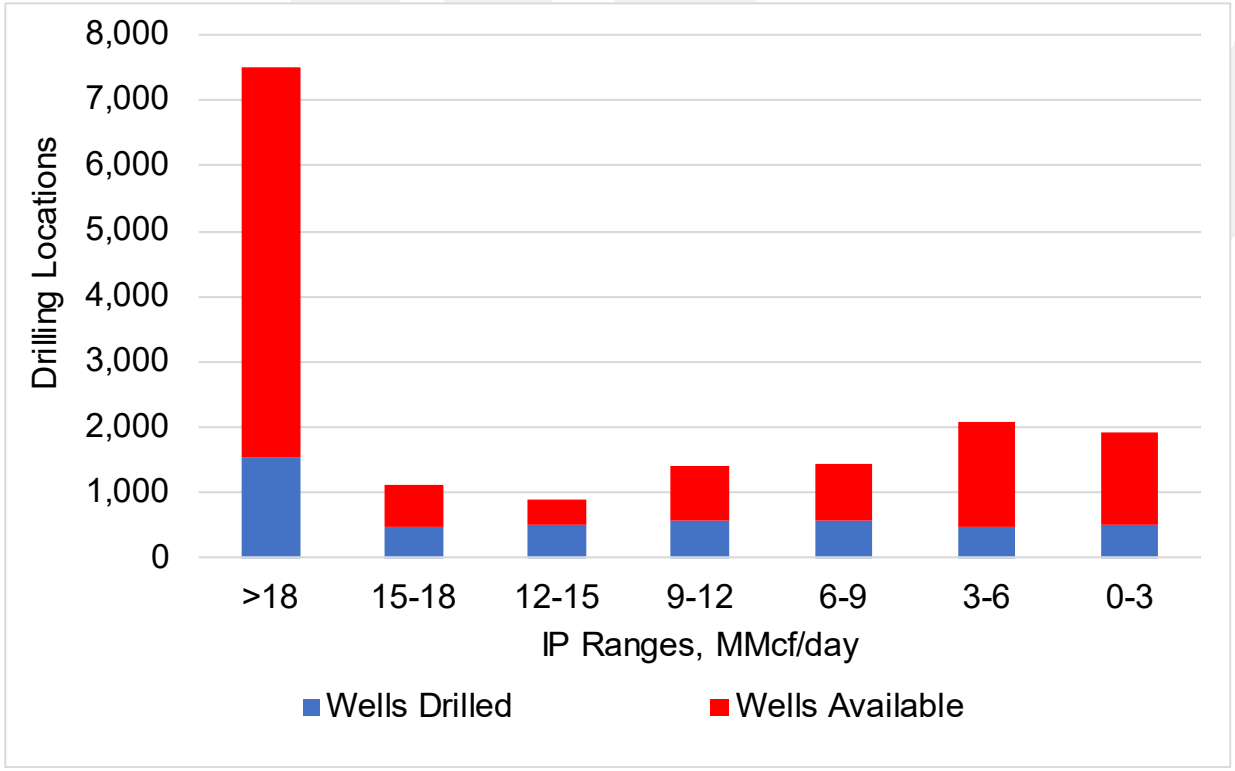


Green River is primarily located in Wyoming extending into northern Colorado. Green River producing formations include Lance, Mesaverde Group, and others.

Incorrys estimates that Green River has almost 63,000 remaining drilling locations with initial productivity above 3 MMcf/d and just over 92,000 remaining drilling locations with initial productivity below 3 MMcf/d. Drilling cost data over the period Q1 2022 through to Q3 2024 is insufficient to perform a detailed analysis of full cycle costs. Incorrys estimates that average full cycle cost of gas in Green River is higher than other basins as sweet spots have become mature. Green River drilling is expected to decline until 2036.

HAYNESVILLE GAS INITIAL PRODUCTIVITY (IP) MAP

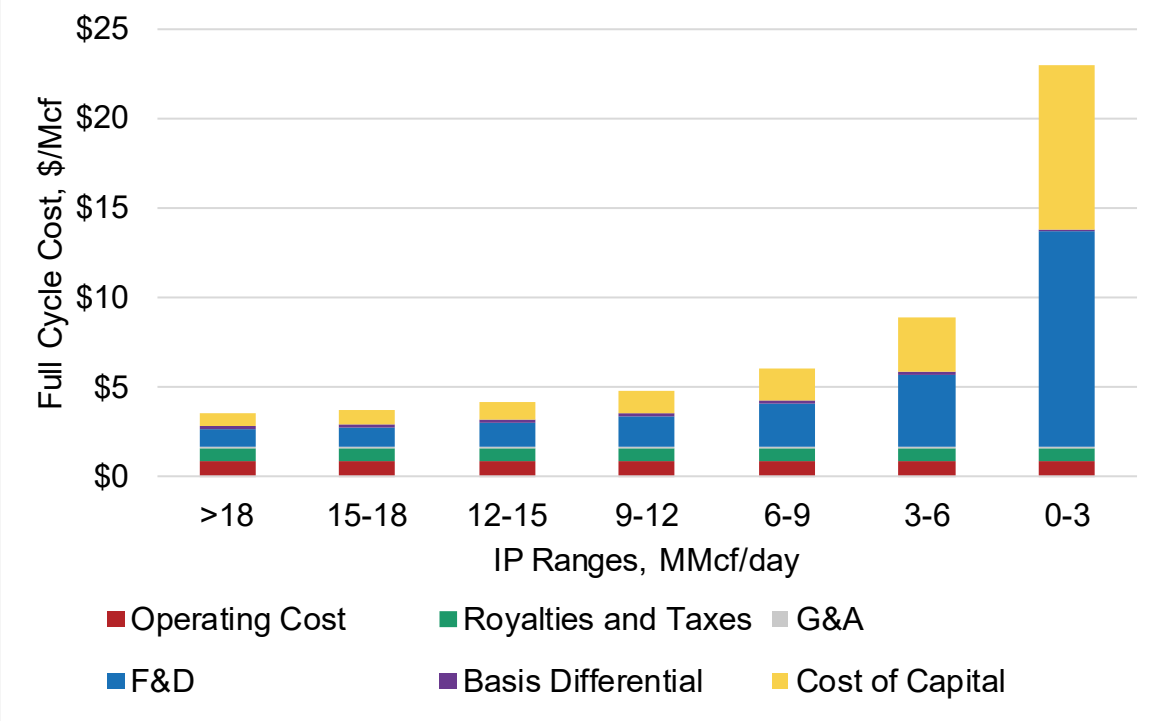


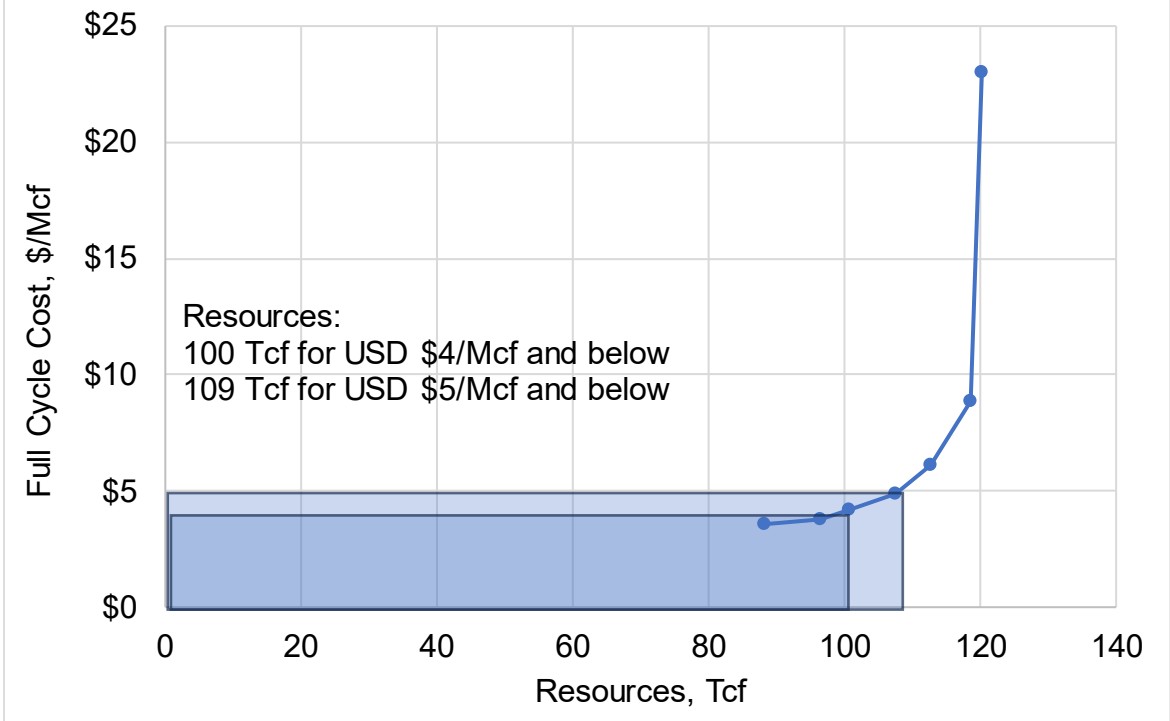


Hayesville is located in East Texas and North Louisiana. Haynesville produces dry gas with very high initial productivity. Its proximity to LNG liquefaction plants located on the Gulf Coast makes it one of primary sources of gas for US LNG exports (together with Permian Associated gas).

Incorrys estimates that Haynesville has over 10,000 remaining drilling locations with initial productivity above 3 MMcf/d and just over 1,400 remaining drilling locations with initial productivity below 3 MMcf/d.

HAYNESVILLE FULL CYCLE NATURAL GAS COST

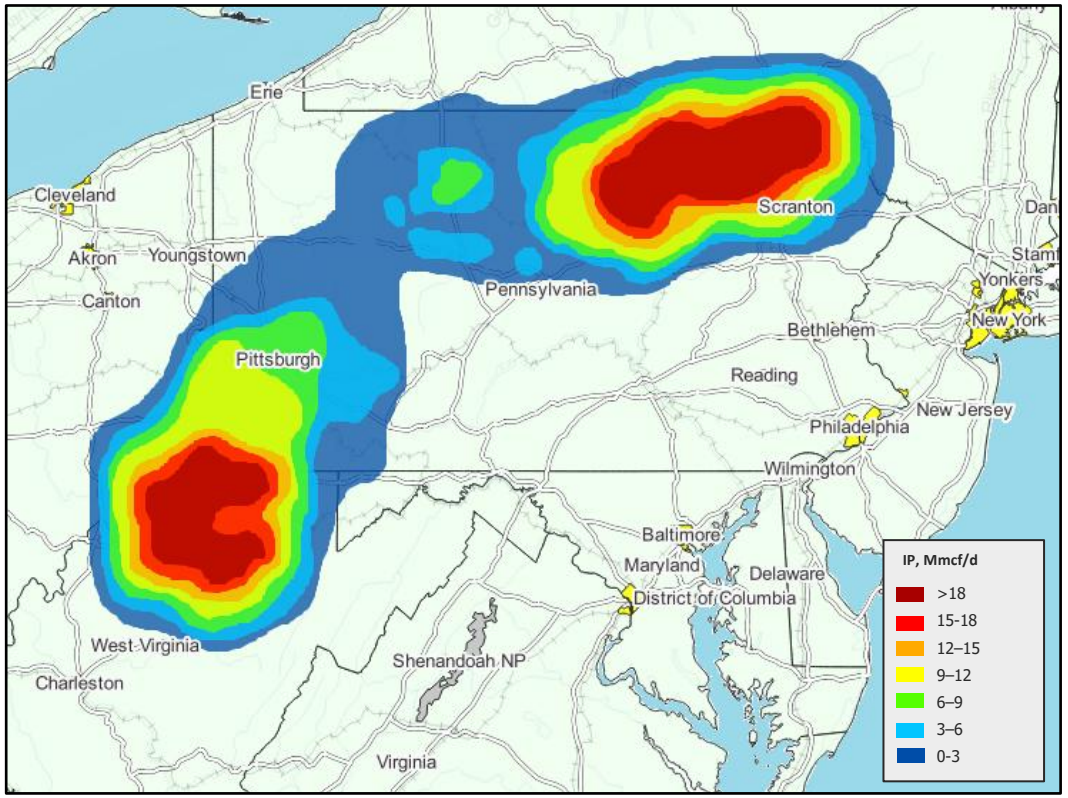




Haynesville natural gas full cycle costs at Henry Hub (HH) equivalent range from a low of USD $3.55/Mcf for wells with an Initial Productivity (IP) greater than 18 MMcf/d to a high of USD $22.95/Mcf for wells with an IP of under 3 MMcf/d. Haynesville produce dry gas: no liquids uplift. Average Operating costs are USD $0.86/Mcf while royalties & taxes and overhead are USD $0.83/Mcf. F&D costs range from USD $0.97 to $12.00/Mcf and the 15% producer return ranges from USD $0.74-$9.12/Mcf. The assumed HH differential is USD $ 0.15/Mcf. Haynesville produces dry gas and therefore has no liquids uplift.

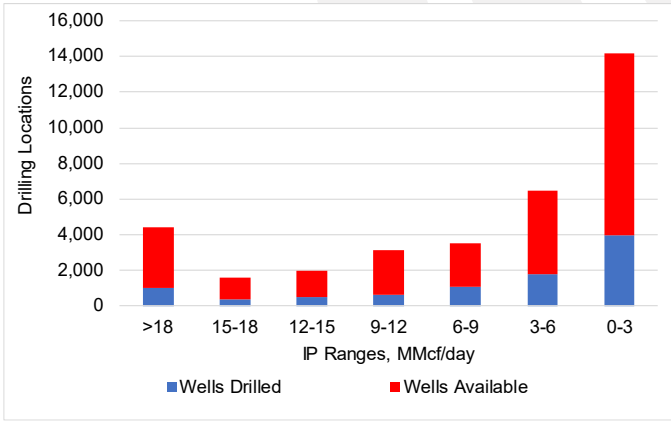
Incorrys analysis shows 100 Tcf of gas resource available below USD $4/Mcf and 109 Tcf available below USD $5/Mcf. Current production (2023) was over 17 Bcf/d (6.3 Tcf/yr).

MARCELLUS GAS INITIAL PRODUCTIVITY (IP) MAP



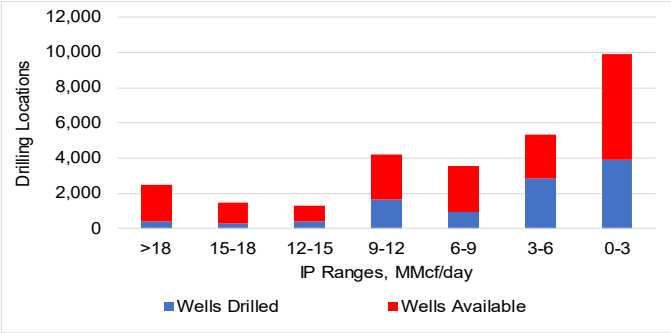
There are two primary production areas: Marcellus Pennsylvania Southwest and West Virginia (Marcellus SW) and Marcellus Pennsylvania Northeast (Marcellus NE).

Marcellus Northeast



- Marcellus NE produces mainly lean, dry gas and is located primarily in Pennsylvania and West Virginia.
- Marcellus NE has higher new well initial productivity (IP) than Marcellus SW.

Marcellus Southwest



- Marcellus SW produces liquids rich gas and includes a small 'super' rich area with liquids yield over 200 Bbl/MMcf.

Incorrys estimates that total Marcellus has over 27,500 remaining drilling locations with initial productivity above 3 MMcf/d and just over 16,000 remaining drilling locations with initial productivity below 3 MMcf/d.

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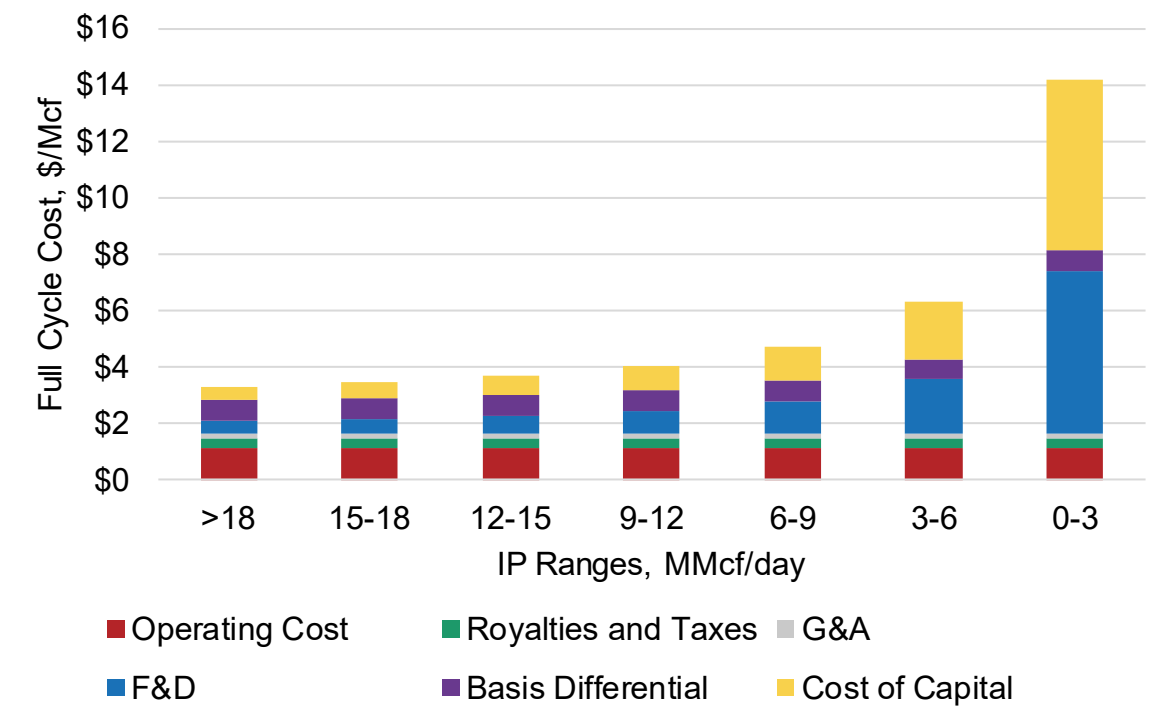
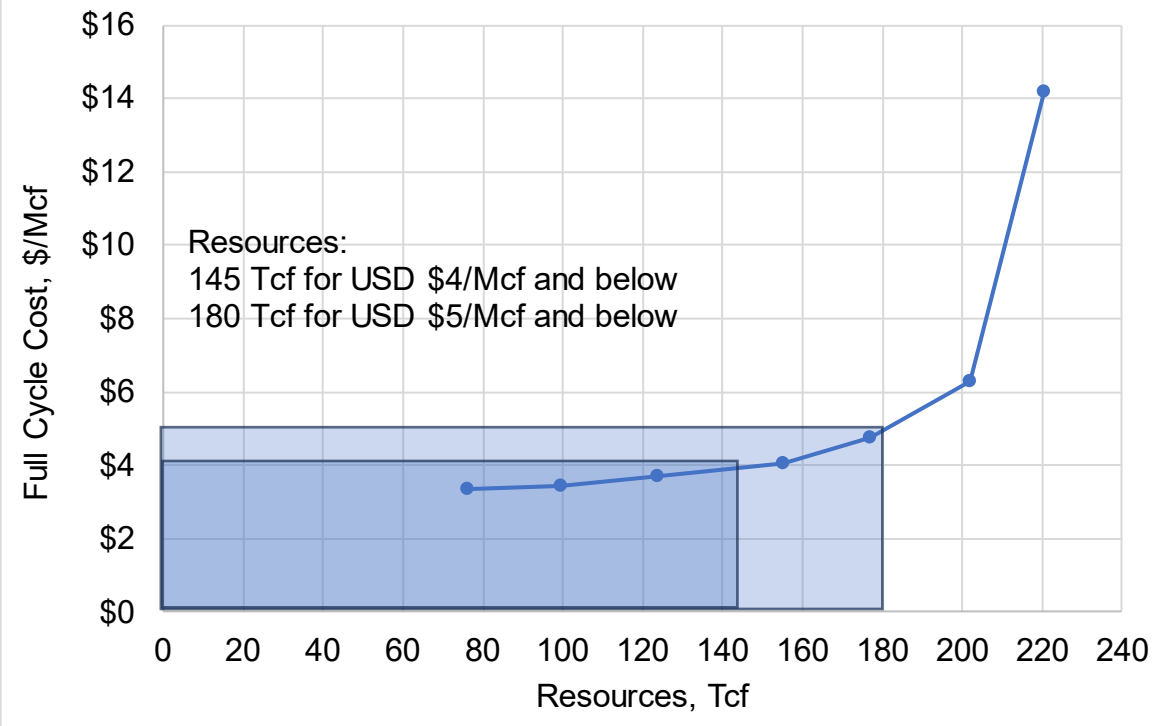
MARCELLUS NE FULL CYCLE NATURAL GAS COST





Marcellus Northeast natural gas full cycle costs at Henry Hub (HH) equivalent range from a low of USD $3.33/Mcf for wells with an Initial Productivity (IP) greater than 18 MMcf/d to a high of USD $14.19/Mcf for wells with an IP of under 3 MMcf/d. Marcellus NE produces mostly dry gas: liquids uplift is assumed to be zero. Average Operating costs are USD $1.13/Mcf while royalties & taxes and overhead are USD $0.52/Mcf. F&D costs range from USD $0.47 to $5.77/Mcf and the 15% producer return ranges from USD $0.49 to $6.04/Mcf. The assumed HH differential is USD $ 0.73/Mcf.

Incorrys analysis shows 145 Tcf of gas resource available below USD $4/Mcf and 180 Tcf available below USD $5/Mcf. Current production (2023) was almost 11 Bcf/d (4.0 Tcf/yr).

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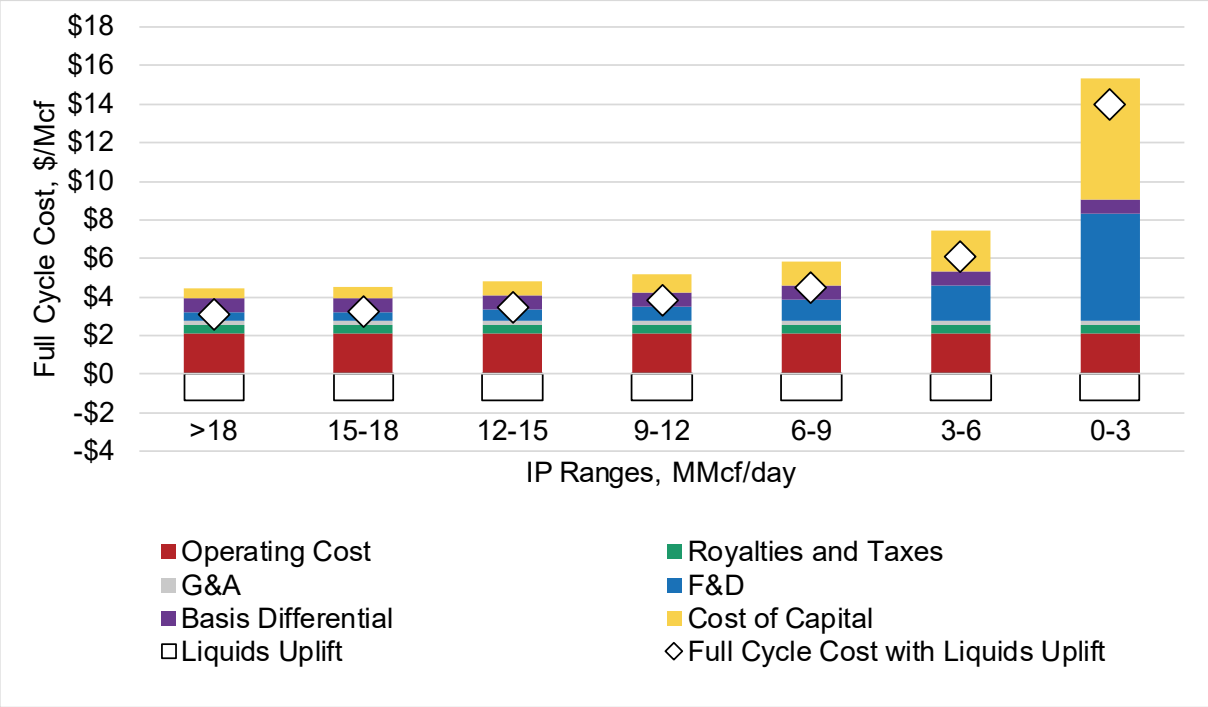
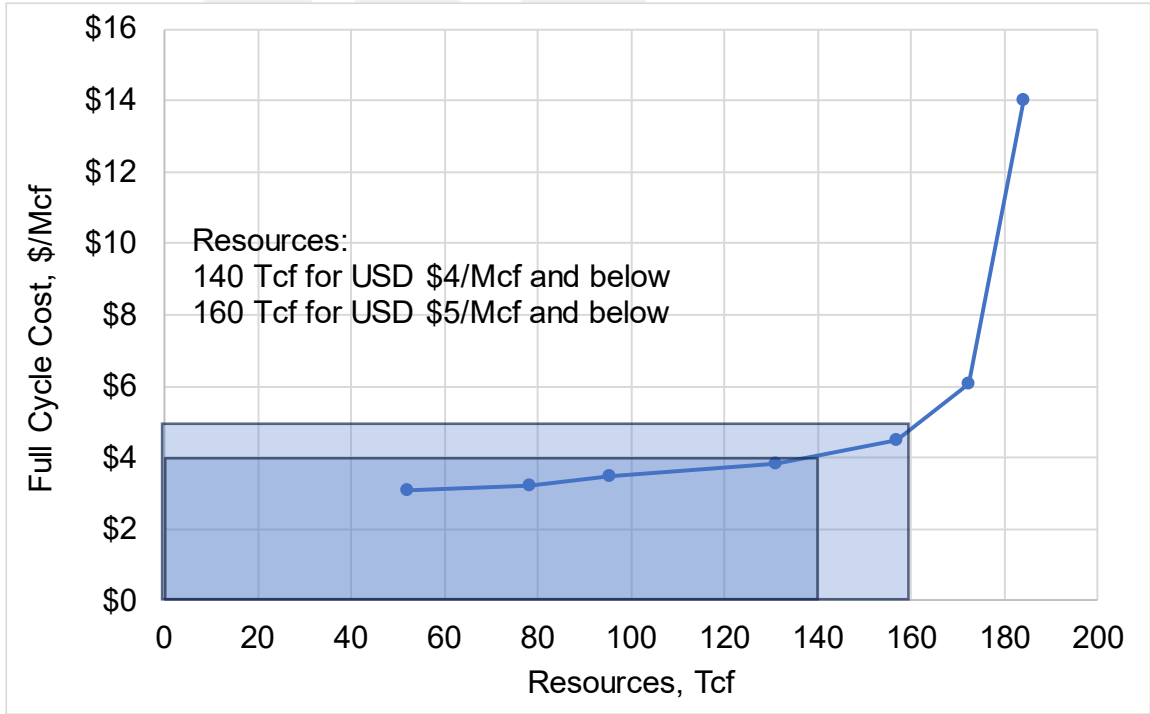
MARCELLUS SW FULL CYCLE NATURAL GAS COST





Marcellus SW natural gas full cycle costs at Henry Hub (HH) equivalent range from a low of USD $4.43/Mcf for wells with an Initial Productivity (IP) greater than 18 MMcf/d to a high of USD $15.33/Mcf for wells with an IP of under 3 MMcf/d without taking into account liquids uplift. Average Operating costs are USD $2.09/Mcf while royalties & taxes and overhead are USD $0.65/Mcf. F&D costs range from USD $0.45 to $5.56/Mcf and the 15% producer return ranges from USD $0.51 to $6.31/Mcf. The assumed HH differential is USD $ 0.73/Mcf.

Incorrys analysis shows 140 Tcf of gas resource available below USD $4/Mcf and 160 Tcf available below USD $5/Mcf. Current production (2023) was almost 16.2 Bcf/d (5.9 Tcf/yr).

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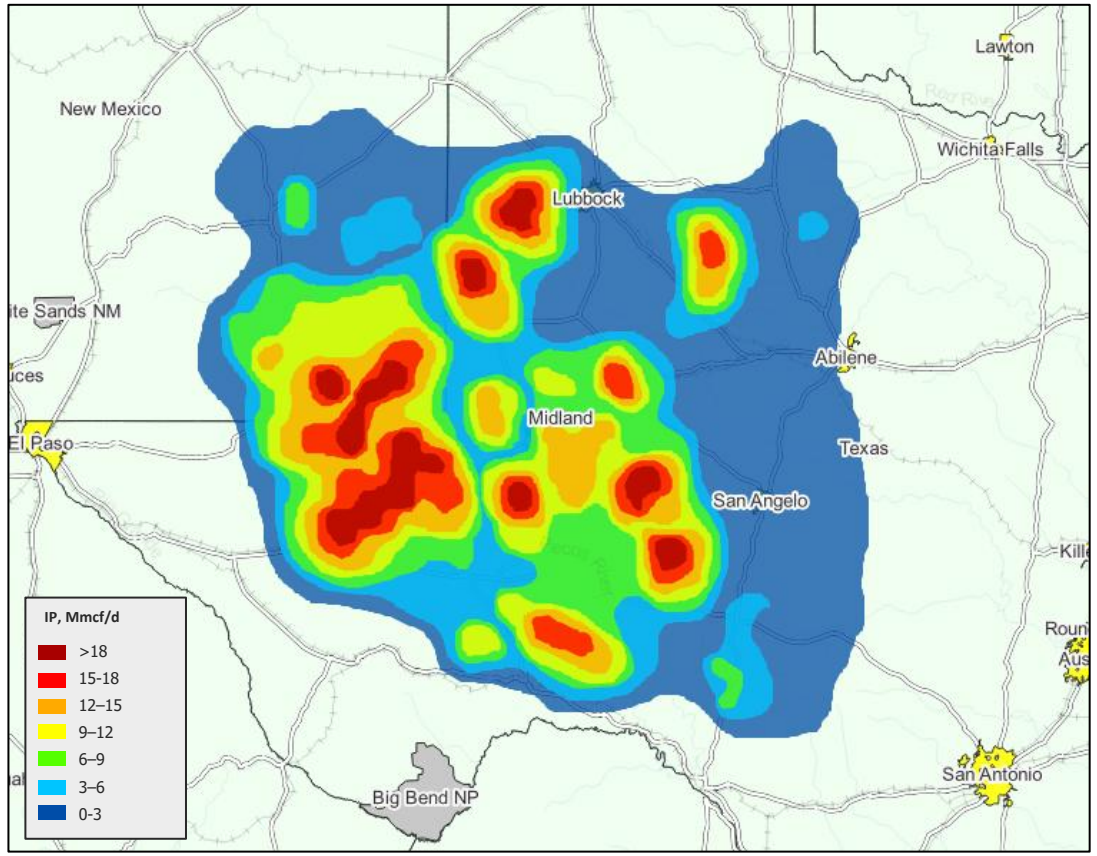
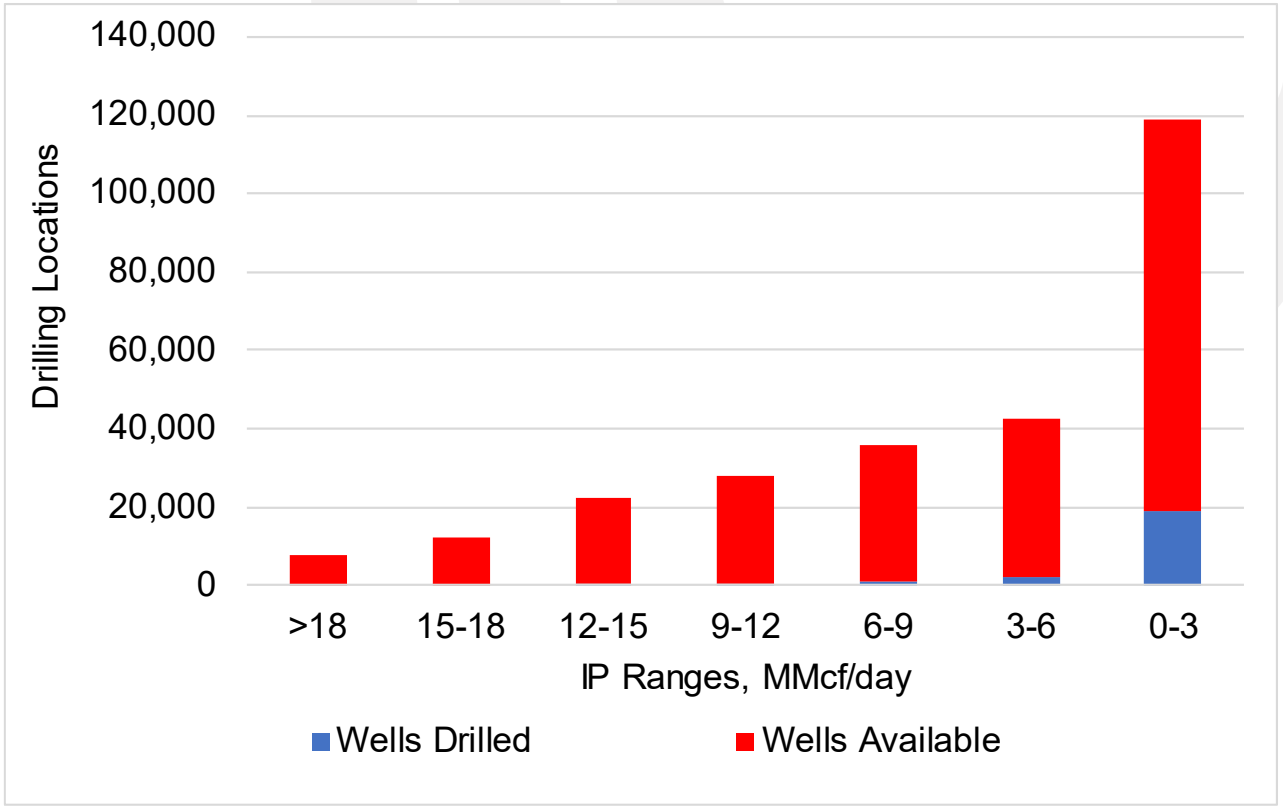
PERMIAN GAS INITIAL PRODUCTIVITY (IP) MAP





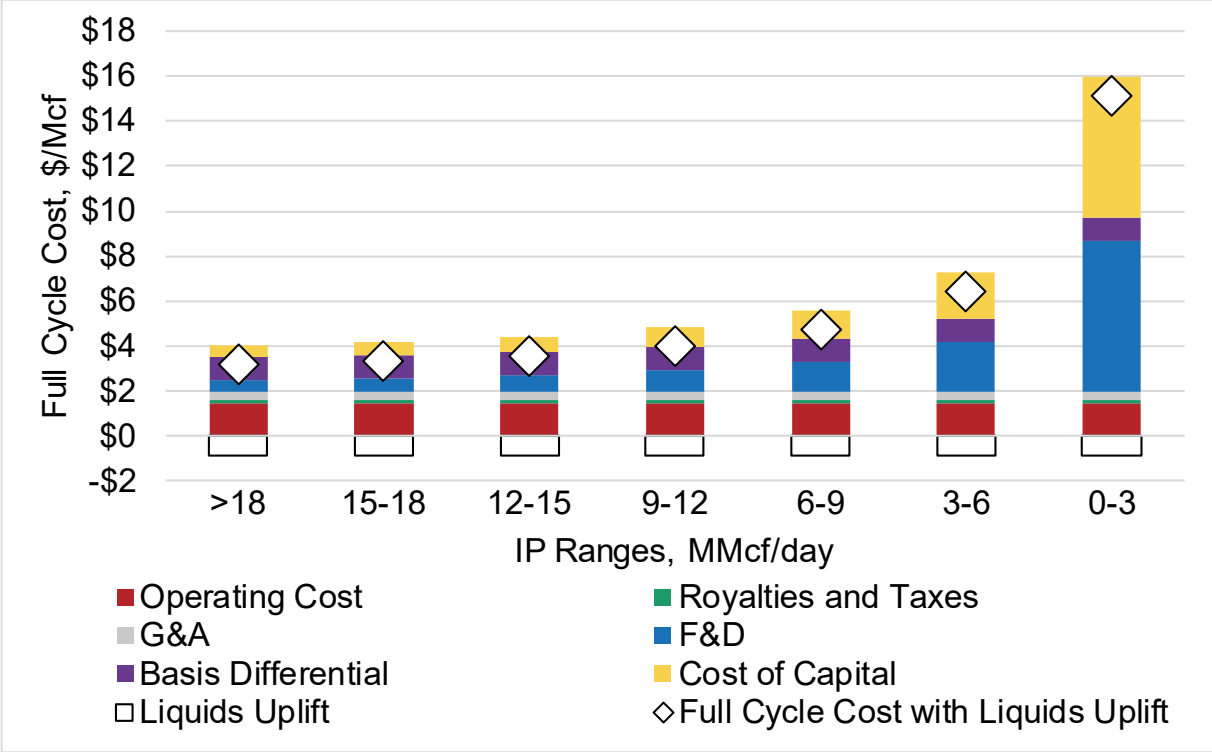
The Permian Basin is located in west Texas and southeast New Mexico. Currently, development in the Permian Basin is focused mostly on oil. Permian associated gas competes with Permian gas-focused activity for available pipeline takeaway capacity.

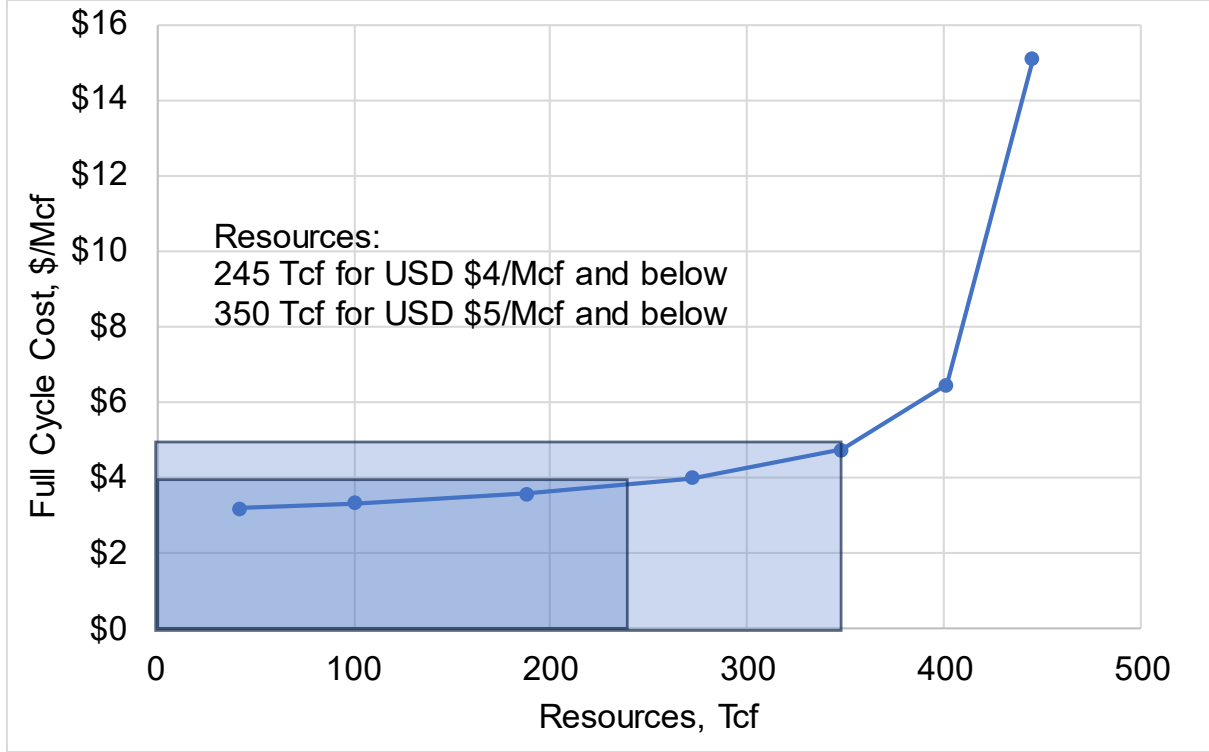
However, Permian has significant natural gas resources. Gas production in Permian is expected to grow after 2035 when Permian gas-focused production will become economical compared with other basins, and as oil focused activity tapers off.

Incorrys estimates that the Permian has over 43,500 remaining gas drilling locations with initial productivity above 3 MMcf/d and over 30,000 remaining drilling locations with initial productivity below 3 MMcf/d.

* Only gas focused drilling. Oil wells with associated gas production are not included.

PERMIAN FULL CYCLE NATURAL GAS COST





Permian natural gas full cycle costs at Henry Hub (HH) equivalent range from a low of USD $4.04/Mcf for wells with an Initial Productivity (IP) greater than 18 MMcf/d to a high of USD $15.94/Mcf for wells with an IP of under 3 MMcf/d without taking into account liquids uplift. Average Operating costs are USD $1.46/Mcf while royalties & taxes and overhead are USD $0.49/Mcf. F&D costs range from USD $0.55-$6.74/Mcf and the 15% producer return ranges from USD $0.50-$6.21/Mcf. The assumed HH differential is USD $ 1.04/Mcf.

Incorrys analysis shows 245 Tcf of gas resource available below USD $4/Mcf and 350 Tcf available below USD $5/Mcf. Current production (2023) was almost 3.99 Bcf/d (1.5 Tcf/yr).

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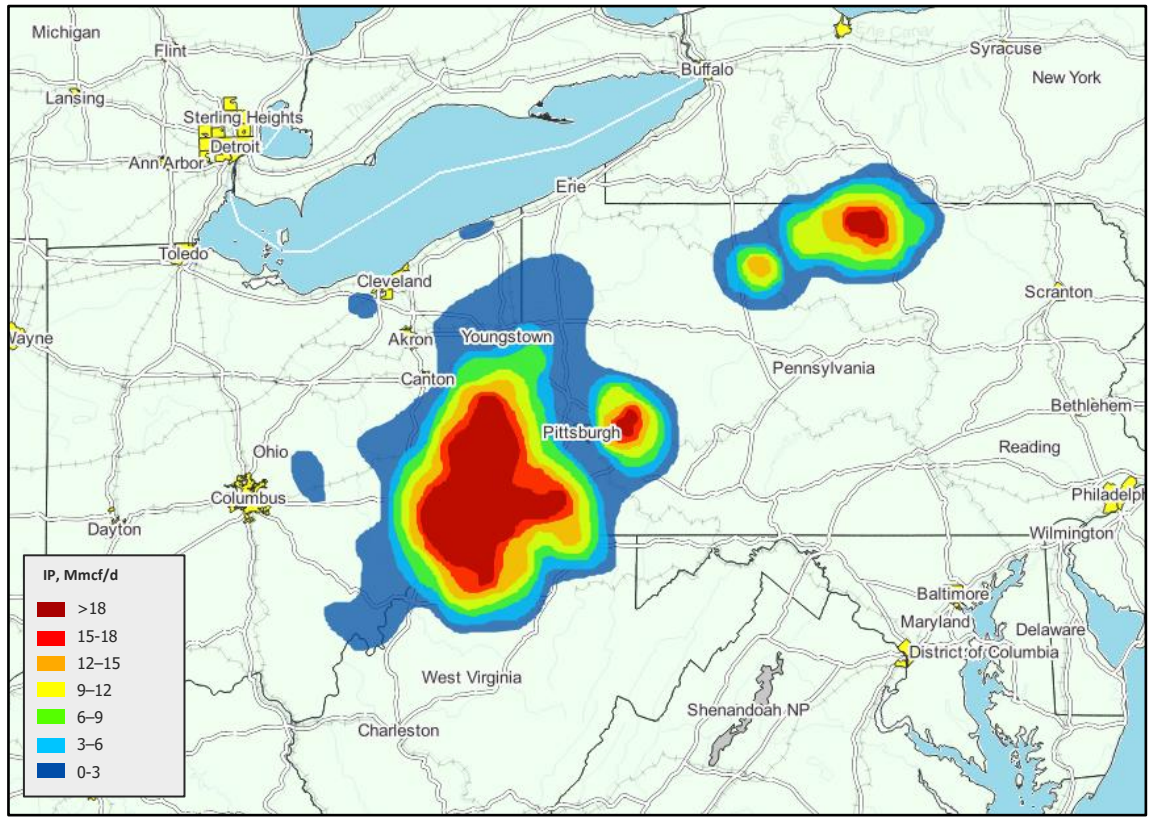
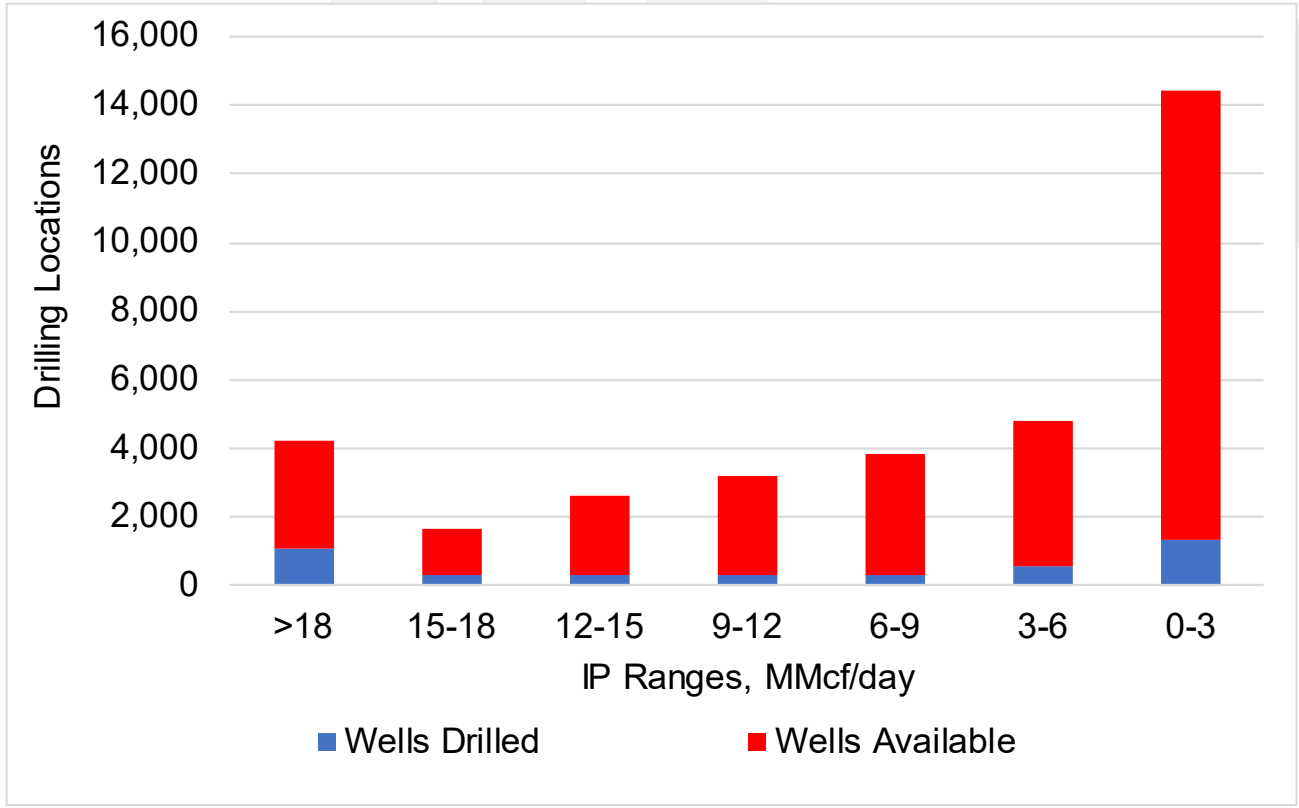
UTICA GAS INITIAL PRODUCTIVITY (IP) MAP





Utica Shale is located primarily in East Ohio, but drilling is also conducted in Southwest and Northeast Pennsylvania. The Utica shale partially overlaps the Marcellus Shale. Utica produces liquids rich gas although the liquids yield varies between different areas.

Incorrys estimates that the Utica has over 17,500 remaining drilling locations with initial productivity above 3 MMcf/d and over 13,000 remaining drilling locations with initial productivity below 3 MMcf/d.

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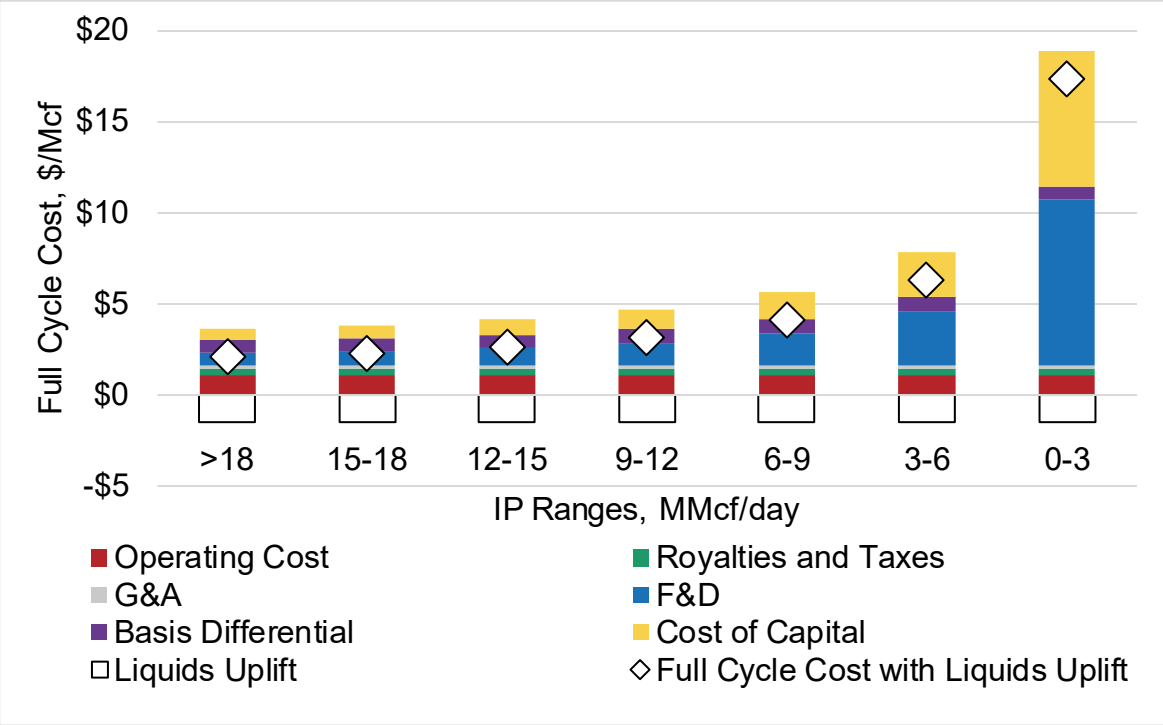
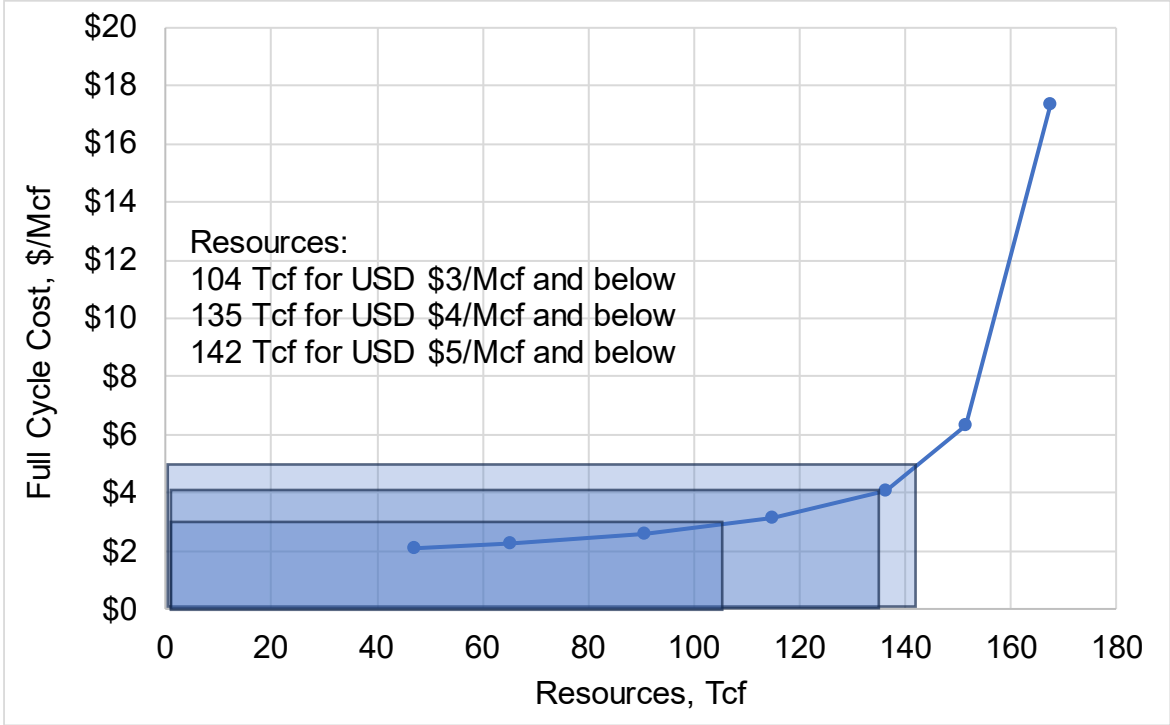
UTICA FULL CYCLE NATURAL GAS COST

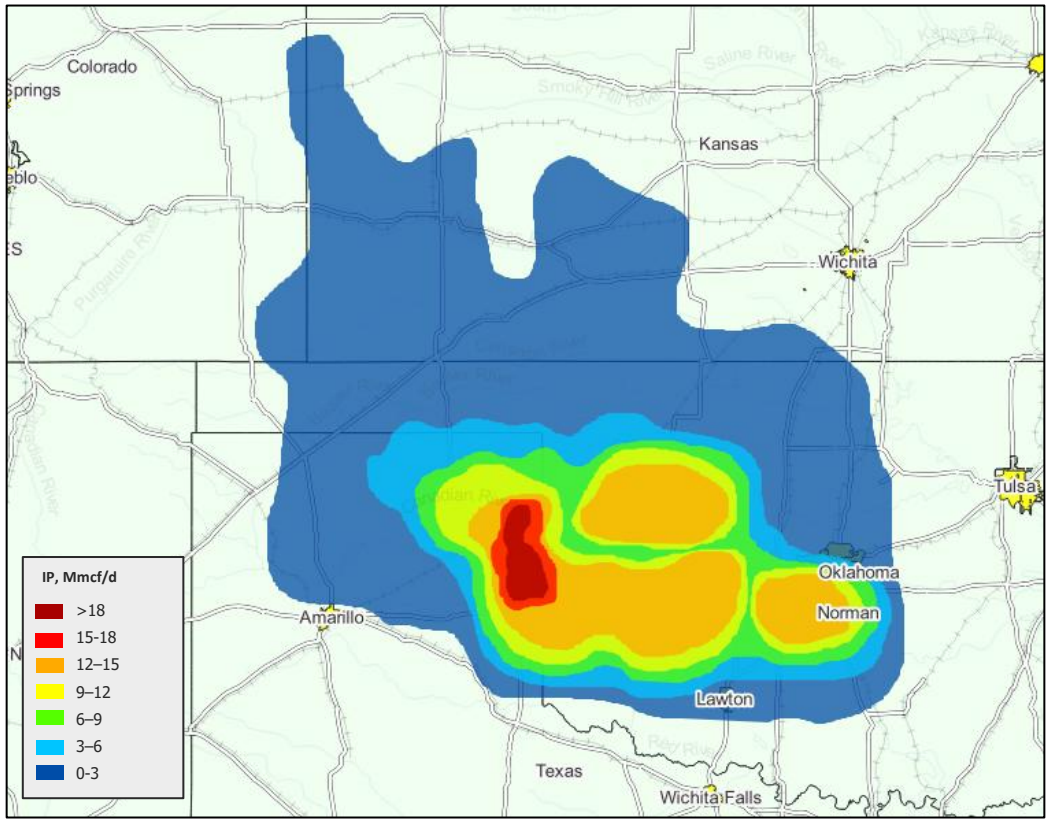


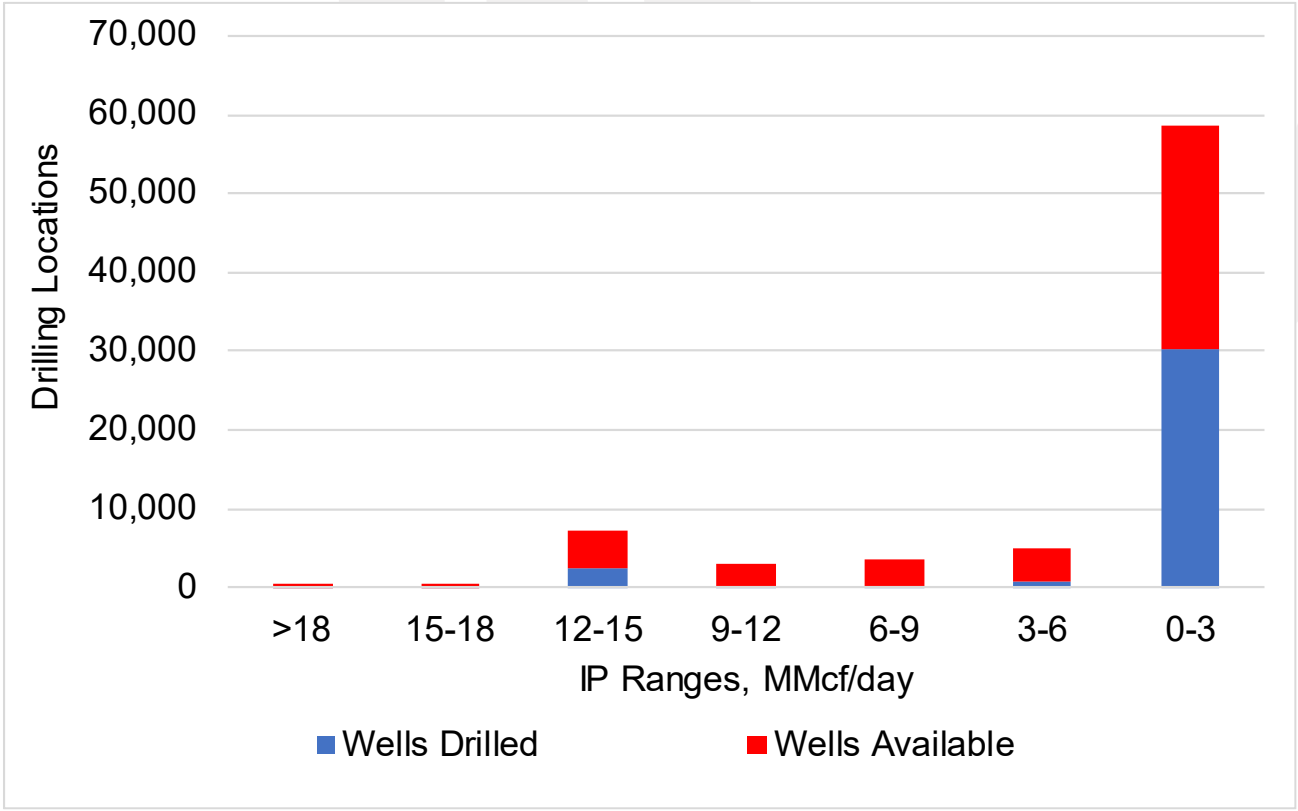


Utica natural gas full cycle costs at Henry Hub (HH) equivalent range from a low of USD $3.65/Mcf for wells with an Initial Productivity (IP) greater than 18 MMcf/d to a high of USD $18.89/Mcf for wells with an IP of under 3 MMcf/d without taking into account liquids uplift. Average Operating costs are USD $1.08/Mcf while royalties & taxes and overhead are USD $0.49/Mcf. Since Utica is a liquids rich area, the liquids uplift is USD $1.53/Mcf. F&D costs range from USD $0.74-$9.18/Mcf and the 15% producer return ranges from USD $0.60-$7.41/Mcf. The assumed HH differential is USD $ 0.73/Mcf.

Incorrys analysis shows 104 Tcf of gas resource available below USD $3/Mcf, 135 Tcf of gas resource available below USD $4/Mcf and 142 Tcf available below USD $5/Mcf. Current production (2023) was almost 6.33 Bcf/d (2.3 Tcf/yr).

ANADARKO GAS INITIAL PRODUCTIVITY (IP) MAP*





Anadarko is located in western Oklahoma and northeast Texas extending to southwestern Kansas and southeastern Colorado. Anadarko basin has multiple formations including Granite Wash, Mississippian Lime, Marmaton, Woodford, Cleveland, and others.

Incorrys estimates that the Anadarko has over 16,000 remaining gas drilling locations with initial productivity above 3 MMcf/d and over 28,000 remaining drilling locations with initial productivity below 3 MMcf/d. However, Anadarko drilling is insignificant and drilling cost data over the period Q1 2022 through to Q3 2024 is insufficient to perform a detailed analysis of full cycle costs.

* Only gas focused drilling. Oil wells with associated gas production are not included.

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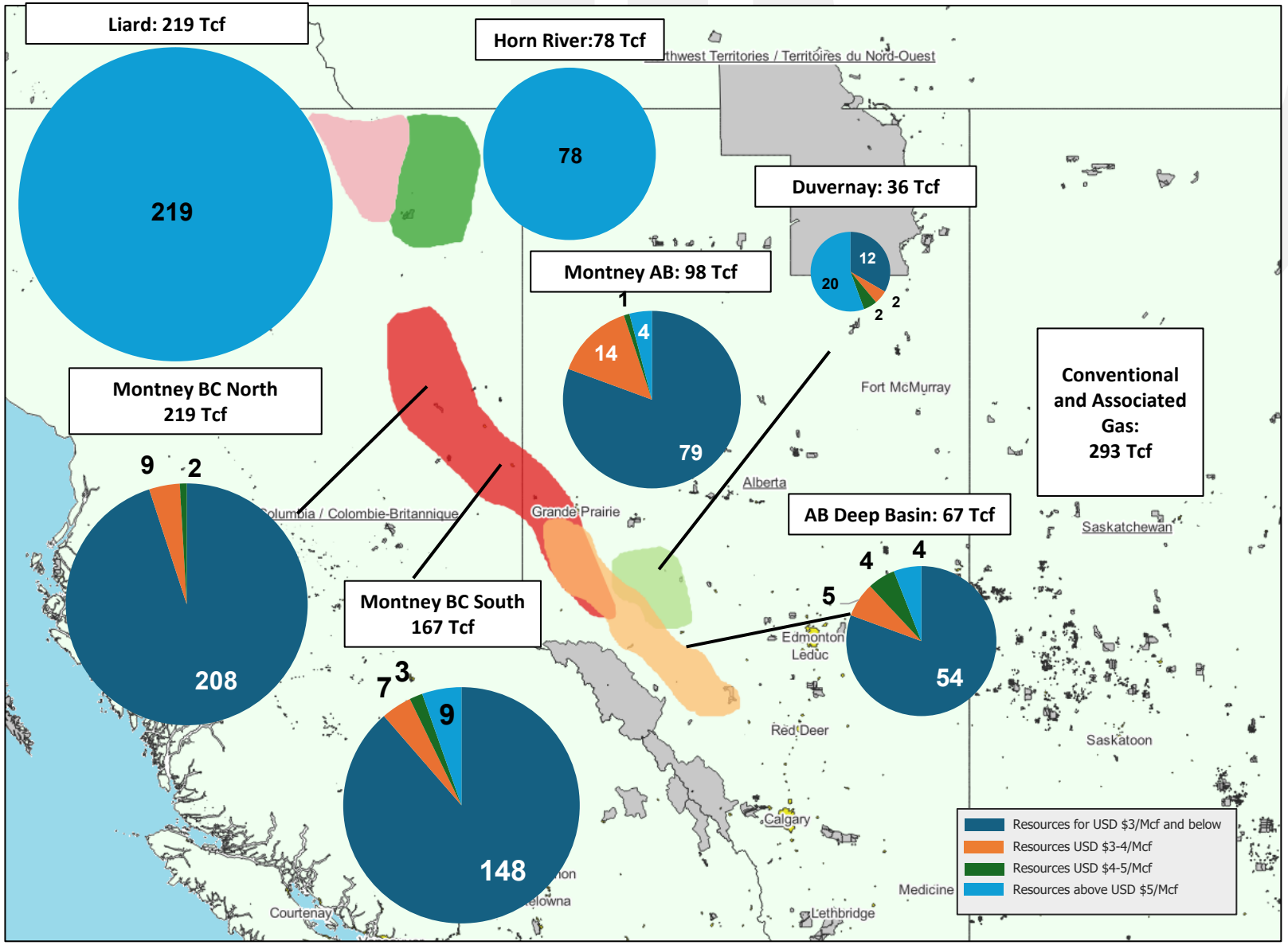
WESTERN CANADA (WCSB) NATURAL GAS RESOURCES

Incorrys estimates that the WCSB has 565 Tcf of gas with full-cycle cost less than USD $5/Mcf. From 2025 to 2050, Incorrys is forecasting total production of 233 Tcf resulting in a remaining ultimate potential resource of 332 Tcf at the end of the period, based on current analysis.

Incorrys has created early estimates of the technically recoverable remaining gas resource potential of the Montney, Deep Basin, Horn River, Liard, and Duvernay plays. These new and developing plays demonstrate the trend in the discovery of new gas resources in Canada. Of the total remaining potential Canadian resource of 1,177 Tcf (including Liard, Horn River, conventional, and associated gas):

- **Shale Gas**: 333 Tcf – 28% of the remaining potential gas resources; almost all located in the Horn River and Liard basins. Incorrys estimates the shale-gas potential of the Duvernay Shale basin could be 36 Tcf; Horn River resources are 78 Tcf, and Liard resource is 219 Tcf.
- **Tight Gas**: 551 Tcf – 42% of the remaining potential gas resource; 88% is in the Montney.
- **Conventional and Associated Gas**: 293 Tcf – 25% of the remaining gas resource potential. Conventional gas in Western Canada is high-cost, and production has declined as producers target lower-cost unconventional sources and liquids-rich gas.
- **CBM:** Western Canada has around 7 Tcf of high-cost coal bed methane (CBM) gas resource potential which is unlikely to be further developed during the forecast period.



WESTERN CANADA NATURAL GAS RESOURCE COST CURVE

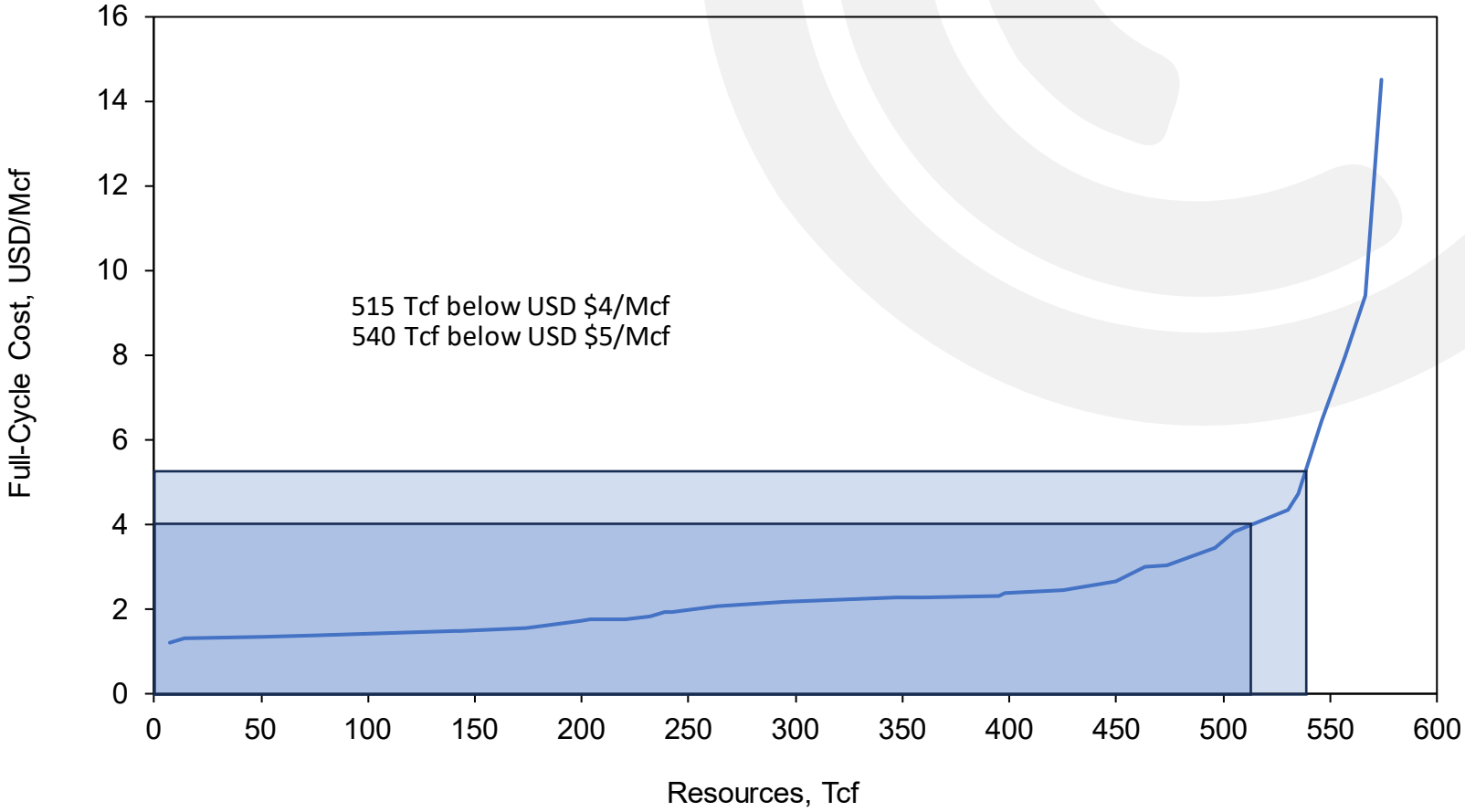
This chart shows the Canadian natural gas resource cost curve estimating full cycle cost vs. resources for five major producing plays in Western Canada.

Most Canadian plays have 7 data points associated with 7 well productivity ranges (from 0 to 3 MMcf/d, 3 to 6 MMcf/d, etc.). Duvernay has 5 data points. The Canadian resource cost curve has 33 data points in total.

Incorrys estimated resources and full cycle costs for each data point in each basin. For example, Duvernay has 2 Tcf of resources available at a full cycle cost of USD$1.48/Mcf and below.

The resource curve helps to estimate total gas resources available at various full cycle cost levels.

In total, Western Canadian basins have over 570 Tcf of natural gas resources, of which 515 Tcf are available at costs below USD $4/Mcf.



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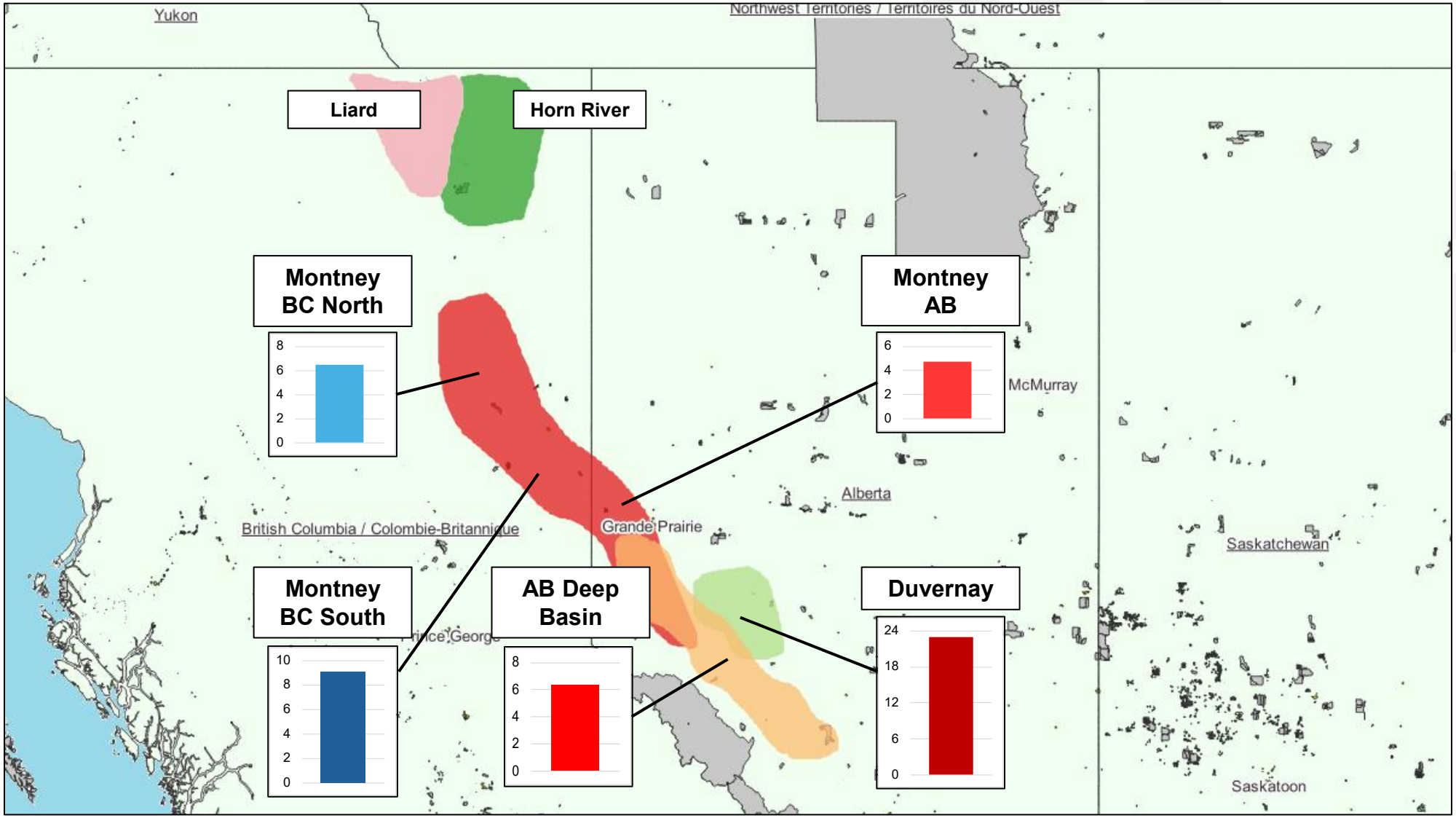
INITIAL PRODUCTIVITY (IP) OF MAJOR CANADIAN GAS PLAYS 2024



New well 30 days initial productivity (IP) in MMcf/d

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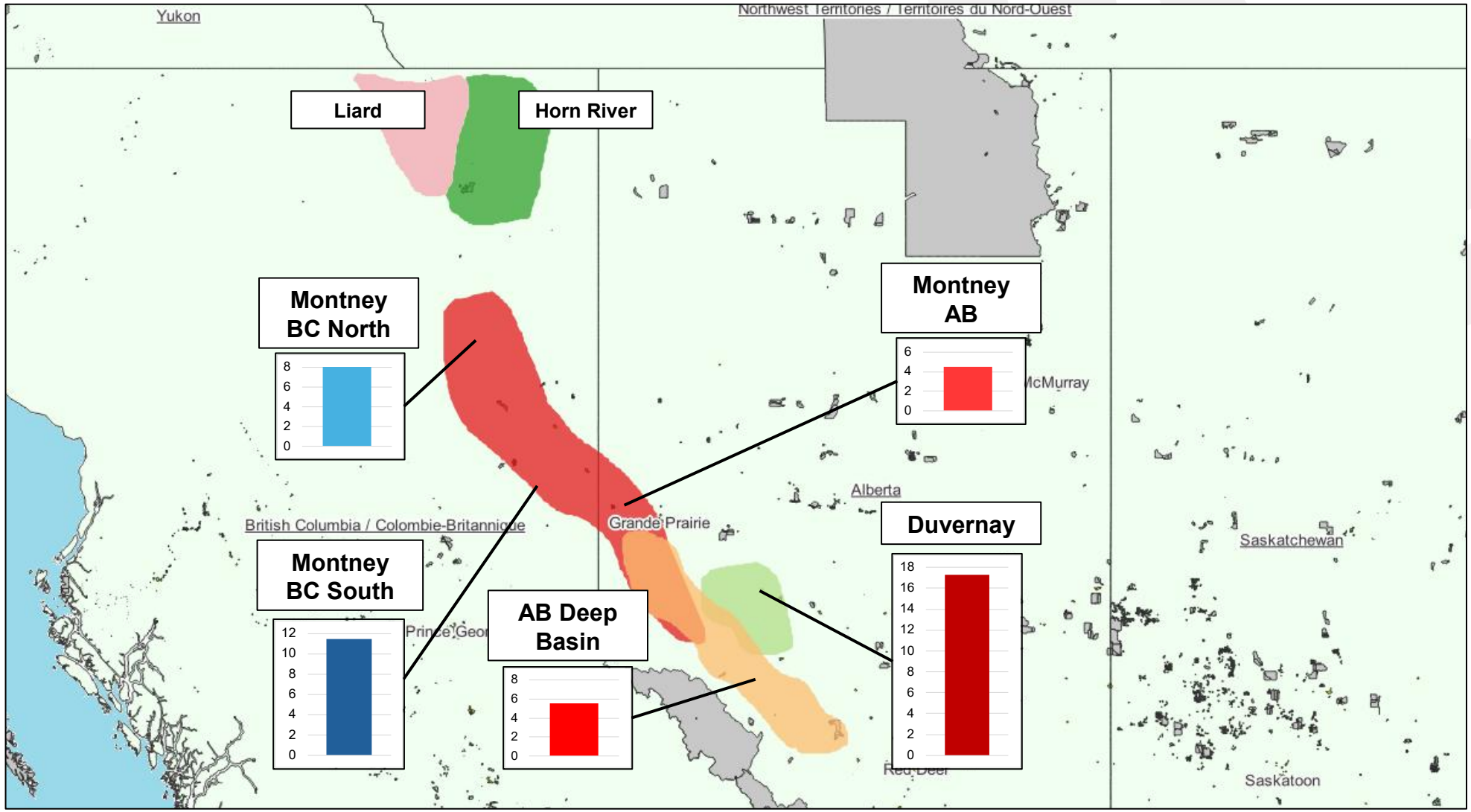
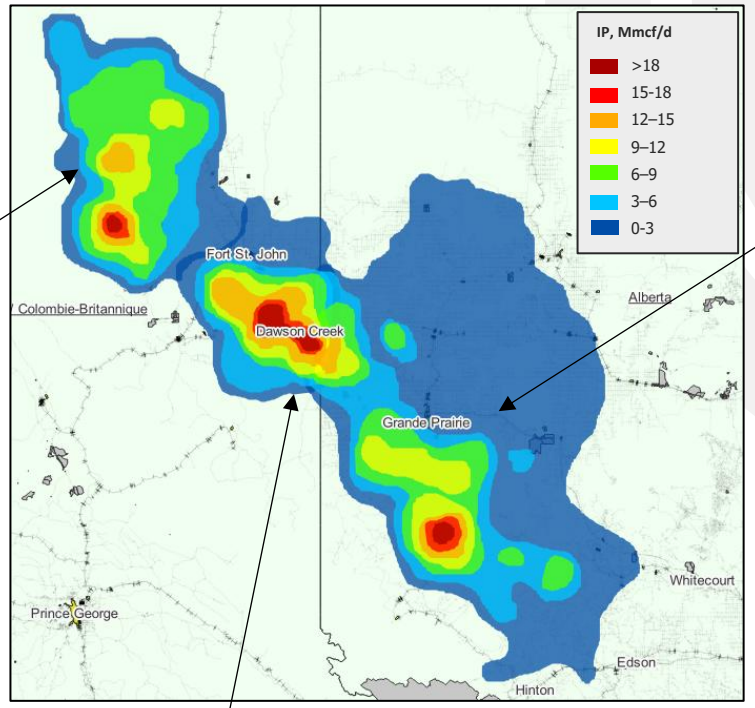
ESTIMATED ULTIMATE RECOVERY (EUR) OF MAJOR CANADIAN GAS PLAYS 2024



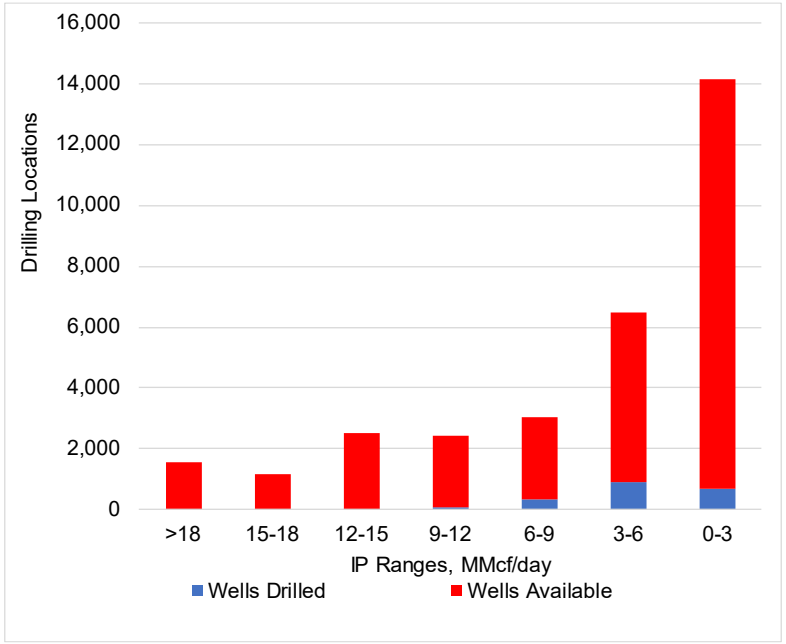
New well estimated ultimate recovery (EUR) in Bcf

MONTNEY GAS INITIAL PRODUCTIVITY (IP) MAP

Montney is a major gas producing play in western Canada with combined resources of 435 Tcf below USD $3/Mcf and 465 Tcf below USD $4/Mcf. Due to the significant resources and low full cycle cost, Montney will be the main play supplying west coast LNG.



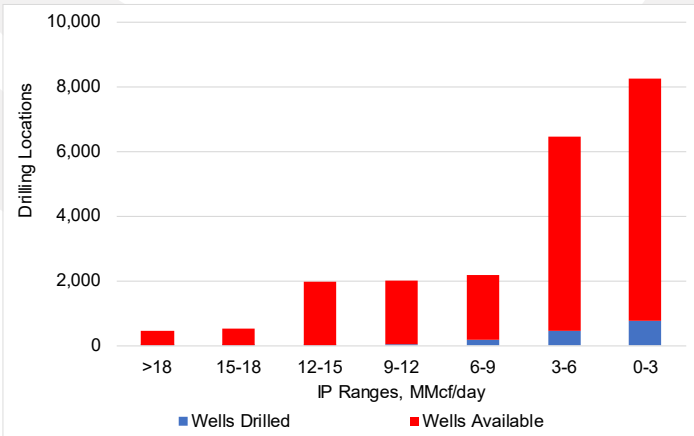
Montney BC North



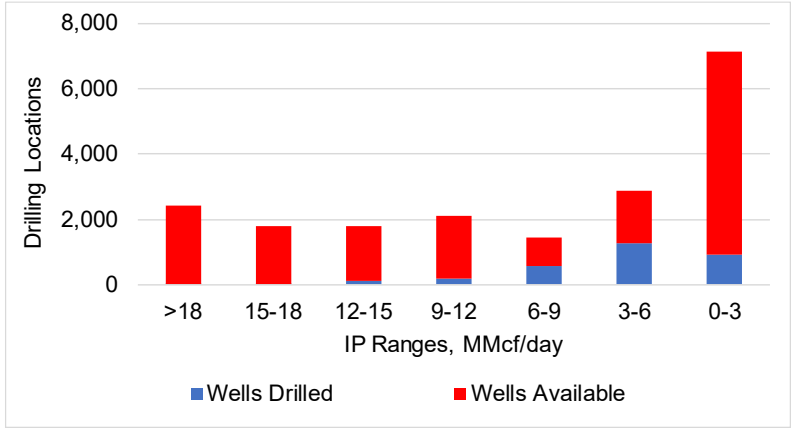
Montney BC North is currently less developed than Montney BC South but does have a significant number of very productive drilling locations.

Montney Alberta has less resources than Montney BC North and South however, some fields in Montney Alberta produce liquids rich gas with yields over 100 Bbl/MMcf.

Montney Alberta



Montney BC South



Montney BC South is the fastest growing play in Western Canada due to significant resources and drilling locations coupled with low full cycle costs.

Incorrys estimates that all Montney plays combined have over 39,000 remaining drilling locations with initial productivity above 3 MMcf/d and just over 27,000 remaining drilling locations with initial productivity below 3 MMcf/d.

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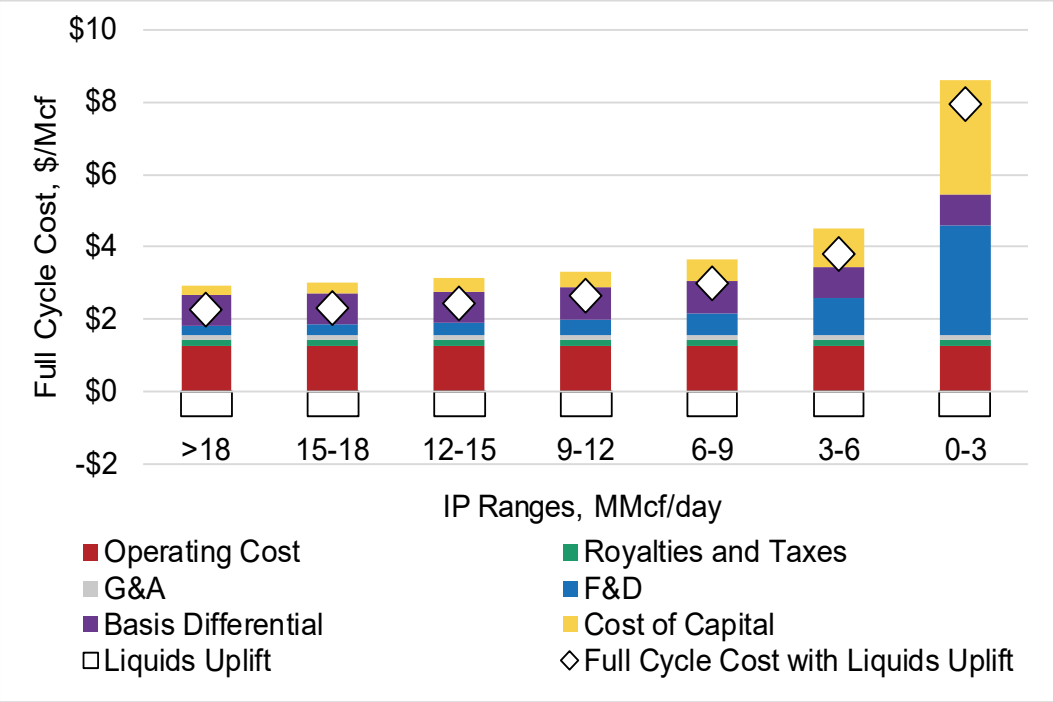
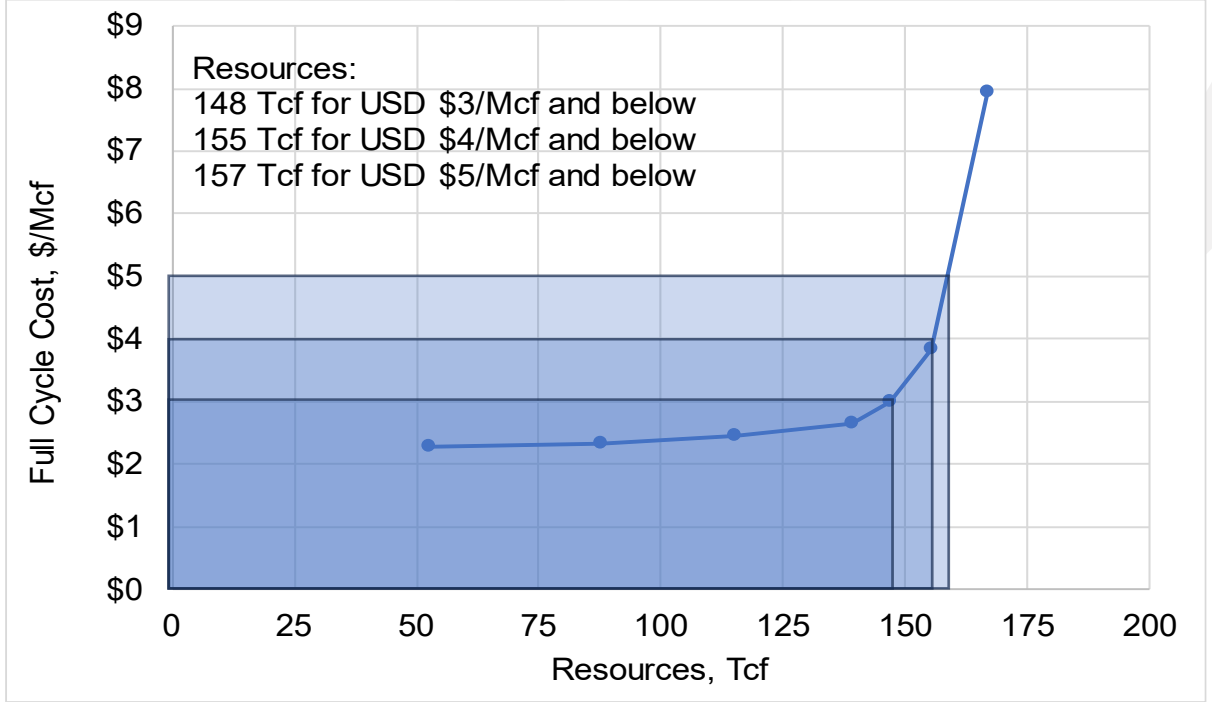
MONTNEY BC SOUTH FULL CYCLE NATURAL GAS COST





Montney BC South natural gas full cycle costs at Henry Hub (HH) equivalent range from a low of USD $2.94/Mcf for wells with an Initial Productivity (IP) greater than 18 MMcf/d to a high of USD $8.62/Mcf for wells with an IP of under 3 MMcf/d without taking into account liquids uplift. Average liquids uplift in Montney BC South is USD $0.67/Mcf. Average Operating costs are USD $1.28/Mcf while royalties & taxes and overhead are USD $0.29/Mcf. F&D costs range from USD $0.24 to $3.02/Mcf and the 15% producer return ranges from USD $0.26 to $3.16/Mcf. The assumed HH differential is USD $ 0.86/Mcf.

Incorrys analysis shows 148 Tcf of gas resource available below USD $3/Mcf and 155 Tcf available below USD $4/Mcf. Raw gas production in 2023 was almost 3.86 Bcf/d (1.4 Tcf/yr).

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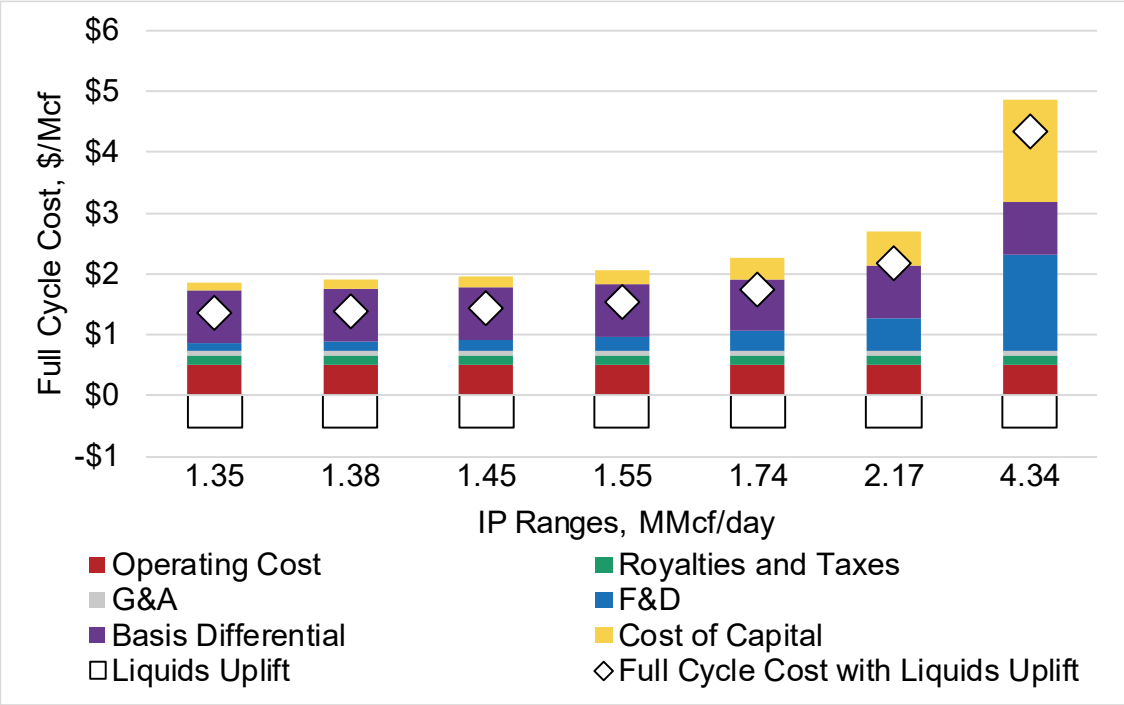
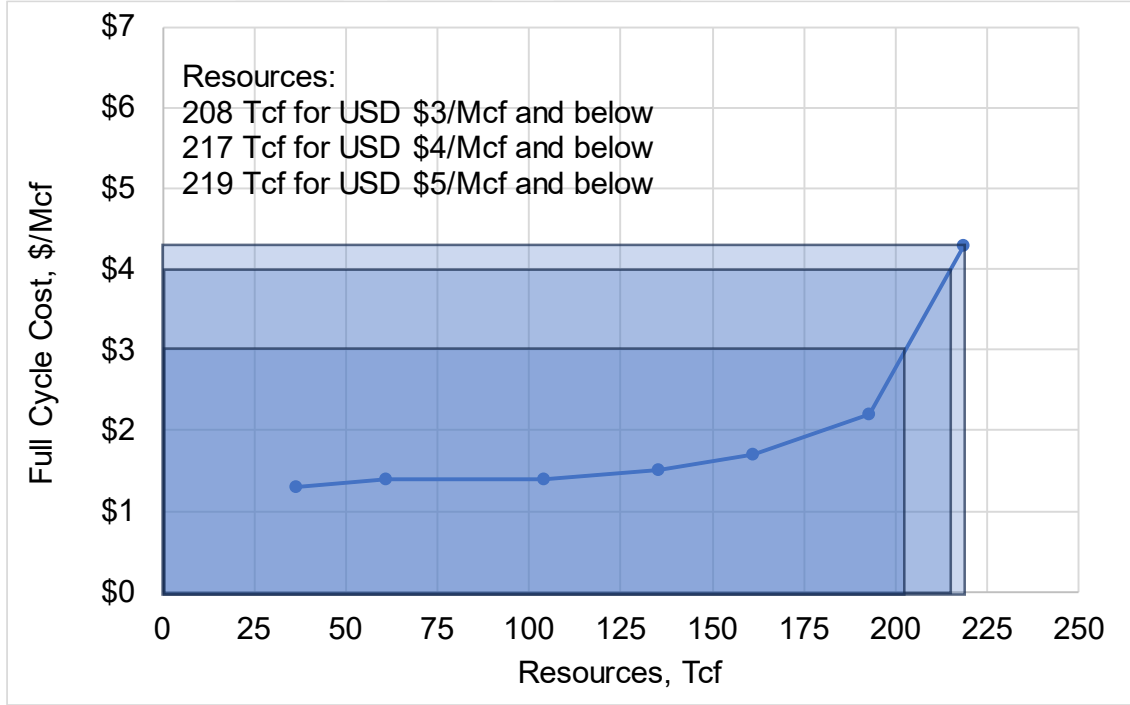
MONTNEY BC NORTH FULL CYCLE NATURAL GAS COST

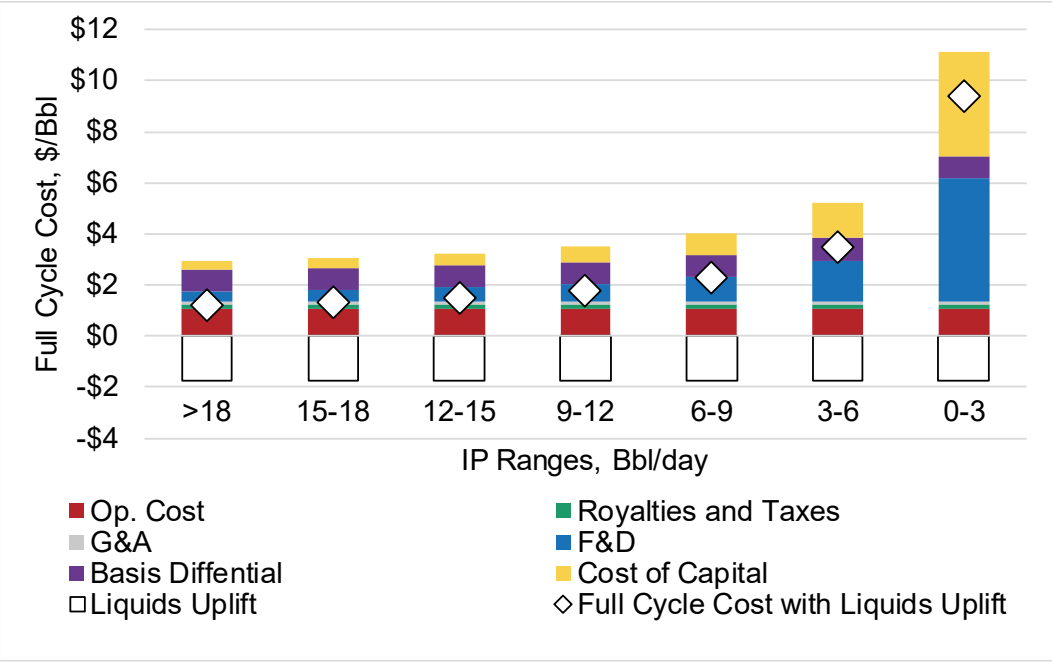


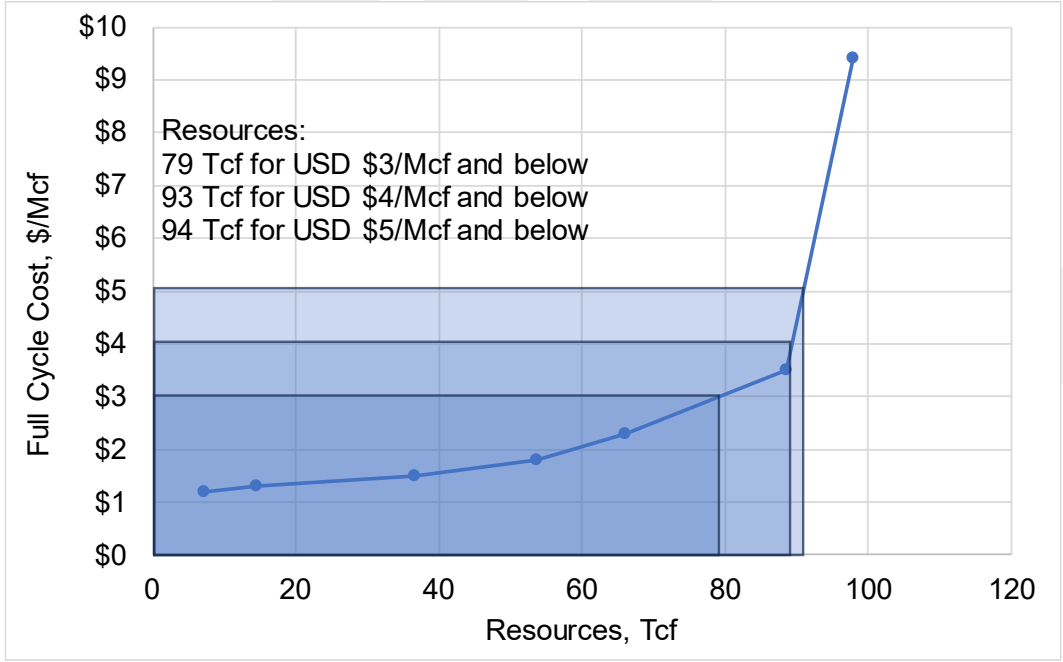


Montney BC North natural gas full cycle costs at Henry Hub (HH) equivalent range from a low of USD $1.87/Mcf for wells with an Initial Productivity (IP) greater than 18 MMcf/d to a high of USD $4.87/Mcf for wells with an IP of under 3 MMcf/d without taking into account liquids uplift. Average liquids uplift in Montney BC North is USD $0.52/Mcf. Average Operating costs are USD $0.50/Mcf while royalties & taxes and overhead are USD $0.24/Mcf. F&D costs range from USD $0.13 to $1.57/Mcf and the 15% producer return ranges from USD $0.14 to $1.69/Mcf. The assumed HH differential is USD $ 0.86/Mcf.

Incorrys analysis shows 208 Tcf of gas resource available below USD $3/Mcf and 217 Tcf available below USD $4/Mcf. Raw gas production in 2023 was almost 2.73 Bcf/d (1.0 Tcf/yr).

MONTNEY ALBERTA FULL CYCLE NATURAL GAS COST

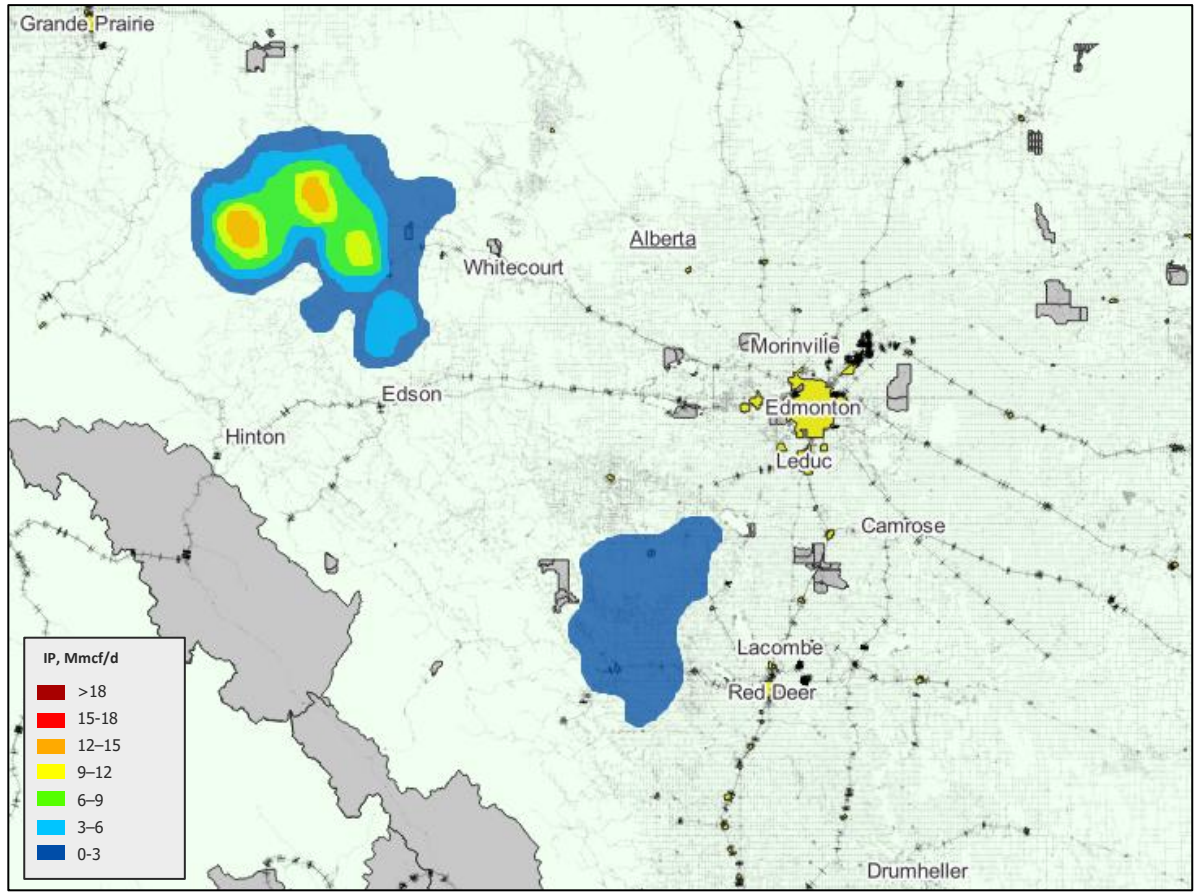


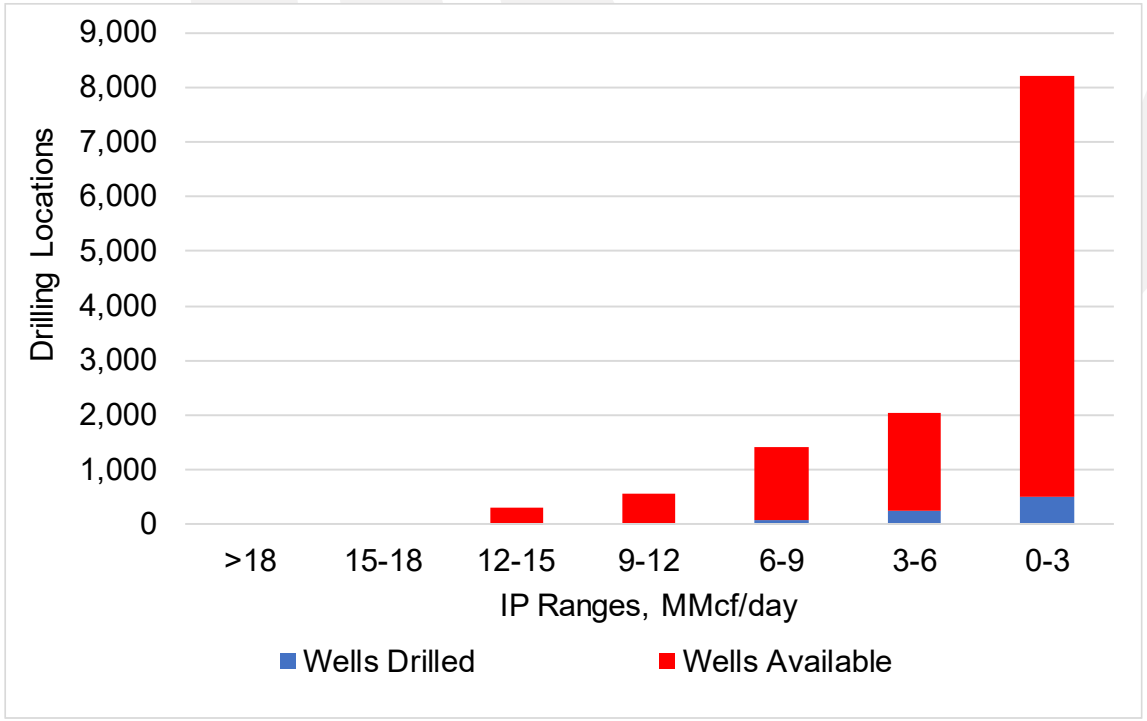


Montney Alberta natural gas full cycle costs at Henry Hub (HH) equivalent range from a low of USD $2.95/Mcf for wells with an Initial Productivity (IP) greater than 18 MMcf/d to a high of USD $11.14/Mcf for wells with an IP of under 3 MMcf/d without taking into account liquids uplift. Average liquids uplift in Montney Alberta is USD $1.74/Mcf. Average Operating costs are USD $1.08/Mcf while royalties & taxes and overhead are USD $0.28/Mcf. F&D costs range from USD $0.39 to $4.08/Mcf and the 15% producer return ranges from USD $0.33 to $4.11/Mcf. The assumed HH differential is USD $ 0.86/Mcf. Certain fields within the Montney Alberta play are liquids rich.

Incorrys analysis shows 79 Tcf of gas resource available below USD $3/Mcf and 93 Tcf available below USD $4/Mcf. Raw gas production in 2023 was almost 3.53 Bcf/d (1.3 Tcf/yr).

DUVERNAY GAS INITIAL PRODUCTIVITY (IP) MAP





Incorrys estimates that Duvernay has over 3600 remaining drilling locations with initial productivity above 3 MMcf/d and just over 7,700 remaining drilling locations with initial productivity below 3 MMcf/d.

- Duvernay wells are more expensive compared to Montney and Alberta Deep Basin.
- Duvernay wells yield greater than 100 Bbl/MMcf, and higher, of natural gas liquids (NGLs).
- Liquids provide economic uplift to full cycle costs resulting in comparative costs to both the Montney and Alberta Deep Basin.

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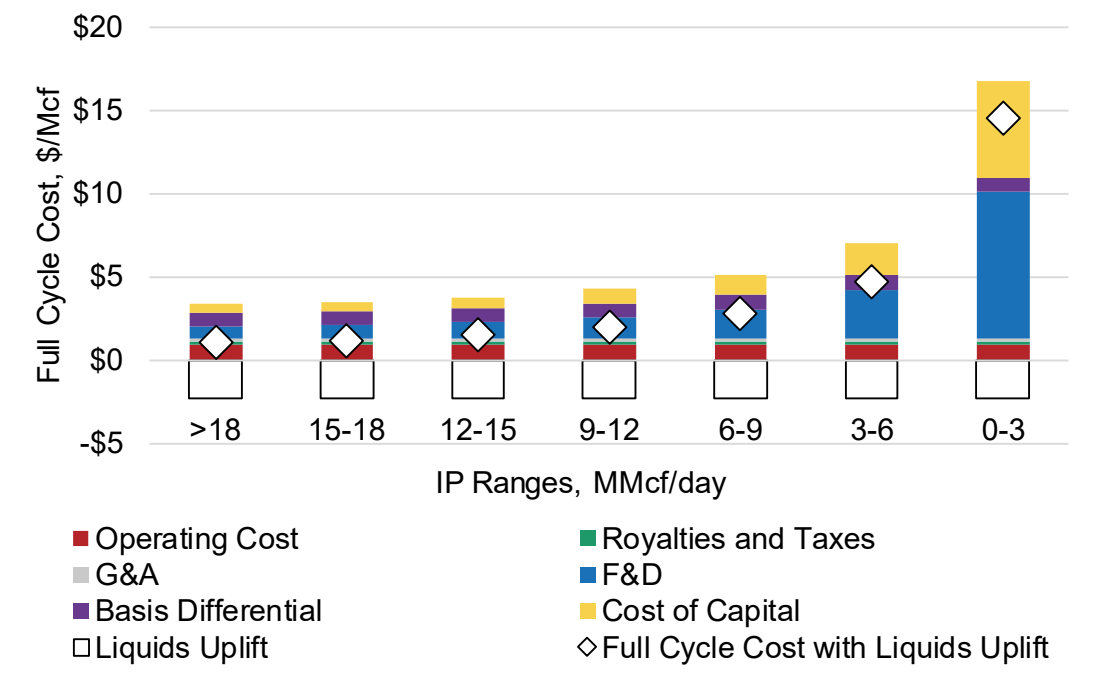
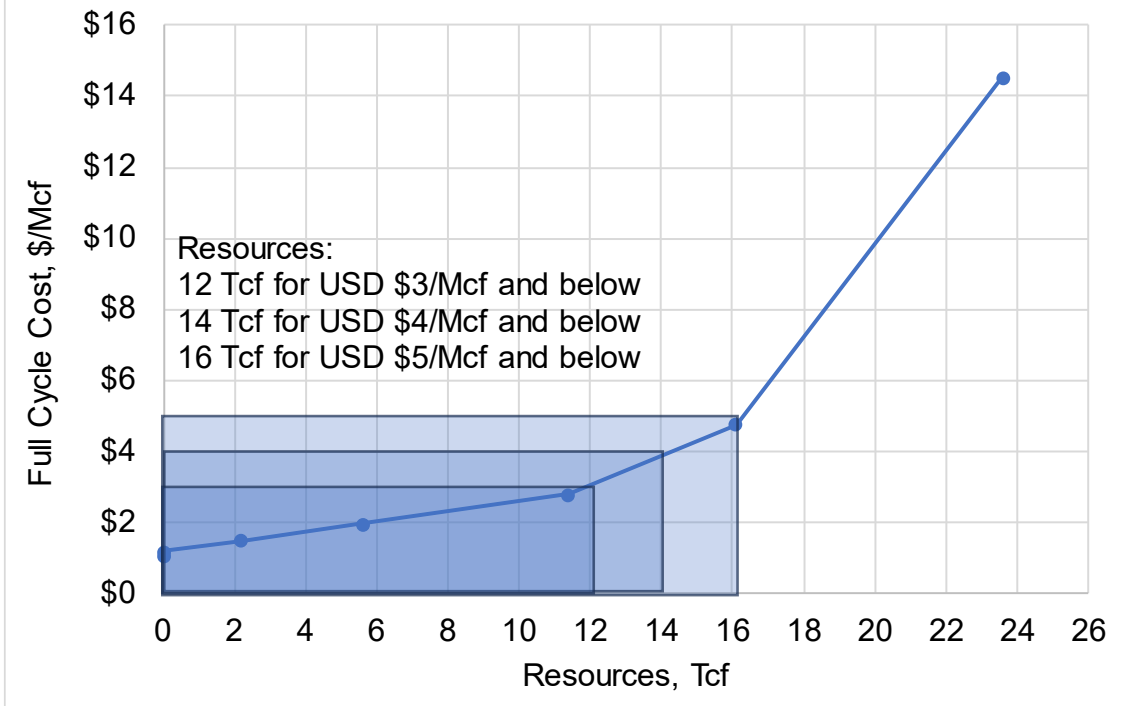
DUVERNAY GAS FULL CYCLE NATURAL GAS COST

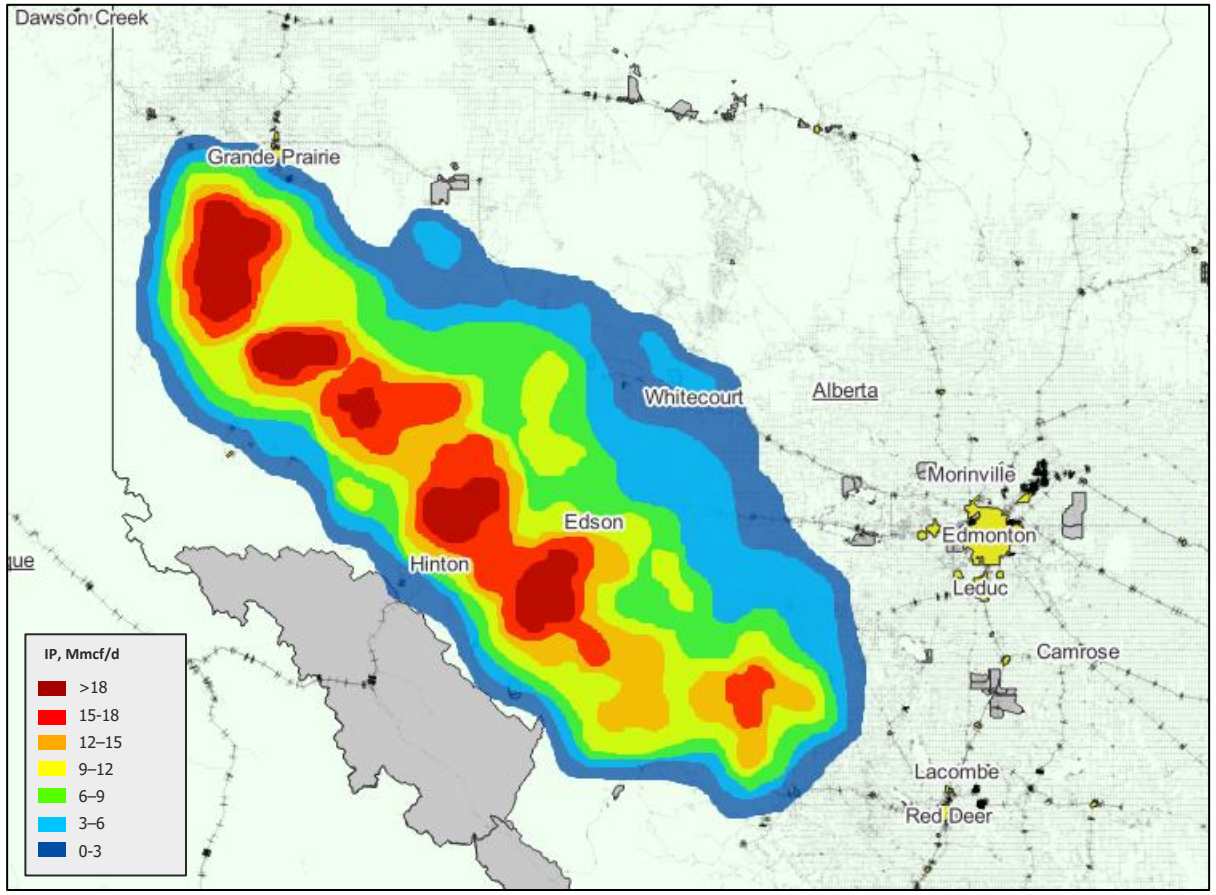


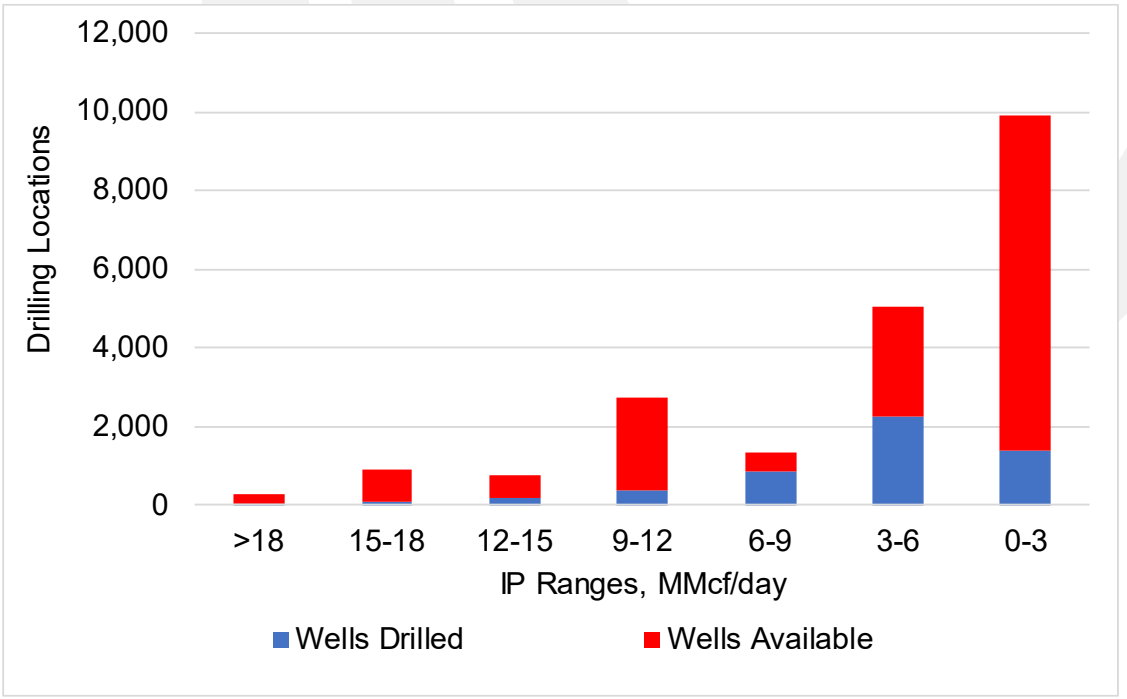


Duvernay natural gas full cycle costs at Henry Hub (HH) equivalent range from a low of USD $3.35/Mcf for wells with an Initial Productivity (IP) greater than 18 MMcf/d to a high of USD $16.84/Mcf for wells with an IP of under 3 MMcf/d without taking into account liquids uplift. Average liquids uplift in Duvernay is USD $2.31/Mcf which is significantly higher than average liquids uplift in other Western Canadian plays. Average Operating costs are USD $0.93/Mcf while royalties & taxes and overhead are USD $0.37/Mcf. F&D costs range from USD $0.98 to $8.80/Mcf and the 15% producer return ranges from USD $0.65 to $5.87/Mcf. The assumed HH differential is USD$ 0.86/Mcf.

Incorrys analysis shows 12 Tcf of gas resource available below USD $3/Mcf and 14 Tcf available below USD $4/Mcf. Raw gas production in 2023 was almost 0.59 Bcf/d (0.2 Tcf/yr).

ALBERTA DEEP BASIN GAS INITIAL PRODUCTIVITY (IP) MAP





Incorrys estimates that Alberta Deep Basin has over 7,300 remaining drilling locations with initial productivity above 3 MMcf/d and just over 8,500 remaining drilling locations with initial productivity below 3 MMcf/d.

- Alberta Deep Basin includes multiple formations: Bluesky/Gething, Cadomin, Cardium Sandstone, Glauconitic Sandstone, Spirit River, Falher, Notikewin, Wilrich, Nikanassin, Viking Sandstone.
- The primary producing formations in Alberta Deep Basin include Falher, Notikewin, and Wilrich. These formations have the most productive wells with new well initial productivity of 6.5 MMcf/d.
- A significant number of wells are commingled among different formations.

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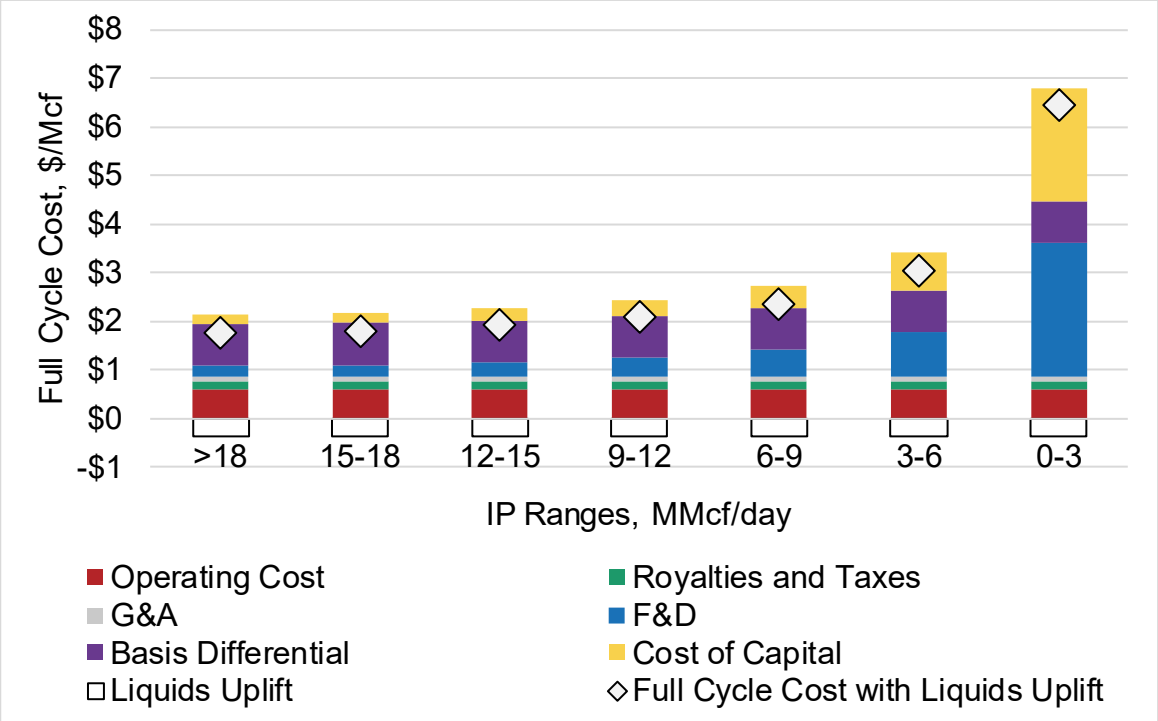
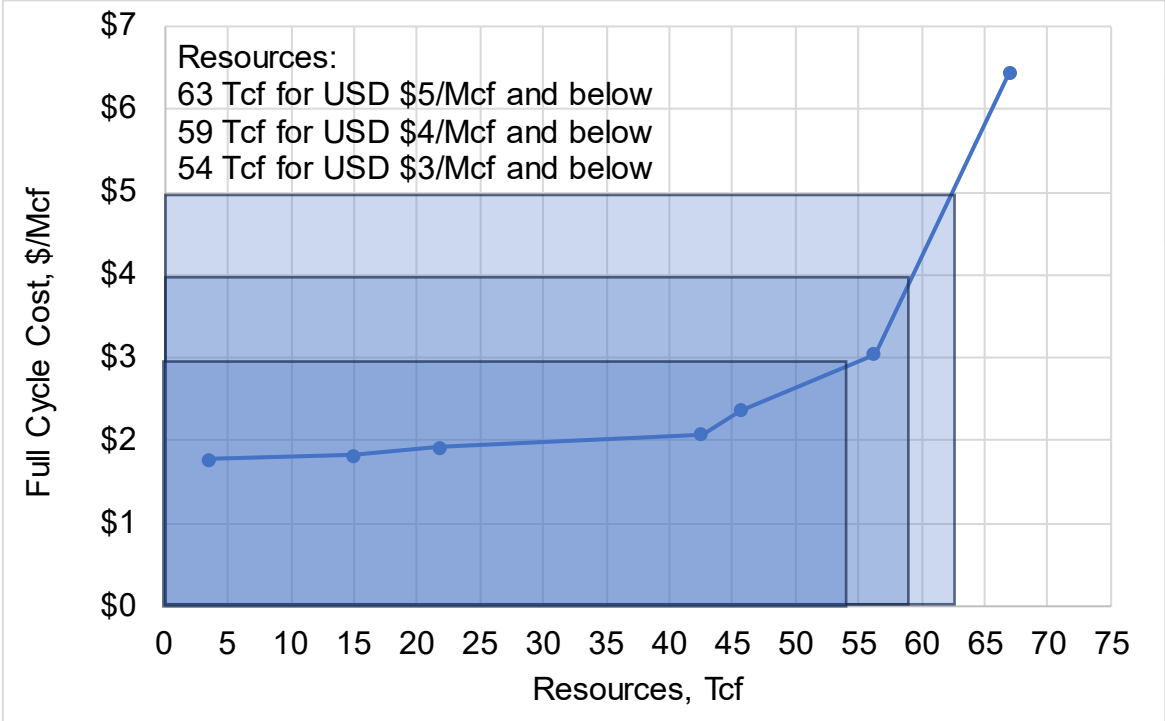
ALBERTA DEEP BASIN FULL CYCLE NATURAL GAS COST





Alberta Deep Basin natural gas full cycle costs at Henry Hub (HH) equivalent range from a low of USD $2.13/Mcf for wells with an Initial Productivity (IP) greater than 18 MMcf/d to a high of USD $6.81/Mcf for wells with an IP of under 3 MMcf/d without taking into account liquids uplift. Average liquids uplift in Alberta Deep Basin is USD $0.37/Mcf. Average Operating costs are USD $0.59/Mcf while royalties & taxes and overhead are USD $0.26/Mcf. F&D costs range from USD $0.22 to $2.76/Mcf and the 15% producer return ranges from USD $0.19 to $2.34/Mcf. The assumed HH differential is USD $ 0.86/Mcf.

Incorrys analysis shows 54 Tcf of gas resource available below USD $3/Mcf and 59 Tcf available below USD $4/Mcf. Raw gas production in 2023 was almost 2.81 Bcf/d (1.0 Tcf/yr).

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WHY INCORRYS INFORMATION SYSTEM

COMPREHENSIVE DATA

Incorrys constantly collects a huge amount of data from multiple public sources world-wide

ADVANCED ANALYTICS

Incorrys performs data analysis to ensure quality and consistency among different industries and jurisdictions

ACCURATE FORECASTS

Incorrys employs various forecasting methodologies to ensure accurate forecasts of trends in different industries.

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