

# CGA By the Numbers:

## Canada's natural gas evolution throughout the years

In this issue of *By the Numbers*, we examine energy outlooks and their important role in shaping our discussions about policy. We start by selecting three different scenarios from the Canada Energy Regulator's ongoing Energy Futures series and compare these projections with the actual natural gas demand and production trends, as well as electricity demand. We then examine some factors behind the differences between these projections and the realities that have transpired.

The key points are as follows:

1. Over the last two decades, natural gas demand and production have exceeded even the most bullish of scenarios. The industry has seen particularly high growth in recent years, with demand growing by 18% and production growing by 10% since 2022.
2. The affordability of natural gas has been a major driver behind the growth. Lower gas prices relative to other energy sources have made it an attractive option for households, businesses and industries, especially amid an affordability crisis.
3. Energy forecasts (or scenarios) are a valuable part of the energy dialogue. While none of the scenarios that we examined fully anticipated the scale of gas growth, they are critical to help frame policy discussions, identify emerging trends and challenges, and encourage informed debates.

Energy forecasts (or scenarios) play an important role in fostering informed and constructive dialogue among Canadians. They provide a look into a potential future, using a certain set of assumptions, to provide insightful reference points to identify existing trends and emerging challenges, as well as how policies can impact potential programs, strategies, and investments.

Here in 2025, Canada's natural gas industry has reached a significant milestone, having just exported its first cargo of liquefied natural gas to Asia. Furthermore, after record-breaking gas production last year, 2025 is on track to set another all time high. By these measures, the natural gas industry is growing faster than other energy sources. However, how long will this trend last? Is this where we thought we'd be five or even 10 years ago?

Answering such questions is very complicated. After all, energy policy is both complex and constantly evolving. There is no shortage of factors that can sway energy policy: geopolitics, technology, environment, and economics, just to name a few. Regardless of these challenges, comparing actual outcomes with past energy outlooks is an important part of the forecasting process. Doing so allows forecasters to adjust and revise their models to improve and better anticipate future impacts.

For this edition of *By the Numbers*, we look back at history and see previous energy forecasts and compare them to what has transpired. While there is no shortage of outlooks that have been published throughout the years, we have chosen to look at the Energy Futures Report published by the Canada Energy Regulator (or previously the National Energy Board).

## SCENARIO OVERVIEW:

For this analysis, the following three Energy Futures reports and corresponding scenarios were chosen:

### 1. National Energy Board's 2007 Canada's Energy Future - Continuing Trends Case (2007EF)

This scenario is generally the most pessimistic on natural gas of the three selected. Released prior to the shale revolution, this scenario predicted declining gas production and generally higher gas prices, which dampen domestic gas demand. While it did project growing gas demand from the oil sands, it also predicted higher growth in electricity-based renewables, which contributed to lower demand growth in gas power generation.

### 2. Canada Energy Regulator's Energy Futures 2016 - Reference Case Scenario (2016EF)

This scenario is generally the most optimistic on natural gas of the three selected. This scenario predicted strong industrial gas demand due to economic growth. The most significant source of growth was projected to come from the oil sands and fuel switching in response to coal plant shutdowns. After seeing technological breakthroughs of horizontal drilling and hydraulic fracturing, this outlook also projected strong growth in natural gas production.

### 3. Canada Energy Regulator's Energy Futures 2021 - Current Policies Scenario (2021EF)

This scenario provides the most moderate view of natural gas of the three selected. While the scenario did build on similar economic growth trends of the 2016EF, there are two factors in this report that impacted its natural gas outlook. The first was the COVID-19 pandemic, which predicted slower growth in the near term. The other factor was the inclusion of more stringent environmental policies. The 2021EF featured new regulations like the federal carbon price and Clean Fuel Regulations that were not present in the 2016EF. These policies, along with other assumptions like a higher adoption of heat pumps, resulted in an overall reduction of both natural gas demand and production relative to the 2016EF.



The scenarios were selected to provide updates at the 5-year and 10-year marks after the outlooks were originally published. Note that the publishing year for each report uses data from the previous year, so the 2016EF and 2021EF are used to represent the 2015 (10-year) and 2020 (5-year) projections, respectively.

Additionally, the 2007EF was also included as an interesting inflection point. As mentioned, this report was released prior to the proliferation of North American shale gas resources. The inclusion of 2007EF in our analysis was done as to provide some insight in to how technological breakthroughs, in this case shale gas, can dramatically change the trajectory of a country's energy landscape.

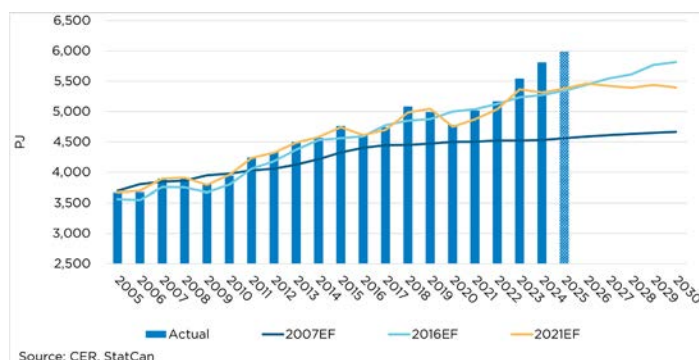
In the sections that follow, we will compare the supply and demand balances of these three outlook reports with the actual outcomes in the years following their release. For curiosity, we will finish by looking at how the electricity demand has fared compared to the natural gas story. Note, however, that data for 2025 are only estimates based on year-to-date values, prorated to the end of the year.

Furthermore, when reviewing the following graphs, take note that as each new report is released, actual values get incorporated into the historical values of the latest projections. This first occurred in 2015, at the release of the 2016EF. The second reset point was in 2020, at the release of the 2021EF. While it may appear that the 2021EF had more accurate projections, remember that it has the benefit of hindsight, incorporating five additional years of actual data (2016–2020) when compared to the 2016EF.

## NATURAL GAS CONSUMPTION

The first variable that we will be examining is domestic natural gas demand. Domestic gas consumption represents gas that is used in the residential, commercial, industrial, electricity generation, and transportation sectors. Figure 1 shows the actual gas consumption since 2005 relative to the projections of the 2007EF, 2016EF, and 2021EF scenarios.

**Figure 1: Natural gas consumption**



We can clearly see that all three scenarios had generally underestimated the country's natural gas demand. Aside from the pandemic years in 2020 and 2021, the actual gas demand has exceeded the projections for every year in all three selected scenarios.

The three most recent years are particularly impressive. After fully recovering from the post-pandemic effects in 2022, domestic gas demand has increased by 18% in total or by an average annual rate of 6%. Compared to the 2007EF, 2016EF, and 2021EF projections, the total gas demand in 2024 exceeded the projections by 19%, 12%, and 11% respectively. Furthermore, gas demand in 2024 had already exceeded the projected demand in 2030 according to the 2016EF scenario, the most optimistic scenario.

There are various reasons why domestic demand has exceeded these original projections. Slower adoption of renewables, higher-than-expected industrial demand, population growth, slower uptake of heat pumps, or more fuel-switching to natural gas are all contributing factors. However, one of the most significant factors that underpins all of this is affordability. Even the most optimistic scenario projected Henry Hub prices to be as low as \$3.18 per mmBtu by 2024. However, gas prices

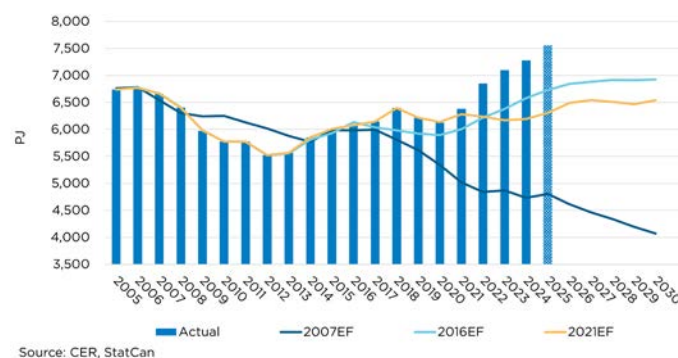
last year were even lower than predicted, averaging about \$2.19 per mmBtu. In today's added focus on affordability and reliability, homeowners, businesses, and industries are all choosing to either switch to natural gas or continue to use it to reap these economic benefits.

It should also be noted that while the 2016EF and 2021EF are closely aligned for most of 2020-2025, these projections start to diverge after 2026. This divergence provides some insight as to how government policies can impact our energy outlooks. Policies like the federal carbon tax or programs like the Greener Homes Grant incentivize switching to alternative sources of energy, which ultimately reduces the anticipated demand for natural gas.

## NATURAL GAS PRODUCTION

The second variable that will be examined is domestic natural gas production. Figure 2 examines the actual natural gas production since 2005 relative to the projections of the 2007EF, 2016EF, and 2021EF scenarios.

**Figure 2: Natural gas production**



Again, we see a similar phenomenon that was observed in the demand graph. Gas production has exceeded the projections for every year after 2014 in all three selected scenarios.

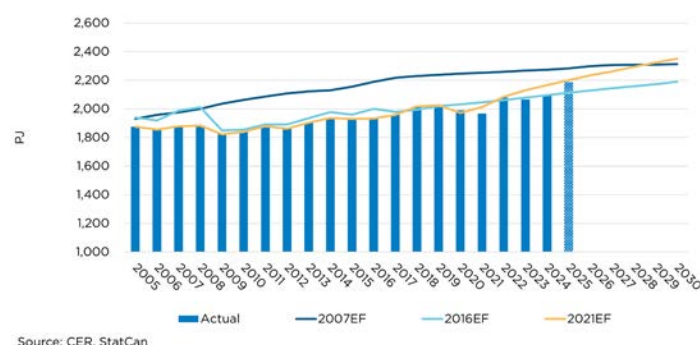
The growth in production since the end of the pandemic has been quite strong. Since the end of 2021, natural gas production has increased by 18%. Relative to the 2007EF, 2016EF, and 2021EF scenarios, gas production in 2024 exceeded the projections by 54%, 11%, and 18% respectively. Furthermore, gas production in 2023 already exceeded the projected demand in 2030 according to the 2016EF scenario.

The starkest contrast with reality can be seen in the 2007EF scenarios. As previously mentioned, the 2007EF projected declining gas production, so much so that Canada would be a net importer of LNG by 2028. Of course, this is far from today's reality. Canada is a top 5 exporter of natural gas in the world and exports almost 50% of its production. Furthermore, as previously mentioned, Canada has just exported its first LNG cargo in 2025. It's a reminder of how technology and market forces, versus policy, can direct the trajectory of an energy source.

## ELECTRICITY DEMAND

Finally, we conclude our analysis by reviewing how electricity demand has changed throughout the years. Figure 3 examines the actual electricity demand since 2005 relative to the projections of the 2007EF, 2016EF, and 2021EF scenarios.

**Figure 3: Electricity demand**



While the trends we observed on the gas side had mostly exceeded expectations, it's been a bit of a mixed bag with electricity demand. As seen in Figure 3, electricity demand throughout the years has mostly underwhelmed the projections of our three selected scenarios.

Overall, the growth in electricity demand in the country has been much more modest than that of gas, growing only 5% since 2022, compared to gas' 18%. In recent years, the demand has most closely followed the 2016EF projection, which was the most pessimistic scenario for electricity demand. However, 2025 demand is on track to be a record year, closely resembling the 2021EF scenario.

## CONCLUSION

The purpose of this exercise is not to critique these projections but to emphasize just how quickly the world can change. It's a complex web of geopolitics, policy shifts, and technological breakthroughs. Over the course of the last two decades, we have had three very different projections for what Canada's energy future may look like. The important thing is to continue to have an informed and open dialogue on how the energy sector evolves in this country.

Whether these trends will sustain or start falling in line with any of these projection lines is anyone's guess. As we speak, we know that things have already changed. What will the elimination of the consumer carbon tax have on natural gas demand in the future? What will emerging technologies like SMRs or CCUS do to the overall energy landscape?

What we do know is that natural gas is an integral part of Canada's energy landscape. It is an affordable and reliable source of energy that makes up nearly 40% of the sources of energy consumed in the country. Despite uncertainties, one thing is clear: natural gas will continue play a vital and enduring role in Canada's energy future.