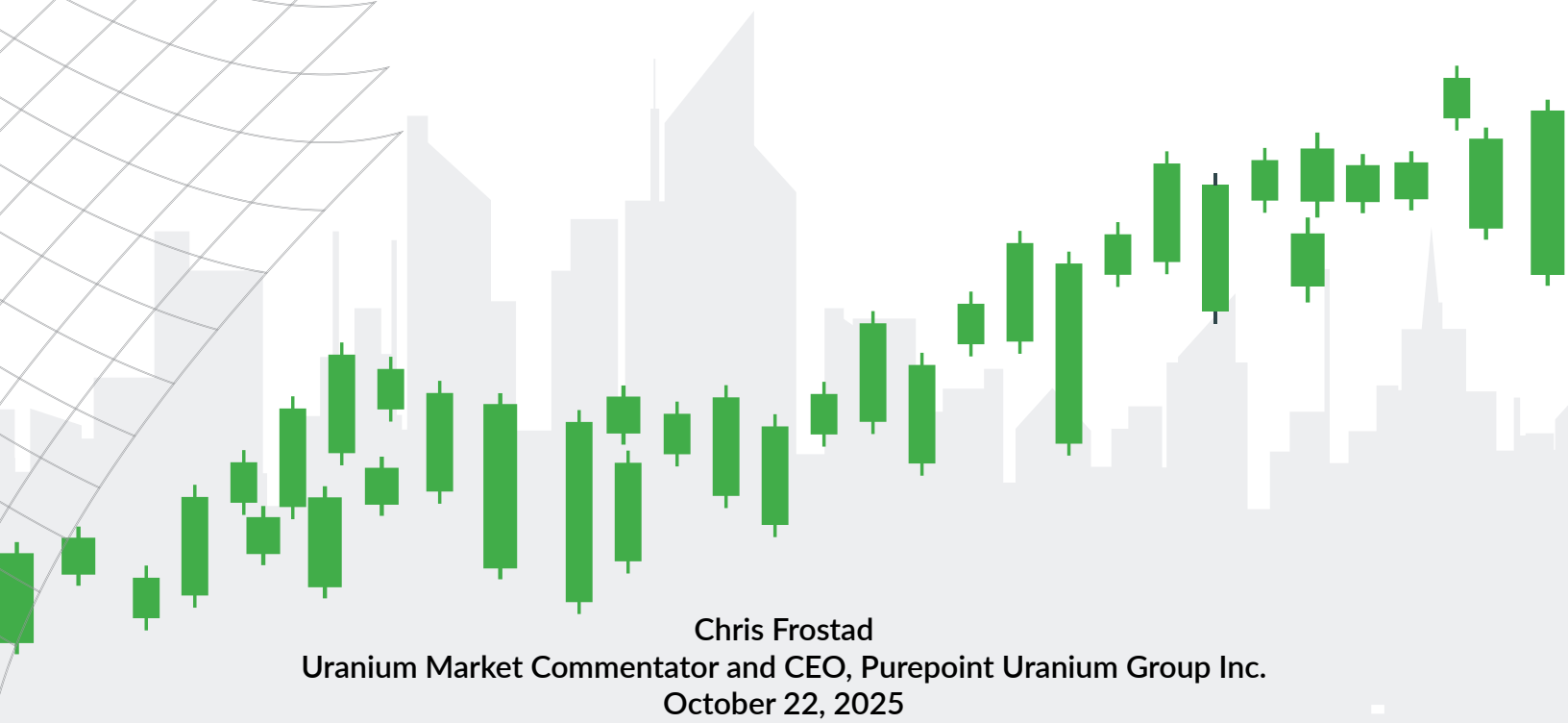
Behind the Curve: Understanding When and How the Uranium Market Turns



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PREFACE

This month, Japan announced that after more than a decade of relying on stored material, Japan Nuclear Fuel has resumed buying uranium. For the first time since Fukushima, Japan is again an active participant in the global fuel market. It is a small transaction by volume but a large one in signal—marking the return of a major nuclear nation to the front end of the cycle. Over the past year, the uranium story has continued to unfold much as this paper anticipated, with a gradual tightening of the system that supports global nuclear fuel supply. The signals have not come from a single headline or statistic but through a steady pattern of confirmation across every part of the fuel cycle.

On the supply side, progress has lagged. Projects once expected to bring relief by 2025 or 2026 have been delayed or downsized, enrichment expansions remain several years from easing bottlenecks, and critical mines continue to face technical, political, and logistical obstacles. Each setback shortens the runway rather than extending it. The price movements that began the year above $100, softened in spring, and then firmed again into autumn reflect that tension between expectation and constraint. Beneath the volatility, the underlying deficit has continued to widen.

This paper follows that trajectory, examining how the cues investors were told to watch have materialized, how they connect, and what they suggest for the years ahead. The analysis draws from data and reporting that are largely one to two years old, yet it is informed by current signals that bridge that gap, including market actions, policy shifts, and operational outcomes that have validated earlier trends and refined their timing.

The goal is not to claim inevitability or absolute precision but to establish the conditions under which the coming pinch becomes unavoidable. The evidence points in that direction with growing clarity, and the window for change continues to narrow. For those who invested early, the frustration of waiting through quiet years is understandable. This document aims to place that patience in context and show how the long expected alignment is now taking shape.

Chris Frostad

PART I - SETTING THE CONTEXT

WHY URANIUM STILL MATTERS

> ***The world can choose how to generate electricity, but once a reactor is built, it cannot choose whether to consume uranium.***

Uranium's importance lies in its permanence. Once nuclear plants are constructed, they become permanent buyers of uranium for decades. No other commodity carries such rigidity of demand. The supply side, however, tells a different story. Mines falter, projects slip, restarts run late, and development cycles stretch to a decade or more. For investors, this contrast is the essence of the uranium story: unyielding demand versus a fragile, under-performing supply chain.

A simple comparison demonstrates the gap between capability and delivery. The 2018 Red Book estimated global mine capacity near 63,000 tonnes of uranium for 2020. Actual output was roughly 47,000 tonnes. That 75 percent realization sits comfortably within the historical range of 70 to 84 percent and highlights how projections of capability almost always overstate production.

Nuclear's Expanding Role in Energy Security

Nuclear has shifted from being treated as a legacy technology to being recognized as a strategic necessity. Governments that once signaled retreat—Japan, South Korea, even parts of Europe—have reversed course. The reason is simple: energy security.

Russia's invasion of Ukraine exposed how deeply many nations depend on imported hydrocarbons. Oil and gas can be weaponized; nuclear power cannot. A reactor anchored on home soil provides decades of secure, carbon free electricity. The more vulnerable a country is to energy shocks, the more attractive nuclear power becomes as a hedge against instability.

The Electrification Wave

Energy demand is not merely stable; it is accelerating. Data centers, artificial intelligence, electric vehicles, and electrified industry are all adding baseload requirements. Analysts expect global data center power use to triple by 2030. Companies such as Microsoft, Google, and Amazon now lobby for nuclear power because it is the only scalable, carbon free solution capable of running continuously.

Electrified transport and industrial processes amplify this trend. The deeper economies move into electrification, the greater their need for reliable, dispatchable baseload power. Nuclear remains the only non carbon option that can meet that requirement. Each new reactor built to serve this demand becomes a locked in uranium consumer for 40 to 60 years.

Between mine output and fabricated fuel delivery, the average lag is 12 to 24 months. That lag—covering conversion, enrichment, and fabrication—means decisions on new supply take years to reach the reactor fleet. It is a structural delay that magnifies any mismatch between expectation and reality.

The Climate Imperative

The climate agenda overlays all these shifts. Every credible path to net zero acknowledges that renewables alone cannot carry the load. Without nuclear, grids remain tied to fossil generation for decades. Institutions such as the IEA, the United Nations, and the IPCC now formally recognize nuclear's role in decarbonization. Policies have followed: subsidies, loan guarantees, and explicit build programs now appear in regions that once planned to retire reactors.

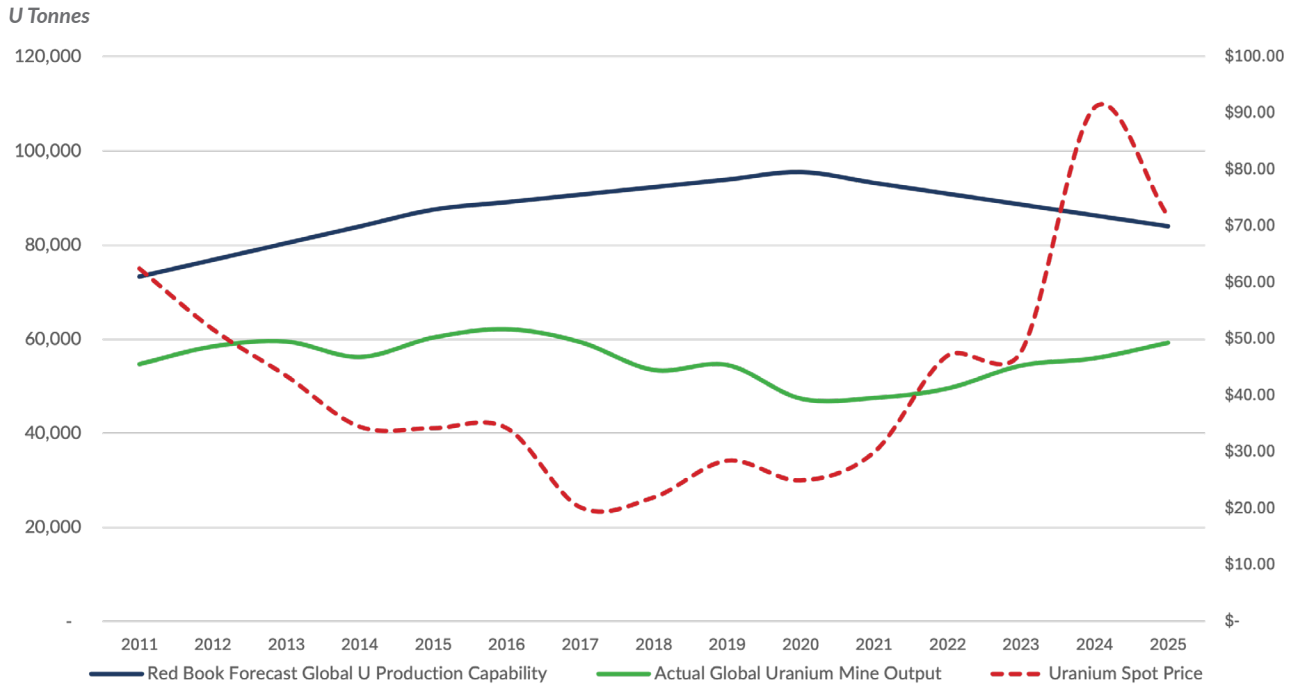
For investors, this alignment does more than reassure demand; it de-risks it. Governments cannot abandon climate goals without reputational cost. As nuclear becomes a formal pillar of national climate strategies, uranium demand becomes embedded in policy itself.

Uranium's Price Dynamics

Unlike oil, copper, or gold, uranium trades in a thin, opaque market. Spot transactions represent less than 15 percent of annual demand, and a single trade can move the quoted price several percent. Long term contracts dominate procurement, and those contracts are complex—built on base prices, inflation escalators, and optional volumes. Reports that describe the long term price as flat often mask tightening terms and rising floor prices.

History shows uranium markets operate in droughts and floods. Long periods of low prices choke exploration and development. When demand forces new supply, the years required for projects to reach production create a crunch that drives prices sharply higher. Utilities cannot defer reloads; they must secure fuel regardless of price.

Figure 1.1: Actual Production vs Forecast Production vs U Price



Market Relevance

For investors, uranium is not simply another cyclical commodity. It is a market where demand is immovable, supply is unreliable, and price discovery is distorted. The outcome is predictable: extended calm followed by abrupt re-ratings. Understanding why uranium still matters—its role in energy security, electrification, and decarbonization—is the foundation for recognizing where the next pinch point lies and why equities will move when it arrives.

Investors Notes

- Demand is fixed for decades; supply continues to underperform.
- The fuel cycle lag ensures that shortages cannot be solved quickly.
- Policy support, electrification, and security concerns make the next price cycle structural, not speculative.

WHAT THE INDUSTRY PUBLISHES

> ***The uranium industry is one of the most heavily reported sectors in energy, yet the reports most investors cite were never written for them.***

At first glance, uranium appears to be a data rich sector. Every two years the Red Book is released by the IAEA and the OECD's Nuclear Energy Agency. The World Nuclear Association ("WNA") publishes its Nuclear Fuel Report, and UxC, LLC ("UxC") issues detailed commercial studies. These are serious works prepared by experts with access to high quality data from governments, utilities, and producers. They appear to be definitive sources for mar ket insight.

The problem is not data quality but purpose. These reports are not written to help investors time equities. They serve policymakers, utilities, and industry planners who need a framework for long range decisions. They measure capability, catalogue resources, and model scenarios. They do not forecast how much uranium will actually be produced or when market shortages will occur.

The Red Book

The Red Book—formally Uranium: Resources, Production and Demand—is published jointly by the IAEA and NEA. It is the authoritative record of uranium resources and production capacity, based on government submissions. It catalogs reserves, projects, and national programs, with resources classified as Reasonably Assured, Inferred, or Undiscovered.

Its strength lies in its depth, not its foresight. The Red Book explicitly presents capability, not production forecasts. Capability assumes ideal conditions—projects on time, operations efficient, utilization rates high. Actual output has consistently fallen short, as shown by the 2018 A II projection that overstated 2020 production by roughly one quarter.

The WNA Nuclear Fuel Report

The World Nuclear Association's Nuclear Fuel Report frames future supply and demand through three scenarios—Upper, Reference, and Lower. The demand side is built from the reactor fleet; the supply side from operating, idled, and planned capacity. The resulting balance charts are widely quoted as forecasts, yet they are conditional models. The Reference scenario describes what could happen if all assumptions—restart timing, development schedules, and secondary supply—proceed as planned. History shows they rarely do.

UxC Studies

UxC, a private consultancy, produces detailed and costly analyses such as the Uranium Production Cost Study and Market Outlook. Their work provides valuable insight into cost structures and supply chain stress points. These studies serve as planning tools for utilities and producers but are written in technical language, not for investors. They explain where new supply might emerge under different price conditions, but not when it will actually arrive.

Market Relevance

For investors, these publications are vital references but limited roadmaps. They reveal the scale and structure of the market but not its timing. The reports are essential starting points, not finish lines. The key is to understand what they measure—and what they do not.

Investor Notes

- Industry reports measure capability, not delivery.
- Red Book data underpin most forecasts but overstate real output.
- WNA and UxC scenarios describe possibility, not probability.
- Interpreting them correctly is the first step in anticipating when their projections will finally become reality.

PART II - THE MISSED HAYDAY: WHY THE SURGE NEVER CAME

THE INVESTOR EXPERIENCE (2019 - 2025)

> ***We were told the crunch was coming. We bought the story. Three years later, the price bump we expected has not arrived.***

Between 2019 and 2025, uranium investors faced a slow lesson in patience. Analysts and commentators agreed that supply would fail to meet demand, triggering a sustained price surge. The logic was sound, the data credible, and the conviction widespread. But the surge never came. Spot prices rose from their lows, term activity returned, and equities rallied briefly, yet the lasting breakout that many expected never materialized. By 2025, early entrants were holding positions that lagged the broader market.

The Warning That Built Expectations

From 2019 through 2022, the narrative was one of inevitability. Supply curtailments, project delays, and geopolitical risk all seemed to point toward the same conclusion: a structural shortfall was near. Industry reports, including the WNA and Red Book, reinforced the theme by showing demand curves outpacing supply capability. Investors interpreted these as forecasts rather than scenarios, believing the deficit would appear within months.

What Investors Actually Experienced

Instead of fireworks, investors endured a slow grind. Inventories proved deeper than assumed. Enrichment and conversion bottlenecks absorbed early pressure. Utilities quietly contracted for long term coverage, avoiding a scramble for spot material. Producers restarted in measured increments, just enough to offset immediate shortfalls. From the outside, it looked like a coiled spring; from the inside, it felt like waiting for momentum that never arrived.

PART II - THE MISSED HAYDAY: WHY THE SURGE NEVER CAME (cont'd)

Market Relevance

This period matters because it captures investor psychology. The thesis was not broken; it was premature. Recognizing that timing, not fundamentals, was the issue is essential to restoring confidence

Investors Notes

- The 2019 to 2025 period tested conviction but did not invalidate the supply thesis.
- Capability was mistaken for production, compressing investor timelines.
- Understanding timing errors is key to recognizing the next legitimate inflection.
- Recognizing this experience is essential before making the case for what comes next.

WHY INVESTORS BELIEVED THE SHOCK WAS IMMINENT

> ***Every headline pointed to a crisis. Every chart suggested the gap was here. For many investors, the only question was how fast the price would explode.***

The years leading up to the current market were charged with expectation. Each new signal seemed to confirm what many already believed, that uranium's moment had arrived. In that atmosphere, certainty spread faster than evidence and patience gave way to conviction.

Headlines That Signaled Crisis

Between 2019 and mid decade, headlines made uranium feel like a breaking story. Russia's invasion of Ukraine raised the specter of sanctions on major suppliers. Governments announced stockpile programs. Small modular reactors and the rise of AI driven data centers created visions of soaring baseload demand. Each development pointed to pressure building faster than the market could respond.

Anchored To The Last Cycle

Investor memory magnified the story. The 2006 to 2007 bull market, when uranium prices leapt from $20 to over $130 per pound, remained vivid. Many believed history would repeat once the gap appeared. The problem was that this cycle began with higher inventories, broader enrichment flexibility, and more disciplined utility contracting.

Misreading The Industry's Own Reports

Industry reports reinforced the conviction. The Red Book's capacity tables and the WNA's Reference Scenario were both interpreted as forecasts rather than capability models. When actual mine production lagged those curves, investors assumed the pinch had already arrived. In reality, production typically runs 16 to 30 percent below capability, meaning the expected deficit was still years away.

The Problem Of Inventory Opacity

Inventories were the silent buffer. Public data on commercial and government holdings was incomplete, outdated, and inconsistent. Utilities, enrichment firms, and state agencies drew from these reserves quietly, stretching the runway and masking tightness. Analysts underestimated their scale and mobility, which delayed visible price pressure.

PART II - THE MISSED HAYDAY: WHY THE SURGE NEVER CAME (cont'd)

The Echo Chamber Effect

Repetition amplified belief. Newsletters, research notes, and social media channels echoed the same conclusions. The more often investors heard the same warning, the more certain it seemed. Dissenting views faded, and conviction hardened into consensus. When the surge failed to appear, the sense of betrayal was sharper precisely because the expectation felt universal.

Market Relevance

Understanding why investors believed the surge was imminent prevents repetition of the same error. The data was not wrong, but the interpretation was premature. Recognizing how expectations formed is the first step in adjusting timing models for the next phase.

Investors Note

- **Headlines, memory, and misread data reinforced a premature consensus.**
- **Industry reports describe capability, not immediate delivery.**
- **Confidence was misplaced in timing, not in fundamentals.**

LESSONS FROM THE MISSED HEYDAY

> ***The crunch was real, but the market had more ways to delay it than most investors realized.***

After years of expectation came a pause that few had prepared for. Prices steadied, headlines quieted, and conviction gave way to questions that felt larger than the data itself. In that pause, the market revealed something important—not through what happened, but through what didn't.

Buffers That Postponed The Crunch

Hidden inventories were deeper than expected, especially among governments and utilities that had built stockpiles during the decade of cheap uranium. These reserves allowed the system to absorb deficits quietly. At the same time, the tightness that did appear first surfaced downstream—in conversion and enrichment—redirecting attention away from raw uranium demand.

The Role of Contracting and Restarts

Utilities rebuilt long term contracts gradually rather than rushing into the spot market. Producers such as Cameco and Kazatomprom restarted mines in phases, adding enough supply to stabilize conditions without overfilling the market. Each measured return extended the balance.

Unspecified Supply and Macro Headwinds

Industry balance tables routinely include an unspecified supply category, often treated as a placeholder. In practice, it reflected real tonnes drawn from enrichment underfeeding, inventory sales, and one time transactions. These temporary sources created the appearance of equilibrium. Meanwhile, higher interest rates and periodic risk off sentiment constrained inflows to uranium investment vehicles, reducing speculative demand.

PART II - THE MISSED HAYDAY: WHY THE SURGE NEVER CAME (cont'd)

Early, But Not Wrong

The fundamental logic of the uranium thesis remains sound. Mines still require years to advance, restarts rarely stay on schedule, and reactor demand remains inelastic. Investors who positioned early misjudged timing, not direction. The buffers that stretched the cycle are finite and already showing signs of exhaustion.

Rebuilding Confidence

The path to restoring confidence begins with clarity. Using the same data through a disciplined investor lens—discounting capability, accounting for lag, and tracking inventory exhaustion—transforms frustration into foresight. The thesis did not fail; its realization moved forward.

Market Relevance

For investors, the lesson is structural: fundamentals remain intact, but buffers masked the signal. As those buffers fade, the underlying shortage will surface more abruptly and with greater force.

Investor Notes

- **Fundamentals remain valid; the market used temporary levers to delay the pinch.**
- **Inventories, enrichment flexibility, and phased restarts will unwind simultaneously.**
- **When they do, the re rating will be faster and steeper than in prior cycles.**

PART III - THE REPORTS AND THEIR LIMITS

HOW SUPPLY AND DEMAND ARE PRESENTED

> ***Industry reports are not forecasts of what will happen. They are frameworks that describe what could happen if everything goes according to plan.***

The leading industry reports on uranium supply and demand are comprehensive in their data collection and careful in their design. Yet for investors, the way those data are framed often leads to misunderstanding. Reports such as the Red Book and the World Nuclear Association's Nuclear Fuel Report are not written as forecasts. They are planning documents. Investors searching for clarity on timing and price movement often mistake conditional scenarios for predictive models.

Capacity, Production, and the Reference Scenario

The Red Book and the WNA Nuclear Fuel Report present uranium supply in terms of capacity or capability. These figures represent what could be produced if every project were to start on time, ramp smoothly, and operate without interruption. Actual mine output almost never meets those assumptions. Historically, production runs between 70 and 84 percent of stated capability.

The WNA's Reference Scenario adds another layer of complexity. It is often interpreted as a forecast but is actually a scenario—one of several. It outlines what might occur if all planned expansions and restarts unfold on schedule. The Lower Scenario provides a more conservative view. When compared with actual results, the Reference Scenario has averaged roughly 16 percent higher than realized production over the following five years. This optimism bias is structural, not deliberate, and stems from the difficulty of predicting delays, cost overruns, and technical setbacks across dozens of mines worldwide.

Specified and Unspecified Secondary Supply

Another common misunderstanding arises from how secondary supply is classified. Reports divide it into specified and unspecified categories. Specified supply includes clearly identified sources such as government stockpiles, commercial inventories, re-enrichment of tails, and defined recycling programs. These are measurable and traceable.

Unspecified supply is different. It is not an identified source but a balancing entry used to close gaps between total demand and known supply. It signals uncertainty, not confidence. In practice, unspecified supply has often come from underfeeding, one time government sales, or inventory drawdowns—temporary factors that cannot sustain the market. For investors, treating unspecified supply as real supply is a common and costly error.

Summaries and Full Reports

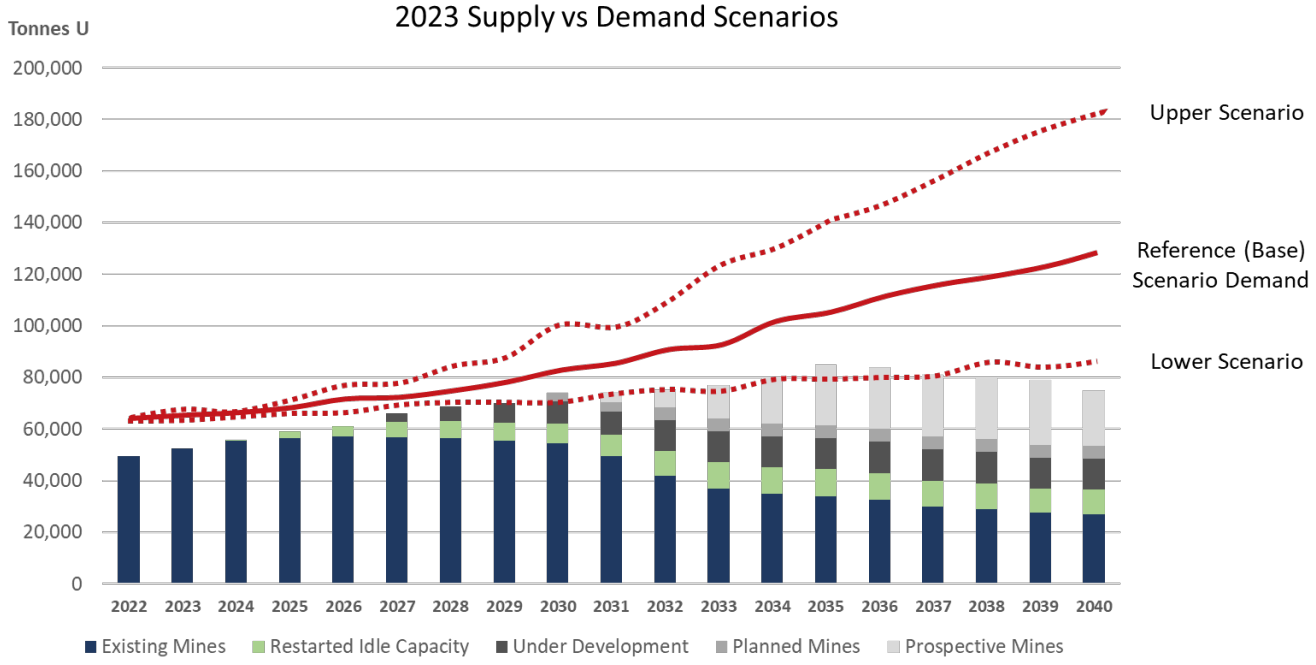
Accessibility also contributes to misinterpretation. Publicly available summaries of the Red Book or the WNA Fuel Report condense hundreds of pages into short overviews. They display capacity charts and demand balances but omit the detailed project analysis, cost curves, and caveats that explain why capability does not equal production. Without that context, the summaries imply that supply will track capacity far more closely than experience supports.

When Charts Reassure But Mislead

The WNA's 2023 supply and demand chart, widely circulated in presentations, appears to show a visible shortfall from 2022 through 2028. To an investor, it suggests that deficits are already present and worsening. The chart is not inaccurate—it follows WNA data—but the impression it creates is misleading:

- It suggests the deficit is already visible in prices, when inventories and fuel cycle lags are still masking it.
- It overstates certainty by treating project restarts and future mines as guaranteed.
- It draws attention to the reference and upper scenarios, which depict dramatic shortfalls, while the lower case—the only one briefly met—barely aligns with capacity.
- It ignores realization. The chart assumes 100 percent delivery with no 70 to 84 percent adjustment for historical performance.
- It omits buffers such as inventories, enrichment flexibility, and secondary supply, which delay visible tightness.

Figure 3.1: World Nuclear Association Supply vs Demand Scenarios



Placed in front of investors, this visual makes the market look tighter than it is today and simpler than it truly is. It implies that prices should already be higher and that future balance depends only on execution. In reality, the adjustment depends on how quickly buffers erode and how contracting evolves.

Market Relevance

For investors, understanding how these reports are structured prevents misplaced urgency. Reference Scenarios are not forecasts. Capability is not production. Unspecified supply is not real supply. The information is valuable when interpreted correctly, but dangerous when treated as predictive. The difference between framework and forecast is the difference between informed patience and premature conviction.

Investor Notes

- Reference Scenarios are conditional models, not forecasts.
- The Reference case averages about 16 percent above realized output over the next five years.
- Unspecified supply represents uncertainty, not deliverable tonnes.
- Public summaries omit critical caveats that explain shortfalls.

TRACK RECORD VS REALITY

> ***Capability is not the same as production. History shows that mines rarely deliver the tonnage forecast on paper.***
> ***NEA/IAEA Red Book***

For decades, uranium supply projections have overestimated production. Capability tables in the Red Book and supply curves in WNA reports have consistently exceeded what the industry delivered. The discrepancy is not new, but its persistence shows how models built for policymakers can mislead investors who interpret them as forecasts.

The Pattern of Overestimation

Between 2019 and 2025, global uranium production fell from 54,742 tonnes to 47,731 tonnes during pandemic disruptions before recovering to around 64,000 tonnes. Throughout this period, successive Red Book editions showed capacity paths far above reality. Each new edition lowered the ceiling but maintained an optimistic view of future recovery. The 2011 and 2014 editions assumed expansion projects that never materialized. The 2018 edition adjusted downward to reflect curtailments. The 2022 edition trimmed further yet still assumed on time restarts and new mines that remain delayed.

The same optimism is visible in WNA's Reference Scenarios, which typically plotted supply of 60,000 to 70,000 tonnes per year in the early 2020s while realized output remained closer to 50,000. On paper the balance appeared comfortable; on the ground, it was not.

Figure 3.2: Red Book A-II Production Capability Forecast vs Actual Production

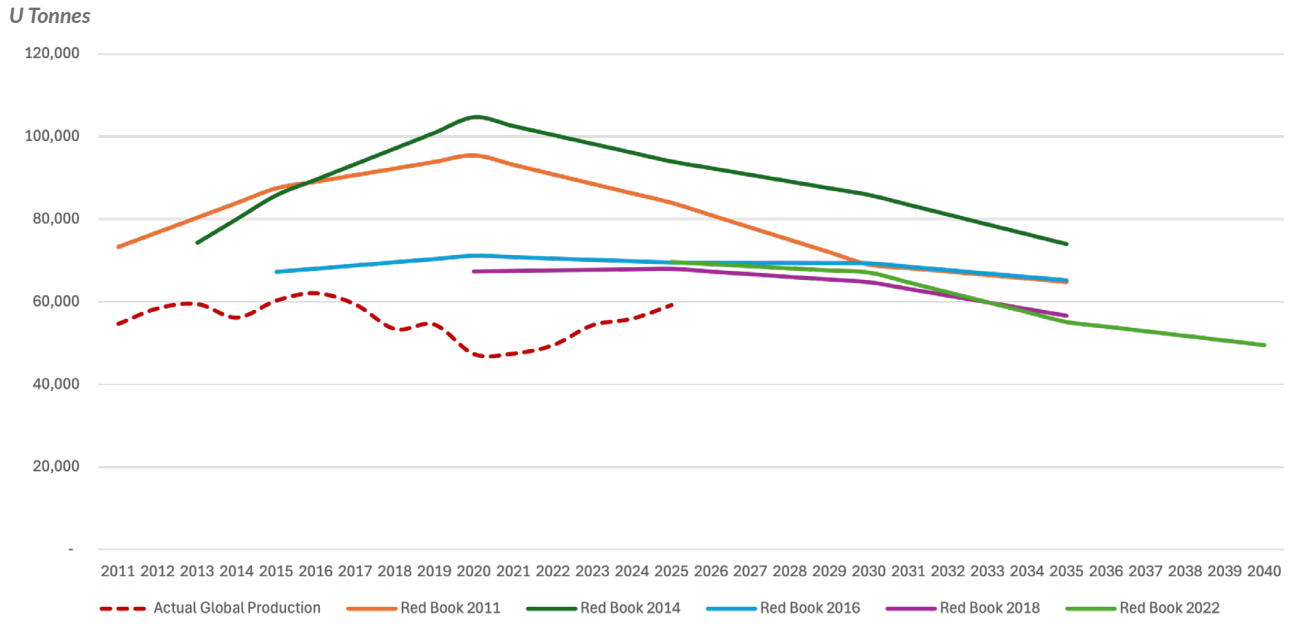
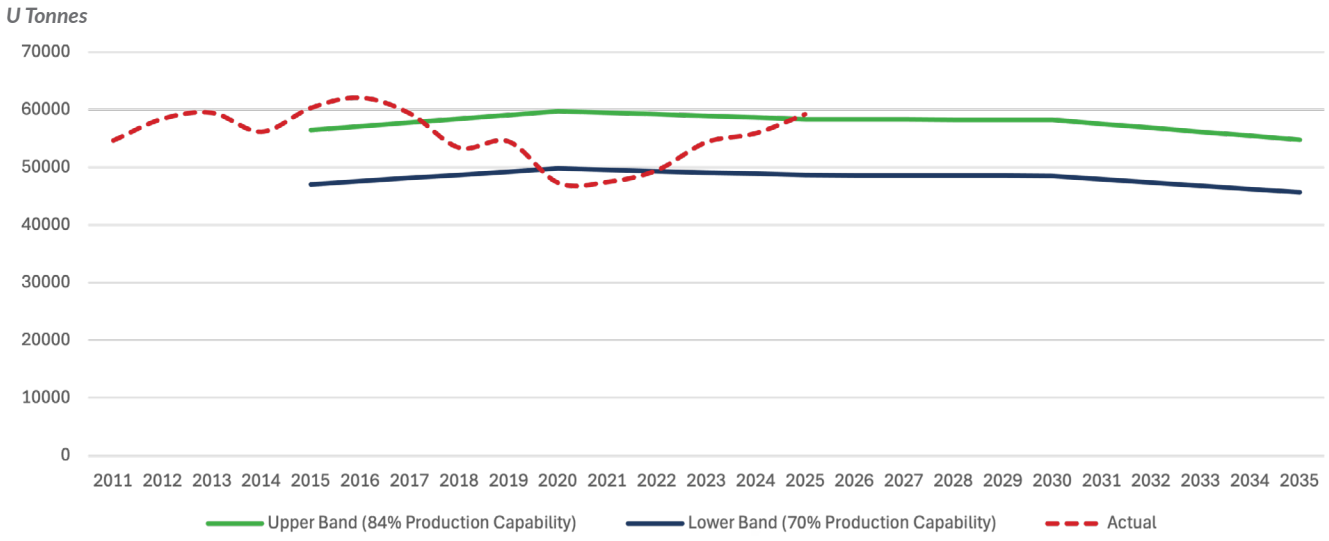


Figure 3.3: 2016 Red Book A-II Production Band vs Actual Global Production



Why The Deficit Hasn't Shown Yet

If forecasts overstated supply and production lagged, the deficit should already be obvious. Instead, several buffers have delayed its appearance:

- Inventories: Utilities and governments have drawn down stockpiles built during the oversupply years.
- Secondary supply: Underfeeding, re-enrichment of tails, and reprocessed materials have bridged shortfalls.
- Fuel cycle lag: It takes one to two years for mined uranium to reach reactors as fabricated fuel, dulling the annual impact of deficits.
- Contract coverage: Many utilities retained long contracts signed before the market tightened.

These buffers are finite. Inventories decline, enrichment margins narrow, and old contracts expire. As they do, deficits at the mine level will shift from hidden to visible.

Market Relevance

The evidence from decades of Red Book and WNA data reveals a consistent optimism bias. Capability routinely overshoots by 16 to 30 percent, while production falls within the Red Book's own 70 to 84 percent realization range. Investors who treat these capability lines as forecasts risk mistiming the cycle. The shortfall exists—it has simply been masked by temporary buffers. Once those fade, prices will adjust quickly.

Investor Notes

- **Capability projections have exceeded reality in every reporting cycle.**
- **The Reference Scenario averages 16 percent above actual production in subsequent years.**
- **Inventories and secondary supply have hidden the deficit but are declining.**
- **When buffers expire, prices will reflect the true structural shortage.**

PART IV - REFRAMING FOR INVESTORS

The first three parts of this paper examined how industry reports present uranium supply and demand, and why those presentations often leave investors with an incomplete or misleading picture. In this section we rebuild the outlook step by step—not from a utility's planning perspective, but from the standpoint of investors trying to understand when tightness in the fuel cycle will become visible.

We begin with supply, adjusting Red Book capability figures to reflect the historical realization range that converts capacity into realistic, fuel-ready production. We then turn to demand, which is grounded more firmly in the operating and planned reactor fleet. Finally, we bring supply, demand, and inventories together to show where they meet, where they diverge, and when the hidden deficit is likely to break into the open.

This reframing does not claim to predict a single point in time when prices will spike. It defines a plausible range based on transparent assumptions—identifying what is measurable, what carries risk, and what remains uncertain. The aim is to give investors a clear and disciplined sense of how close the market is to a turning point, and why official forecasts must be interpreted through a different lens.

REFRAMING SUPPLY

> ***Capability tells us what could be produced. Realization tells us what will be.***

The path from reported capacity to fuel ready supply is rarely straightforward. Each step introduces slippage, technical, logistical, or economic, that steadily narrows what the market can actually deliver. This chapter applies three layers of adjustment, Structural, Risk, and Shock, to move reported capability toward probable delivery and to reveal how the apparent surplus fades once real world performance is applied.

The Adjustment Process

Uranium supply figures in the Red Book and WNA Fuel Report start with capacity, what might be mined if every project proceeds on time and every facility performs flawlessly. History shows that never happens. To obtain a realistic picture, we apply three layers of adjustment:

1. Structural Adjustments correct for the difference between theoretical capacity and what mines actually deliver. They include the realization rate, the fuel cycle lag, and the influence of known secondary supply.
2. Risk Adjustments account for uncertainties in committed projects, restarts, and unspecified secondary supply. They also incorporate qualitative risks such as politics, logistics, and funding.
3. Shock Adjustments capture the unpredictable, geopolitical conflict, natural disasters, or systemic failures, that historically remove a measurable share of global output.

When these layers are applied together, capability collapses toward realized production, revealing the structural deficit hidden inside official projections.

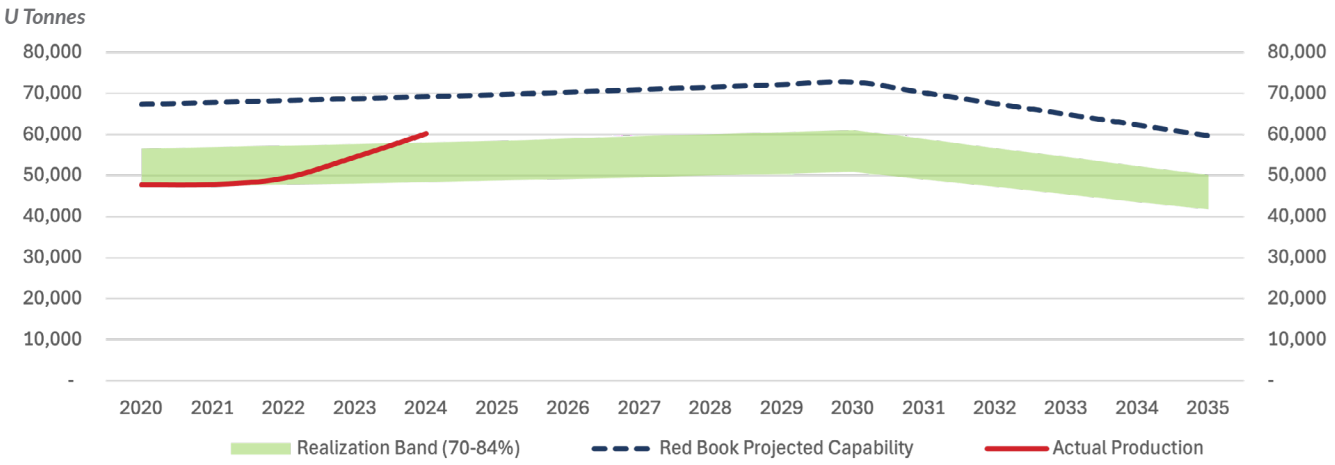
Structural Adjustments

REALIZATION RATE

The first adjustment is the realization haircut. History makes it clear that mines do not operate at their theoretical capacity. Across cycles, global production has consistently delivered between 70 and 84 percent of stated capability. This band reflects the accumulated drag of commissioning lags, gradual ramp-ups, equipment downtime, and ongoing maintenance.

Figure 4.1 shows how this adjustment reshapes the picture. The Red Book A-II capability line runs well above actual production, while the 70 to 84 percent band encloses the real-world outcomes. Actual production from 2019 to 2024 falls neatly inside the band, slightly exceeding the top and in stressed years brushing the lower edge.

Figure 4.1: Adjusting Capability to Historic Realization



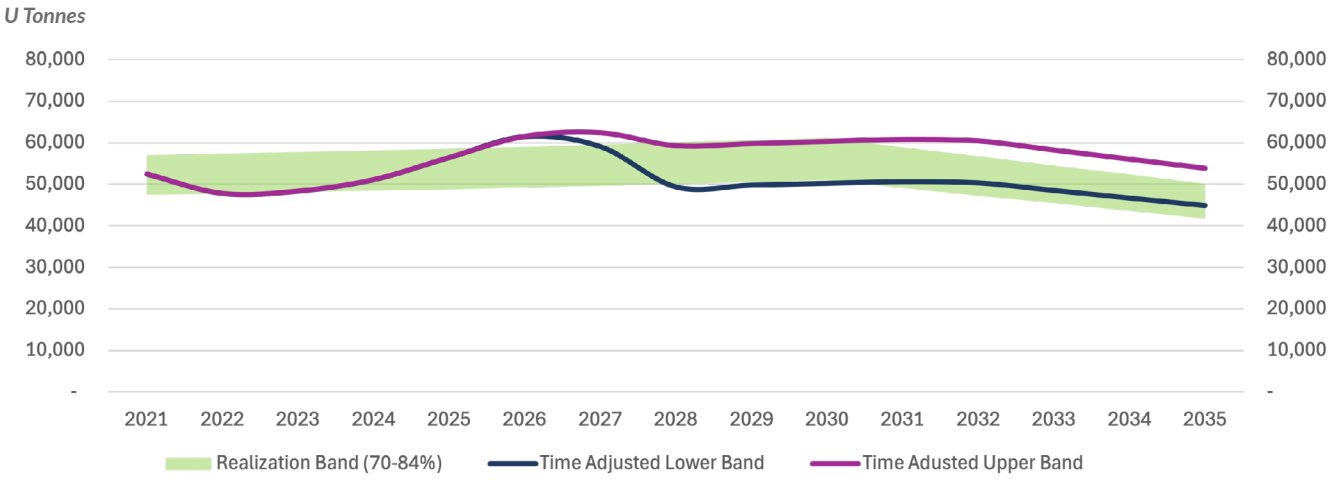
The solid line shows actual production through 2024 against Red Book A-II capability. From 2025 onward, the shaded band reflects the historical realization range of 70–84 percent, illustrating how capability translates into a narrower corridor of plausible supply rather than a single ceiling.

FUEL-CYCLE LAG

The second adjustment reflects the time required to convert mine output into fabricated fuel. Uranium must be transformed from U_3O_8 into UF_6, enriched, and then fabricated into assemblies. This sequence takes a minimum of twelve months and often closer to twenty-four. In our model, a base lag of eighteen months is applied, allocating one third of annual production into the following year and two thirds into the year after.

Figure 4.2 shows the effect of this shift. The realized supply band, once lagged, smooths out over time. A shortfall in one year does not translate into an immediate deficit at the reactor level but appears with a delay. This lag is critical for investors: it explains why tightness in mine output may not immediately surface in utility contracting behaviour but will emerge later when fabricated fuel deliveries converge with reactor reload schedules.

Figure 4.2: Delivered Supply After Fuel-Cycle Lag
Adjusting Time Lag for Conversion/Enrichment



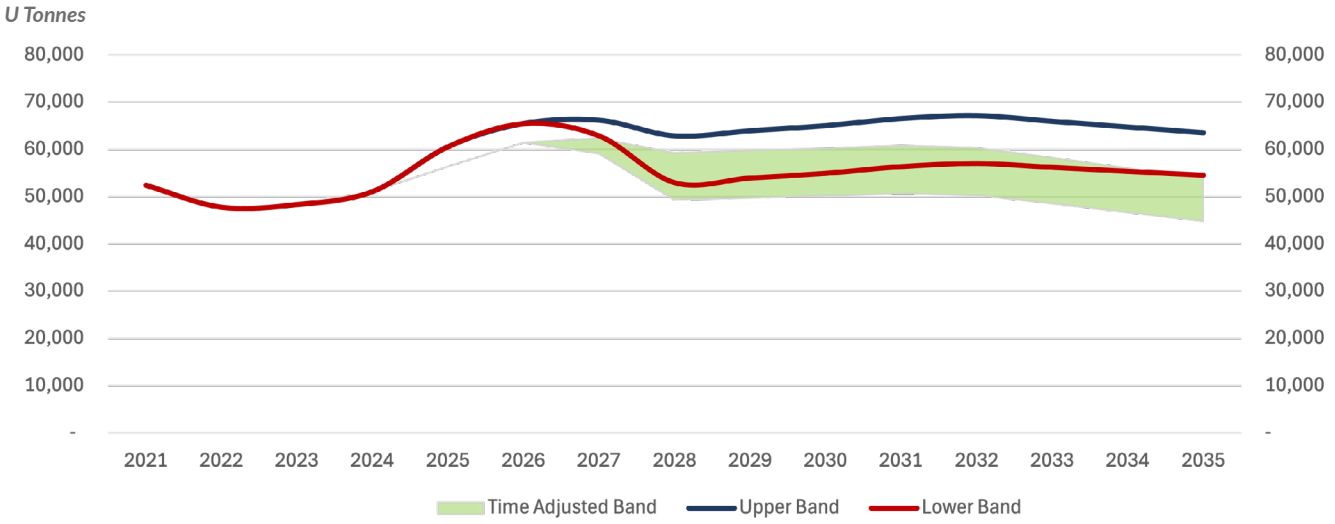
Actual production, lagged by eighteen months, is plotted as a solid line through 2025. From 2026 onward, the shaded band shows the lagged realization range, with supply arriving one to two years after mining. This shift highlights that production shortfalls are not felt immediately but emerge in the delivery cycle with a delay.

KNOWN SECONDARY SUPPLY

The third structural element is the addition of specified secondary flows. While many secondary sources are opaque or discretionary, some are documented and scheduled. These include DOE material inflows, ERU/MOX contributions, and other published commitments identified in WNA 2025 (Tables 4.21 and 4.22). Because these flows are dated and quantified, they can be added directly to the structural baseline without adjustment for probability.

Figure 4.3 illustrates this combined view. Lagged realized primary supply is lifted modestly by these known secondaries, but not enough to offset the flat-to-declining trajectory of mine output. Investors should note that while these contributions are real, they are limited in scale and duration, and cannot substitute for the sustained growth in primary production that the market will ultimately require.

Figure 4.3: Structural Supply with Known Secondary Adjusted for Known Secondary Supply



The solid line through 2025 shows delivered supply adjusted for realization and lag. From 2026 onward, the shaded band represents the forward range, with known secondary sources (DOE inflows, ERU/MOX) added on top. These contributions provide a modest lift to the baseline but do not alter the overall flat-to-declining trajectory of supply.

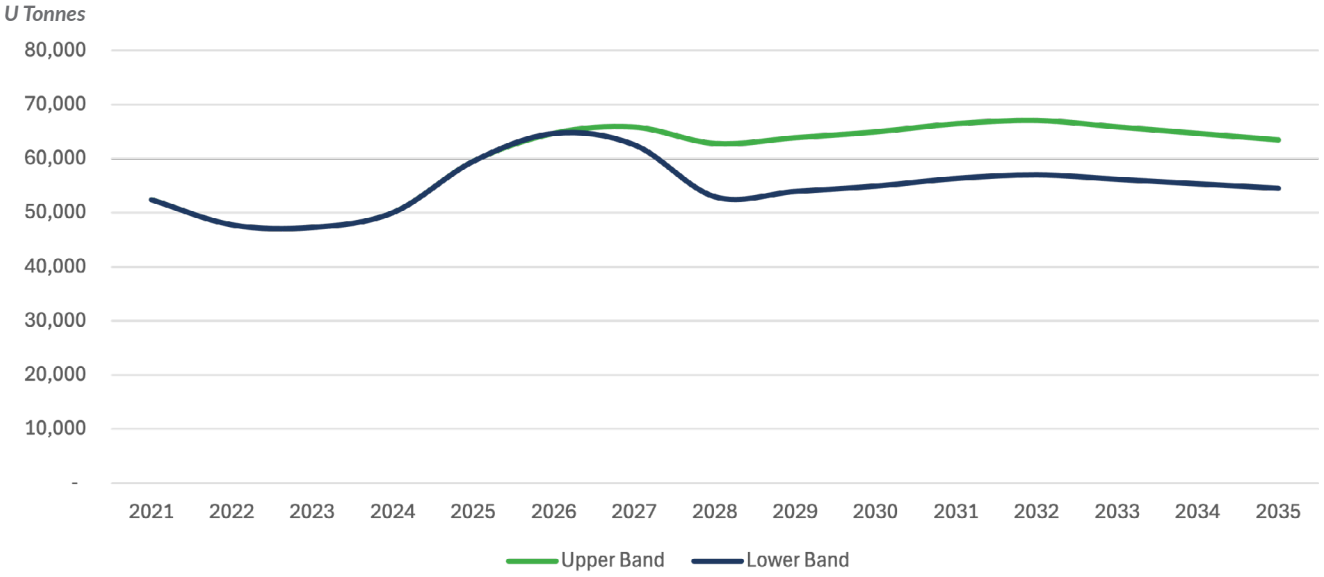
IDLED RESTARTS

The Red Book A-II capability figures include output from mines that were idled but considered restart candidates. In practice, not all of these centres have restarted as scheduled. By cross-checking company reports and recent production data, we can separate those that have returned to operation from those that remain offline.

This matters because the Red Book assumes these tonnes are available in its 2025 waypoint. If the re-start has not happened, then the capability line is overstated. For mines where a restart is confirmed, we shift them into the structural baseline alongside current production. For those still offline, their capacity is moved out of the baseline and placed into the risk layer, where their timing remains uncertain.

Figure 4.4 shows the effect of this adjustment. The solid line through 2025 reflects actual production, adjusted for realization, lag, known secondary supplies, and confirmed restarts. Beyond 2025, the trajectory turns into a band based on Red Book A-II capability, but corrected for the restarts that did not materialize on schedule. The result is a structural supply curve that rests on what is actually operating today and transitions into a historically reliable band thereafter.

Figure 4.4: Base Line All Structural Adjustments Applied



This completes the set of structural adjustments. From here, the analysis moves from what can be counted on with confidence to the projects, timelines, and buffers that introduce additional uncertainty.

Together, these four adjustments define the structural baseline. This is the closest approximation of what the system can reliably deliver as fuel, before introducing probabilistic risks, discretionary buffers, or shocks.

Risk Adjustment

Even after applying structural filters, the Red Book A-II capability line still assumes that all committed projects, restarts, and enrichment behaviour occur smoothly. Experience suggests otherwise. This section adds the risk adjustments — quantifiable factors that widen the range of plausible supply outcomes — and then considers the qualitative risks that are harder to chart but just as important.

COMMITTED PROJECTS AND RESTARTS

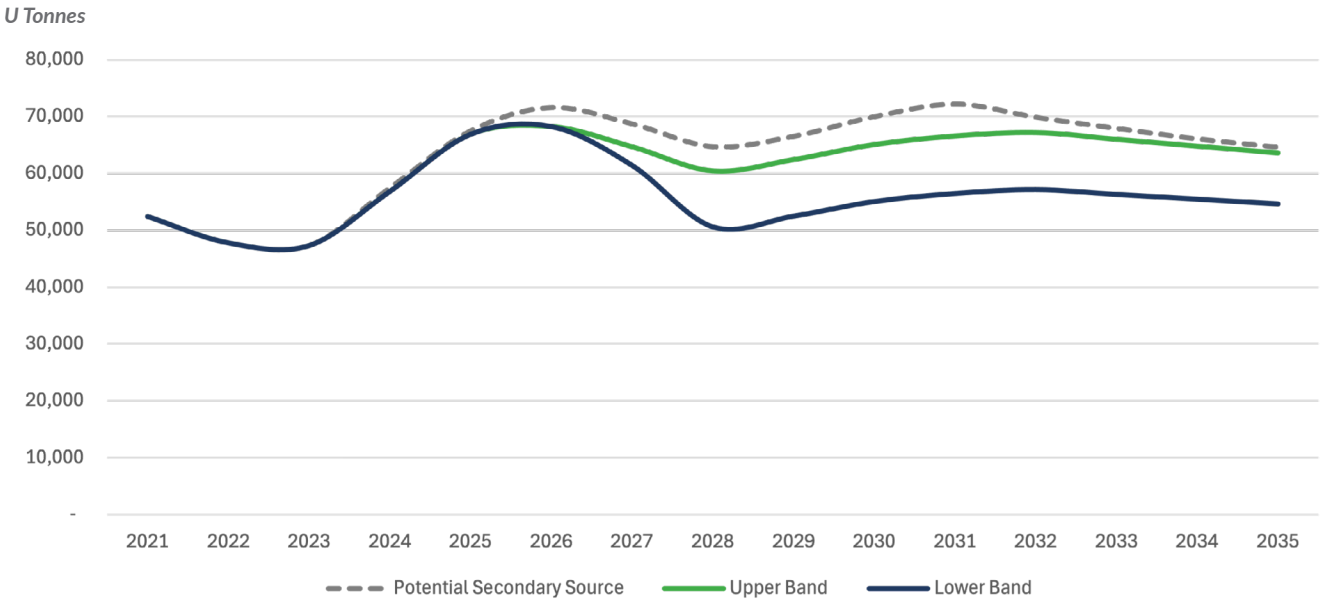
The Red Book includes tonnage from mines and expansions that are described as "committed" and from idled projects assumed to restart. In practice, these tonnes often arrive later or slower than scheduled. We reviewed recent committed centres and idled mines listed in the 2024 Red Book. Where production or restart has already occurred, those tonnes have been folded into the structural baseline. Where projects have not yet delivered, their capacity is carried here in the risk band. We assume conservative delays of 18 months and method-specific ramp-up curves. The effect on the global total is modest — roughly 2% — but it demonstrates that A-II continues to overstate how quickly these tonnes will materialize.

UNSPECIFIED SECONDARY SUPPLY (UNDERFEEDING AND TAILS)

A second risk factor is underfeeding. Enrichment plants can "squeeze" more uranium from the same feed when SWU is abundant, creating secondary uranium supply. When enrichment is tight, underfeeding disappears. WNA's 2025 scenarios (Table 4.19) quantify this effect.

For this analysis we assume that some minimal underfeeding will persist and include it in the baseline. This corresponds to WNA's "Upper" case, where enrichment is tight and contributions are small. Additional underfeeding, under Reference or Lower cases, is shown as dotted overlays above the band. Figure 4.5 illustrates this structure.

Figure 4.5: Risk Adjusted Supply



This figure highlights that after adjusting for committed projects and underfeeding, the baseline takes a different shape. At most, the dotted overlays show how enrichment slack could add incremental tonnes, however, these are uncertain, contingent on SWU market dynamics, and prone to vanish if enrichment remains tight.

QUALITATIVE RISKS

Beyond these quantifiable adjustments are risks that cannot be measured in tonnes but that weigh heavily on timing:

Permitting and licensing. Several projects in Africa, the US, and Asia face environmental reviews and community agreements that can delay production far beyond engineering schedules.

Financing constraints. Capital costs for new mines are rising. Juniors and even mid-tiers may struggle to raise funds, slowing projects that Red Book assumes are "committed."

Supply chain and labor. Acid, reagents, equipment, and skilled technical staff have become bottlenecks in past cycles. These are hard to model but consistently slow execution.

These qualitative risks tilt the outcome toward delays rather than acceleration. They do not alter the baseline tonnes directly, but they add context to why guidance often slips and why Red Book capability overshoots reality.

Together, the quantifiable and qualitative adjustments define the Risk layer: the zone where delivery becomes uncertain, timing slips, and secondary flows may or may not appear.

Shock Adjustments

Shock adjustments capture the rare and unpredictable events that fall outside the scope of Red Book capability tables or the risk adjustments applied earlier. These are sudden interruptions to the supply chain that can neither be forecast with confidence nor smoothed into averages. They tend to arrive without warning, and their effect is usually to reduce or delay supply rather than increase it. Because they are episodic and uneven, shocks are best handled qualitatively, with sensitivity tests rather than fixed numbers.

Shocks take many forms. Large underground operations have in past cycles suffered from major water ingress or ground failure, forcing extended dewatering, remediation, and re-engineering before production could resume. In situ recovery facilities and mills have been disrupted by acute shortages of reagents or power, which stopped output for weeks or months. At the country level, unrest or abrupt policy shifts have occasionally interrupted exports, while sanctions have constrained cross-border flows of UF_6 and enriched product. Severe weather can damage wellfields, tailings facilities, or haulage routes, while unplanned outages at conversion or enrichment facilities ripple back through the fuel cycle, cutting secondary supply and forcing greater reliance on mined uranium.

History shows that recovery from such events typically takes longer than early guidance suggests. Flooding at one major underground mine removed several thousand tonnes per year before it was repaired and restarted. Export interruptions have stranded material that was otherwise available on paper but inaccessible in practice. Conversion and enrichment outages have temporarily reduced UF_6 or SWU availability, which in turn lowered underfeeding and increased the draw on primary supply.

For this analysis, shocks are not added to the supply band directly. Instead, they are acknowledged as an overlay of uncertainty that can be tested with simple scenarios. A modest shock can be imagined by subtracting one to two percent of global delivered supply for a year, while a more serious event might remove three to five percent for one or two years. Alternatively, the loss of a single large asset for a full year, followed by a slow ramp-up, can be tested as a standalone sensitivity. The purpose is not to predict specific accidents but to remind readers how quickly a thin balance can tip into a visible deficit when even a modest disruption occurs.

These adjustments highlight the asymmetry of shocks: they almost always delay or reduce supply and almost never accelerate it. In a system already running close to balance, such interruptions have an outsized impact, especially when inventories are thin and enrichment is tight. For that reason, shock scenarios are best presented in prose and footnotes rather than as a permanent feature of the charts. They serve to explain why prudent buyers and sellers carry contingency plans and why price responses can be abrupt when the system has little slack.

Market Relevance

Correcting supply from capability to fuel-ready deliveries reveals how much the official numbers have overstated availability. Realization rates alone cut the ceiling down by nearly a quarter. Once lag and secondary timing are considered, the apparent balance in many published charts gives way to a structural shortfall. Even when committed projects, restarts, and underfeeding are layered on top, the supply trajectory changes little — it shifts in timing or form, but not in scale.

For investors, this means the central question is not whether Red Book tonnes exist, but whether they can be delivered into the fuel cycle when needed. History shows they cannot, at least not at the pace implied. The true supply line is lower, flatter, and more fragile than official capability curves suggest. That fragility is masked by inventory draws today, but once those buffers are thin, the gap between promised tonnes and delivered supply will no longer be hidden.

Investor Notes

- **Capability ≠ supply: mines consistently deliver only 70–84% of nameplate.**
- **Conversion and enrichment add a 1–2 year lag before U_3O_8 becomes fuel-ready.**
- **Known secondaries exist, but their scale is small relative to the gap.**
- **Restarts and committed projects add little near-term tonnage; most are delayed.**
- **Underfeeding can vanish entirely when enrichment is tight.**
- **Structural supply is lower, flatter, and less flexible than official forecasts imply.**
- **Inventories have covered the difference so far; once they thin, the shortfall will be visible and abrupt.**

REFRAMING DEMAND

> ***Supply can stumble, but demand is steady. Reactors run year after year, and their fuel needs are not optional.***

Unlike supply, which is shaped by delays, restarts, and operating risks, uranium demand is anchored in the reactor fleet. Each unit operates with a predictable reload schedule and consumes a measurable quantity of fuel. New build projects and retirements are known years in advance, and capacity factors only vary within a narrow band. For investors, this means demand is far easier to quantify than supply. The task is not to guess but to align the published requirements with the actual operating fleet, correct for quirks in the reporting methods, and present a transparent timeline of true uranium draw.

Building a Transparent Demand Line

Published demand curves, such as those in the Red Book and the WNA Nuclear Fuel Report, are often labeled "uranium requirements." While useful for policymakers, these numbers are not always a faithful reflection of market draw. They apply fuel multipliers to the entire operable reactor fleet, regardless of whether units are actually generating electricity, and they make no allowance for differences in load factors or reload timing. For investors, these quirks matter, because they determine how much uranium is truly consumed in a given year.

To produce a demand line that can be compared directly with our adjusted supply forecast, we need to translate those broad requirement figures into a more realistic, fuel-ready series. The process is simpler than on the supply side but no less important. It involves four main adjustments:

1. **Anchor to actual history —** check 2019–2024 requirements against recorded reactor operations and set 2024 as the last confirmed year.
2. **Correct for operable vs operating —** ensure demand reflects reactors that are actually running, not just those that are licensed.
3. **Normalize to natural uranium equivalent —** confirm all requirements are expressed in tonnes U equivalent to align with our supply line.
4. **Adjust for fleet changes —** incorporate the predictable effect of new builds, retirements, and known load-factor assumptions.

These steps convert the policy-oriented demand numbers into an investor-oriented demand curve. Unlike supply, the range of adjustment is narrow: new builds and retirements are published years in advance, and reactor reloads follow steady patterns. The result is a demand line that provides a clear, stable benchmark against which our re-framed supply outlook can be measured.

Establishing the Baseline

With demand, the task is not to conjure new numbers but to reconcile two respected forecasts and anchor them to what has actually occurred. The Red Book and the World Nuclear Association both publish uranium requirement scenarios, but they diverge in pace. Over the 2020–2025 period, the WNA consistently projected higher consumption, while the Red Book was more restrained. In practice, actual uranium requirements fell in between: higher than the Red Book's upper case, yet lower than WNA's central view.

To capture this, we created a blended baseline that uses the midpoint between the WNA Lower scenario and the Red Book Upper scenario. This pairing proved to be the most consistent with realized requirements during 2020–2025, where actual consumption tracked close to their average. We then adjusted the baseline upward by a small factor to correct for the average underestimation seen in those years.

Finally, we wrapped this central line in a narrow envelope to reflect the historical margin of error. A ±7 percent band around the debiased baseline covers the observed variance from 2020 through 2025. The result is a demand curve that extends to 2035 with a central trajectory closely tied to reality and a corridor that is tight and defensible.

Figure 4.6: Baseline Demand

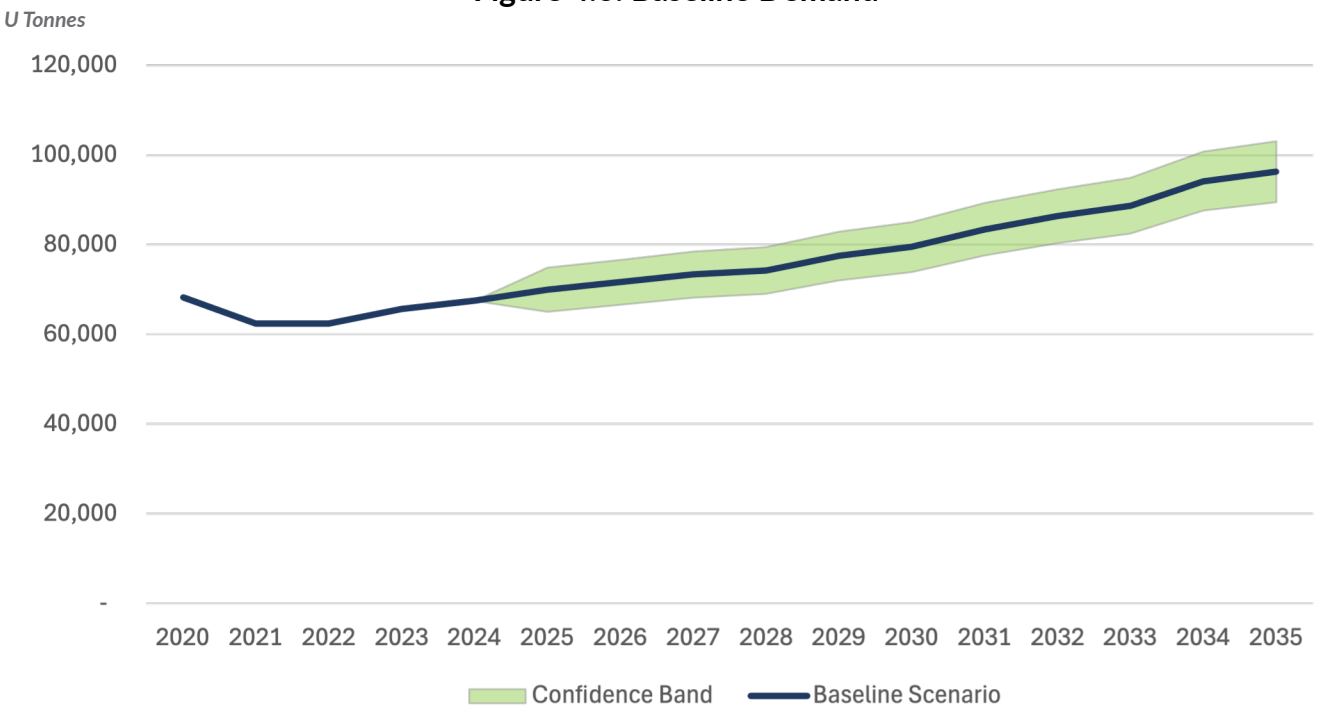


Figure 4.6 illustrates this construction. Actual requirements are shown through 2025, followed by the new baseline and its narrow corridor. The contrast with supply is immediate: while production forecasts fan out widely, demand falls within a narrow, predictable range. This stability is what allows us to focus on supply as the true driver of when visible scarcity will emerge.

Refining the Baseline

Even with a blended baseline that closely tracks actual requirements, two small technical adjustments are worth considering to bring demand into line with the realities of reactor operation and enrichment practice.

The first is the operable versus operating correction. Published requirement tables, whether from WNA or the Red Book, are derived from the total operable fleet. In practice, not every unit designated as operable is actually running in a given year. PRIS data, which records global operating capacity, allows us to measure the difference. Between 2020 and 2024, the ratio of operating to operable capacity ranged from about 97 to 99 percent. Applied to uranium requirements, this trims the published figures by a very small amount. The effect is not large enough to change the shape of the curve, but it ensures that the demand line represents actual reactor operation rather than licensed capacity.

The second adjustment relates to tails enrichment sensitivity. Uranium requirements depend not only on how many reactors are running, but also on the enrichment parameters used to fabricate their fuel. When enrichment capacity is loose, tails assays can be lowered, reducing the tonnes of natural uranium required per unit of fuel. When enrichment is tight, tails assays are raised, increasing natural uranium requirements. Using a central tails assumption of 0.20 percent as a reference, the effect of adjusting tails downward to 0.18 percent reduces demand by roughly 3 percent, while tightening to 0.25 percent increases it by nearly 10 percent. Rather than showing additional lines, we capture this by widening the demand envelope asymmetrically: a corridor that allows for 7 percent error on the downside, reflecting historical forecast variance, and 10 percent on the upside, reflecting enrichment tightness.

Figure 4.7: Adjusted Demand

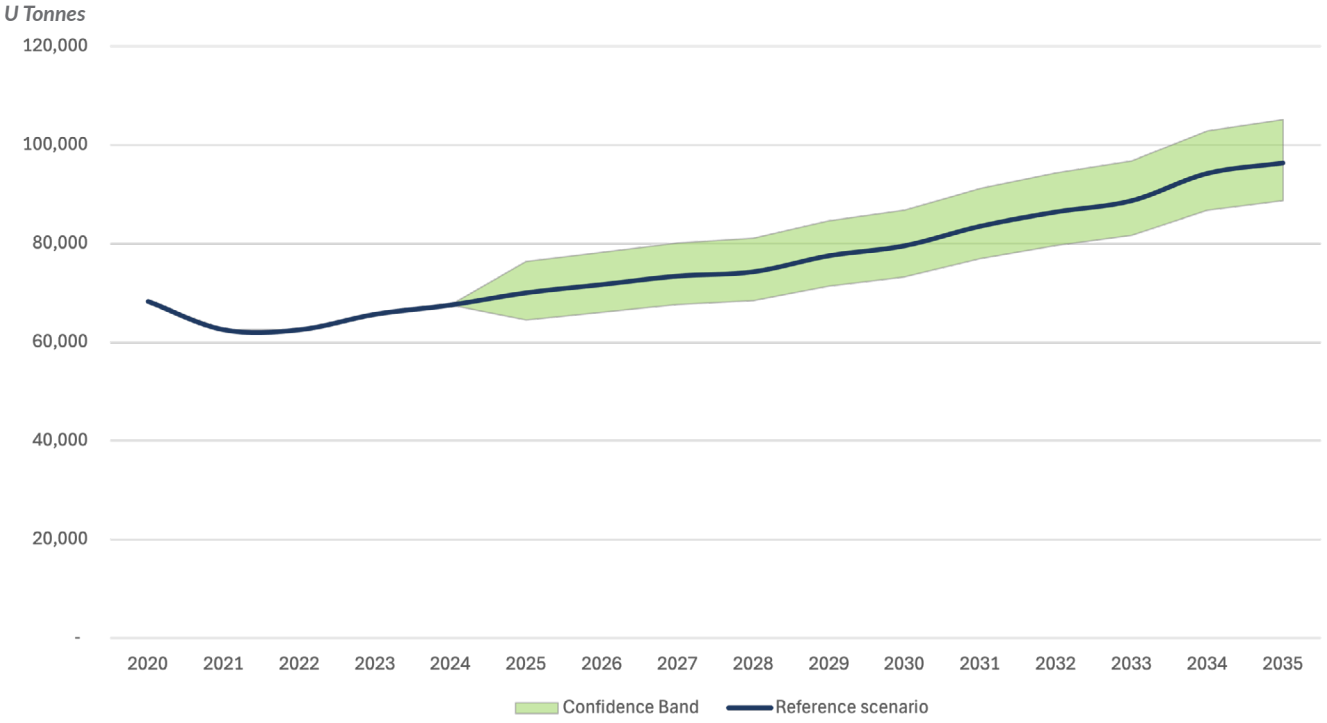


Figure 4.7 presents the final demand curve with these refinements. Actual requirements are shown through 2025, after which the debiased baseline carries forward to 2035 within a narrow corridor that reflects both historical forecast error and enrichment sensitivity. The adjustment is modest, but it highlights a critical point for investors: while uranium demand is more stable than supply, it is not completely fixed. Shifts in enrichment practice can nudge requirements higher just as underfeeding disappears, compounding the pressure on primary supply.

Qualitative Considerations

Beyond these refinements, there are broader uncertainties around uranium demand that resist quantification. They deserve recognition, but they are best handled qualitatively rather than built into the baseline.

One of the most common is **retirement timing**. Forecasts usually assume official retirement dates for aging reactors, yet history shows these dates are often extended. Political decisions, electricity shortages, or decarbonization goals can keep plants online years longer than planned. Conversely, sudden policy shifts can accelerate closures. These changes alter the trajectory of demand, but because they hinge on political and social choices, they cannot be forecast with precision.

A second area is **new technology optimism**. Scenarios from both WNA and the Red Book include contributions from small modular reactors (SMRs) and advanced designs. While these projects are progressing, their commercial contribution before 2035 will be minimal in global tonnage terms. They are important for the long-term narrative, but they should not be counted as near-term demand drivers.

Another factor is **load factor assumptions**. Most demand projections assume reactors operate at a standard 80–90 percent capacity factor. In practice, extended outages in France or delayed restarts in Japan have pulled realized generation lower. These variations matter in individual years but tend to smooth out globally, making them difficult to model in a consistent way.

Finally, **fuel management strategies** can shift annual demand. Some utilities extend cycles slightly, deferring reloads into the following year; others bring forward orders to lock in supply. These practices adjust timing, not the long-term trajectory, and are difficult to capture in aggregate forecasts.

Taken together, these factors underline that uranium demand is not perfectly rigid. But compared to the uncertainties on the supply side, these qualitative risks shift timing at the margin rather than redefining the curve. For investors, the important point is that demand remains predictable within a narrow range. The real volatility lies on the supply side.

Market Relevance

For investors, the story of demand is not one of volatility but of consistency. Unlike supply, where projects slip, mines underperform, and restarts drag out, uranium demand is driven by a fleet that runs year after year on predictable reload schedules. The adjustments we applied — anchoring to actuals, correcting for operating versus operable, and testing tails sensitivity — showed that even when the numbers are refined, the line does not move much. The range is narrow and bounded, with historical forecast error and enrichment effects amounting to less than a ten percent swing.

This stability is what makes the exercise so valuable. It means that investors can treat demand as a firm baseline and focus their attention on the supply side, where the range of outcomes is far wider. Inventories may still blur the picture in the short term, but the demand trajectory itself is not in question. That reliability is what turns the supply adjustments from a theoretical debate into a real investment signal: when the narrower demand line meets the structurally weaker supply line, the pinch point is exposed.

Investor Note

- Demand is simpler than supply — it follows reactor reloads, not mine plans.
- Actual requirements 2020–2025 confirm a tight corridor, well within ±10%.
- PRIS correction for operating versus operable reactors trims only a few percent.
- Tails sensitivity matters: tight enrichment can raise demand by ~10%.
- New builds, retirements, and SMRs are known but slow-moving; they add little uncertainty to 2035.
- Demand is stable and predictable — the real uncertainty lies in supply.

INVENTORY

“

Inventories explain timing, not balance. The deficit exists today, but whether it is felt this year or two years from now depends on what sits in stock and how much of it can move.

Every cycle reaches a point where the numbers alone stop explaining the calm. Prices hold, supply lags, and yet the system keeps running. The reason lies in what sits unseen between production and consumption, the quiet stockpiles that decide when pressure becomes visible.

The Role of Inventory

Inventories are the buffer that reconcile official supply and demand balances with the reality of the market. When production and secondary supply fall short, the gap is filled by drawdowns. When supply temporarily exceeds requirements, inventories absorb the surplus. For investors, this means inventories do not eliminate the deficit, they only delay when it becomes visible.

Forecasting without inventories risks calling the pinch too early. But forecasting with inventories can also be misleading, because the totals are not the same as mobility. Strategic stockpiles, pipeline material already in the fuel cycle, and commercial inventories held under contract all count toward reported totals but are not necessarily available to the market. The relevant question is not how many tonnes exist, but how many tonnes can actually move.

The Data We Have

The World Nuclear Association’s 2025 Fuel Report places utility inventories outside China and India at about 147,000 tonnes uranium at the end of 2024, up from about 125,000 tonnes uranium at the end of 2022. That increase reflects a combination of procurement and ownership shifts. Utilities rebuilt some working stock, but not because global supply suddenly exceeded demand.

The same report notes that about 41 percent of these holdings are strategic and are not intended for normal drawdown. Another large portion, roughly equal to one year of forward requirements, sits in the pipeline at converters, enrichers, and fabricators. That leaves only the remainder as potentially commercial. Even then, only part of that remainder is mobile. Some is tied to contracts, some is committed forward, and some is held as operational minimum.

Adding China and India brings the headline global total to more than 300,000 tonnes uranium. But the report itself cautions that China's holdings are primarily strategic, equivalent to about ten years of reactor requirements, and not available to the market. India's stocks are also described as strategic. On this basis, it is conservative and correct to treat Chinese and Indian inventories as non-mobile for the purpose of timing the global balance.

Producers and traders hold additional material, but mobility is limited. Producers carry working stocks needed for operations and deliveries, while traders often pre-commit their holdings in carry trades. These volumes may look large on paper, for example United States traders reported more than 13,000 tonnes uranium at the end of 2023, but much of it was already sold forward.

Where Mobility May Stand Today

If we divide the 2024 utility total into its components, the picture looks smaller:

- Strategic (about 41 percent): roughly 60,000 tonnes uranium
- Pipeline (about one year of non-Chinese and non-Indian requirements): roughly 55,000 to 60,000 tonnes uranium
- Remainder: roughly 27,000 to 32,000 tonnes uranium

Applying a reasonable mobility haircut to the remainder, say 40 to 80 percent, suggests a mobile range of perhaps 11,000 to 25,000 tonnes uranium for utilities outside China and India. Adding discretionary trader and producer volumes may increase that somewhat, but not by an order of magnitude.

In other words, the usable runway at the start of 2025 is on the order of one to three years of today's structural deficit. That is consistent with the pattern observed in 2023 and 2024: a modest surplus in the most optimistic scenario, but deficits in the baseline and pessimistic cases. The optimistic surplus appears to have been absorbed into pipeline rebuild rather than creating fresh slack.

Why The Numbers Are Difficult

Three factors make inventory analysis unreliable:

1. Composition. Totals combine strategic, pipeline, and commercial material. Only the last category is of interest to investors.
2. Form. U_3O_8, UF_6, and enriched uranium product have different lead times to the reactor, so availability depends on form as well as ownership.
3. Disclosure. Utility surveys and agency reports give broad numbers, but they are neither audited nor standardized. Traders and producers are even less transparent.

As a result, any specific mobile number is only an approximation. The safer conclusion is that inventories are finite, partly immobile, and shrinking relative to annual demand.

How Investors Should Use Inventory

Inventories should not be built into forward supply lines. Instead, treat them as a time buffer against the visible shortfall:

- The baseline deficit exists today. Supply is structurally lower than demand once adjusted for realization, lag, and secondary flows.
- Inventories delay visibility. Drawdowns can mask the gap for a year or two, but they do not change the underlying balance.
- Mobility is uncertain. Strategic and pipeline material cannot be assumed to be available. Only a modest fraction of reported totals is mobile.

The runway is short. Central estimates suggest one to three years of cover at current deficits. That places the visible pinch in the 2025 to 2027 window, consistent with the supply and demand overlay.

Market Relevance

For investors, inventories are best understood as the fuse length, not the powder. The powder is the deficit between adjusted supply and predictable demand. The fuse is how long inventories can mask it. Whether the window is one year or three, it is short compared to the timelines required to bring on new mines. That asymmetry — a slow moving supply side and a finite inventory buffer — is what creates the conditions for abrupt price adjustment.

Investor Note

- **Inventories reconcile why the market has not felt the deficit yet.**
- **Reported totals overstate what is mobile; strategic and pipeline dominate the count.**
- **Only a small fraction, perhaps 10,000 to 20,000 tonnes uranium outside China and India, is truly mobile.**
- **China and India's stock is strategic and not market relevant.**
- **Surpluses in 2023 and 2024 likely rebuilt pipeline, not marketable slack.**
- **The runway is short: one to three years at most, placing the pinch window in the mid-2020s.**
- **For investors, inventories explain timing, not balance.**

PART V - THE TURNING POINT FOR URANIUM

The previous sections dissected supply, demand, and inventory independently. Each piece told a partial story. Now the lines meet.

Part V brings those strands together to reveal what the adjusted numbers actually mean — when supply and demand converge, how long inventories can disguise that tension, and what happens when they no longer can. This is where forecasts turn into timelines.

The objective here is not to produce a single date or a precise shortage figure, but to understand the window in which the uranium market's structural imbalance becomes visible and unavoidable. From that point forward, price behavior and investor sentiment will follow patterns that are well established but rarely recognized in advance.

WHEN THE LINES CROSS

> ***Balance on paper is not balance in time. The market breaks when the barrels, drums, and contracts no longer line up with the dates on which they are needed.***

This chapter draws together the adjusted supply, demand, and inventory work to show when the shortage becomes real—not in theory, but in timing.

Three scenarios bracket the possibilities. The optimistic case assumes every restart succeeds, demand edges lower, and inventories stretch further than expected. The pessimistic case assumes continued delays and firm demand. Between them lies the central view, built from the most defensible assumptions: realized production, lagged fuel conversion, and modest secondary relief.

By placing these curves on a single frame, we can see where they cross and how that crossing moves through time. We also see why the pinch did not appear earlier, and why it cannot remain hidden much longer. The analysis that follows uses these figures to identify the most probable window when the shortage becomes visible and to explain, quantitatively, why the market still feels calm even as it runs out of cover.

The Illusion of Balance

The first scenario represents the market as it wishes to appear — stable, predictable, and comfortably supplied. It assumes that every link in the fuel chain performs flawlessly: restarts happen on time, new mines ramp smoothly, conversion and enrichment operate at full efficiency, and secondary sources flow freely. It also assumes that inventories remain liquid and available, with utilities continuing to release pounds into the market and traders able to carry material forward without constraint.

On the demand side, this picture imagines moderation: slower reactor buildouts, softer utilization rates, and enrichment optimization that reduces the amount of uranium needed per gigawatt. It is the scenario the industry hopes for — where the system looks calm and the risk of shortage recedes.

Figure 5.1: High Supply Scenario

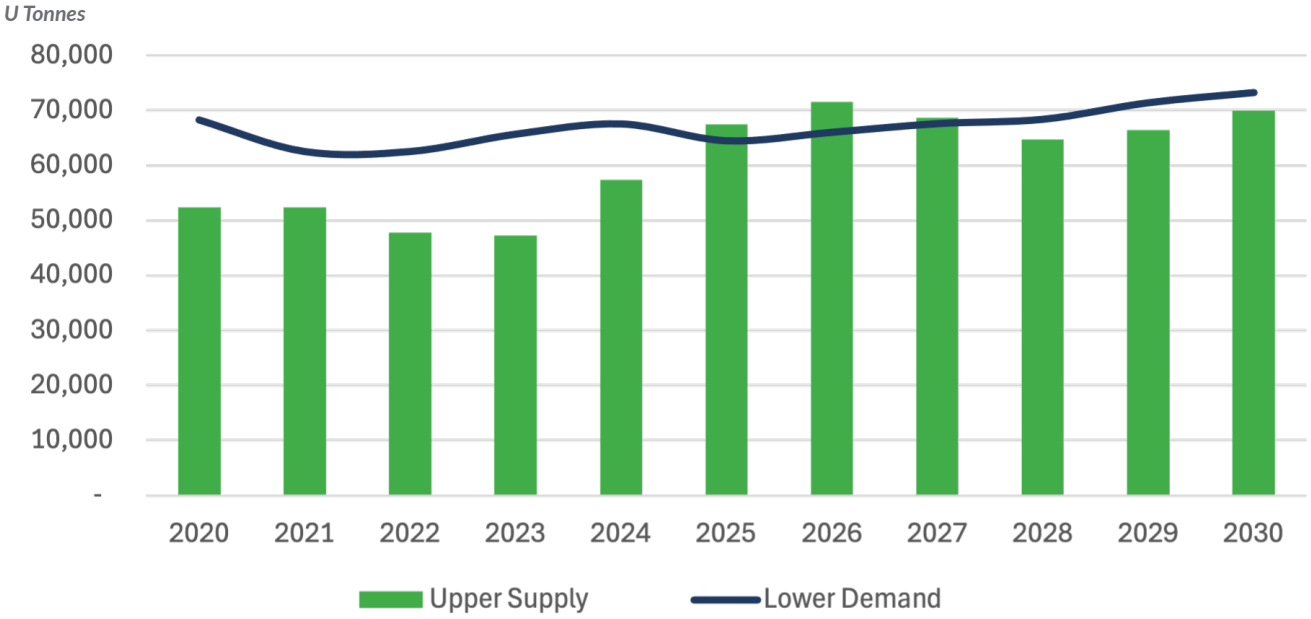


Figure 5.1 shows that illusion clearly. The high supply path remains below the low case demand through 2024. A shallow surplus appears from 2025 through 2027, reaching no more than a few thousand tonnes per year and never translating into real market relief. Those excess tonnes would be quickly absorbed by converter and fabricator inventories that had been drawn down in earlier years. From 2028 onward, supply again trails demand, and by 2030 the shortfall widens to roughly eight to nine thousand tonnes per year, even under these most optimistic assumptions.

To sustain this appearance of balance, every assumption must hold perfectly. Mines must deliver at nameplate capacity. Conversion and enrichment plants must run without interruption. Secondary sources must continue to flow at the high end of expectations. Inventories must remain mobile and willingly released, even as prices begin to rise. That has never happened before in the history of the nuclear fuel cycle.

The Illusion of Balance, therefore, is not a forecast but a retrospective. It explains why the market appeared calm in 2023 and 2024, when supply briefly caught up on paper, yet it also shows why that calm cannot last. The thin surplus that comforted utilities has already been spent. From 2025 onward, even perfect execution leaves the market structurally short. The balance that investors think they see today is simply the last echo of temporary relief.

The Real Picture

When we move from assumptions of perfection to what is actually achievable, the picture changes immediately. The Real Picture is built on the central case — a supply line adjusted for historical realization, the time required to convert and enrich mined uranium into fuel, and the modest contribution of known secondary sources. It represents what can realistically be delivered to the market, not what is theoretically possible on paper.

Figure 5.2: Base-Case Scenario

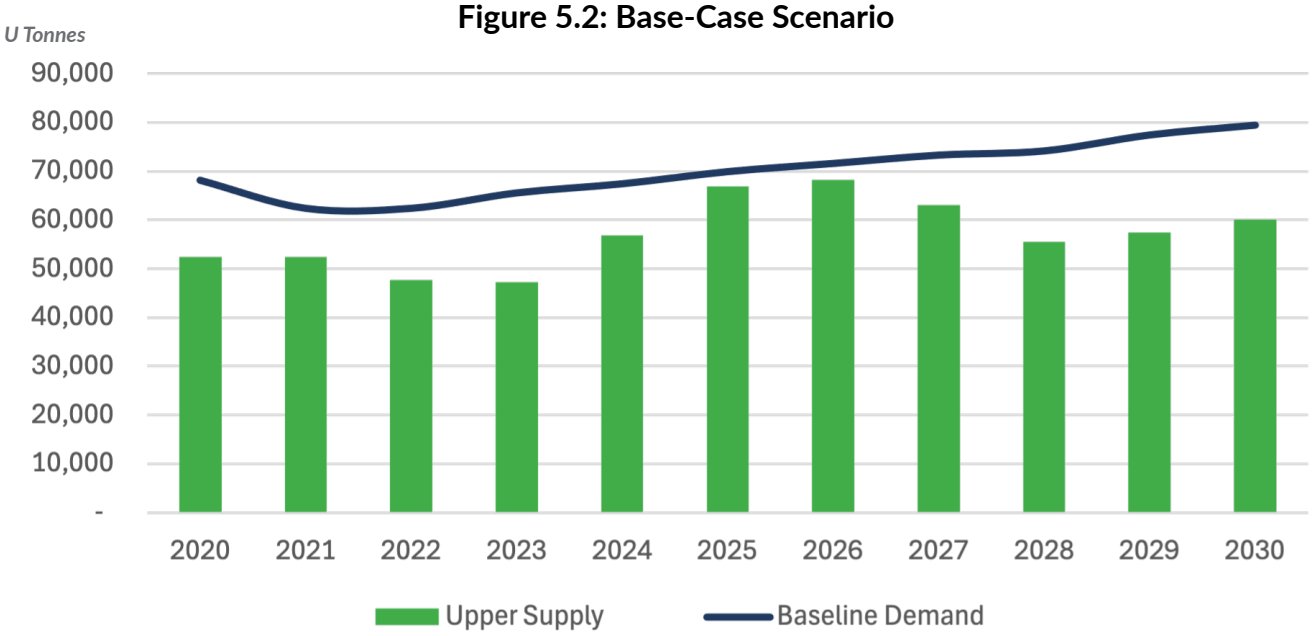


Figure 5.2 shows that balance has already broken. The demand line sits above the supply bars through the entire period, with only a narrow moment in 2025–2026 when the two nearly meet. By 2027, the gap reopens, and from there the deficit widens steadily. By the end of the decade, demand exceeds deliverable supply by eight to nine thousand tonnes each year.

This scenario assumes neither crisis nor failure — only normal performance. Mines operate at the historical realization range of seventy to eighty-four percent of stated capability. Restarts proceed, but not all at once. Conversion and enrichment capacity remain constrained. Underfeeding continues to shrink as

enrichment tightens. These are the same dynamics that have governed the cycle for years, now simply projected forward on realistic terms.

Inventories in this case play a delaying role, not a balancing one. Drawdowns in recent years have bridged the difference between mine output and fuel requirements, but those stores are finite. Even assuming one to three years of mobile coverage, the market cannot rely on them much longer. Once inventories return to operational minimums, the shortfall becomes visible, and utilities are forced back into the term market to secure forward supply.

The Base-Case scenario shows a system that is already short in substance, even if the symptoms are not yet fully visible. It explains why prices have been firm despite the perception of comfort: the comfort is borrowed time. The true balance point lies behind us, and each additional year of demand draws the industry further into deficit.

For investors, this is the most probable outcome — not because it is pessimistic, but because it matches how the fuel cycle has always behaved. Capability overshoots, production underdelivers, and inventories cushion the difference until they cannot. The question is no longer whether the pinch will arrive, but when it becomes impossible to disguise.

The Unmasking

The final scenario strips away every comfort. It begins where the others end — with the understanding that the system no longer has slack to absorb disappointment. The Constrained-Supply Scenario represents what happens when the recurring challenges that have defined this sector for decades continue to behave as they always have: projects slip, mines underperform, enrichment remains tight, and inventories grow protective.

In this version, there are no heroic assumptions. The lower edge of the supply band captures what happens when production delivers closer to seventy percent of stated capability and restarts come slower than scheduled. Underfeeding stays subdued, re-enriched tails contribute little, and some secondary supplies assumed in earlier models fail to materialize on time. Inventories that once smoothed volatility become inert, as utilities hold their minimum working stock rather than release it into a tightening market.

Figure 5.3: Constrained-Supply Scenario

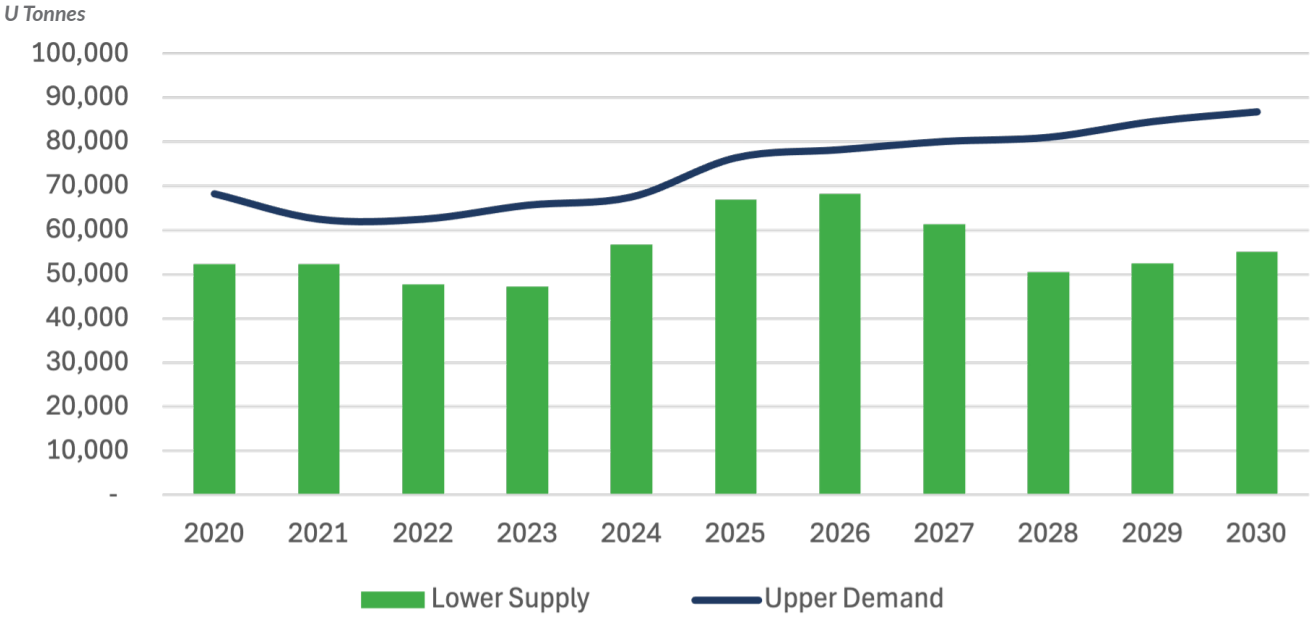


Figure 5.3 shows the result. The demand line stands well above the supply bars from the very start, with no point of contact or balance. Even in 2025 and 2026 — the brief years of apparent calm in the other scenarios — the gap here is visible and growing. By 2025, the deficit is clear and material. By 2026, it becomes structural, surpassing the scale of any plausible mobile inventory. By 2030, the shortfall reaches levels the industry has no capacity to offset within the decade.

This is the point of recognition — the unmasking of the deficit that has existed all along. The illusion of balance dissolves when the buffers that hid it run out. Utilities will first respond quietly, accelerating long-term contracting and locking in term coverage. Traders will thin their offers as carry trades lose viability. Spot availability will contract, and small parcels will begin clearing at higher prices without fanfare. Then, as it becomes clear that inventories cannot fill the gap, prices will begin to jump rather than drift.

The Unmasking does not describe a future collapse or crisis. It describes visibility — the moment when the underlying shortage becomes impossible to ignore. In reality, the Constrained-Supply Scenario is only a slightly more conservative version of the Base Case, but its implications are sharper. It reveals how little separates comfort from constraint. A handful of delays, a slow restart, or an enrichment bottleneck — none dramatic on their own — are enough to turn balance into shortage.

For investors, this is where opportunity lies. Recognition always lags reality. The fuel cycle adjusts slowly, and price discovery in uranium tends to come all at once. The Unmasking is not the end of the story, but the turning point when the data that has been visible for years finally translates into market behavior.

The Converging Lines

The composite view distills all three scenarios into a single frame — a baseline demand line drawn against the full range of plausible supply outcomes. It shows the lower, upper, and risk-adjusted upper supply paths, representing every reasonable combination of realization, timing, and secondary contribution.

Figure 5.4: Composite Summary

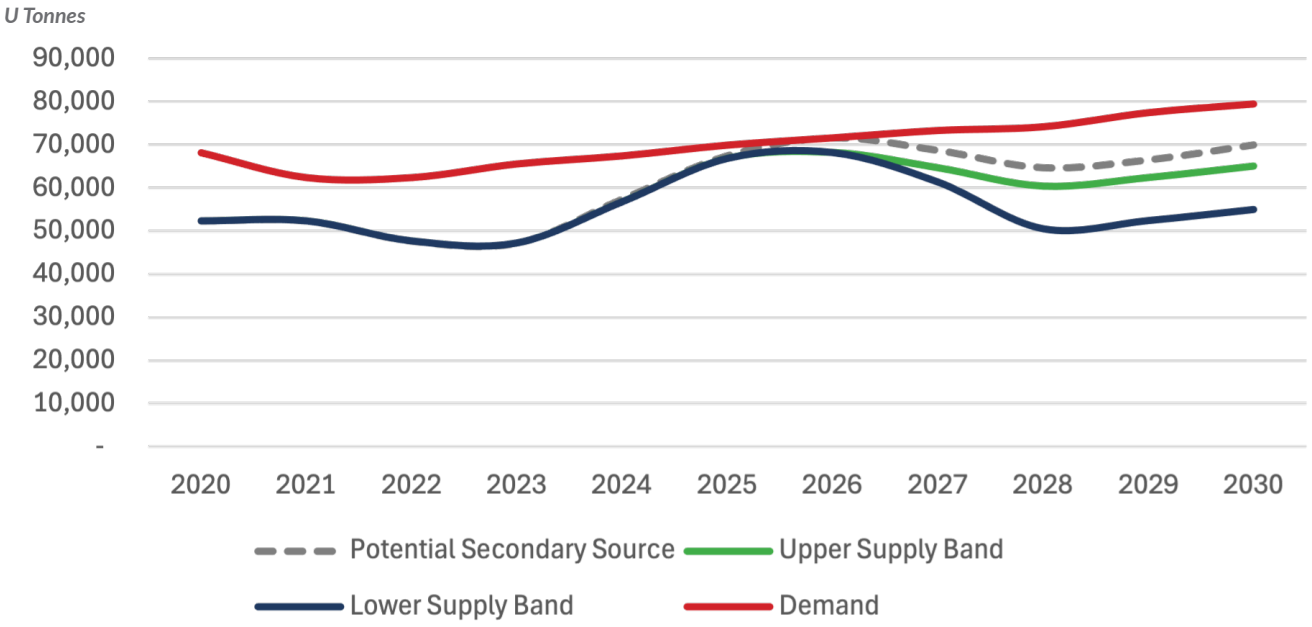


Figure 5.4 reveals how little room for interpretation remains. The demand line rises steadily while all three supply paths flatten. The lower supply path, corresponding to the Constrained-Supply Scenario, never approaches balance. The upper path, equivalent to the Base-Case Scenario, comes closest but remains below demand after 2025. Even the risk-adjusted upper line — which assumes generous underfeeding and a fully liquid inventory base — touches demand only briefly before diverging again.

The message is unmistakable. Regardless of how much optimism is built into the supply side, every line converges on the same outcome: a persistent and widening deficit beginning in the middle of this decade. The precise year when the lines cross depends on assumptions, but the window is narrow — between late 2025 and mid-2027. Beyond that point, no credible combination of restarts, expansions, or secondary relief is sufficient to re-establish balance.

This composite graph also clarifies why the past three years felt comfortable. The temporary alignment of high supply and low demand in 2025 and 2026 is now revealed as a brief intersection of two moving trends, not a stable equilibrium. From this point forward, the lines separate decisively, and the structural gap becomes the defining feature of the market.

For investors, the significance of this figure is simple: it marks **the turning point for uranium**. The crossing of these lines is not a theoretical exercise; it is the market's countdown clock. As the supply envelope falls permanently below demand, the only remaining buffer is inventory — and, as shown in the previous chapter, that fuse is short. When it burns through, prices will do the work of balancing the system.

Market Relevance

For investors, the crossing of these lines is not a forecast to debate — it is a transition to recognize. The models behind this chapter draw from the same public data that industry reports use, but they apply the realization, timing, and secondary adjustments that history has proven necessary. Once those adjustments are made, every plausible path leads to the same conclusion: uranium supply cannot meet reactor demand within the next few years.

The implications are direct. Utilities that have relied on inventories and secondary sources will soon return to long-term contracting in greater volume and at higher reference prices. Producers will prioritize term deliveries and exercise greater discretion in spot sales. Traders will find fewer carry opportunities as available pounds tighten. Each of these behaviors is a visible cue that the structural shortfall is becoming recognized.

Price response will not wait for a statistical shortage to appear; it will begin when buyers realize that future coverage is no longer assured. This is the stage the market is now entering. For investors, the importance of this chapter lies in its timing: the adjustment window is short, and the recognition phase has already begun.

Investor Note

- **The apparent balance of recent years was temporary — the system was already drawing on stored supply.**
- **All credible supply paths now fall below demand between late 2025 and mid-2027.**
- **Even after accounting for optimistic assumptions, balance cannot be sustained beyond a short window.**
- **Inventories mask, but do not eliminate, the deficit; their mobility is limited and shrinking.**
- **Early signs of tightening will appear first in term contracting, then in spot volatility.**
- **The turning point for uranium is not a forecasted event — it is a process now underway.**

READING THE SIGNALS

> ***Markets rarely announce that the balance has broken. They whisper it first — in contract terms, delivery schedules, and the silence of sellers.***

The crossing of supply and demand lines marks the structural turning point, but recognition in the market happens gradually. Before prices surge, before analysts revise forecasts, and before headlines acknowledge a shortage, the signals appear quietly in the fabric of the fuel trade. They are behavioral, not statistical.

This chapter focuses on those signals — the cues that confirm the pinch is forming even while official reports still suggest comfort. Most of them occur behind closed doors: in the timing of utility requests for proposals, the length of contract tenors, the language used by producers in guidance, and the changing patterns of trader behavior. Others are visible to investors willing to watch closely, such as deepening term premiums, thinner spot offers, and firmer floor prices.

Together, these developments reveal the progression from hidden deficit to visible tightness. The goal here is not to predict the exact price move but to understand the sequence of events that precedes it — the period when knowledge shifts from a few participants to the entire market. That is the moment when opportunity transitions from potential to performance.

Early Indicators

Before prices move, the market changes its habits. In the uranium trade, recognition begins long before it appears in public data. Utilities sense tightening first, producers confirm it with behavior, and intermediaries withdraw quietly from activities that no longer make sense in a tightening market. These are the early signals — small shifts that, taken together, mark the transition from apparent comfort to real scarcity.

The first cue comes from **contracting cadence**. For years, utilities have operated with long coverage horizons and slow renewal cycles, issuing term requests for proposals at a deliberate pace. As awareness of future shortfall grows, that rhythm changes. Requests become more frequent, cover longer periods, and focus on origin assurance rather than pure price. A growing share of tenders specify delivery windows several years out, often extending beyond 2030 — a subtle acknowledgment that coverage beyond existing contracts is no longer assumed.

Next, watch the **tenor of contracts**. During comfortable periods, most term deals span three to five years. As tightness approaches, tenors lengthen to seven or even ten years, often including options for additional volumes. This is not speculation by utilities; it is insurance. It signals that buyers are no longer confident they can roll coverage year to year at stable prices.

A third sign appears in **offer depth**. When markets are balanced, utilities receive a broad range of bids — ten or more, covering multiple jurisdictions. In tightening conditions, the number of qualified offers falls, and the distribution shifts toward established producers. Juniors and traders step back as they realize they cannot reliably source the pounds they would need to deliver. The decline in offer diversity is one of the earliest and most reliable indicators that deliverable supply is thinning.

At the same time, **conversion and enrichment queues** begin to lengthen. Fabricators report longer booking windows, converters start quoting deferred deliveries, and enrichers adjust tails assays upward to preserve SWU capacity. Each of these actions signals stress further up the chain. When tails rise and underfeeding declines, the system's "hidden secondary" relief fades, magnifying the pull on primary uranium.

Another subtle shift occurs in **producer language**. Company guidance begins to emphasize term contracting, delivery reliability, and disciplined market participation. Phrases such as "prioritizing long-term customers," "matching production to commitments," or "marketing pounds strategically" appear in management commentary. Each phrase is code for reduced availability of discretionary material.

Finally, traders — who often act as the market's balancing mechanism — start to pull back. **Carry trades** shrink as borrowing costs rise and available material tightens. The small arbitrage that once existed between spot and term prices closes, leaving little incentive to hold inventory. As traders unwind, liquidity in the spot market thins, making each incremental utility purchase more visible in price.

Taken together, these changes form a consistent pattern. The early indicators of tightness are behavioral, not numerical. They show up first in how contracts are written, how material is offered, and how market participants talk about their own priorities. The data may still show balance, but the behavior says otherwise.

For investors, this is the stage when awareness begins to shift. Utilities are no longer buying to restock; they are buying to protect. Producers are no longer selling to move inventory; they are allocating to ensure delivery. These are not isolated adjustments — they are the quiet confirmation that the lines have already crossed.

Hidden Tightness

Most of the proof that the market is tightening does not show up in public data. It lives inside private conversations, bid lists, contract drafts, and operating schedules. This is why the deficit can exist for years before it becomes visible to headlines. The information is real, but the channels are closed.
The first veil is confidentiality. Term requests, bid quantities, origin constraints, and escalation clauses are negotiated privately. Utilities do not publish who offered, how much, or on what terms. Producers rarely disclose the price or flexibility they granted, only that volumes were placed. Traders protect their carry structures and financing costs. By design, the critical information that would reveal scarcity is withheld.

The second veil is timing. The fuel cycle is slow. A weak mining year does not hit the reactor face until conversion and enrichment are complete. Adjustments in tails assay change natural uranium intensity, but those choices are also private and often flow through with a delay. The result is a mismatch between when stress occurs and when it appears in statistics.

The third veil is substitution. When conversion or enrichment becomes the bottleneck, buyers change form. They purchase UF_6 or enriched product instead of U_3O_8. On paper, uranium demand looks steady, but the pull on primary material is shifted and fragmented across the cycle. Official statistics can record balanced flows while the market for deliverable pounds is already tight.

The fourth veil is language. Companies signal conditions in cautious phrases rather than numbers. When producers say they are prioritizing long term customers or matching production to commitments, they are saying that discretionary material is scarce. When utilities ask for longer tenors or specify origin assurance, they are saying that coverage is no longer assumed. These are clear messages, but they are easy to ignore if you are only watching price.

Finally, there is the reflex to smooth. Agencies and industry groups aggregate country data, average surveys, and reconcile inconsistencies. That is valuable, but smoothing hides inflection points. A handful of missed ramps, a shift in tails, or a modest change in bid depth can mark the turning point, yet the rolling averages will not capture it until much later.

For investors, hidden tightness means two things. First, do not wait for public confirmations. By the time a deficit appears in official reports, the procurement response is already underway. Second, read behavior as data. Contract cadence, tenor length, offer depth, booking windows at converters and fabricators, and cautious wording in producer guidance together form a reliable signal. When these move in the same direction, the shortage is already working its way through the system, even if the charts still look calm.

Observable Symptoms

For those outside the contracting circle, the first visible evidence of tightening appears in prices and terms rather than volumes. These are subtle but measurable signals — the small cracks that appear before the structure gives way.

The clearest sign is the **widening of term premiums**. In balanced markets, the difference between spot and term pricing narrows to only a few dollars per pound, reflecting plentiful availability and flexible delivery. As tightness develops, that gap expands. Term offers climb faster than spot prices, signaling that producers are valuing certainty more than cash. This is the opposite of speculative behavior — it is risk management.

Next comes the **firming of spot floors**. Spot markets often overreact to short-term flows, dropping when traders release carry pounds or when utilities sell unneeded inventory. But as liquidity dries up, those dips become shallower and recover faster. Prices stop falling even when volume is light, and bids begin to chase offers upward. This change in market texture — less volatility on the downside, sharper moves on the upside — is the behavioral fingerprint of tightening supply.

The third symptom is **reduced origin flexibility**. In looser periods, utilities can specify a range of acceptable sources. As inventories dwindle and geopolitical barriers increase, those choices narrow. More bids exclude specific regions, and more offers are tied to designated origins. Each time flexibility shrinks, the market's ability to absorb shocks diminishes. What was once a single fungible pool of uranium becomes a patchwork of isolated flows.

These are not dramatic shifts; they are quiet and cumulative. Term premiums widen by degrees, floors become sticky, and optionality erodes. But together they tell a single story: the hidden deficit is starting to show itself in the market's behavior.

Interpretation

For investors, these signals mark the transition from comfort to quiet constraint. The market does not ring a bell when balance turns to shortage. Instead, it changes its rules. Utilities begin paying more to lock coverage, producers stop chasing volume, and traders find fewer profitable spreads. Each change looks minor in isolation; together they redefine the structure of the trade.

This is the period when price inertia ends. The forward curve tilts upward, volatility compresses on the downside, and the smallest incremental demand begins to move prices disproportionately. It is also when headlines remain calm — official forecasts still show balance — because the stress is behavioral, not statistical.

Recognition follows behavior. By the time agencies revise their tables or analysts call out a deficit, the participants inside the market have already adjusted. For investors, this is the opportunity window: the phase when the fundamentals have shifted but broad awareness has not.

Market Relevance

The signals described here define the onset of the turning point. They are the bridge between a structural shortage and a visible price response. For those watching from outside the contracting floor, they are the only practical way to gauge where the market truly stands.

Each of these indicators — longer tenors, firmer floors, shrinking offer depth, and rising term premiums — confirms that deliverable material is no longer abundant. Utilities are no longer managing price; they are managing access. Producers are no longer seeking share; they are defending obligations. These are the conditions that precede price discovery.

For investors, this stage is critical because it offers confirmation without saturation. Once these cues are widely recognized, the market will already have repriced. The edge lies in identifying them early, understanding their significance, and recognizing that the turning point has already begun.

Investor Notes

- **The earliest signs of tightening appear in behavior, not statistics.**
- **Term premiums widen as producers value certainty over price.**
- **Spot floors strengthen as liquidity thins and bids chase offers.**
- **Origin flexibility narrows, reducing the system's ability to absorb shocks.**
- **These signals precede visible price movement — by the time data confirms them, the market has already adjusted.**
- **Investors who watch contracting behavior, not just spot quotes, will see the turning point first.**

THE MARKET'S RESPONSE

> ***Recognition, not scarcity, is what moves prices. Scarcity builds in silence; recognition happens all at once.***

The turning point in the uranium market will not arrive with a single event. It will emerge through a sequence — utilities returning to long-term contracting, spot volumes thinning, and equities beginning to anticipate what the data already shows.

The lines have already crossed. The market is in deficit now; only inventories and timing mask it. This chapter explains how that deficit becomes visible, how the price response unfolds, and how uranium equities will react once recognition spreads.

Term Tightness First

The first move always happens in the term market, where utilities secure multi-year coverage. This phase is already under way. Contracting volumes are rising, tenors are lengthening, and more bids now specify origin and assurance, not just price.

As utilities compete quietly for reliable supply, the long-term reference price begins to lift. Producers respond by holding back discretionary pounds and allocating production toward firm contracts. The change is subtle but decisive: price discovery shifts from traders to utilities.

When term prices climb, it is not speculation — it is confirmation that the structural deficit is now being priced in by the only buyers that matter.

Spot Follows in Steps

Spot price response comes later, and it comes in bursts rather than a smooth climb. The uranium spot market is thin — often less than a few million pounds of liquidity at any moment. Once traders and producers withdraw material to fulfill term obligations, every small purchase moves the price.

The result is a **stair-step pattern**: long periods of stability punctuated by sharp upward adjustments when a utility, trader, or fund needs physical material. Those steps set new floors, rarely retracing.

In past cycles, these jumps were often dismissed as speculative noise, but in a structurally short market they are the visible expression of constrained availability. The steps do not reflect hype; they measure the market's realization that supply is already spoken for.

Equities React In Sequence

Equity markets mirror the fuel cycle's progression. Producers move first, developers follow, and explorers move last — but with the greatest leverage.

- **Producers** re-rate as term prices rise. Utilities prefer certainty, and every new long-term contract at a higher price increases valuation transparency. The move is steady, not explosive, but it forms the base of the cycle.
- **Developers** accelerate when utilities start extending coverage beyond existing producers. A single off-take or term negotiation can reprice an entire peer group, as investors see that latent capacity will be required.
- **Explorers** react only when the shortage becomes undeniable. When the conversation shifts from "when will prices move?" to "who will find the next supply?", early-stage equities reprice most sharply — the asymmetric phase of the cycle.

The timing between each group can be months, not years. Once recognition spreads, capital moves quickly down the risk curve.

Timing The Recognition Phase

The math from Chapter 1 pointed to a **visible pinch window between late 2025 and mid-2027**, with mid-2026 as the central expectation. The early signals described in Chapter 2 — widening term premiums, thinning spot offers, and longer tenors — show that the process has already begun.

The pattern typically unfolds in four overlapping stages:

1. **Utilities rebuild coverage** – contracting volumes rise; term prices strengthen. (Already in progress.)
2. **Spot liquidity fades** – inventories no longer offered; prices jump episodically. (Likely through 2025.)
3. **Public recognition** – agencies and analysts revise projections; media picks up the story. (Mid-2026 window.)
4. **Equity acceleration** – valuations re-rate across the sector; explorers capture late-cycle asymmetry. (2026–2027.)

The process is already underway — what remains is the moment when recognition becomes consensus.

Market Relevance

The turning point for uranium is no longer theoretical — it is unfolding in real time. Recognition within the fuel cycle has already occurred. Utilities are contracting forward, producers are limiting discretionary sales, and secondary supplies are fading. What remains is the broader market's realization of what those actions mean.

For investors, this chapter is not about watching the cycle begin; it is about positioning for its continuation.

The physical adjustment is already in motion. Term prices are rising because buyers are paying to secure coverage. Spot volatility is a symptom of shrinking liquidity, not speculation. Equity performance will follow as the rest of the market connects these dots.

The opportunity now lies in understanding sequence and timing. The supply–demand balance will not normalize quickly, because mine development and restarts require years, not quarters. Once recognition becomes consensus, price discovery accelerates. The winners in this phase will be those who recognize that the adjustment has already started and that the next stage is not prediction, but participation.

Investor Notes

- The deficit is already in motion — focus now shifts from recognition to positioning.
- Contracting, not commentary, drives the price cycle: monitor term volumes, not headlines.
- Term price escalation is the first confirmation of scarcity being monetized — a leading, not lagging, indicator.
- Spot volatility is a symptom, not the story; sustained floors signal the real transition.
- Producers offer leverage to pricing power; developers to duration; explorers to discovery premium — each plays a timed role in the cycle.
- Capital rotation down the risk curve happens faster than expected once consensus shifts — plan entry points before that phase.
- The window for accumulation closes as the 2026–2027 recognition phase becomes mainstream.

IN SUMMARY

The market's balance has already shifted. Adjusted supply and demand curves show that the deficit is not a future risk but a present condition. Inventories have masked it temporarily, but their capacity to do so is nearly spent.

The first phase of recognition is under way. Utilities are extending contract coverage, term prices are rising, and discretionary supply is tightening. These are not forecasts — they are observable behaviors confirming that the shortfall is now being priced. Spot market volatility and selective equity strength are early reflections of that process.

From here, timing replaces uncertainty. The visible pinch window identified in this paper — late 2025 through mid-2027 — defines the period when recognition becomes consensus and prices begin to realign. What follows is the market's natural response: term strengthening, spot repricing, and a cascading re-rating of uranium equities.

The turning point for uranium has arrived quietly. What remains is for investors to recognize that it is already in progress.

PART VI- HOW HIGH AND HOW HARD

WHEN RECOGNITION TURNS TO REACTION

> ***The market always moves too slowly—until the moment it moves too fast.***
> ***— Anonymous uranium trader, 2007***

At this point, the message is clear. Supply cannot match demand within any reasonable timeframe. Every credible source now converges on the same truth — the system is running out of flexibility. What matters from here is no longer if the market tightens, but when recognition breaks, how fast prices react, and what scale of movement investors can expect.

When Recognition Happens

Based on accumulated data, observed contracting trends, and typical lag structures, recognition of the shortfall is most likely to occur between mid-2026 and early-2027.

Historical realization rates, project delays, and conversion bottlenecks together advance the shortfall roughly 18–24 months ahead of official forecasts.

At present, the balance of evidence indicates this window is likely, corresponding to roughly a two-in-three to four-in-five probability that visible tightness appears within that period.

The assessment draws from five key levers:

Lever	***Current Reading***	***Directional Effect***
Realization vs Nameplate Capacity	Moderate-High Shortfall	Advances Pinch
Restart and Ramp Slippage	Moderate	Advances Pinch
Fuel Cycle Lag (Mine to Fuel)	High	Advances Pinch
Contracting Velocity	Moderate-High	Advances Pinch
Mobile Inventory Availability	Low-Moderate	Delays Pinch Slightly

If these readings persist or strengthen, the recognition window remains centered in mid 2026 to early 2027. Only a combination of accelerated restarts and unexpected new supply would extend it beyond that range.

PART VI- HOW HIGH AND HOW HARD (cont'd)

How Fast The Market Moves

Once recognition takes hold, uranium markets move quickly. The structural lag that delays price discovery also compresses the reaction.

Looking back over previous cycles, the steepest **80 percent of price appreciation occurred within 12–18 months** of the recognition phase. The same dynamic holds today: contracting velocity will climb, utilities will compete for coverage, and price escalation will outpace any immediate physical change in supply.

Inventories provide only a brief buffer. Once utilities accept that balance sheets no longer represent available supply, contracting becomes reflexive. Prices do not climb gradually—they gap higher and stabilize only after replacement production is fully financed and visible.

How Prices Can Go

The incentive price for new mine development sits near **$80 per pound**, already achieved in long-term contracts. But incentive is not equilibrium.

Historically, once markets recognize a structural deficit, prices overshoot incentive by **40–100 percent** before settling back to cost-supportive levels.

That range implies a plausible reaction zone between **$110 and $150 per pound U_3O_8**, depending on how quickly utilities secure coverage and how soon producers can respond.

These figures are not projections; they are the probable outcomes of delayed adjustment. Uranium's price elasticity is steep because no other mechanism can restore balance in time.

Equity Response

When recognition occurs, equities follow a familiar sequence:

Stage	*Typical Lag*	*Market Behaviour*
Producers	Immediate	Re-rate on forward margins and contracting visibility
Developers	1-2 quarters	Accelerate as financing reopens and term prices signal rebuild economics
Explorers	2-4 quarters	Reprice asymmetrically as capital seeks the next tier of optionality

Historically, producers deliver roughly 2× the uranium price move, developers 3–5×, and explorers often an order of magnitude more during peak liquidity.

These moves are rarely smooth — they compress into the same 12–18 month window as the price surge itself.

What To Watch Next

Investors now have the essential reference points:

- **When**: Recognition likely mid 2026 to early 2027, based on current cue readings.
- **How fast**: Majority of price response within 12–18 months once recognition begins.
- **How high**: Probable overshoot toward $110–$150/lb, sustained until replacement supply is funded.

From here, timing becomes the key variable. Each production delay, contracting surge, or policy shift moves that clock forward or back. These dynamics can now be translated into a measurable framework. Each new cue such as production guidance, contracting velocity, enrichment utilization, or inventory movement alters the timing of recognition. The following section tracks that progression in real time, showing how those cumulative signals reveal when the tightening becomes visible.

Market Relevance

The uranium price has already reached the incentive level for new development, but visible supply additions remain limited. Historically, that combination precedes a sharp acceleration phase within one to two years. Investors who wait for evidence of tightness risk entering during the steepest part of the curve.

Investor Notes

- **Recognition of shortfall is expected mid 2026 to early 2027, aligning with accelerating term contracting.**
- **Price surges have historically unfolded over 12 to 18 months, producing overshoots of 40 to 100 percent above incentive levels.**
- **Producers typically capture the first wave of re-rating, while developers and explorers provide leveraged follow-through.**
- **The timing of this sequence is now measurable through observable cues, detailed in Part VII – Tracking the Turning Point.**

PART VII - TRACKING THE TURNING POINT

The final part of this paper shifts from analysis to application. Having established when and why uranium markets tighten, the focus now turns to how to track that moment as it approaches. Static forecasts have limited value in a system that evolves by delay, deferral, and surprise. What investors need is a framework that measures progress toward recognition in real time — one that converts individual market cues into a clear view of how near the next inflection point has come.

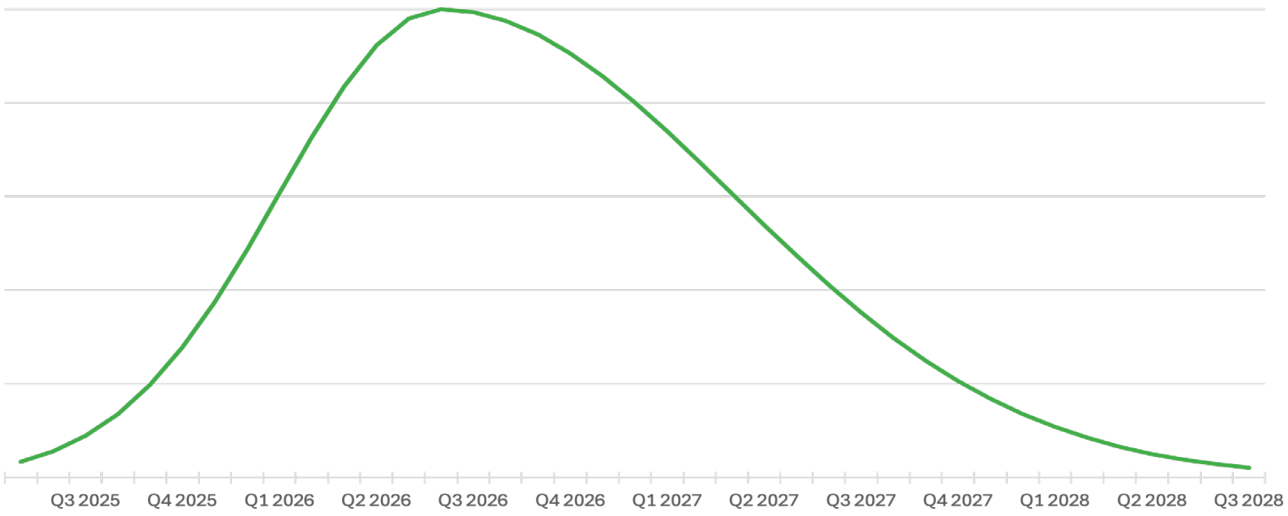
BUILDING THE FRAMEWORK

> ***Markets rarely surprise those who count the cues.***
> ***— Veteran fuel buyer***

Forecasts describe what has already happened. The uranium market moves in steps. Each quarter brings new delays, deferrals, and confirmations that reshape the balance in real time. Static reports capture a moment from the past. Investors need a way to see how quickly the system is tightening now.

This framework was created for that purpose. It translates every meaningful development into a living view of when recognition is most likely to occur. Each event, whether a production revision, a contracting surge, or a policy change, becomes a cue that either advances or delays the moment when the shortage becomes visible.

Figure 7.1: The Probability Curve of Recognition



At the centre of the framework sits the probability curve. It converts the full record of cues into a timeline that shows when the market is most likely to acknowledge the shortfall.

The current curve reaches its highest point around mid 2026, with its edges stretching from early 2026 to late 2027. The shape of the curve reflects balance, not prediction. Each new piece of information shifts the weight slightly forward or back.

Events that tighten the system, such as slower mine restarts, enrichment constraints, or increased utility contracting, pull the curve forward. Developments that create relief, such as new financing or added production, push it outward.

Today the pattern of evidence leans to the forward side of the curve. The majority of recent cues are advancing the pinch rather than holding it back. The framework makes that movement visible, showing that recognition is now within sight rather than a distant expectation.

Figure 7.2: The Evidence Ledger

Date	*Cue*	*Category*	*Direction*	*Impact*	*Description*
Jan 2024	Kazatomprom cuts 2025 guidance	Supply	Pull-Forward	High	10 percent output reduction; ISR reagent shortage confirmed
Mar 2024	Cameco conversion outage	Fuel Cycle	Pull-Forward	Moderate	Limits UF_6 availability; compresses inventories
Jun 2024	Langer Heinrich re-start on schedule	Supply	Push-Back	Low	First restart proceeding as planned
Dec 2024	Utility term contract-ing exceeds 120 M lbs	Market	Pull-Forward	High	Sharp rise in long-term contracting activity
Apr 2025	Cigar Lake expansion approved	Supply	Push-Back	Moderate	Adds 3-4 M lbs post-2027

Beneath the curve lies the Evidence Ledger. It is a working record that lists each confirmed event under five headings: Supply, Demand, Fuel Cycle, Policy, and Market Behaviour.

Every entry notes the direction of its effect, advancing or delaying, along with its influence and the date it occurred. Taken together, the entries reveal the pressure that is building across the system.

This record allows investors to interpret information with consistency. A production delay counts as a major advancing cue, while an expansion several years away registers as a modest delay. The balance of these weighted entries defines the slope of the probability curve.

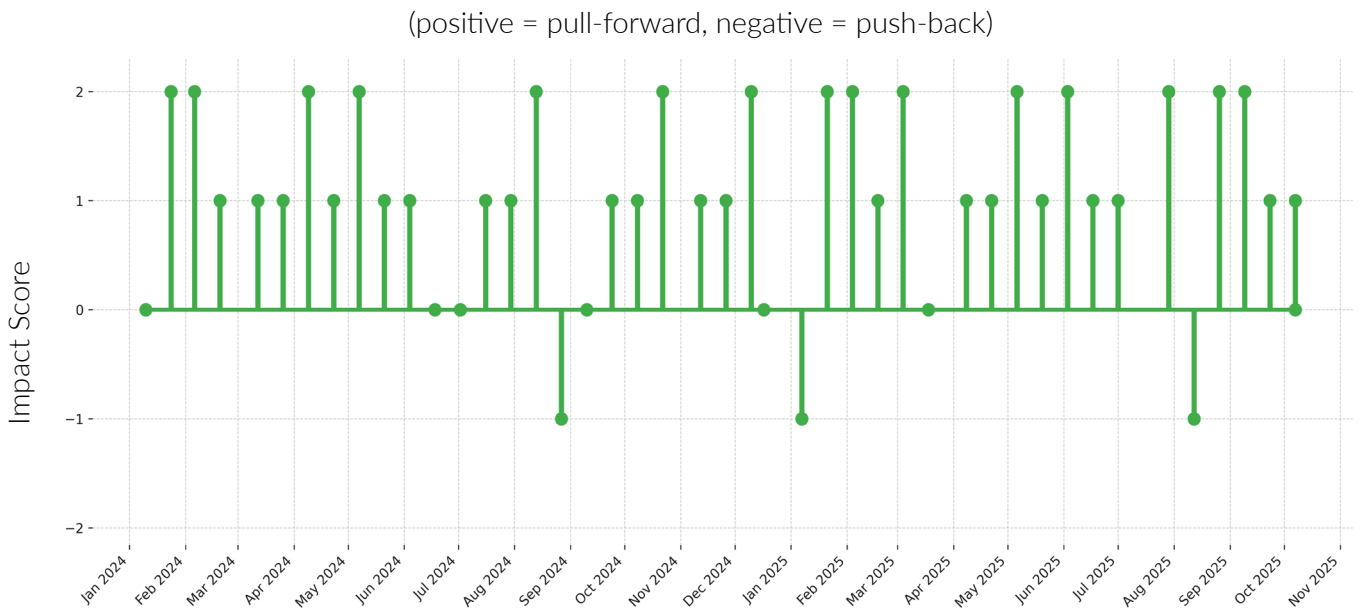
The ledger is updated as new data appear. Company guidance, policy announcements, and confirmed contracting activity are all entered and weighted. Each addition shifts the curve slightly, allowing timing to be tracked as it evolves rather than guessed at through static reports.

The Cue Impact Timeline

The ledger feeds into the Cue Impact Timeline. Each event is shown as a point connected to a baseline. Points above the line represent advancing cues. Points below the line represent delays. The length of each stem shows the strength of the cue.

When stems rise above the line quarter after quarter, the message is clear. Recognition pressure is building faster than relief can appear.

Figure 7.3: Cue Impact Timeline



The most recent timeline shows this pattern unmistakably. Advancing cues such as new production set-backs, stronger long term contracting, and persistent fuel cycle constraints dominate the field. Delaying factors are few and weak. The pattern is one of steady acceleration toward recognition.

The timeline turns scattered developments into a visible pulse of momentum. When stems above the line dominate, the market is moving closer to recognition. When the pattern flattens, the system is pausing briefly before the next advance.

From Timeline to Probability

The probability curve shown earlier is the translation of this timeline into a continuous measure. Each advancing cue pulls the curve forward. Each delay pushes it back. The balance of these opposing forces defines both the shape and the centre of the curve.

The present reading places the highest probability of recognition between mid 2026 and early 2027. This aligns with the rising pace of long term contracting and the continued drag in mine development. The slope of the curve shows a growing bias toward an earlier outcome rather than a later one.

Market Relevance

This framework replaces static forecasts with observation in motion. It shows how the market is progressing toward recognition in real time.

For investors, the message is clear. The balance of cues has shifted decisively toward advancing pressure. Each new development from producers, utilities, or governments now fits into a measurable sequence that confirms acceleration rather than delay.

The next market movement will not be a surprise. It will be the cumulative result of what is already visible. The cues are being counted, and the curve is bending forward.

Investor Notes

- The cue ledger tracks directional events under Supply, Demand, Fuel Cycle, Policy, and Market Behaviour.
- The current balance of cues indicates net advancing pressure, consistent with a recognition window centred on mid-2026 to early-2027.
- Sustained positive pressure in the index will confirm acceleration toward recognition.
- Each new event can shift the probability curve — forward when tightening intensifies, outward when relief appears.

USING THE MODEL

> ***You can't time the market, but you can track when it runs out of excuses.***
> ***— Fund manager, uranium sector***

The cue framework is designed to convert uranium's slow, opaque fundamentals into something observable and practical. This chapter explains how to use it — how to update the ledger, read the pressure index, and interpret the probability curve as new information arrives. Investors don't need to forecast; they need to recognize momentum and understand what each signal means for timing.

Updating the Cue Ledger

The ledger is the foundation of the model. It should be updated as soon as new, verifiable information emerges — typically after quarterly company updates, major policy announcements, or market-wide contracting data. Each cue is entered with four attributes: Category, Direction, Impact, and Date.

Most users will find quarterly updates sufficient to maintain accuracy. Events that can trigger an entry include:

- Changes to mine production guidance or restart timing
- Notable shifts in conversion or enrichment capacity
- Government inventory purchases or strategic stock changes
- Large-term contracting announcements by utilities
- Confirmed new mine financing or sanction decisions

Each new cue immediately alters the cumulative reading in the Cue Impact Timeline, ensuring the model reflects the latest market pressures.

The full ledger covering January 2024 onward is maintained in Appendix A.

Recognizing Momentum

The **Cue Impact Timeline** serves as the model's heartbeat.

- A **rising line** indicates that advancing cues dominate, meaning recognition pressure is building.
- A **flat line** signals temporary balance — the market is marking time.
- A **declining line** shows a run of delaying cues, suggesting some breathing room before recognition.

Momentum matters more than position. A high but flattening index means advancing forces are losing speed; a low but rising index means acceleration has begun. The investor's advantage lies in spotting those inflection points before they appear in prices.

Trigger	*Description*	*Implication*
Sustainable Term Contracting Above $85/lb	Indicates utilities have accepted higher replacement costs	Recognition phase has begun
Two Consecutive Quarters of Falling Reported Inventories	Confirms buffer exhaustion	Market entering scramble phase
Restart of Development Defferals Beyond 2027	Removes visible supply from forecast horizon	Curves shifts further left

Trigger Thresholds

Certain combinations of cues have historically marked the transition from quiet buildup to visible tightening. Within the model, these are referred to as Recognition Triggers.

The following three thresholds represent the most important confirmation signals:

When at least two of these triggers occur within a single contracting year, historical precedent suggests that prices and equities enter their steepest acceleration phase within the following 12 months.

Scenario Interpretation

The probability curve adjusts dynamically as new information arrives.

- **Advancing Scenario**: A combination of contracting acceleration and persistent supply delays shifts the curve left, narrowing the recognition window toward mid-2026.
- **Delaying Scenario**: Successful restarts, expanded conversion throughput, or new financing announcements push the curve right, extending recognition toward late-2027.
- **Balanced Scenario**: Mixed cues flatten the curve's peak, indicating uncertainty rather than directional clarity.

The model does not predict — it simply reflects how the sum of events is tilting the timeline.
Readers who follow the ledger can watch this shift quarter by quarter, replacing speculation with measured observation.

Market Relevance

The cue-tracking framework allows investors to monitor a complex market with the same discipline utilities apply to fuel management. It reduces uncertainty to a set of observable movements — a live map of when recognition is approaching or retreating. By quantifying each new development as a cue, the framework provides a transparent way to communicate timing across analysts, producers, and investors.

Investor Notes

- The Cue Impact Timeline currently trends upward, showing net advancing pressure.
- Recognition triggers have not yet aligned but are trending closer with rising term contracting.
- The recognition window remains centred on mid-2026 to early-2027, subject to the next quarterly updates.
- Investors can use the model to monitor momentum and adjust positioning as cues shift — rather than waiting for price to confirm what the fundamentals already signal.

THE LAST WORD

> ***Cycles don't reward those who predict them — they reward those who endure them.***

Many who entered this market early have carried the weight of waiting. They've watched expectations fade, prices stall, and confidence erode — yet they stayed, because the fundamentals never changed. That patience is finally being tested for the right reason: the story they believed in is now unfolding on schedule, not on hope.

The numbers no longer argue. Supply cannot meet the pace of demand, and time has run out for quick fixes. The only question left is **when recognition breaks, not if**. The cues tracked throughout this paper show that the window has narrowed to **mid-2026 through early-2027**, a phase that historically delivers the steepest price response in the shortest time.

For those who endured the quiet years, this is not vindication yet — but it is confirmation. The pressure they saw building is real, measurable, and now accelerating. Once recognition begins, history says the move compresses into less than eighteen months.

Those who wait for the headlines will be too late.

Those who've already done the work will finally see why it was worth it.

The market's next inflection isn't theoretical anymore — it's on the clock.

APPENDIX A: CUE LEDGER (JANUARY 2024 TO OCTOBER 2025)

It lists each event, its category, direction, and impact rating, and serves as the raw dataset behind the Cue Impact Timeline and Probability Curve.

The ledger does not seek precision; it seeks balance. Each cue is a directional marker in an evolving pattern of pressure. The more frequent and weighted the advancing cues, the nearer the recognition window moves.

Date	*Category*	*Cue (Specific Event)*	*Observed Market Effect*	*Direction*	*Impact*
2024-01-10	Price texture	Spot > $100 on thin float	Reveals limited discretionary supply when buyers step in	Confirm	0
2024-01-24	Contracting	Utilities open RFPs for 2026-2030 delivery	Coverage begins extending beyond usual horizons	Pull-Forward	2
2024-02-06	Fuel Cycle	Western enrichers raise tails assays	Underfeeding declines; greater pull on primary U_3O_8	Pull-Forward	2
2024-02-20	Supply & Production	Producers flag acid/ reagent constraints in guidance	Execution risk increases for ISR and mill throughput	Pull-Forward	1
2024-03-12	Policy & Regulation	US/EU reiterate nuclear fuel security objectives	Policy emphasis that later translates to procurement behavior	Pull-Forward	1
2024-03-26	Demand & Reactors	Japan/EU restart milestones posted for 2024 units	Adds visible baseload demand; boosts contracting confidence	Pull-Forward	1
2024-04-09	Fuel Cycle	Conversion providers signal persistent queues	UF_6 remains pinch point; pulls on U_3O_8 pipeline	Pull-Forward	2
2024-04-23	Financial Bid	New institutional vehicle launches to hold physical	Non-utility bid emerges during thin periods	Pull-Forward	1
2024-05-07	Contracting	Utilities report larger volumes and higher prices in LT deals	Clear behavior change toward duration and certainty	Pull-Forward	2
2024-05-21	Logistics/Geopolitics	Route and sanction uncertainty persists for select origins	Encourages earlier deliveries and diversified sourcing	Pull-Forward	1
2024-06-04	Supply & Production	Operational hiccups at select mines/mills disclosed	Reduces discretionary pounds; raises near-term delivery risk	Pull-Forward	1
2024-06-18	Industry Cadence	Mid-year meetings stress delivery over price discovery	Reinforces shift from spot opportunism to term cover	Confirm	0
2024-07-02	Price texture	Spot eases while LT benchmark holds near 80	Decoupling keeps focus on term reality over spot noise	Confirm	0
2024-07-16	Demand & Reactors	Additional uprates and restart steps announced	Incremental demand without new-build lead time	Pull-Forward	1
2024-07-30	Policy & Regulation	Japan signals expanded restart ambitions and plan updates	Accelerates timing of regional demand normalization	Pull-Forward	1
2024-08-13	Contracting	EU utilities increase contracting; begin rebuilding stocks	Early stockpiling shortens visible runway	Pull-Forward	2

APPENDIX A: CUE LEDGER (JANUARY 2024 TO OCTOBER 2025)

Date	Category	Cue (Specific Event)	Observed Market Effect	Direction	Impact
2024-08-27	Fuel Cycle	Enrichers outline capacity additions late-decade	Future relief post-2028; limited near-term change	Push-Back	-1
2024-09-10	Demand & Reactors	New-build and major component milestones (China, others)	Reinforces durable growth trajectory in fuel needs	Confirm	0
2024-09-24	Fuel Cycle	Fewer spot offers; defended floors reported	Suppliers prioritize obligations; discretionary pounds thin	Pull-Forward	1
2024-10-08	Policy & Regulation	National agencies elevate nuclear in energy security plans	Procurement begins reflecting origin and duration needs	Pull-Forward	1
2024-10-22	Contracting	RFP bunching into year-end across multiple delivery years	Brings demand forward in tender calendar	Pull-Forward	2
2024-11-12	Fuel Cycle	Fabrication queues extend for specific bundle designs	Downstream constraint pulls U_3O_8 needs forward	Pull-Forward	1
2024-11-26	Supply & Production	ISR restarts/slower ramps vs prior expectations	Shifts relief later; reduces discretionary supply	Pull-Forward	1
2024-12-10	Contracting	Late-year awards emphasize duration and origin assurance	Access premium becomes explicit in outcomes	Pull-Forward	2
2024-12-17	Price texture	Year-end spot noise; term unchanged	Noise does not resolve structural gap	Confirm	0
2025-01-07	Price texture	Spot dips < 70 while LT holds near 80	Short-'lived sentiment drag; delivery reality unchanged	Push-Back	-1
2025-01-21	Contracting	Offer depth thins to fewer qualified bids per tender	Evidence of deliverable scarcity, not just price firmness	Pull-Forward	2
2025-02-04	Industry Cadence	Utilities request longer tenors (7-10 yrs)	Duration premium evidences recognition of tightness	Pull-Forward	2
2025-02-18	Logistics/Geopolitics	Border/route frictions add delivery lead time	Promotes earlier contracting and larger buffers	Pull-Forward	1
2025-03-04	Contracting	Origin-assurance clauses common in awards	Market segmentation increases timing risk	Pull-Forward	2
2025-03-18	Price texture	Spot stabilizes while forwards firm	Classic sequence preceding step-up moves	Confirm	0
2025-04-08	Policy & Regulation	National programs elevate fuel security priority	Policy begins to shape procurement and stockholding	Pull-Forward	1

APPENDIX A: CUE LEDGER (JANUARY 2024 TO OCTOBER 2025)

Date	*Category*	*Cue (Specific Event)*	*Observed Market Effect*	*Direction*	*Impact*
2025-04-22	Supply & Production	Project deferrals or slower ramps acknowledged	Pushes relief outside near-term window	Pull-Forward	1
2025-05-06	Contracting	Options for additional volumes added to contracts	Utilities pay for access/scalability, not just price	Pull-Forward	2
2025-05-20	Logistics/Geopolitics	Export paperwork/insurance frictions persist	Favors secure origins; earlier scheduling	Pull-Forward	1
2025-06-03	Supply & Production	Producers align output to obligations (less spot)	Reduces discretionary supply; tightens float	Pull-Forward	2
2025-06-17	Fuel Cycle	Fewer underfeeding opportunities persist	Sustains pull on primary U_3O_8	Pull-Forward	1
2025-07-01	Financial Bid	Secondary vehicle raises significant capital	Adds intermittent spot bid; supports floors	Pull-Forward	1
2025-07-29	Supply & Production	Early signals of guidance downticks at major producers	Validates structural fragility of primary supply	Pull-Forward	2
2025-08-12	Fuel Cycle	Announcements of enrichment investments (late-decade)	Future SWU relief; minimal near-term impact	Push-Back	-1
2025-08-26	Supply & Production	Formal guidance cuts by top producers	Reduces available pounds through 2026	Pull-Forward	2
2025-09-09	Demand & Reactors	US data-center PPAs absorb full reactor output	Converts narrative demand into contracted baseload	Pull-Forward	2
2025-09-23	Contracting	Fewer spot offers; firm floors defended	Suppliers protect delivery schedules; thin float	Pull-Forward	1
2025-10-07	Price texture	LT benchmark lifts to meet spot	Forward curve confirms sustained tightness	Confirm	0
2025-10-07	Contracting	New LT contracts include options for additional volumes	Access premium and scalability priced in	Pull-Forward	1

APPENDIX B - LIST OF FIGURES

APPENDIX C - REFERENCES

The analysis and graphics presented in this paper are based on data and trend information drawn from the following primary industry sources:

- Uranium: Resources, Production and Demand (IAEA and OECD-NEA, 2011, 2016, 2018, 2022, and 2024 editions)
- World Nuclear Association Nuclear Fuel Report (2021, 2023, and 2025 editions)
- UxC Uranium Market Outlook and Uranium Production Cost Study Expanded Summary (2024–2025)
- World Nuclear Association Reactor Database and IAEA PRIS statistics (2007–2025)
- Company production guidance, regulatory disclosures, and market data from UxC and TradeTech price histories

All figures are schematic representations prepared by the author to illustrate relationships and timing based on these data. They do not reproduce proprietary charts or specific numeric values.

APPENDIX D - GLOSSARY OF TERMS

A-II / B-II Categories: Classifications used in the OECD/IAEA Red Book to describe uranium production capability.

- A-II: Existing or committed capacity—projects already operating or under construction.
- B-II: Planned or prospective capacity—projects identified or studied but not yet committed.

Back End (of the Fuel Cycle): The stages following uranium use in a reactor, including storage, reprocessing, and disposal of spent fuel.

Brownfield Project: A new development located at or adjacent to an existing or past-producing mine or processing facility.

By-Product Uranium: Uranium recovered as a secondary product during extraction of another mineral such as copper or gold.

Conversion: The process that transforms uranium oxide concentrate (U_3O_8 or "yellowcake") into uranium hexafluoride gas (UF_6) for enrichment.

Contract Coverage Ratio: A measure of how much of a utility's future uranium requirements are secured under existing term contracts. A low coverage ratio indicates that utilities must return to the market soon to sign new contracts, often driving the next contracting cycle.

Cue Impact Timeline: A proprietary framework developed for this paper that tracks real-world "cues" influencing the timing of the uranium supply pinch—events or signals that either advance or delay its onset.

Cut-Off Grade: The minimum uranium concentration in ore that can be mined and processed economically under current market conditions.

Depleted Uranium (DU): Uranium remaining after enrichment, with a lower proportion of the fissile isotope U-235 than found in natural uranium.

Enrichment: The process that increases the proportion of the fissile isotope U-235 in uranium, making it suitable for use in reactor fuel.

Front End (of the Fuel Cycle): The stages leading up to reactor use, including exploration, mining, milling, conversion, enrichment, and fuel fabrication.

In Situ Recovery (ISR or ISL): A mining method in which uranium is dissolved underground by a chemical solution and pumped to the surface for processing. It has become the dominant global production method.

Inferred Resources (IR): Uranium quantities estimated with limited geological confidence. Further exploration is required to upgrade these estimates to higher certainty categories.

Long-Term Contract Price (Term Price): The price negotiated under multi-year supply agreements between uranium producers and utilities. Term prices represent the majority of global uranium trade and better reflect the price level required to sustain mine development. They are far less volatile than spot prices and move in response to long-term supply and demand expectations.

APPENDIX D - GLOSSARY OF TERMS (Cont'd)

Market Clearing Price: The uranium price at which supply and demand reach balance over the medium term. It represents the level needed to incentivize sufficient new mine development to meet future reactor requirements.

Mixed Oxide Fuel (MOX): Reactor fuel that combines uranium and plutonium recovered from previously used nuclear fuel.

Pinch (or Uranium Pinch): The period when global uranium mine production and secondary supply fall short of reactor demand, drawing down inventories and putting sustained upward pressure on prices.

Primary Supply: Uranium produced from new mine output and processing facilities.

Probability Distribution (Cue Curve): A graphical depiction of the expected timing and intensity of the coming uranium supply-demand imbalance—used in this paper to illustrate the "recognition window."

Reasonably Assured Resources (RAR): Uranium quantities defined with high geological confidence, typically supported by sufficient data for mine development planning.

Red Book: Short for Uranium: Resources, Production and Demand, the biennial reference jointly published by the OECD Nuclear Energy Agency and the International Atomic Energy Agency. It provides the most widely cited global data on uranium resources, production, and demand.

Secondary Supply: Uranium sourced from inventories, reprocessed fuel, down-blended weapons material, or enrichment underfeeding rather than new mine output.

Spot Price: The quoted price for uranium in short-term or one-off transactions, usually for immediate or near-term delivery. Spot prices are highly visible but represent a small share of total uranium sales and often reflect short-term sentiment more than fundamental supply conditions.

tU / U_3O_8: Units of measurement for uranium:
- tU: Metric tonnes of uranium metal.
- U_3O_8: Uranium oxide ("yellowcake"). Market prices are typically quoted per pound of U_3O_8.

Term Market: The segment of uranium trading based on multi-year delivery contracts between producers and utilities. It determines most of the real supply and demand balance in the industry.

Undiscovered Resources: Uranium expected to exist based on geological evidence but not yet confirmed by drilling. Includes prognosticated and speculative categories.

Yellowcake: A concentrated form of uranium oxide (U_3O_8) produced at a mill—the standard intermediate product of uranium mining before conversion.

ABOUT THE AUTHOR

CHRIS FROSTAD, BBA, CA, CPA

Chris Frostad is a widely recognized voice in Canada's uranium exploration sector, known for his clear analysis of market trends and his ability to connect technical realities with investor insight.

As the author of Behind the Curve: Understanding When the Uranium Market Turns and host of the Uranium Spotlight Podcast, he has become a familiar presence at leading industry forums and a frequent guest on The Crux Investor's Energy Show, where he helps audiences understand the forces shaping uranium supply, demand, and price discovery.

With over four decades in resource development and capital markets, Chris draws on both field and boardroom experience to explain how the sector actually works—from exploration risk and mine development timelines to the broader economics of nuclear fuel supply.

Earlier in his career, he led several public companies through periods of rapid growth across the technology and mining industries, experience that underpins his pragmatic view of how discovery, finance, and strategy intersect.

A Chartered Professional Accountant, Chris began his career with Deloitte in international taxation before turning his focus to early-stage ventures and corporate development.

Today, as a founding partner and CEO of Purepoint Uranium Group, he continues to combine data-driven research with accessible storytelling to help investors navigate one of the most misunderstood corners of the energy market.