INDEPENDENT SUPPLY-CHAIN RESEARCH

The Western NdFeB Magnet Supply Chain

A facility-level map of what is operating, ramping, under construction, and still missing

94%	20	18
China's share of sintered permanent-magnet production in 2024	industrial transformations from resource to qualified assembly	Western facilities or linked facility groups in the status register

JOSIAH WILSON

Version 1.0 · July 23, 2026

Independent public-source research. Not investment advice, a supplier audit, or a technical feasibility study.

How to read this paper

This paper treats each facility as a dated status claim. It does not convert every announced tonne into present supply.

Status	Evidence threshold
Operating	Routine production or deliveries are publicly evidenced.
Commercial ramp	Commercial-scale equipment is commissioned and output has begun; steady-state output is not established.
Under construction	Physical construction is publicly evidenced; capacity is prospective.
Development	A site, design, financing package, or procurement activity is public; operating capacity does not yet exist.

Capacity rule Concentrate, TREO, NdPr oxide, metal, alloy, and finished-magnet tonnes are different products and are not added together.

Executive summary

The rare-earth magnet problem is often narrated as a mining problem. It is not. A high-performance neodymium-iron-boron (NdFeB) magnet passes through roughly twenty technically distinct transformations between an ore body and a qualified motor or actuator. A country can mine rare earths and still depend on another country for separation, metal reduction, alloying, powder preparation, sintering, finishing, magnetization, or customer qualification.

That distinction matters because concentration rises as material moves downstream. The International Energy Agency estimates that China accounted for 60% of mined magnet rare earths in 2024, 91% of refined output, and **94% of sintered permanent-magnet production**.[1] The United States, meanwhile, reported 67% net import reliance for rare-earth compounds and metals in 2025; 71% of 2021–2024 imports came from China.[2]

The Western response is no longer hypothetical. MP Materials produced 2,599 metric tons of NdPr oxide at Mountain Pass in 2025 and began producing magnets on commercial-scale equipment in Fort Worth.[3] USA Rare Earth commissioned the first line at Stillwater in March 2026.[4] Noveon operates a vertically integrated magnet plant in San Marcos.[5] Energy Fuels is producing separated NdPr at White Mesa and has agreed to acquire VAC, whose South Carolina plant has 2,000 metric tons per year of NdFeB nameplate capacity.[6] In Europe, Solvay has inaugurated commercial NdPr separation in France; Neo Performance Materials is ramping magnet production in Estonia; Less Common Metals is expanding alloy capacity in the United Kingdom; and HyProMag is commissioning a short-loop recycling and magnet line.[7][8][9]

But a list of plants can create false confidence. Three caveats govern this map:

1. **Announcements are not production.** The United States has tens of thousands of tonnes of announced future magnet capacity, but far less demonstrated commercial output.
2. **Tonnes are not interchangeable.** Concentrate, total rare-earth oxide, NdPr oxide, metal, alloy, and finished magnets are different products with different mass bases.
3. **Qualification is a production stage.** A magnet that meets a laboratory specification is not automatically qualified for a traction motor, defense actuator, medical device, or semiconductor tool.

The emerging Western chain has credible anchors, but its least duplicated links remain heavy rare-earth separation, oxide-to-metal conversion, high-quality strip-cast alloy, production powder handling, diffusion and coating, and application qualification. The near-term strategic question is therefore not “Who owns rare-earth deposits?” It is “Which facilities can repeatedly deliver a specified magnet, at yield, with traceability, to an approved customer?”

This paper contributes three practical artifacts:

- a **20-stage process map** from resource definition to qualified assembly;
- a **facility-status dataset** that separates operating, ramping, construction, and development claims; and
- a **verification framework** for evaluating new capacity announcements without double-counting.

The core conclusion is encouraging but disciplined: a Western supply chain is being built; it is not yet a fungible, fully redundant market.

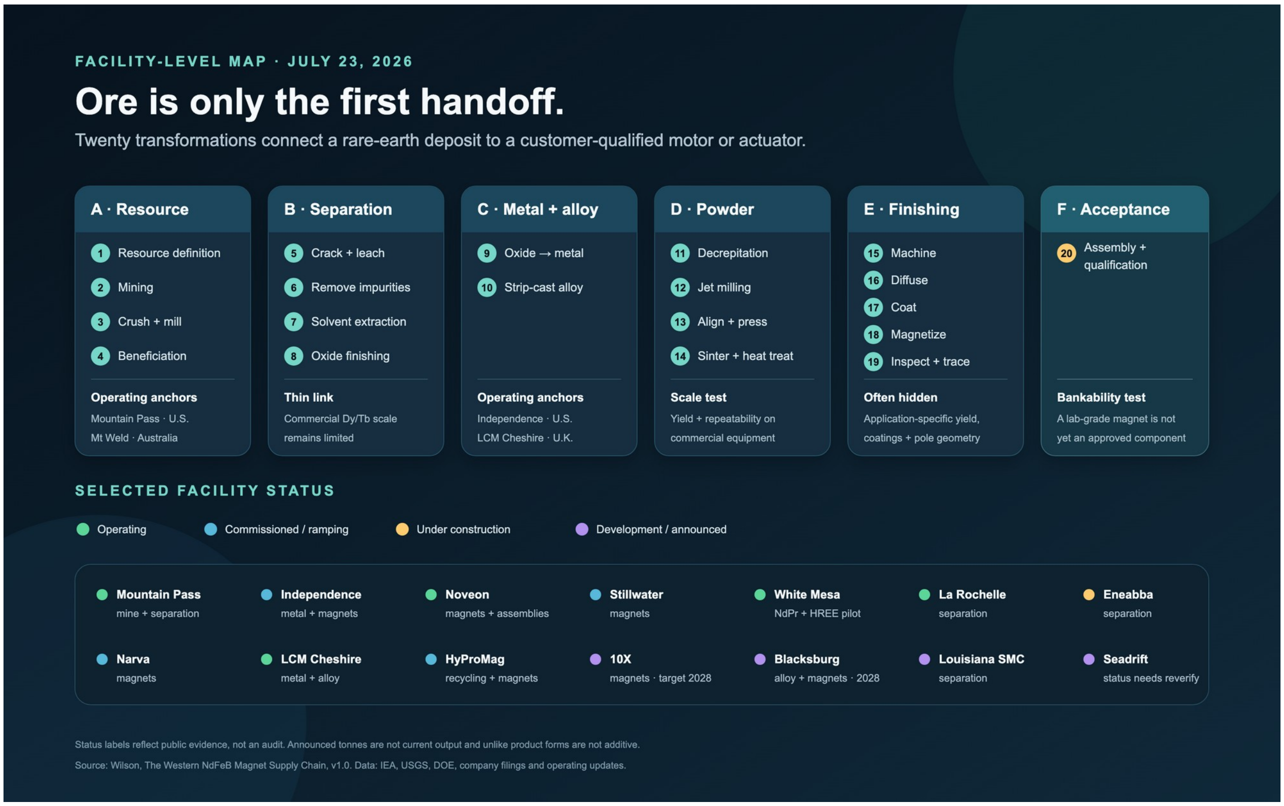

Figure 1. The chain is a sequence of transformations and qualifications, not a single mine-to-factory jump.

1. Why the magnet chain is easy to misunderstand

Rare earths are not rare in the ordinary sense. The difficulty is finding deposits with workable mineralogy, separating chemically similar elements, managing waste streams, converting oxides into reactive metals, and manufacturing brittle magnets with tight control over oxygen, particle size, grain orientation, heat treatment, dimensions, coatings, and magnetic performance.

Public discussion compresses this into “mine to magnet.” That phrase hides the actual industrial stack. It also encourages three recurring analytical errors.

First, observers count a mine as evidence of a complete domestic supply chain. A mine may export concentrate because downstream separation is unavailable, uneconomic, unqualified, or tied to an incumbent buyer.

Second, observers add unlike capacity figures. A plant rated for 10,000 tonnes of total rare-earth oxide does not yield 10,000 tonnes of NdPr oxide, much less 10,000 tonnes of finished magnets. Yield losses, elemental distribution, alloy formulation, machining scrap, and product mix intervene.

Third, observers give announced and operating capacity the same visual weight. This is especially misleading in a policy-supported buildout, where companies may disclose site selection, financing, procurement, commissioning, run-rate, and qualification milestones years before steady-state deliveries.

The U.S. Department of Energy's rare-earth permanent-magnet supply-chain assessment already provides a rigorous high-level map of raw materials, processed materials, magnets, end uses, and recycling.[10] The remaining public-information gap is more operational: which named facilities perform which transformations today, what evidence supports their status, and what must happen before their capacity is commercially substitutable?

2. The twenty transformations between ore and a qualified magnet

The chain can be represented as six industrial blocks containing twenty control points.

Block A — Resource to concentrate

1. **Resource definition and mine planning.** Geology determines grade, mineral distribution, coproducts, waste, and processing strategy.
2. **Mining.** Ore is extracted under a permit, operating plan, and waste-management system.
3. **Crushing and milling.** Mechanical processing liberates rare-earth-bearing minerals.
4. **Beneficiation.** Flotation or other methods reject bulk waste and produce a concentrate.

The headline metric at this stage is usually tonnes of rare-earth oxide contained in concentrate. It is an upstream measure, not a magnet-equivalent figure.

Block B — Concentrate to separated oxide

5. **Cracking and leaching.** Acid or alkali treatment moves rare earths into solution.
6. **Impurity and residue management.** Iron, phosphate, thorium, uranium, and other contaminants must be removed and responsibly handled.
7. **Solvent extraction and separation.** Long trains of chemical stages split chemically similar rare-earth elements.
8. **Precipitation and calcination.** Separated streams become high-purity oxides such as NdPr, dysprosium, or terbium oxide.

Separation is the technical midpoint of the chain. Heavy rare earths are present in smaller quantities and may require many stages to reach specification. A light-rare-earth separation line should not be assumed to produce qualified dysprosium or terbium.

Block C — Oxide to magnet alloy

9. **Metal reduction.** Stable oxides are converted into reactive rare-earth metal.
10. **Alloy formulation and strip casting.** Rare-earth metal, iron, boron, and additives are vacuum melted into an NdFeB alloy with a controlled composition and microstructure.

This block is frequently omitted from public maps. It is strategically important because oxide is not direct feed for a conventional sintered-magnet line. Metal and alloy capacity must match the grades, volumes, and delivery schedules of downstream producers.

Block D — Alloy to sintered block

11. **Hydrogen decrepitation.** Hydrogen breaks alloy flake into friable coarse powder.
12. **Jet milling.** Inert-gas milling produces a fine, narrow particle distribution while limiting oxygen and contamination.

13. **Magnetic alignment and pressing.** Powder is aligned in a magnetic field and compacted.
14. **Sintering and heat treatment.** Vacuum furnaces create a dense microstructure and tune magnetic performance.

This is the core powder-metallurgy sequence. Yield and repeatability depend on recipe knowledge, powder safety, atmosphere control, tooling, furnaces, metrology, and disciplined statistical process control—not merely possession of a patent or a piece of equipment.

Block E — Block to finished magnet

15. **Machining.** Brittle sintered blocks are ground, sliced, drilled, or shaped.
16. **Grain-boundary diffusion or infiltration.** Selected grades use targeted heavy rare-earth additions to improve high-temperature coercivity without loading the entire bulk alloy.
17. **Coating and plating.** Surface treatments protect corrosion-prone NdFeB and must survive the intended environment.
18. **Magnetization.** High-energy fixtures establish the required pole geometry.
19. **Inspection and traceability.** Magnetic properties, dimensions, coating quality, lot history, and material compliance are verified.

Finishing can be labor-, equipment-, and qualification-intensive. A producer of sintered blocks is not necessarily a producer of ready-to-install magnets.

Block F — Magnet to accepted application

20. **Assembly and customer qualification.** Magnets are bonded, retained, balanced, and integrated into rotors, actuators, sensors, or magnetic assemblies. Automotive production-part approval, aerospace first-article inspection, defense traceability, medical validation, and customer-specific life testing can take months or years.

Qualification is not paperwork attached to production. It is one of the processes that turns nominal capacity into bankable supply.

3. The facility map

The public-source map in this repository tracks eighteen facilities or linked facility groups. It is deliberately conservative: a row records what a dated source supports, and the status label is more important than the announced tonnage.

3.1 United States: multiple anchors, little redundancy

Mountain Pass, California — operating upstream and midstream. MP Materials operates the country’s only rare-earth mine and processing operation of scale. The company reported more than 45,000 tonnes of rare-earth oxide contained in concentrate in 2024 and 2,599 tonnes of NdPr oxide in 2025.[3][11] Mountain Pass is a genuine operating anchor. Yet its output illustrates why capacity comparisons must preserve product form: concentrate tonnage and separated NdPr tonnage are not the same measure.

Independence, Fort Worth, Texas — commercial ramp. MP began commercial NdPr metal production and trial magnet production in 2025. The facility is designed for approximately 1,000 tonnes per year of finished NdFeB magnets, with material sourced from Mountain Pass.[11] MP later reported its first magnets on commercial-scale equipment.[3] This is strong evidence of technical progress; sustained annual output and broad customer qualification remain separate milestones.

10X, Northlake, Texas — development. MP selected Northlake for a second campus intended to bring total company magnet capacity, including Independence, to approximately 10,000 tonnes per year. Commissioning is targeted for

2028.[12] The project benefits from a ten-year U.S. government offtake commitment, but its tonnage remains future capacity.

San Marcos, Texas — operating magnet manufacturing. Noveon describes a 132,000-square-foot, vertically integrated plant that performs alloy development, coating, magnetization, assembly, and inspection, including the use of recycled magnetic feedstock.[5] It is an important counterexample to the claim that all U.S. magnet capability is merely planned. Public material reviewed for this paper did not establish a current, audited production tonnage, so the dataset marks capacity as undisclosed rather than repeating an old scale-up target.

Stillwater, Oklahoma — commissioned and ramping. USA Rare Earth commissioned its Phase 1a commercial magnet line in March 2026 and said customer orders could begin in the second quarter. The company targets a 600-tonne-per-year run rate by the fourth quarter of 2026 and 1,200 tonnes per year after Phase 1b in the first quarter of 2027.[4] The milestone is meaningful, but the future run rate should not be counted as current output.

Blacksburg, South Carolina — development. USA Rare Earth selected a site for a proposed 6,400-tonne-per-year magnet plant and 5,000-tonne-per-year metal and alloy operation, with commissioning targeted to begin in 2028.[13] Engineering and procurement are evidence of progress; neither is operating capacity.

White Mesa, Utah — operating light-rare-earth separation, heavy-rare-earth pilot work. Energy Fuels describes existing Phase 1 capacity of roughly 1,000 tonnes per year of NdPr oxide and pilot production of dysprosium and terbium products.[14] The distinction is crucial: operating NdPr separation does not prove a commercial heavy-rare-earth circuit.

Sumter, South Carolina — operating / commercial ramp. VAC's U.S. subsidiary has a 2,000-tonne-per-year NdFeB magnet plant. In June 2026, Energy Fuels announced a definitive agreement to acquire VAC, describing the business as a producer with customer-qualified grades and commercial operations in Europe and the United States.[6] The facility belongs in the operating map; the proposed mine-to-magnet corporate integration should be treated as contingent until the transaction closes and upstream material is qualified through the chain.

Alexandria, Louisiana — engineering / pre-commercial. Ucore's current design for the Louisiana Strategic Metals Complex comprises an initial 600-tonne-per-year machine and three approximately 3,000-tonne-per-year separation trains, targeting about 9,600 tonnes per year of total rare-earth-oxide throughput.[15] The company has produced qualification samples at its demonstration facility, but the Louisiana capacity remains an engineered buildout rather than commercial output.

Rochester, New York and Marengo, Illinois — operating downstream integration. Arnold Magnetic Technologies provides design, machining, coating, assembly, and qualification capabilities and has announced a collaboration with USA Rare Earth.[16] Such facilities matter because the supply chain does not end at a sintered block. They are not counted here as new sintered-magnet nameplate.

Seadrift, Texas — announced, not recently reverified. Lynas previously selected a Texas site for planned light- and heavy-rare-earth separation.[17] The public project page reviewed for this paper is dated. In the absence of recent construction or commissioning evidence, the dataset explicitly labels status as not recently reverified.

3.2 Allied countries: operating depth and new downstream capacity

Australia and Malaysia — operating upstream and midstream. Lynas links the Mt Weld mine and Kalgoorlie processing facility in Western Australia with separation operations in Malaysia.[18] This chain is a major source of non-Chinese separated rare earths. It is strategically valuable even though it does not, by itself, supply all downstream magnet-manufacturing stages.

Eneabba, Western Australia — under construction. Iluka is building a refinery designed for up to 23,000 tonnes per year of separated rare-earth oxide, including up to 5,500 tonnes of NdPr and 725 tonnes of dysprosium and terbium, subject to feedstock, with commissioning targeted for 2027.[19] This is one of the most consequential allied heavy-rare-earth projects, but its capacity remains prospective until commissioning and sustained product qualification.

La Rochelle, France — operating and expanding. Solvay inaugurated commercial production of rare-earth materials for permanent magnets in April 2025 and says the site can separate the full suite of rare-earth elements. Its ambition is to serve up to 30% of European demand for permanent-magnet rare earths by 2030.[7] That 30% is a market-share objective, not present output.

Sillamäe and Narva, Estonia — operating separation and ramping magnets. Neo Performance Materials operates rare-earth separation at Silmet, commissioned a small-scale heavy-rare-earth line, and is ramping sintered magnets at Narva. In its first-quarter 2026 update, the company reported its one-millionth magnet and a plan to expand Narva from roughly 2,000 to 5,000 tonnes per year.[8] The pairing is strategically coherent; the heavy-rare-earth line is still described as small-scale.

Cheshire, United Kingdom — operating metal and alloy. Less Common Metals produces rare-earth metals and alloys using fused-salt electrolysis, vacuum induction melting, strip casting, hydrogen processing, and milling.[20] USA Rare Earth, its owner, targets a 3,000-tonne-per-year metal-and-alloy run rate by the end of 2026.[9] This is a key bridge between oxide producers and magnet plants, but its tonnage includes multiple metals and alloy products.

Birmingham, United Kingdom — commissioning recycled magnet production. HyProMag's Tyseley facility uses hydrogen processing of magnet scrap to create recycled alloy powder and magnets. As of April 2026, magnet samples had gone to more than twenty potential customers while remaining equipment was being commissioned. Public materials describe an initial 20–25-tonne-per-year target with pathways to 100–350 tonnes and potentially more.[21] This is small in global tonnage but important as a short-loop model that bypasses parts of primary extraction and separation.

4. Where the chain is still thin

4.1 Heavy rare-earth separation

High-temperature magnets may use dysprosium or terbium to preserve coercivity. Western light-rare-earth separation is more advanced than Western heavy-rare-earth separation. Several projects now address this gap—Mountain Pass's planned Dy/Tb circuit, White Mesa pilots, Neo's small-scale Silmet line, Ucore's proposed product suite, and Iluka's Eneabba design—but the words *planned*, *pilot*, and *small-scale* appear repeatedly.

This is not just a volume issue. A heavy-rare-earth circuit must demonstrate purity, yield, waste handling, reliable feedstock, and customer acceptance. The IEA's estimate of 91% Chinese refined output in 2024 explains why a disruption at this stage can propagate even when mines elsewhere remain open.[1]

4.2 Oxide-to-metal and alloy conversion

Metal reduction and strip casting sit between highly visible oxide projects and highly visible magnet factories. They are less familiar to the public and often less transparent. LCM's operating capabilities, MP's Independence operations, and proposed U.S. and French expansions are therefore strategically significant.

The match must be qualitative as well as quantitative. Magnet makers require alloy recipes with controlled rare-earth content, additives, oxygen, carbon, microstructure, and flake characteristics. A generic tonne of alloy is not necessarily usable in a qualified grade.

4.3 Powder metallurgy at yield

Commissioning a line demonstrates that equipment can run. Commercial competitiveness requires stable powder-size distribution, oxygen control, pressing consistency, sintering yield, furnace availability, scrap recovery, and labor discipline across many production lots.

This is why design capacity should be discounted until a producer reports sustained output or deliveries. A line may be nominally rated for hundreds of tonnes while operating well below that level during recipe development, maintenance learning, or customer qualification.

4.4 Finishing, diffusion, coating, and magnetization

Machining and coating can determine delivered yield. Grain-boundary diffusion can conserve expensive heavy rare earths, but it adds materials, process control, and intellectual property. Magnetization fixtures are application-specific. A plant optimized for rectangular industrial magnets cannot automatically supply arc segments for a high-speed motor at automotive volumes.

Downstream firms such as Arnold matter because they contain application knowledge and qualification infrastructure. The strategic unit is often not a magnet plant but a validated route from alloy recipe to customer assembly.

4.5 Customer qualification and demand aggregation

Qualification creates a chicken-and-egg problem. Producers need long-term demand to finance and optimize capacity; customers need proven yield, quality, and continuity before committing critical programs. Government-backed offtake, price floors, prepayments, and minimum-purchase agreements are attempts to bridge that gap.

MP's U.S. government agreement is unusually explicit: it includes a ten-year price floor for NdPr and a ten-year commitment to take all magnets produced at 10X.[22] This reduces market risk but does not eliminate execution risk. Similar analysis should be applied to every project: who carries price risk, who carries qualification risk, what product is covered, and when does the obligation begin?

5. A better way to read capacity announcements

Every new project can be tested with seven questions.

1. **What is the product?** Concentrate, mixed carbonate, separated oxide, metal, alloy, block, finished magnet, or assembly?
2. **What is the status verb?** Selected, financed, ordered, constructed, commissioned, producing, delivering, or qualified?
3. **What is the capacity basis?** Design, nameplate, run rate, reported output, saleable output, or customer-accepted output?
4. **What feedstock is qualified?** A plant without secure, compatible feedstock is not an independent supply chain.
5. **Which grades are demonstrated?** NdFeB is a family of materials, not a single commodity.
6. **Which finishing steps are in-house?** Machining, diffusion, coating, magnetization, inspection, and assembly can remain external dependencies.
7. **Which customers have accepted the product?** Samples, purchase orders, production-part approval, and recurring deliveries are different evidence levels.

This framework prevents the most common form of double-counting: treating every announced tonne at every stage as though it were a finished, interchangeable magnet available today.

6. What would make the Western market genuinely resilient

A resilient market does not require every country to duplicate every process. It does require multiple qualified routes with enough interoperability that the failure of one facility does not halt the system.

Five developments would materially improve resilience.

First, publish product-form-specific capacity. Companies and governments should report capacity and output by concentrate, oxide, metal, alloy, magnet block, finished magnet, and qualified delivery. A common status vocabulary would make public funding more accountable.

Second, build paired facilities and qualification pathways. Separation capacity should be linked to metal and alloy conversion; alloy capacity should be linked to magnet recipes; magnet plants should be linked to finishers and anchor customers. A stranded midpoint is not a supply chain.

Third, treat heavy rare earths as a separate problem. NdPr scale does not resolve Dy/Tb exposure. Public reporting should state which heavy-rare-earth products meet which purity and volume specifications.

Fourth, invest in manufacturing inputs and workforce. Furnaces, presses, magnetizers, diamond tooling, coatings, inert-gas systems, extractants, analytical laboratories, and experienced operators are dependencies. Resilience cannot be measured only in ore and factory square footage.

Fifth, preserve recycling optionality. Short-loop processes can recover alloy or powder without repeating every primary chemical stage. Noveon and HyProMag show different versions of this approach. Recycling will not immediately replace primary supply, but it can reduce waste, shorten lead times, and create a buffer whose feedstock grows with the installed base of motors and electronics.

7. Investment interpretation

The facility map supports a narrower investment thesis than “rare-earth prices go up.”

If policy and customers assign a premium to U.S. or allied magnets, the most direct beneficiaries are firms that can convert that preference into **qualified magnet deliveries**. Upstream miners may benefit, but only if their material moves through compatible separation, metal, alloy, and manufacturing routes. Midstream scarcity can be more valuable than resource ownership, yet it is also harder to scale and verify.

For public equities, the most direct exposures in the mapped chain are:

- **MP Materials (NYSE: MP):** operating U.S. mine and separation, commercial magnet ramp, and a large government-backed expansion.
- **USA Rare Earth (Nasdaq: USAR):** commissioned U.S. magnet line, operating U.K. metal/alloy capability, and ambitious planned expansion; execution and valuation risk are correspondingly high.
- **Energy Fuels (NYSE American/TSX: UUUU):** operating U.S. monazite-to-NdPr processing, heavy-rare-earth pilot work, and a proposed acquisition of VAC that would add customer-qualified magnet capability; transaction and integration risk remain.
- **Neo Performance Materials (TSX: NEO):** operating European separation and a ramping Estonia magnet plant.
- **Lynas Rare Earths (ASX: LYC; OTC: LYSDY):** established allied mine and separation exposure, but less direct current finished-magnet exposure.
- **Iluka Resources (ASX: ILU):** construction-stage Australian separation exposure including planned NdPr and heavy rare earths.

This is a value-chain exposure list, not a recommendation or valuation conclusion. A magnet premium can be competed away, absorbed by capital intensity, offset by qualification delays, or transferred to customers through contract structure. Government support can de-risk demand while introducing dilution, compliance obligations, price formulas, or political dependency. Investors should analyze share count, financing, offtake terms, construction milestones, yield, product mix, and customer acceptance—not merely announced tonnes.

8. Conclusion

The Western NdFeB supply chain has crossed an important threshold. It now contains operating mines, separated-oxide production, rare-earth metal and alloy capacity, multiple commercial or commissioning-stage magnet plants, downstream integrators, and serious recycling routes.

It has not crossed the threshold into a deep, interchangeable market. Several stages still have one or two credible suppliers. Much of the headline capacity sits in 2027–2028 commissioning targets. Heavy rare earths remain thinner than NdPr. Qualification makes usable supply application-specific. And public disclosure is not standardized enough to compare projects without manual reconstruction.

The practical implication is simple: map transformations, facilities, status, product form, and qualification evidence separately. Do that, and the supply chain becomes legible. Fail to do it, and future capacity will keep masquerading as present resilience.

Methodology and evidence rules

This map has a fixed public-information cutoff of **July 23, 2026**. The facility—not the company—is the primary unit of analysis because one owner can operate a mine, develop a separation plant, commission a magnet line, and announce another campus at four different levels of maturity.

Sources were prioritized in this order: government statistics and technical reports; regulatory filings and official project disclosures; company operating updates; academic and technical literature; and trade reporting only when a primary source was unavailable. The linked dataset preserves the dated source used for every facility row.

Status terms are evidentiary. *Operating* means public evidence indicates routine production or deliveries. *Commercial ramp* means commercial-scale equipment is commissioned and output has begun, but steady-state output is not established. *Under construction* requires evidence of physical construction. *Development* includes site selection, design, financing, procurement, or announced schedules without operating capacity. *Pilot* and *demonstration* output are not promoted to commercial status.

Capacity is recorded in its disclosed form. Reported output, nameplate capacity, run-rate targets, design targets, and market-share ambitions remain separate. Concentrate, TREO, NdPr oxide, metal, alloy, magnet block, finished-magnet, and qualified-delivery tonnes are not normalized or summed. A capacity figure is omitted when public evidence does not support a current, product-specific number.

This is not an audit. The research did not include site visits, purchase orders, customs records, supplier quality files, confidential customer qualifications, or independent mass-balance verification. The absence of a facility does not prove the absence of capability, and the presence of a facility does not prove that its products are interchangeable with an incumbent grade.

The machine-readable status register and process taxonomy are included in the accompanying GitHub repository. Corrections should identify the affected facility, the proposed change, and a dated primary source so that revisions remain reproducible.

Appendix A — Facility status register

The status label is the primary field. Capacity is retained in its disclosed product form and basis; future targets are not current output.

Facility	Stages	Status	Capacity / evidence note
Mountain Pass Mountain Pass, California, United States	mine beneficiation concentrate light rare-earth separation	**operating**	45,000 t REO in concentrate in 2024; 2,599 t NdPr oxide in 2025 Operating output, not nameplate capacity.
Independence Fort Worth, Texas, United States	NdPr metal alloy strip casting powder sintered magnets finishing	**commercial ramp**	approximately 1,000 tpa finished NdFeB magnets First magnets were produced on commercial-scale equipment in 2025; design capacity is not current output.
10X Northlake, Texas, United States	metal alloy sintered magnets finishing	**development / site selected**	approximately 10,000 tpa total company magnet capacity including Independence Forward-looking target; not operating capacity.
San Marcos magnet plant San Marcos, Texas, United States	recycled feedstock alloy powder sintering coating magnetization assemblies	**operating**	not publicly verified Company describes vertically integrated commercial operations; public sources reviewed did not establish a current audited tonnage.
Stillwater Stillwater, Oklahoma, United States	alloy feed powder sintered magnets finishing	**commissioned / ramping**	600 tpa run-rate target by Q4 2026; 1,200 tpa target in Q1 2027 Phase 1a was commissioned in March 2026; target capacity is not current output.
Blacksburg Blacksburg, South Carolina, United States	rare-earth metal strip-cast alloy sintered magnets	**development / procurement**	6,400 tpa magnets and 5,000 tpa metal/alloy Forward-looking target; site work had not yet been reported complete.
White Mesa Mill Blanding, Utah, United States	monazite processing separated NdPr oxide pilot Dy/Tb separation	**operating light-REE line; heavy-REE pilot**	approximately 1,000 tpa NdPr oxide Phase 1 capacity Light-REE production and heavy-REE pilot work should not be conflated.
eVAC magnet plant Sumter, South Carolina, United States	sintered NdFeB magnets finishing customer qualification	**operating / commercial ramp**	2,000 tpa NdFeB nameplate Acquisition was announced, not closed, as of the cutoff date.
Louisiana Strategic Metals Complex Alexandria, Louisiana, United States	solvent-extraction separation individual oxides including NdPr, Dy and Tb	**engineering / pre-commercial**	approximately 600 tpa Machine A plus three 3,000 tpa trains; approximately 9,600 tpa TREO planned Demonstration results and an engineering report do not constitute commercial production.
Arnold Magnetic Technologies US operations Rochester, New York and Marengo, Illinois, United States	magnet design machining coating assemblies qualification	**operating**	not publicly verified A downstream fabricator and integrator; not counted as new sintered-magnet nameplate.

Facility	Stages	Status	Capacity / evidence note
Mt Weld / Kalgoorlie / Kuantan chain Western Australia and Pahang, Australia / Malaysia	mine beneficiation cracking and leaching separation	**operating**	not normalized in this dataset Operating allied upstream and midstream chain; facilities have different product bases.
Seadrift separation project Seadrift, Texas, United States	planned light- and heavy-rare-earth separation	**announced / status not recently reverified**	not included The public project page reviewed was dated; this map does not treat the facility as operating or under construction.
La Rochelle La Rochelle, France	rare-earth separation commercial NdPr oxide	**operating / expanding**	target to serve up to 30% of European permanent-magnet rare-earth demand by 2030 The 30% figure is a demand-share ambition, not verified output.
Silmet Sillamäe, Estonia	rare-earth separation heavy-REE separation	**operating / newly commissioned line**	small-scale Dy/Tb separation line; tonnage not disclosed in cited release Small-scale line should not be presented as full commercial heavy-REE independence.
Narva magnet plant Narva, Estonia	sintered NdFeB magnets finishing	**commercial ramp**	approximately 2,000 tpa initial phase; expansion toward approximately 5,000 tpa One-millionth magnet milestone confirms production activity; target capacity is not the same as steady-state output.
LCM Ellesmere Port Cheshire, United Kingdom	rare-earth metals NdFeB and SmCo alloy strip casting hydrogen processing alloy powder	**operating / expanding**	3,000 tpa metal and alloy run-rate target by Q4 2026 Target includes multiple metals and alloys, not only NdFeB feed.
Tyseley Energy Park Birmingham, United Kingdom	magnet-scrap preprocessing hydrogen decrepitation recycled alloy powder sintered magnets	**commissioning / early commercial**	20–25 tpa initial target, with 100–350 tpa ramp described Early capacity is constrained while university-owned equipment is commissioned.
Eneabba refinery Eneabba, Western Australia, Australia	mineral-sands feed cracking separation NdPr and Dy/Tb oxides	**under construction**	up to 23,000 tpa separated REO including 5,500 tpa NdPr and 725 tpa Dy/Tb, subject to feedstock Forward-looking design capacity; not current output.

Full source URLs and verification notes are preserved in data/facilities.csv.

Notes and sources

1. International Energy Agency, "Rare Earth Elements — Executive Summary," 2025, https://www.iea.org/reports/rare-earth-elements/executive-summary
2. U.S. Geological Survey, *Mineral Commodity Summaries 2026: Rare Earths*, 2026, https://pubs.usgs.gov/periodicals/mcs2026/mcs2026-rare-earths_ver.1.2.pdf
3. MP Materials, "Fourth Quarter and Full Year 2025 Results," February 2026, https://investors.mpmaterials.com/investor-news/news-details/2026/MP-Materials-Reports-Fourth-Quarter-and-Full-Year-2025-Results/default.aspx
4. USA Rare Earth, "Commissioning of Phase 1a Magnet Production at Stillwater," March 26, 2026, https://investors.usare.com/news-releases/news-release-details/usa-rare-earth-achieves-major-operational-and-strategic
5. Noveon Magnetics, "Our Process," accessed July 23, 2026, https://noveon.co/our-process
6. Energy Fuels, "Definitive Agreement to Acquire VAC," June 23, 2026, https://investors.energyfuels.com/2026-06-23-Energy-Fuels-Announces-Definitive-Agreement-to-Acquire-VAC-for-1-9-Billion-Equity-Value
7. Solvay, "Solvay Advances European Rare Earths Production Through Capacity Expansion," April 8, 2025, https://www.solvay.com/en/press-release/solvay-advances-european-rare-earths-production-through-capacity-expansion
8. Neo Performance Materials, "First Quarter 2026 Results," May 2026, https://www.neomaterials.com/neo-performance-materials-reports-first-quarter-2026-results/
9. USA Rare Earth, "First Quarter 2026 Financial Results," May 13, 2026, https://investors.usare.com/news-releases/news-release-details/usa-rare-earth-reports-first-quarter-2026-financial-results
10. U.S. Department of Energy, *Rare Earth Permanent Magnets: Supply Chain Deep Dive Assessment*, February 2022, https://www.energy.gov/sites/default/files/2024-12/Neodymium%2520Magnets%2520Supply%2520Chain%2520Report%2520-%2520Final%5B1%5D.pdf
11. MP Materials, "MP Materials Restores U.S. Rare Earth Magnet Production," January 22, 2025, https://investors.mpmaterials.com/investor-news/news-details/2025/MP-Materials-Restores-U-S--Rare-Earth-Magnet-Production/default.aspx
12. MP Materials, "MP Materials Selects Northlake, Texas, as the Site of 10X," March 2026, https://investors.mpmaterials.com/investor-news/news-details/2026/MP-Materials-Selects-Northlake-Texas-as-the-Site-of-10X-a-New-U-S--Rare-Earth-Magnet-Manufacturing-Campus/default.aspx
13. USA Rare Earth, "Selects Cherokee County, South Carolina," June 2, 2026, https://investors.usare.com/news-releases/news-release-details/usa-rare-earth-selects-cherokee-county-south-carolina-new-rare
14. Energy Fuels, "Q1 2026 Results," May 6, 2026, https://investors.energyfuels.com/2026-05-06-Energy-Fuels-Announces-Q1-2026-Results
15. Ucore Rare Metals, "Engineering Report Drives Optimized Commercial Deployment Plan," May 28, 2026, https://ucore.com/ucore-engineering-report-drives-optimized-commercial-deployment-plan-for-louisiana-strategic-metals-complex/
16. Arnold Magnetic Technologies, "New USA Rare Earth Agreement," March 2026, https://www.arnoldmagnetics.com/blog/arnold-announces-new-usa-rare-earth-agreement/
17. Lynas Rare Earths, "U.S. Project Update," accessed July 23, 2026, https://lynasrareearths.com/u-s-project-update/
18. Lynas Rare Earths, "About Us," accessed July 23, 2026, https://lynasrareearths.com/about-us/
19. Iluka Resources, "Eneabba," accessed July 23, 2026, https://www.iluka.com/operations-resource-development/resource-development/eneabba
20. Less Common Metals, ISO 14001 scope certificate, valid through October 18, 2026, https://lesscommonmetals.com/wp-content/uploads/2023/11/ISO14001-2015-Certificate-18.10.26.pdf
21. Mkango Resources, "HyProMag UK Update," April 23, 2026, https://mkango.ca/site/assets/files/5164/20260423-hypromag-uk-update.pdf
22. MP Materials, "Transformational Public-Private Partnership with the Department of Defense," July 10, 2025, https://investors.mpmaterials.com/investor-news/news-details/2025/MP-Materials-Announces-Transformational-

Public-Private-Partnership-with-the-Department-of-Defense-to-Accelerate-U-S--Rare-Earth-Magnet-Independence/default.aspx

Disclosure

This paper is an independent public-source research project. It is not investment advice, a supplier audit, a technical feasibility study, or a representation that announced projects will meet schedule, quality, yield, or capacity targets. Company capacity statements are forward-looking unless explicitly identified as reported output. The author may revise the facility map as new primary evidence appears.

Research and production credit

Josiah Wilson identified the research opportunity, set the publication objective, and directed the scope and framing. OpenAI Codex assisted with public-source research, synthesis, dataset construction, drafting, and document production. Josiah Wilson is responsible for publication and any subsequent revisions.