

Air Products' Louisiana Bet: Commit, Stage, or Stop?

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All financial amounts are U.S. dollars. This case is set immediately before a potential final investment decision (FID) targeted for mid-2026. It uses public information available by June 25, 2026; it does not assert that FID had occurred.

The decision

On June 25, 2026, Air Products and Chemicals (APD) faced a consequential choice about its Louisiana Clean Energy Complex (LCEC). The company had described a potential partnership with Yara International that linked APD's hydrogen production and industrial-gas capabilities with Yara's ammonia operations and distribution network. The companies had publicly targeted FID for mid-2026, subject to conditions including an air permit and final construction contracts.³ The precise final project economics, customer contracts and approval status were not public.

For an APD strategy committee, the question was not simply whether low-carbon hydrogen had a future. It was whether this particular project, at its current scale and risk allocation, merited an irreversible capital commitment now. Three paths were available: proceed under the announced Yara structure; renegotiate or stage the commitment until specified commercial, regulatory and construction conditions were met; or defer or exit and redirect capital to other opportunities. What evidence should govern the choice, and what conditions would make the decision reversible?

A strategic fit-and a growing commitment

APD is a global industrial-gas supplier whose business depends on reliable production and delivery to customers in sectors such as refining, chemicals, metals, electronics and healthcare. In its FY2025 annual report, management said it remained confident in long-run demand for industrial gases and clean-energy solutions, while acknowledging that clean-energy markets had not developed as previously anticipated. APD also said it would focus on projects that met projected return requirements and expected the NEOM Green Hydrogen Project to begin operating in 2027.¹

APD announced LCEC in October 2021 as an approximately \$4.5 billion blue-hydrogen complex near Burnside, Louisiana. The initial public design called for more than 750 million standard cubic feet per day of hydrogen, with about 95% of process carbon dioxide captured and more than five million metric tons per year permanently sequestered. The project was intended to serve industrial customers along the Gulf Coast and to retain and create jobs in Louisiana. These were announcement-era descriptions, not a final cost estimate, a completed design, or evidence of realized project output.²

The project subsequently grew more complex. On December 8, 2025, APD and Yara said they were in advanced negotiations to connect APD's low-emission hydrogen supply with Yara's ammonia production and global distribution capabilities. Under the proposed Louisiana structure, Yara would acquire ammonia production, storage and shipping assets after they achieved agreed performance levels, for approximately 25% of the estimated total project cost of \$8-9 billion. Yara would operate those assets and place the ammonia into its distribution network. APD would own and operate the industrial-gas production assets. The companies said about 80% of LCEC's low-carbon hydrogen would be supplied to Yara under a proposed 25-year offtake agreement to produce 2.8 million metric tons of low-carbon ammonia per year; the remaining hydrogen would go to APD customers in the United States.^{2 3}

The release described a potential arrangement-not a completed sale, a binding 25-year contract, final construction terms, or FID. The companies targeted their respective Louisiana FIDs for mid-2026, subject in part to the air permit and construction-contract finalization. APD and Yara also described separate negotiations over marketing and distribution of renewable ammonia from NEOM; that prospective Saudi project should not be confused with LCEC's Louisiana low-carbon project.³

The capital-allocation problem

APD's most recent public filing before the decision date was its Form 10-Q for the quarter ended March 31, 2026, filed April 30. It forecast approximately \$4.0 billion of capital expenditures for FY2026, including about \$1.0 billion for traditional industrial-gas projects, with the balance supporting energy-transition projects and core maintenance. Management expected to fund spending from existing cash and operating cash flow, while retaining access to capital and money markets.⁴

For the six months ended March 31, APD reported \$1.788 billion of its non-GAAP capital-expenditure measure, versus \$2.939 billion a year earlier. The measure excludes portions of spending on the consolidated NEOM joint venture funded by project financing or other partners; it is not the same as cash used for investing activities. On the filing's reconciliation, cash used for investing activities was \$2.319 billion over the same six months. The company said NEOM spending had declined as the project neared completion.⁴

The FY2026 capital-expenditure forecast did not reveal how much LCEC capital remained to be spent, how much was sunk, what cancellation costs might be, or how much cash would be freed by a decision to stop. Nor did it disclose a project-specific return threshold or expected LCEC return. The annual report showed FY2025 capital expenditures of \$5.064 billion under APD's non-GAAP definition, including \$3.0 billion of NEOM-related additions to plant and equipment before the JV-funding adjustment.⁵ Capital intensity was therefore a portfolio-wide issue, not an isolated Louisiana calculation.

LCEC's scale made simple comparisons hazardous. The original \$4.5 billion announcement and the later \$8-9 billion estimate imply a nominal difference of \$3.5-4.5 billion, or roughly 78%-100% of the original estimate. This is a derived comparison across public figures, not a verified cost overrun: scope, design, ownership boundaries, timing and estimate bases may differ. Without a project bridge, the committee could not infer that the difference represented waste, nor could it treat the later estimate as the final cost-to-complete.^{2 3}

Customers, contracts and competitors

Long-term customer arrangements are central to industrial-gas economics. Dedicated plants and pipelines can create relationship-specific investments; predictable minimum volumes and contract duration can align the supplier's investment with the customer's demand. Academic work on contracting in coal markets provides one theoretical and empirical analogy: relationship-specific investment is associated with longer-duration supply contracts. The mechanism is useful, but the sector differs, and the study does not predict APD's margin or project return.⁶

The proposed Yara relationship could reduce APD's exposure to ammonia operations and distribution while anchoring a large share of hydrogen output to a long-term customer. But the public announcement did not provide the price formula, minimum take, remedies for underperformance, credit support, conditions for the asset transfer, or a fully specified allocation of construction and operating risk. A long term alone could not answer whether the price covered natural-gas feedstock, power, carbon transport and storage, maintenance, financing and the return on dedicated capital.

Linde offered a contemporary regional comparator. On June 23, 2025, it announced a long-term industrial-gas supply agreement with Blue Point Number One, a joint venture of CF Industries, JERA and Mitsui. Linde said it would invest more than \$400 million to build, own and operate an air-separation unit supplying oxygen and nitrogen to a 1.4-million-ton-per-year low-carbon ammonia plant in Louisiana, then expected to start in 2029. Linde highlighted its existing Gulf Coast infrastructure and network density.⁷

Blue Point did not provide a direct valuation benchmark for LCEC. Its disclosed scope was an air-separation unit and gas supply, not a fully integrated hydrogen, ammonia, carbon-capture and sequestration complex. Yet it sharpened a strategic question for APD: could a narrower, customer-linked investment capture attractive industrial-gas returns while limiting exposure to the less mature parts of the low-carbon value chain?

Why now-and what could change?

APD's mid-2026 FID target created urgency, but the announcement identified prerequisites rather than a completed approval. A decision to wait could preserve the option to learn more about permitting, final construction pricing, customer commitments and policy economics. Delay could also carry costs: counterparties might redirect capital, project interfaces might be repriced, and competitors could secure customer relationships or scarce infrastructure positions.

Research on irreversible investment explains why uncertainty can raise the value of waiting, while also recognizing that delay sacrifices cash flows and strategic positioning.⁸ Research on large-project forecasting offers another caution. In a historical sample of 258 transportation projects, Flyvbjerg, Holm and Buhl found that 86% exceeded decision-time cost estimates and mean real cost escalation was 28%. The authors considered technical, economic, psychological and political explanations; they did not establish intentional deception, and the evidence is not an APD-specific forecast. The lesson for the committee is to ask for independent reference-class estimates and explicit contingencies, not to add 28% mechanically to LCEC's budget.⁹

The public record could support several competing explanations for the apparent change in LCEC's project economics. A larger, redesigned complex may better capture carbon, integrate ammonia production and meet customer specifications, but it also exposes APD to more interfaces and capital. Inflation, changing financing or policy support, permit timing, construction terms, customer demand and partner risk appetite may all matter. A company's

willingness to invest in the project would not by itself validate the forecast; a partner's interest would not substitute for enforceable terms.

The committee's choices

Proceed toward FID under the proposed structure. This path would preserve the potential scale, low-carbon product position and Gulf Coast customer access. Yara would be expected to take a large share of ammonia output and operate the ammonia assets after specified performance criteria, while APD would retain the industrial-gas role. Before approval, the committee would need to decide whether proposed prices, volumes, cost caps, guarantees, carbon-storage rights, construction contracts, schedule contingencies and remedies were sufficient. "Proceed" could mean authorization only after documented conditions-not a blank check.

Renegotiate or stage. APD could seek firmer minimum-take commitments, stronger Yara credit support, more cost sharing, capped or guaranteed construction terms, or payments tied to performance. It could authorize engineering, permitting or limited long-lead spending while deferring irreversible construction commitments until agreed gates were met. Staging might reduce downside and reveal information, but could increase total cost, reduce schedule certainty or weaken counterparties' willingness to participate.

Defer or exit. APD could stop new discretionary commitments and redirect resources toward traditional industrial gases, maintenance, debt capacity or smaller customer-linked transition projects. Such a choice could protect capital if the project no longer met APD's hurdle rate or critical contracts remained incomplete. It could also crystallize cancellation obligations, impair assets, surrender strategic optionality and weaken relationships with Gulf Coast customers or public stakeholders. The public information available to students does not quantify any of these project-specific costs or benefits.

Assignment

You are advising APD's strategy committee on June 25, 2026. Recommend a decision path and the evidence required before the next irreversible commitment. State which risks APD should bear, share or transfer; identify the strongest argument against your recommendation; and define measurable continuation, pause and abandonment gates. Your analysis should distinguish facts, calculations and assumptions. Do not treat the original project announcement, the later cost estimate, a proposed offtake structure or an FID target as a completed contract or verified return.

Student source notes

1. Air Products, FY2025 Form 10-K, filed Nov. 20, 2025, "Outlook" and "Capital Expenditures" (FY2025 adjusted capital expenditures); [SEC filing](#), pp. 32 and 51 (HTML headings/printed pages).
2. Louisiana Economic Development, "Air Products Announces \$4.5 Billion Blue Hydrogen Clean Energy Complex," Oct. 14, 2021, project description and design scope; [release](#).
3. Air Products and Yara, "Air Products and Yara in Advanced Negotiations to Partner on Low-emission Ammonia Projects," Dec. 8, 2025, Louisiana project section and FID timing; [Air Products investor release](#) and [Yara release](#).
4. Air Products, Form 10-Q for quarter ended Mar. 31, 2026, filed Apr. 30, 2026, "Capital Expenditures" and "Outlook for Investing Activities," pp. 67-69; [SEC filing](#).

5. Air Products, FY2025 Form 10-K, “Cash Flows From Investing Activities” and “Capital Expenditures,” pp. 49-51; [SEC filing](#).
6. Paul L. Joskow, “Contract Duration and Relationship-Specific Investments: Empirical Evidence from Coal Markets,” *American Economic Review* 77, no. 1 (1987): 168-185, [abstract/metadata](#); [JSTOR record](#). The full paper was not available in this research package; the case uses only its abstract-level mechanism.
7. Linde, “Linde Signs Long-Term Agreement to Supply Industrial Gases to World-Scale Low-Carbon Ammonia Facility in Louisiana,” June 23, 2025, paragraphs 1-4; [company release](#).
8. Avinash K. Dixit and Robert S. Pindyck, *Investment under Uncertainty* (1994), available [extract](#), pp. 3-8; [PDF extract](#).
9. Bent Flyvbjerg, Mette K. Skamris Holm, and Søren L. Buhl, “Underestimating Costs in Public Works Projects: Error or Lie?” *Journal of the American Planning Association* 68, no. 3 (2002): 279-295, methods, results and limitations; [author-accepted manuscript](#), [published DOI](#).

Information boundary: This student case stops on June 25, 2026. It excludes all later company, partner, regulatory and financial developments.