

SUPPLY CHAIN connect™

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3 WAYS AI COST OPTIMIZATION TRANSFORMS LEGACY PROCUREMENT WORKFLOWS





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Obsolescence is a present-day cost driver embedded in every product lifecycle. Effective obsolescence management determines whether that cost is controlled, anticipated and absorbed or whether it becomes an unplanned and often exponential burden.



Can State-Led Planning Help Cut Carbon Emissions? [\(Page 22-23\)](#)

A new CATF report explores how states can tackle long-term energy challenges while preserving the benefits of competitive electricity markets.



Tracking Critical Minerals Across the Global Supply Chain [\(Page 24-25\)](#)

Electronics buyers need reliable sourcing information, but fragmented tracking systems and inconsistent data still make end-to-end tracking difficult.



Coming to a Town Near You: Drone Delivery [\(Page 26-27\)](#)

Drone delivery gains momentum as major retailers expand their programs.



3 Ways AI Cost Optimization Transforms Legacy Procurement Workflows

AI cost optimization identifies hidden spending inefficiencies and improves supplier contract decisions, allowing procurement teams to shift from reacting to financial losses to protecting margins before costs accelerate.

Legacy procurement workflows can quietly erode profit margins. Fragmented spending data, unauthorized purchases and missed supplier contract opportunities create financial losses that often go unnoticed. Traditional procurement systems frequently uncover these expenses only after transactions occur, complicating how organizations recover lost capital.

Artificial intelligence (AI) in procurement offers a more proactive cost optimization approach. By analyzing purchasing patterns and automating financial controls, these technologies help organizations identify hidden costs and prevent unnecessary expenses. From improving spend visibility to enforcing real-time purchasing controls and optimizing supplier contracts, AI can transform how procurement teams protect company resources.

1. AI Spend Analytics Reveal Hidden Procurement Costs

Hidden procurement costs can accumulate when organizations lack a clear view of purchasing activities across departments.

AI spend analytics for enterprise procurement helps teams uncover these expenses by identifying spending patterns, pricing inconsistencies and opportunities to reduce costs.

Why Traditional Spend Analysis Misses Cost-Saving Opportunities

Procurement teams often rely on enterprise resource planning (ERP) reports and disconnected purchasing records to track spending across departments. However, fragmented data makes it difficult to detect duplicate payments, inconsistent supplier pricing and purchases that bypass negotiated agreements. These gaps allow unnecessary expenses to accumulate without attracting attention.

Fragmented data also weakens trust in centralized reporting. When teams question the accuracy of shared reports, they may create their own datasets and analyses, resulting in conflicting spending figures and misaligned purchasing decisions. Without a reliable organization-wide view of spending, procurement leaders struggle to identify cost-saving opportunities and control financial losses.

How AI Identifies and Recovers Lost Capital

AI spend analytics for enterprise procurement consolidates purchasing data from multiple systems and automatically categorizes transactions across business units. Machine learning algorithms analyze spending patterns to uncover supplier pricing discrepancies and other irregularities that manual reviews might miss. This visibility helps procurement teams identify where organizations lose money.

Autonomous category agents and AI-powered spend analytics can deliver 15% to 30% efficiency improvements by automating routine activities, such as spend classification and reporting. These gains free procurement professionals to focus on strategic sourcing, supplier negotiations and other cost-saving opportunities. With better spending insights, organizations can recover eligible overpayments and negotiate more favorable supplier pricing.

2. AI Pattern Recognition Prevents Maverick Spending

Maverick spending occurs when employees make purchases outside established procurement policies, which increases costs and weakens budget controls. AI pattern recognition helps organizations detect suspicious purchasing activity in real time, allowing procurement teams to address potential violations before transactions occur.

The Financial Risks of Delayed Procurement Audits

Legacy procurement workflows often rely on quarterly audits to identify unauthorized purchases and policy violations. By the time procurement teams discover these issues, organizations have already spent the money, limiting their ability to prevent financial losses. In one survey, 37% of supply chain leaders cited integrating machine learning or automation as a top concern when adopting AI.

This integration challenge can be particularly difficult for decentralized procurement operations. Disconnected purchasing systems and inconsistent processes limit real-time spending visibility across business units. As a result, some organizations continue relying on delayed audits instead of implementing proactive controls that could prevent unauthorized spending.

Moving From Quarterly Reviews to Real-Time Spending Controls

Lightweight AI pattern recognition tools allow procurement teams to monitor purchasing activity across decentralized business units without replacing existing systems. These solutions analyze transaction data to detect unusual purchase amounts and attempts to bypass spending thresholds. When

integrated with purchasing platforms, AI can automatically flag noncompliant transactions before approval or payment.

Real-time visibility helps procurement teams address potential policy violations before they result in financial losses. Instead of relying on quarterly audits to uncover unauthorized expenses, organizations can intervene earlier and prevent unnecessary spending.

How Agentic AI Strengthens Procurement Compliance

Agentic AI goes beyond traditional automation by interpreting user intent and executing multistep workflows across different applications. These systems can adjust their actions as conditions change, coordinating tasks between ERP platforms and approval systems with minimal manual intervention.

For example, when an employee submits a purchase request, an AI agent can verify the supplier and route the transaction for approval. If the purchase exceeds spending limits or supplier conditions change, the agent can adjust the workflow or escalate the issue. This approach helps procurement teams prevent maverick spending while maintaining human oversight of critical financial decisions.

3. Agentic AI Optimizes Supplier Contracts Before Renewal

Automatic supplier contract renewals can lock organizations into unfavorable pricing and terms, especially when procurement teams overlook important deadlines. Agentic AI helps teams monitor agreements, identify renegotiation opportunities and act before contracts renew.

Using AI to Identify Better Contract Terms

Automated contract lifecycle management (CLM) systems help procurement teams extract and monitor critical contract details, including minimum purchase commitments and escalation clauses. These systems can also compare contract terms against historical purchasing activity and available market benchmarks. This analysis reveals pricing discrepancies and contractual obligations that traditional reviews might overlook.

With these insights, procurement teams can identify overpriced agreements, unused purchase commitments and opportunities to consolidate supplier contracts. For example, AI may reveal that different business units purchase similar materials from multiple suppliers at varying prices. Organizations can use this information to negotiate volume discounts and secure more favorable contract terms.

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6 Steps to Better CFO-CPO Alignment

How procurement and finance can get on the same page about savings, spending and financial results.

There's a lot to be said for having everyone in an organization rowing in the same direction, especially in challenging business environments where uncertainty and unpredictability have become the norm. With procurement navigating these issues on the front lines and financial departments making the budgeting decisions, CPOs and CFOs need to be aligned and working from the same playbook.

Making that happen isn't easy, and this isn't a new problem. Procurement and finance have historically approached spending from different perspectives, with procurement focused on negotiating favorable supplier agreements and finance concerned with how those agreements affect budgets, cash flow and the bottom line. Those differences can become a source of conflict when the savings reported by procurement don't match the financial results the company records.

A recent *Procurement Pulse Report* from Agiloft highlights a persistent gap between the savings companies negotiate and the financial benefits they ultimately receive. Based on a survey of

2,005 procurement executives, it identifies a weak connection between supplier contracts and the systems responsible for carrying out their terms. This gap is causing companies to lose negotiated savings through invoice discrepancies, missed contractual remedies and purchases made outside approved supplier agreements.

Collaborative Work, Separate Scorecards

The research also found that 61% of respondents described their relationship with finance as "collaborative" during budget cycles, with most departments operating with "separate scorecards" throughout the year. And just 29% share performance indicators and jointly report financial results.

"Once a contract is signed, it enters a world of processes and systems that are expected to act on contract data but were never designed to read it," Agiloft says in the report. "ERP platforms process purchase orders, accounts payable teams approve invoices, and supplier relationships are managed through relationship owners who may never open the contract document."

The good news is that CFOs and CPOs can solve these problems by looking closely at how their departments measure savings and account for the financial results. When that happens, the two departments get a common basis for evaluating purchasing decisions and identifying new savings opportunities. Here are six steps companies can take to get these two teams working from the same playbook:

- 1. Agree on what counts as savings.** Procurement may count avoided price increases as savings, while finance looks for reductions in actual spending. In *"How to Improve Collaboration Between Procurement and Finance,"* Ramp says both departments should establish a common reporting standard so they calculate savings the same way.
- 2. Spell out who's responsible for what.** According to Deloitte's *Benefits of Integrating Procurement and Finance Operations*, both departments should establish who handles each stage of the purchasing process, from contract negotiations through invoice approval, while maintaining appropriate financial controls.
- 3. Bring procurement into budget planning.** Ramp also advises companies to involve procurement in financial planning discussions. That way, finance can account for upcoming supplier price changes and purchasing commitments when developing forecasts.
- 4. Connect contract and financial systems.** Agiloft recommends integrating contract management, purchasing and accounts payable systems so employees can verify negotiated prices and payment terms before approving invoices.
- 5. Share supplier information across departments.** Finance can share supplier payment histories and credit information with procurement, giving buyers more information to draw on when negotiating contracts and assessing supplier performance, Deloitte adds.
- 6. Review financial results together.** Get everyone in the same room to compare purchasing activity with financial results to identify discrepancies and confirm the recorded savings. "The collaborative-but-separate finance relationship described by 61% of respondents will remain a limitation until CPO and CFO teams adopt shared KPIs that bridge negotiated savings and realized outcomes," Agiloft concludes. ■

3 Ways AI Cost Optimization Transforms Legacy Procurement Workflows (Continued from page 5)

Automating Contract Reviews Before Deadlines

Agentic AI can continuously monitor contract milestones and initiate approved review workflows before automatic renewal deadlines. These systems generate renewal alerts, prepare supplier performance summaries and flag agreements that require renegotiation. This proactive approach gives procurement teams more time to evaluate contract terms and negotiate better deals.

Automated CLM solutions also offer measurable financial benefits by automating routine tasks, such as extracting contract terms and checking renewal clauses. This **reduces manual workloads and internal administrative costs** while helping teams identify unfavorable renewal provisions and compliance risks that could lead to disputes or litigation. By catching potential oversights early, organizations can reduce contract management expenses, avoid costly disagreements and secure more favorable supplier agreements.

Integrating AI Cost Optimization into Existing Procurement Workflows

Procurement teams can adopt AI capabilities by integrating new tools with existing ERP, purchasing and financial systems rather than replacing their entire infrastructure. However, data governance remains a major challenge. According to PwC's Tech Strategy and AI Survey, **91% of CIOs and technology leaders** identify data governance as their second-highest challenge for the next three to five years. Fragmented supplier records and inaccurate purchasing data can also undermine AI recommendations.

Organizations can start with high-impact applications, such as duplicate payment detection, real-time spending compliance and supplier contract monitoring. Reliable data and consistent procurement policies help these systems deliver accurate insights. By tracking recovered overpayments and verified cost savings, procurement leaders can measure financial returns while maintaining human oversight of critical decisions.

Turning AI Cost Optimization into a Financial Safeguard

AI in procurement helps teams move beyond reactive cost reporting toward proactive financial protection. Through AI-powered spend analytics, real-time purchasing controls and automated contract monitoring, organizations can uncover hidden costs and optimize supplier agreements before renewal. By adopting these capabilities, businesses can capture savings that traditional procurement workflows might overlook. ■

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Strategic Curiosity: The Supply Chain Superpower Most Leaders Miss

Leaders are encouraged to go beyond surface-level data by probing deeper into supply chain dependencies, fostering cross-functional collaboration and leveraging technology to enhance decision-making and resilience.

Companies have been dealing with more than their fair share of uncertainty this year as everything from tariffs to geopolitical issues to trade wars has impacted their global supply chains. Now, just under a month away from the national midterm elections, they're adding another challenge to the list: how to plan for an outcome that no one is really sure of yet.

Supply chains have never been more instrumental. Dashboards glow with real-time data, AI models scan for risk, and teams invest in visibility, forecasting and network optimization. Yet when disruption hits, the difference between companies that adapt and those that scramble often comes down to something far less technical: the questions leaders were asking before the crisis arrived.

In an era where volatility is no longer an exception but the operating environment, strategic curiosity has become a competitive advantage. It's the habit of looking beyond the obvious, challenging assumptions that feel settled, and probing for vulnerabilities hidden beneath layers of suppliers, logistics routes and production networks. The organizations that see farther are usually the ones that ask deeper questions first.

Strategic curiosity is more than intellectual interest. It's a disciplined way of examining a supply chain to uncover the dependencies, risks and opportunities that traditional reporting can miss. While data can reveal what's happening, curiosity helps leaders understand why it matters and what might happen next. In a world defined by uncertainty, that distinction can determine whether a disruption becomes a setback or a strategic advantage.

Strategic curiosity is the discipline of looking beyond surface-level data to uncover the dependencies, vulnerabilities and opportunities hidden across a supply chain. For many organizations, visibility still ends with direct suppliers. Leaders may know who provides their components, materials and services but have limited insight into upstream manufacturing dependencies, country-of-origin exposure, freight lanes, testing locations or regional concentrations deeper in the network.

The result is a dangerous gap between what a supply chain appears to be and how it will actually behave under pressure. Leadership can begin to close that gap by asking some important questions and the answers reveal critical insight into supply chain operations.

Q: Where is each critical component manufactured, tested, stored and shipped?

A: Geographic and operational dependencies

Q: Which suppliers share the same factory, sub-tier source or transportation route?

A: Hidden concentration behind apparent diversification

Q: How would a country-of-origin change affect cost, compliance or continuity?

A: Regulatory and commercial exposure

Q: Which sourcing assumptions have not been tested recently?

A: Decisions that may no longer reflect current conditions

Q: Have we conducted scenario analyses to reveal the impacts of disruption?

A: Existence (or lack) of a response playbook
These are not technical questions alone. They are leadership questions because their answers shape investment priorities, customer commitments, product decisions and the organization's resilience posture.

Look Beyond Apparent Diversification

Supplier diversification illustrates why strategic curiosity matters. Two suppliers may appear independent while relying on the same upstream manufacturer, logistics network or regional infrastructure. A leader who stops at the Tier 1 relationship may see redundancy. A leader who examines the ecosystem may discover concentrated risk.

The same principle applies to country-of-origin rules, globally distributed production and component lifecycle exposure. These factors can create operational and regulatory consequences that are not visible in a traditional supplier scorecard. Leaders do not need to become experts in every domain, but they do need the curiosity to probe beyond the first answer and bring the right expertise into the discussion.

Invite More Functions into the Room

Strategic curiosity can also broaden who participates in supply chain decisions. Engineering can identify design dependencies and qualification constraints. Finance can test the cost of mitigation against the cost of interruption. Logistics can expose route and capacity vulnerabilities. Manufacturing can explain where process dependencies limit flexibility. Marketing and commercial teams can clarify which customer commitments carry the greatest business consequences.

Bringing those perspectives together before a disruption forces the conversation to improve both the quality and speed of decisions. It also helps leaders distinguish between risks that can be monitored, risks that require mitigation and risks the business is prepared to accept.

Use Technology to Strengthen Judgment

AI, analytics and digital mapping can reveal patterns, monitor risk signals and make complex networks easier to examine. Their value, however, depends on reliable data and leaders who know what to investigate and what to do as a result.

Technology can show that a condition has changed. Leadership determines whether the signal matters, who owns the response and what action should follow. Supply chain leaders cannot eliminate uncertainty, nor can they stock their way out of every risk. They can build organizations that see more clearly, challenge assumptions earlier and respond with greater discipline.

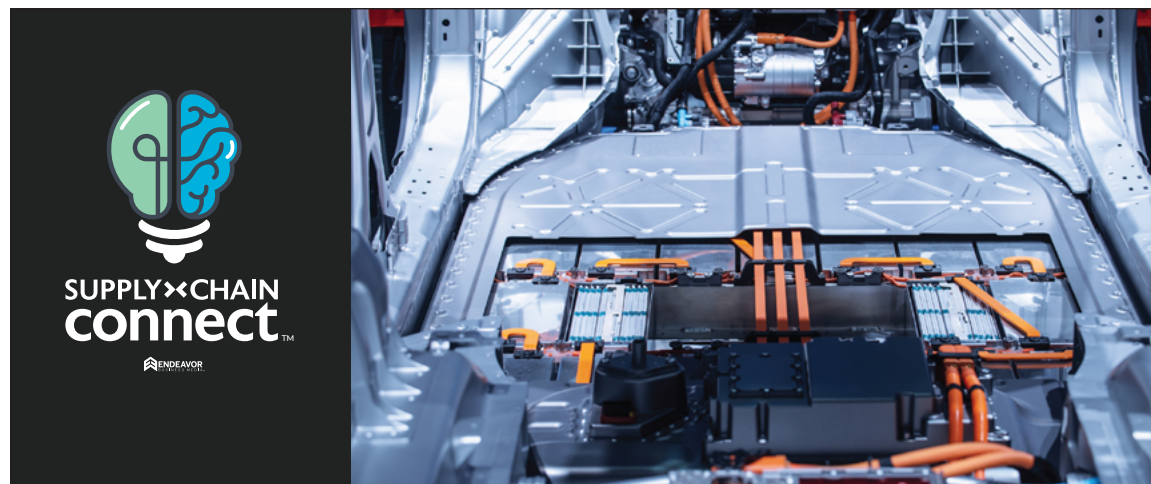
In an era of permanent volatility, strategic curiosity is not a soft skill. It is a practical leadership capability for designing resilience before the next disruption arrives.

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The Podcast Channel for Supply Chain Professionals

Supply Chain Connect provides supply chain and purchasing professionals with essential news, information and analysis about the technology and business trends that impact the global supply chain industry.



The \$500 Million Push for Domestic Battery Supply Chains

A \$500 million federal investment aims to strengthen domestic critical mineral processing, battery manufacturing and recycling while reducing reliance on overseas supply chains.

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What Every Industry Can Learn from Data Center Supply Chains

Blue Yonder's Puneet Saxena shares how smarter spare-parts planning and real-time visibility help hyperscalers keep data centers running—and what other industries can learn from their approach.

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Getting Ahead of the Midterm Election Wildcard

With the midterm elections set for next month, organizations are managing current disruptions while also trying to get out in front of an uncertain political outcome.

Companies have been dealing with more than their fair share of uncertainty this year as everything from tariffs to geopolitical issues to trade wars has impacted their global supply chains. Now, just under a month away from the national midterm elections, they’re adding another challenge to the list: how to plan for an outcome that no one is really sure of yet.

Without getting overly political, the main point here is that control of either or both the House and the Senate could change next month. That would shift the balance of power in more ways than one and lead to a very different looking second half of Trump’s term. As election day closes in, PwC says proactive organizations are “already taking steps to prepare for what’s coming next.”

“While the most likely election scenarios are unlikely to yield the sort of extensive legislative and regulatory changes that occurred over the last two years,” the firm states in [The mid-](#)

[terms won’t end uncertainty. Here’s what CEOs can do now](#), “we believe there will still be important strategic shifts that companies need to adjust to moving forward.”

5 Preparation Strategies

In this environment, PwC tells executives to focus on what they can control: understanding their exposure, investing in more intelligent and transparent operations, staying anchored to clear corporate values, and building the organizational capabilities to adapt repeatedly over time. “Whatever the midterm outcome,” it adds, “CEOs should expect continued volatility, geopolitical uncertainty, and a policy environment shaped by executive action, particularly on tariffs and trade policy.”

Here are five strategies companies can use to prepare amid the uncertainty:

1. Help shape policies that are under development. If Democrats retake a chamber of Congress, they will likely focus legislative activities on issues they think demonstrate why voters should support their party in 2028. “That creates a window of opportunity for your company to influence the structure of those policies before the political stars are aligned in a way that causes proposals to move more fully into the legislative machinery,” PwC says.

2. Brace for more supply chain uncertainty. Regardless of the election results, companies should also plan for a wider range of potential futures. Critical minerals are a point of vulnerability across industries, for example, and “securing domestic access to lithium, graphite, rare earths, copper, and other critical minerals is likely to remain a shared priority because of its implications for energy, defense, manufacturing, and grid reliability,” says PwC. “There’s also likely to be bipartisan support for policies that expand the domestic semiconductor chip manufacturing as a way to reduce supply chain dependency and strengthen national competitiveness.”

3. Reallocate resources to manage trade uncertainty. Tariffs will likely stay in place regardless of any power shift, according to PwC, which says tariffs at some organizations are now the biggest cost item in the P&L (even bigger than taxes). At the same time, enforcement is growing, with U.S. Customs and Border Protection (CBP) using more data-driven enforcement tools and the Department

of Homeland Security aligning with the Department of Justice in a cross-agency Trade Task Force to make sure that companies are complying.

4. Get ready for increased AI oversight. California enacted the first state framework for independent verification of AI systems, setting criteria for who’s qualified to perform those assessments and directing the state to align them with established auditing and assurance standards. “The midterms are likely to showcase growing concerns about AI,” PwC predicts. “Republicans are likely to continue to hold a pro-innovation stance regarding model governance and chips, while Democrats will push for greater regulation, including calls to slow the develop of frontier AI models.”

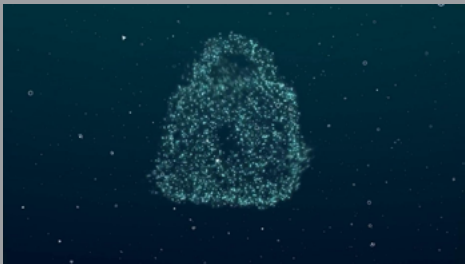
5. Continue focusing on sustainability. Growth in AI, data centers, electrification, advanced manufacturing and reshoring is leading to greater demand, PwC notes, and energy affordability is triggering populist resistance to data centers in many municipalities. There are also new sustainability requirements to consider. “In the near term,” it says, “some companies will need to start reporting in line with the Corporate Sustainability Reporting Directive’s disclosure requirements and California’s climate-related disclosure laws.”

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Building Supply Chain Resilience Amid Electronic Component Shortages and AI-Driven Demand

The discussion highlights practical approaches such as strategic partnerships, traceability, and testing to navigate market volatility, ensuring component quality and supply chain robustness in a rapidly evolving electronics landscape.

As artificial intelligence (AI) infrastructure drives unprecedented demand for electronic components, supply chain leaders face growing challenges involving component shortages, extended lead times, and market volatility. How can OEMs and electronics manufacturing services (EMS) providers strengthen supply chain resilience while maintaining sourcing flexibility and component quality?



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The Supply Chain Behind America’s Electricity Grid

The Department of Energy reveals a new plan to strengthen the nation’s aging grid in an era of high usage and demand.

Over the last three years, U.S. electricity consumption has increased by about 3% annually. This puts new strains on an aging energy grid that’s ripe for modernization. Some of the increased demand is being driven by new data centers coming online, more electric vehicles on the road and the industrial reshoring trend (i.e., manufacturers bringing operations back to the U.S.). These and other factors have pushed the federal government to assess the current situation and come up with solutions.

The latest options were presented by the Department of Energy’s Office of Electricity (OE), whose *Strengthening America’s Grid Supply Chain* report looks at some of the key pressures on the existing grid plus new solutions for strengthening and modernizing it. It also highlights the important role of the underlying supply chain, including the transformers, circuit breakers, substation components and other grid equipment needed to make the electric grid hum.

The core supply chain challenges include dependence on imported components and materials, limited domestic production capacity and excessive customization, OE says, noting that lead times for the equipment are currently extended out one or two years. “Furthermore, these supply chain issues drive up electricity prices for American homes and businesses,” the OE adds. “Some transformers have seen four to nine times price increases in the last five years.”

The Need is Real and Growing

According to the International Energy Agency (IEA), electricity consumption in the U.S. is set to rise by close to 2% on average per year (more than twice the rate of the past decade). It also says that:

- Electricity demand is climbing, and the amount of new demand added each year through 2030 will average about 50% more than it did over the last 10 years.

- AI and data centers, advanced manufacturing, electric vehicles and space cooling are driving much of the expansion.
- Electricity consumption will grow at least 2.5 times faster than overall energy demand.
- The U.S. isn’t alone when it comes to increased energy consumption. In global advanced economies, IEA says electricity use is rising again after roughly 15 years of stagnation.
- By 2030, electricity demand is expected to outpace economic growth globally, with total and per-capita consumption reaching new highs in many regions.

As electricity demand driven by data centers, manufacturing and broader electrification continues to grow, utilities and grid operators will need to add generation and transmission capacity faster than they have in recent years. They’ll also need stable, reliable supply chains to move the equipment, components and materials needed for construction and ongoing maintenance.

The OE’s Supply Chain Program

Knowing the importance of a strong supply chain and the related constraints, the OE has developed a \$375 million domestic supply chain enhancement program that includes:

- Strengthening U.S. readiness for supply chain disruptions by promoting greater refurbishment and

reuse of existing grid equipment and materials and increasing the use of alternative materials and subcomponents sourced from the U.S. to reduce the need for imports, stabilizing supply-demand mismatches.

- Maximizing the impact of investments in domestic manufacturing capacity by promoting greater standardization of grid equipment through common configurations that can streamline production, reduce lead times and lower costs through economies of scale, optimizing resources.
- Positioning the U.S. as a leader in next-generation grid power electronics like solid-state transformers, which can reduce the need for conventional equipment and materials, increase grid capacity, and ease large load integration by strengthening the domestic supplier ecosystem, growing the jobs and grid of tomorrow.

The OE’s expected outcomes include reducing imports and lead times of critical grid components by up to 10% and lowering utility spending on essential equipment by as much as 25%. *PowerLine* says the program is focused on prioritizing affordable, reliable and secure technologies; strengthening grid reliability through baseload and dispatchable power expansion; and streamlining permitting to accelerate energy infrastructure development.

“The idea is to achieve four critical outcomes,” the publication adds, “energy dominance (including 100 GW of capacity additions by 2030 and increased energy exports), affordability, national security and innovation.”

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Moving Beyond Risk: Agility as a Growth Lever - Wired to Procure

This video covers the four main disciplines of agile procurement: measuring launch enablement, building flexibility, removing quote-to-order friction, and choosing NPI-focused partners like Mouser. Better agility helps teams design smarter, launch faster, and grow revenue.



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Supply Chain Adoption of Cloud IoT Solutions Accelerates Digital-First Logistics

Supply chains are becoming information-rich networks as cloud IoT systems connect physical assets with cloud platforms. Benefits include integrated data sources that better inform procurement and logistics decisions.

Supply chain leaders are swapping spreadsheets and phone calls for live, always-on data streams. Warehouses flag low stock the moment it happens, while shipping containers report their own location and temperature mile after mile.

Organizations across industries are adopting cloud-based Internet of Things (IoT) solutions to power this shift, using real-time data to sharpen decisions, cut waste and respond to disruption before it spreads.

Core Technologies Powering the Digital Supply Chain

IoT, cloud computing and data analytics form the technical foundation for connected supply chains. [Research on Industry 4.0 identifies IoT](#), cloud computing and big data analytics

as closely integrated technologies within digital supply chain environments.

Cloud Computing Infrastructure

Cloud infrastructure provides the computing and storage layer for IoT-generated information. Data from warehouses, vehicles, production facilities, suppliers and distribution centers can move into shared platforms where applications can process and analyze it.

For large supply networks, centralized cloud resources also support scale. Organizations can add devices, facilities and data streams without building separate computing environments for every location. APIs and integration services can connect IoT platforms with warehouse management, enterprise resource planning, transportation management and procurement systems.

These connections create a common data environment for apps requiring updated operational information. Processes like predictive maintenance and inventory monitoring can all draw from connected data sources.

Industrial Internet of Things Networks

Industrial IoT networks provide the physical data layer. RFID tags, GPS trackers and temperature and humidity sensors ride on pallets, containers and vehicles. They capture the condition of goods in transit. Sensors on production lines and warehouse equipment add another layer, reporting on performance and wear before problems arise.

Together, these networks generate the steady stream of real-time data that cloud platforms need to turn raw signals into usable insights. The more physical operations these devices cover, the fewer blind spots a team has to manage manually.

Primary Benefits of Cloud IoT Integration

Once the core technologies are in place, IoT for supply chain management pays off in three connected ways.

Real-Time Asset Tracking and Visibility

Supply chain visibility depends on continuous information about inventory, shipments and operational conditions.

EMO Trans reports that about [6% of small and medium-sized companies](#) have achieved full supply chain visibility, while 43% do not track inventory. Its analysis associates limited visibility with losses reaching 62% financial, 54% logistical and 54% reputational impacts during disruptions.

A McKinsey report found that visibility into tier one of the supply chain is increasing, with [60% of respondents](#) in its 2024 survey reporting that level of transparency. However, there is a lack of a deeper-level understanding of the supply chain.

Cloud IoT can close some of these information gaps. Environmental sensors can flag temperature fluctuations in transit, while RFID can update inventory records as tagged items pass through designated points. Those signals give procurement and logistics teams more time to respond to potential issues or accidents.

Predictive Analytics and Proactive Maintenance

IoT data can also feed predictive models that assess asset condition. Vibration, temperature, pressure, power consumption and other sensor readings can reveal changes in equipment behavior.

Analytics platforms can compare current measurements with historical patterns and identify anomalies. Maintenance teams can then inspect equipment based on its real-time conditions and schedule service around usage and wear patterns.

The same technology can also support supply chain forecasting. Changes in transit times, supplier performance and inventory positions can help assess potential bottlenecks.

Automated Workflow Optimization

Connected data becomes more useful when it flows directly into business systems. An inventory sensor can trigger a replenishment event, while a shipment status can update an order record.

These automated exchanges reduce the delay between an operational event and the corresponding business action. They also reduce the amount of manual data entry required across procurement and logistics processes.

Global Disruptions Require Agile Networks

Digital connectivity becomes especially valuable when external conditions change. Tariffs, supplier interruptions, transportation constraints, and geopolitical events can alter sourcing and logistics requirements across multiple regions.

Data from 2025 shows that [82% of supply chains](#) have been altered by U.S. tariff changes. A connected data architecture helps teams assess those changes across suppliers, transportation routes, inventory and customer requirements.

Proactive Risk Management

End-to-end visibility gives supply chain managers earlier signals about emerging risks. Supplier performance data can reveal deteriorating lead times, while shipment information can expose delays at specific parts of the route.

The OECD's 2025 review [links digitalization with greater supply chain transparency](#) and resilience. It identifies IoT, RFID, GPS, cloud communications and predictive analytics as technologies that can support real-time information sharing and earlier responses to disruptions.

For procurement organizations, the benefit extends into supplier monitoring. Connected data can provide periodic supplier reviews with current information about lead times, fulfillment performance and shipment conditions. Teams can then investigate changes while they still have sourcing or allocation options.

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Survey Says: U.S. Manufacturing Solidly in Expansion Mode

Manufacturing activity in the U.S. expands for the ninth consecutive month in September.

Economic warning signs, inflation and rising interest rates be darned, the U.S. manufacturing sector is on a roll and showing no signs of slowing down. In fact, economic activity in the sector expanded for the ninth consecutive month in September, according to the latest [ISM Manufacturing PMI Report](#). The Manufacturing PMI registered 54.5% last month (a reading higher than 50% indicates expansion) as the overall economy expanded for the 23rd month in a row.

Just two industries reported a contraction in September (printing & related support activities and textile mills), while the other 12 manufacturing industries grew, including electrical equipment; primary metals; computer & electronic products; fabricated metal products; miscellaneous manufacturing; and chemical products.

ISM says the New Orders Index expanded for the ninth consecutive month after four straight readings in contraction,

registering 55.3% (up 1.6 percentage points compared to August's 53.7%). Here's how some of the other ISM indexes performed last month:

- The Production Index (56.7%) was 1.6 percentage points lower than the 58.3% recorded in August.
- The Prices Index remained in expansion, registering 77.9%, "a notable increase of 6.8 percentage points compared to August's reading of 71.1%," ISM reports.
- The Backlog of Orders Index registered 56.4%, up 4.6 percentage points compared to 51.8% the prior month.
- The Employment Index reading of 52.7% was up 1.5 percentage points from August's figure of 51.2%.
- The Inventories Index registered 48.6%, down 2 percentage points compared to August's 50.6%.

- The New Export Orders Index lost 2.3 percentage points in September for a reading of 50.9% (versus 53.2% in August).

"In September, U.S. manufacturing activity remained in expansion territory," Susan Spence, ISM's Manufacturing Business Survey Committee chair, said in the report. "Of the five subindexes that make up the PMI, only New Orders and Employment grew faster than the previous month."

From the Horse's Mouth

The monthly survey also incorporates feedback and comments from across the manufacturing sector. In September, 40% of those comments were positive and 60% were negative, with a 1-to-1.6 ratio of positive to negative sentiment. Among the negative comments, pricing volatility was mentioned in 46%, tariffs 34%, the Iran war 30% and increasing lead times 21%.

"Better performance was driven primarily by temporary market effects, including (1) geopolitical uncertainties, (2) customers bringing forward purchases, (3) delayed raw material price increases and (4) reduced competitor capacity," one chemical products manufacturer said. "However, these factors do not signal sustained recovery: Structural challenges facing the chemical industry remain, including overcapacity, persistent pricing pressures and protectionist trade policies."

Another company in the computer and electronics field said it continues to face tariff-related challenges, and that "finding alternate sources of supply outside of China, local pushback on data centers in the U.S. and continuing material/component shortages are affecting business." An electrical equipment manufacturer echoed those sentiments: "Raw metals continue to be challenging, especially with the uncertain nature of tariffs being on and off again. New tariffs against Canada have drastically increased costs for capital expenses as well as assemblies."

One machinery manufacturer blamed rising interest rates for slowing the growth of new construction projects and, in turn, impacting its business. "We also have to face up to the higher cost of components from overseas due to tariffs and freight rates," it added. "Due to booming demand of AI and data centers, domestic steel capacity has been stretched and pushed. Higher steel costs each month increase our raw-material and finished-goods costs."■

[Supply Chain Adoption of Cloud IoT Solutions Accelerates Digital-First Logistics](#) (Continued from page 17)

Rapid Rerouting and Allocation

Cloud IoT can support decisions when a facility, supplier or transportation node becomes unavailable. Current inventory locations, shipment positions and facility capacity give planners a clearer picture of the resources available throughout the network.

Suppose a distribution center loses capacity. A connected system can identify inventory at nearby facilities, shipments moving toward affected markets and orders that require immediate attention. Planners can evaluate alternative allocations and delivery options using up-to-date network data.

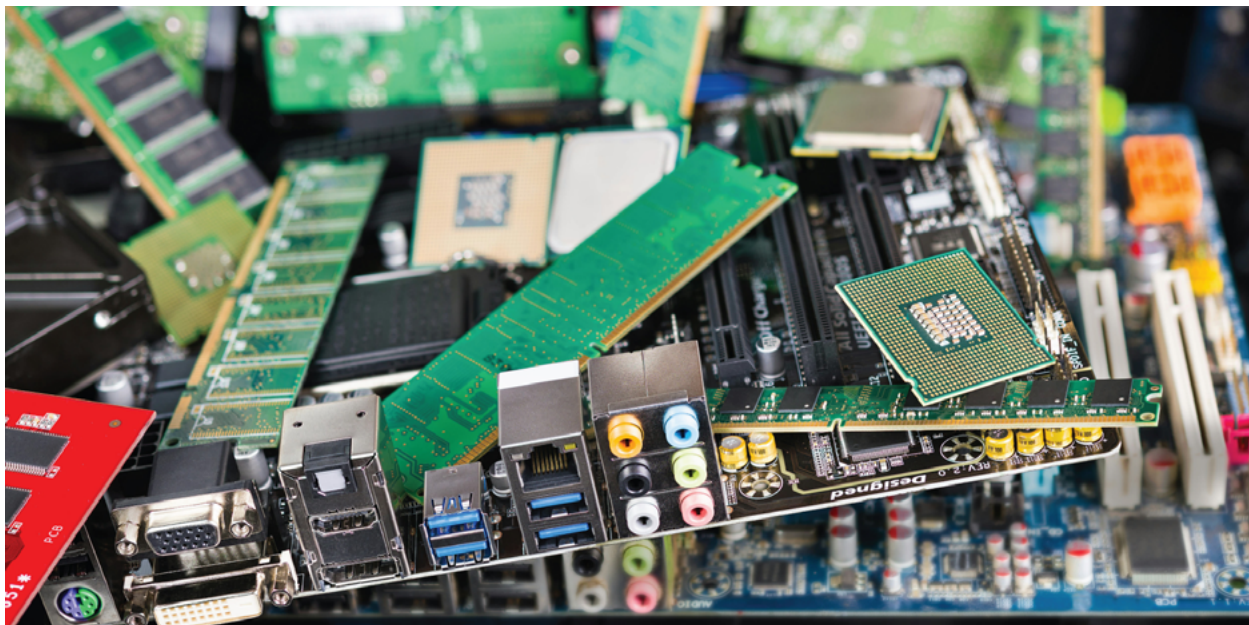
Over time, records from past disruptions can also show where problems happen most often. Teams can use this information to review areas like supplier choices or transportation plans. The result is a supply chain that can respond to current problems while using past data to improve future planning.

Building a Resilient Digital-First Future

Cloud IoT gives supply chain organizations a way to connect physical operations with the information systems that guide procurement and logistics decisions. Sensors provide operational signals, cloud infrastructure makes them available across various functions, and analytics helps teams identify changes that require action.

Supply chain leaders can start with areas where delayed information creates problems, such as asset tracking, inventory, equipment and shipment visibility. Connecting these data sources to existing business systems can give teams better information and help them respond faster when conditions change. ■

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Why Does Obsolescence Management Matter? Understanding Cost, Risk and Long-Term Resilience

Obsolescence is a present-day cost driver embedded in every product lifecycle. Effective obsolescence management determines whether that cost is controlled, anticipated and absorbed or whether it becomes an unplanned and often exponential burden.

With data centers consuming more electricity, the race to reduce emissions is on. After declining for two years straight, U.S. greenhouse gas emissions (GHG) increased an estimated 2.4% last year, according to [Rhodium Group](#). Power sector emissions jumped 3.8%, fueled in part by growing electricity demand and a 13% increase in coal-fired electricity generation.

Obsolescence management is often underestimated until an organization is faced with a critical shortage, a last-time-buy notification or an urgent redesign requirement. By that stage, options are limited, timelines are compressed and costs escalate rapidly.

What is often surprising is the scale of the financial impact. A relatively simple component change or improvement might cost under £1,000 when addressed early. However, if obsolescence is discovered late and requires a design refresh, those costs can escalate to £500,000, £750,000, or significantly more depending on system complexity, certification requirements and supply chain constraints.

The difference between these outcomes is not the obsolescence event itself, but the maturity of the obsolescence management approach already in place.

The Cost of Reactivity

When obsolescence is managed reactively, organizations typically respond only after a discontinuation notice is received. At that point, time is limited, supplier leverage is reduced and engineering changes are often forced rather than optimized.

In contrast, proactive obsolescence management allows organizations to anticipate changes and integrate solutions into planned engineering cycles, significantly reducing both cost and risk exposure.

The Drivers Behind Obsolescence

To manage obsolescence effectively, it is essential to understand why it happens. It is not a single-source problem but a combination of market, technological, regulatory and commercial forces.

1. Technological Advancement

Industries continuously evolve to deliver better performance, efficiency and capability. However, innovation inherently drives obsolescence of previous generations of technology.

As new technologies enter the market, older products become economically or technically redundant.

2. Changing Customer Expectations

Consumer and market demand play major roles in accelerating product turnover. Expectations for faster performance, smaller devices and enhanced functionality drive continuous redesign cycles, particularly in electronics and digital systems.

3. Economic and Commercial Pressures

Products may become obsolete not because they fail technically, but because they are no longer economically viable. Factors include low demand, reduced profitability, supply chain consolidation as well as mergers and acquisitions. In such cases, manufacturers may discontinue products even if they remain technically functional.

4. Regulatory Change

Regulation is one of the most significant and unavoidable drivers of obsolescence.

Frameworks such as REACH and RoHS continuously reshape material and design requirements. One of the most impactful emerging areas is PFAS regulation.

PFAS (Per- and Polyfluoroalkyl Substances), often referred to as “forever chemicals,” are widely used across industries due to their non-stick, heat-resistant, fire-resistant and water-resistant properties. They appear in items such as firefighting foams, air conditioning refrigerants, PPE are used in semiconductor manufacturing processes and as a tool release agents.

With over 10,000 known compounds and increasing regulatory scrutiny from bodies such as ECHA, restrictions expected from 2027 onwards will have widespread supply chain implications. In many cases, substitution is not optional; it is mandatory.

The Reality of Long-Life Assets

Obsolescence becomes especially critical in sectors with long operational lifecycles such as aerospace and defense, rail, marine, nuclear and oil. These assets can have lifecycles measured in decades, sometimes 30, 40, 50 or more years.

However, the technologies within them do not match that timescale. Memory devices may last only 3–5 years. Subsystems are frequently refreshed long before platform retirement.

Software and firmware evolve continuously, and regulatory changes can occur every 18–24 months. This creates a fundamental challenge: organizations are maintaining assets designed decades ago, using technologies that no longer exist in their original form.

From Volume Management to Risk-Based Focus

It is not practical to manage every component in a bill of materials with the same level of attention. Instead, effective obsolescence management relies on prioritization.

A risk-based approach allows organizations to assess both the likelihood of obsolescence, as well as the business and operational impacts.

This enables classification of components into risk categories (e.g. green, amber, red), supporting decisions on whether to manage proactively or reactively.

High-risk components typically require:

- Early monitoring
- Supplier engagement
- Lifecycle forecasting
- Design intervention strategies

Lower-risk components may be managed reactively with minimal impact exposure.

Reducing Risk Through Proactive Strategies

Organizations that successfully manage obsolescence tend to adopt several key practices.

Design Transparency and Documentation

Capturing functional requirements, design decisions and sourcing assumptions reduces dependency on institutional knowledge and supports future engineering decisions.

Multi-Sourcing Strategies

Where feasible, avoiding single-source dependencies reduces exposure to supplier discontinuation risks.

Lifecycle Forecasting

Understanding where components sit in their lifecycle, including failure trends and end-of-life signals, significantly improves procurement and planning decisions.

Supplier Collaboration

Strong supplier relationships enable earlier notification of discontinuations, often providing 12–18 months of lead time. This window is critical for planning mitigation actions.

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Can State-Led Planning Help Cut Carbon Emissions?

A new CATF report explores how states can tackle long-term energy challenges while preserving the benefits of competitive electricity markets.

With data centers consuming more electricity, the race to reduce emissions is on. After declining for two years straight, U.S. greenhouse gas emissions (GHG) increased an estimated 2.4% last year, according to Rhodium Group. Power sector emissions jumped 3.8%, fueled in part by growing electricity demand and a 13% increase in coal-fired electricity generation.

Individual states are looking for new ways to keep up with rising electricity demand while meeting their long-term clean energy goals. A new report from Clean Air Task Force (CATF) says giving those states a bigger role in planning and procuring clean energy resources could help. The approach could be especially useful in deregulated electricity markets, where existing market incentives may fall short.

“States in deregulated markets with clean energy targets need a way to supplement the market’s inherent shortsightedness and proactively identify what the electricity system needs years in advance,” CATF’s Kasparas Spokas said in the report. “State-led planning and procurement can give states the

capacity to do that while keeping the benefits of competitive electricity markets.”

What Goes Into a State-Led Program?

According to CATF, cutting power sector carbon emissions quickly and affordably takes “long-lead-time technologies that are prone to development barriers, such as nuclear energy, geothermal, and long-duration energy storage.” While market prices and clean electricity standards have helped advance clean power deployment in deregulated electricity markets, it says they “don’t provide sufficient incentives to support projects with longer development timelines.”

Giving states a bigger role in energy planning could also help get long-delayed clean energy projects off the drawing board. CATF says these efforts would have to include:

- 1. **System needs assessments.** A state agency (or similar government organization) performs periodic, scenario-based assessments to identify long-term system needs to achieve clean electricity standards (and other policy targets) and gaps in expected development.

- 2. **Technology development roadmaps.** Roadmaps that identify, characterize and offer strategies and policy solutions to address technology development and investment barriers. These roadmaps also can incorporate non-electricity priorities of the state, such as around job creation, economic development and public health.

- 3. **Development mandates or state-led procurement.** Based on the system needs assessment and gaps, state-mandated procurement targets for load serving entities or direct state procurement of resources that the state assesses to have long-term value for achieving clean electricity standards and local economic development goals to provide revenue certainty for investors that is not present in existing market-based mechanisms.

According to CATF, these three activities form an “iterative cycle” in which clean electricity standards define the goal and drive near-term deployment. “State-led planning also establishes long-term plans and market-driven development and state-led or -directed procurement ensure development of the projects needed to close the gap on decarbonization quickly and affordably,” it adds.

Illinois is already doing it. The state’s Clean and Reliable Grid Affordability Act was enacted in January 2026. The state will continue to study its power system through 2045, with an initial plan due by November 2026 that will directly inform the Illinois Power Agency’s procurements, state advocacy positions and transmission planning, CATF says.

California and New York also have state-led planning programs in place. New York published a state-led energy storage roadmap to assess development needs and barriers, along with a Blueprint for Consideration of Advanced Nuclear Energy Technologies that identified deployment barriers in the state (which is now developing a Master Plan for Responsible Advanced Nuclear Development).

No Small Task

Looking ahead, CATF sees state-led planning as a complement to the current wholesale energy markets and says that successful initiatives will have to be rooted into new policies, oversight regulations and expert capacity. “While this is no small task,” it adds, “versions of state-led planning already exist and offer learnings.” ■

[Why Does Obsolescence Management Matter? Understanding Cost, Risk and Long-Term Resilience](#) (Continued from page 21)

Structured Obsolescence Processes

A defined process ensures consistent evaluation of impact, faster response times and clearer resolution pathways.

Supply Chain Visibility Matters

Obsolescence management is not limited to internal systems. It requires transparency both upstream and downstream across the supply chain. This includes:

- Multi-tier supplier visibility
- Communication beyond immediate suppliers
- Customer engagement on lifecycle risks
- Coordinated planning across stakeholders

Better supply chain visibility enables:

- Earlier detection of at-risk components
- Improved inventory planning
- More informed cost versus risk decisions
- Greater coordination across engineering, procurement and operations

Ultimately, obsolescence management is a collaborative discipline, not a standalone function.

Turning Challenge into Capability

Despite the scale of the challenge, there is a positive reality: organizations are not addressing obsolescence alone. Knowledge, standards and communities of practice continue to evolve.

Institutes such as the International Institute of Obsolescence Management (IIOM) bring together engineers, designers, operators and solution providers to share lessons learned and develop better approaches to managing lifecycle risk.

Conclusion

Obsolescence is inevitable. The cost of reacting to it is not. The organizations that perform best are not those that avoid obsolescence, but those that anticipate it, structure it and manage it as a core engineering and business capability.

By shifting from reactive firefighting to proactive lifecycle management, organizations gain something invaluable in complex systems: time, options and control over cost. ■



Tracking Critical Minerals Across the Global Supply Chain

Electronics buyers need reliable sourcing information, but fragmented tracking systems and inconsistent data still make end-to-end tracking difficult.

Being able to track and trace extracted minerals from mine sites all the way through to processing and final production hasn't gotten much easier in the last decade. Even with the rapid advancements in technology and software, the level of visibility in the electronics supply chain remains opaque at best and in some cases, non-existent.

"Amid rising risks linked to the high concentration of critical mineral supply chains, the ability to track where minerals originate, how they move through supply chains, who has custody of them and how they are transformed is increasingly important for policymakers seeking to create diversified and responsible supply chains," the International Energy Agency (IEA) points out in [Critical Mineral Traceability for Energy and Economic Security](#).

In that report, IEA focuses on six key minerals: copper, lithium, nickel, cobalt, graphite and rare earth elements. These minerals play an important role in energy and strategic industrial applications, it says, and traceability system adoption remains "relatively high," but depth and end-to-end coverage are both limited.

"Nearly all companies with traceability systems report collecting country of origin data, while more detailed provenance information is less widely covered," the IEA says, "while corporate transparency or environmental data [being] collected at around half [that] rate. End-to-end traceability nevertheless remains limited, with coverage typically dropping sharply beyond companies' direct suppliers."

High Demand, Low Visibility

With demand for critical minerals at record-high levels right now, the Organisation for Economic Co-operation and Development (OECD) just released [new guidance](#) focused on boosting mineral supply chain credibility. Traceability should be a core focus, it says, and that traceability needs to be rooted in reliable supply chain data.

"Price floors and similar trade-related measures need verified information on origin and production conditions to direct support toward trusted and responsible producers," OECD points out in its [report](#). "Stockpiling programs need provenance, grade and ownership data for acquired commodities. Finally, preferential procurement initiatives require chain of custody data to exclude entities of concern."

Put simply, you have to know where the material came from, how it was produced and who touched it along the way. Otherwise, you won't know who should qualify for support, what belongs in a government or industry stockpile (i.e., a reserve kept on hand for shortages or disruptions) or which suppliers should be excluded.

In electronics, for example, procurement teams need to know where materials came from, who handled them and which suppliers may fall outside government or procurement requirements. The problem is that this information isn't always readily accessible. And even if it is, that data may be spread across different systems, platforms and even spreadsheets.

Managing Global Traceability

The global nature of the electronics supply chain makes traceability especially difficult and complicated. A mineral that's mined in one country may be processed in another and then turned into a component in a completely different area of the world. Every handoff adds another way for sourcing data to get lost, delayed or disconnected from the material itself.

"There are substantial barriers to the uptake of traceability," says the OECD, whose research shows that over 50% of companies point to costs and lack of interoperability as the key barriers to setting up traceability systems. Confidentiality concerns, supplier leverage and data quality concerns also factor in here. "Half of [our] survey respondents rank regulatory consistency as the top priority for scaling traceability," it says, "with a similar share citing shared data infrastructure."

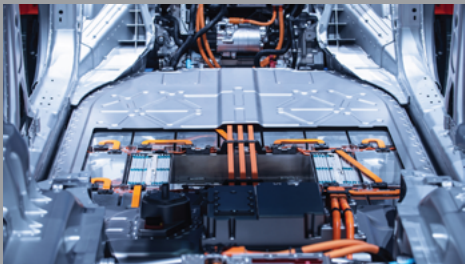
Despite these challenges, OECD says industry adoption of traceability is increasing and that nearly 75% of organizations plan to increase investment in traceability, but most of them say it's still too early to identify any tangible benefits. "Cost, interoperability and fragmented regulation are the principal barriers," it notes. "This represents a window for policy action, in which targeted intervention can shape how traceability systems develop before they consolidate around incompatible standards."

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A New Infusion for Domestic Mineral and Battery Supply Chains

The latest round of Battery Materials Processing and Battery Manufacturing and Recycling grants will award \$500 million to a range of domestic projects.

With the goal of curbing the U.S.' reliance on China and other mineral-producing countries, the U.S. Department of Energy (DOE) recently rolled out \$500 million in new grants. The infusion will be allocated to seven different projects and focuses on expanding critical mineral and material processing, battery manufacturing and recycling capacity in the U.S., according to the DOE.



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Coming to a Town Near You: Drone Delivery

Drone delivery gains momentum as major retailers expand their programs.

The first time you see it, you'll probably rub your eyes in disbelief. The next time it happens, you'll probably just accept the fact that we now live in a world where deliveries literally drop out of the sky and onto someone's front porch, pool deck (and sometimes, [right into the pool](#)) or office entryway.

Just a few years ago this sounded like something out of a sci-fi novel, but drone delivery is now coming on strong and may soon show up in your town.

Credit AI with speeding up some of the advancement on the drone side, where [Sairone](#) says the concept of drone delivery has "evolved rapidly from a futuristic vision to a tangible reality in recent years." Early drone delivery experiments focused on demonstrating the feasibility of using drones for transporting small items, it says, but improvements in battery life, flight control systems and payload capacity have all helped advance commercial drone delivery.

"The integration of AI [unlocks] the full potential of drone delivery systems," Sairone explains. "AI empowers drones

with advanced capabilities that enable them to operate autonomously, navigate complex environments, and make intelligent decisions in real-time."

Lowe's Rises Up

Last month, Lowe's threw its hat into the delivery drone ring and announced [a new autonomous, aerial fulfillment method](#) for a select number of home improvement items. And with that, the big box retailer became the first in its sector to offer drone delivery. Lowe's says it's delivering the goods directly to DIY and Pro customers in as fast as 20 minutes from a store in Matthews, N.C.

This new offering leverages Wing and DoorDash's existing drone delivery operations in the Charlotte area. Lowe's says the initial pilot spans a curated list of eligible products, including hand tools and paint products, plus everyday household items such as soap, tape, all-purpose cleaner and batteries.

"By piloting drone delivery, we're addressing a real project pain point with an innovative solution that is integrated into the retail journey, giving our hometown customers next-generation fulfillment right when they need it," Seemantini Godbole, CIO and AI officer, said in a press release.

More Companies Are Jumping In

Not to be outdone, companies like Amazon, Walmart and Uber are also making fast tracks into the drone delivery area. Walmart is working with Wing to expand its drone delivery footprint into 20 U.S. markets, including Dallas-Fort Worth, Houston and Atlanta.

"Our work with Walmart has shown that drone delivery isn't just a novelty, it's a service many customers count on multiple times per week," Wing's Heather Rivera said in [an announcement](#). "We're already working with many communities in the seven new markets, as we accelerate our progress to bring ultra-fast delivery to 40 million residents throughout the U.S."

Wing says its drones fly at speeds up to 60 mph and use a tether to gently lower packages directly to a customer's yard or driveway in as fast as 30 min. Before launching in each new city, Wing and Walmart work with local leaders and community members to educate them on the process, the safety and the mechanics of drone deliveries.

Food delivery has also gone airborne. According to Uber, the company is partnering with Zipline to deliver orders via the latter's autonomous drone delivery. The partnership brings Zipline's delivery system to Uber Eats customers and small businesses.

"Teleportation isn't science fiction anymore. It's becoming part of everyday life," said Zipline's Keller Clifton, in a [press release](#). "Every great transportation revolution has changed where people live, how businesses operate, and how economies grow."

More Oversight Please

Not everyone has been quick to jump on board with the idea of drone delivery coming to their town. According to [Commercial UAV News](#), 15 states sued the FAA over a drone delivery environmental review last month. The states are challenging the agency's review of the environmental impact of commercial drone package delivery.

"The suit, which was filed in the U.S. Court of Appeals for the Second Circuit, is centered on the FAA's Programmatic Environmental Assessment for drone package delivery operations in the United States," the publication explains. "For applications that fall within its scope, the assessment allows the agency to approve new delivery markets without a separate environmental assessment for each one."

The lawsuit followed a comment letter calling for a full programmatic environmental impact statement and site-specific analysis for individual drone hubs. "The FAA, which received 241 comment submissions, instead completed the programmatic assessment," Commercial UAV News reports, noting that the key concerns include "aircraft noise, lithium-ion battery fires, hazardous materials, and the cumulative effects of repeated drone flights."

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