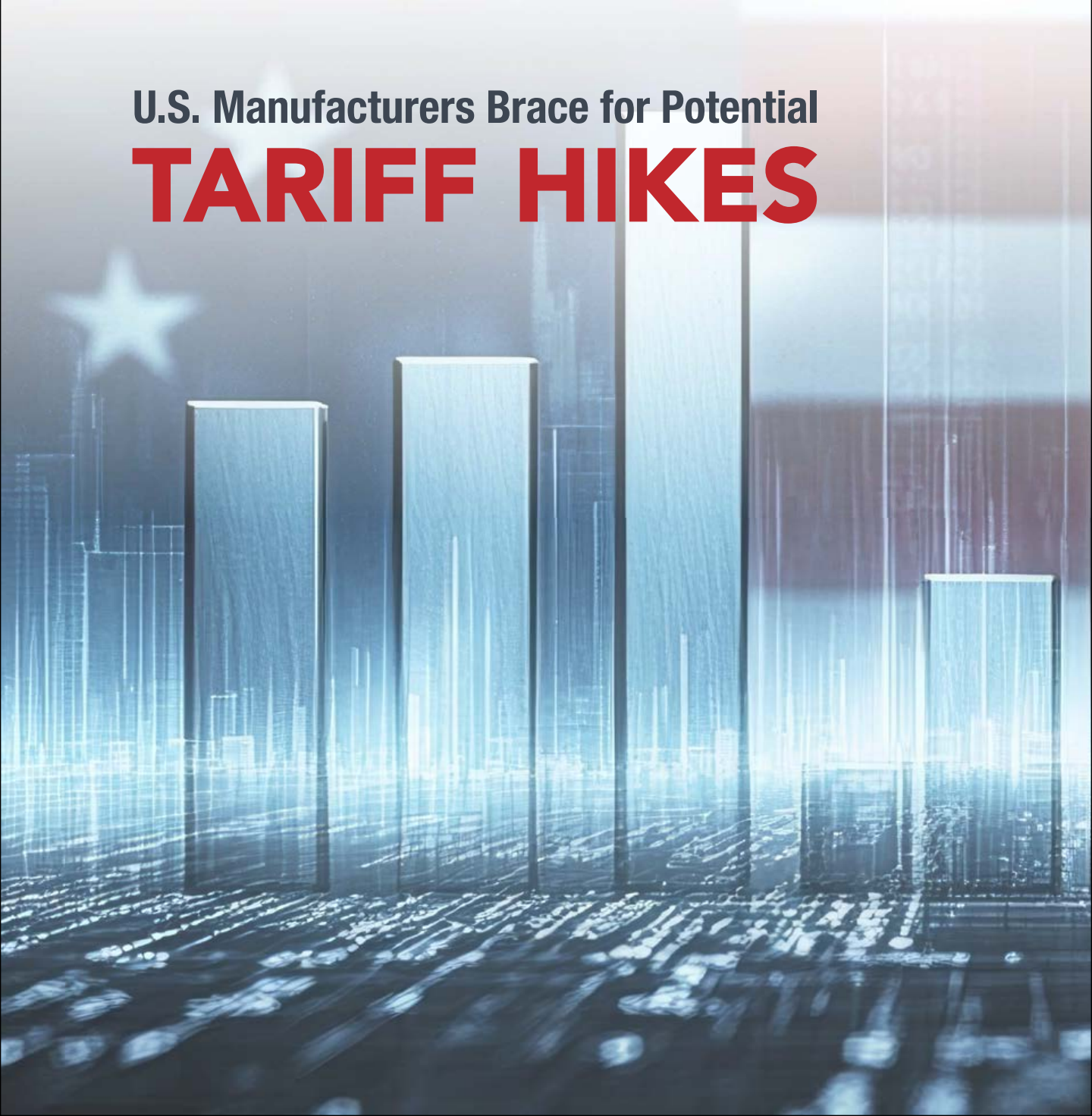


SUPPLY CHAIN connect™

November
2024

U.S. Manufacturers Brace for Potential
TARIFF HIKES





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Tracking Reshoring, Onshoring and Nearshoring Trends

Organizations in the U.S. continue to assess their reshoring, onshoring and nearshoring options.

Rising labor costs in China, geopolitical tensions, tariffs and a lack of supply chain transparency are some of the key factors driving American producers to rethink their offshoring strategies. And while a full-scale reshoring or onshoring trend has yet to take effect, certain industries are already leading the charge in this area.

“Rising labor costs in traditional offshore locations, such as China, have diminished the cost advantages that once drove companies to move production overseas,” ARC Group states in [“The Strategic Imperative of Onshoring and Nearshoring.”](#)

Tariffs and trade barriers have increased the overall cost of importing goods from certain regions, and there are more government policies/incentives that support onshoring and nearshoring.

According to [FTI Consulting](#), electrical, transportation, chemicals, pharmaceuticals, computers and electronic products are the industries that are most apt to reshore, onshore or nearshore manufacturing and sourcing. For example, GE Appliances reshored production to the U.S., while the electric vehicle (EV) market is in the midst of its own reshoring renaissance.

And let’s not forget the semiconductor industry, which has seen “significant reshoring activity,” FTI Consulting points out, “spurred by national security concerns and government initiatives such as the CHIPS Act.”

Addressing Offshoring Challenges

Global disruptions and geopolitical challenges are two of the top reasons why many organizations are reevaluating their sourcing strategies. *GlobalTrade* says reshoring (bringing production back to home countries) and nearshoring (sourcing closer to the consumer market) are both expected to become more prevalent in 2025, “helping businesses reduce lead times, mitigate risks, and enhance supply chain responsiveness,” the publication adds.

In [“The Resurgence Of U.S. Manufacturing: Onshoring And Nearshoring Trends,”](#) investment consultant Sean Dalfen writes about the reversal of the “move everything overseas” trend that encountered some serious difficulties during the pandemic-era supply chain disruptions. “Now, we’re seeing some of that manufacturing come back, especially in the automotive industry,” he adds.

The current onshoring shift is about building resilience into supply chains, reducing dependence on foreign sources and bringing jobs back to the U.S. Dalfen says automotive manufacturing is leading the charge, and cites a 2023 report that states that \$400 billion in advanced manufacturing investments was pledged to create a minimum of 250 million square feet of new industrial projects by 2030.

“In light of the change from NAFTA to USMCA in 2020, we’re also seeing a lot of nearshoring—where companies move their manufacturing to places like Mexico,” he points out. “Tesla is among the latest to join with their announcement to build a factory in Mexico less than 140 miles from the U.S. border. It’s a win for everyone involved—more goods are produced at lower costs, and the supply chain is much more manageable.”

The Sustainability Hook

Sustainability is becoming an increasingly important supply chain management consideration, and it’s also driving at least some of the momentum on the reshoring and onshoring front. According to ARC Group, both onshoring and nearshoring

can “significantly reduce” the carbon footprint associated with long-distance transportation.

“Regulatory compliance with environmental standards is easier to achieve with local or regional production,” it adds. “Additionally, ethical considerations and Corporate Social Responsibility (CSR) initiatives are pushing companies to adopt more sustainable practices, including sourcing materials and manufacturing products closer to their end markets.”

Onshoring and nearshoring also provide the enhanced supply chain control that so many organizations are seeking right now. “By relocating production closer to home,” ARC Group states, “companies can significantly improve their quality control measures and ensure better compliance with regulatory standards.”

Balancing the Pros and Cons of Reshoring

Bringing production and/or sourcing closer to home isn’t always easy. Sure it enhances supply chain resilience by reducing transportation costs and lead times due to proximity to end markets, but companies also have to consider the higher labor costs in North America, the persistent manufacturing labor shortage and stricter U.S. regulations.

“Infrastructure limitations are also a concern, as the U.S. needs more manufacturing space and significant improvements to support reshored operations,” FTI Consulting says. “Finally, rebuilding domestic manufacturing infrastructure requires substantial capital investment, which can be a significant barrier for many companies. Balancing these pros and cons is crucial for businesses that are considering reshoring their operations.”

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By SUPPLY CHAIN CONNECT STAFF



USGS Uncovers an Abundant Supply of Lithium in Arkansas

New study finds that there are millions of tons of lithium in the Smackover Formation in southern Arkansas.

As the primary component of lithium-ion batteries used in electric vehicles (EVs), electronics, medical devices and energy storage systems, lithium is in pretty big demand right now. In fact, the [American Association for the Advancement of Science \(AAAS\)](#) says global demand for lithium “greatly exceeds known supplies.” As the world transitions away from fossil fuel energy sources, that demand is only expected to increase.

At least some of that demand could be addressed by a plethora of lithium located underground in Arkansas. According to the United States Geological Survey (USGS),

high concentrations of lithium in brines have been observed in the Smackover Formation in the southern portion of the state.

The [Smackover Formation](#) is a limestone aquifer that spans across several states in the southern United States, including Arkansas, Louisiana, Mississippi and Alabama. Formed during the Jurassic period, this geological formation has been tapped for oil and gas, as well as brine for production of bromine, since the 1950s.

“The high concentration of lithium in Smackover brines presents a unique opportunity to produce lithium through direct extraction,” energy law firm Liskow & Lewis explains. “Currently, large-scale lithium production from brine is done using evaporation ponds, which is costly and takes a considerable amount of time.”

The law firm says new advancements in chemical and mechanical extraction techniques have made it possible to separate lithium from brine much more quickly and with lower ecological impact. “The high lithium concentration in Smackover brines makes this formation the perfect target for operators looking to scale up those newer methods,” it adds.

Novel Testing Methodology

Using a combination of water testing and machine learning, the USGS-led study estimated that between 5 and 19 million tons of lithium reserves are located beneath southwestern Arkansas. If commercially recoverable, the amount of lithium present would meet projected 2030 world demand for lithium in car batteries nine times over.

The USGS says it used a “novel methodology” involving water testing and artificial intelligence (AI) to determine the amount of lithium that could possibly be extracted from brine reservoirs in the Smackover Formation. Extracting lithium from brines co-produced during oil and gas operations provides an opportunity to extract a valuable commodity from what would otherwise be considered a waste stream, the organization adds.

“Lithium is a critical mineral for the energy transition, and the potential for increased U.S. production to replace imports has implications for employment, manufacturing and supply-chain resilience,” said David Applegate, USGS director. “This study illustrates the value of science in addressing economically important issues.”

Nine Times Global EV Demand

Katherine Knierim, the study’s principal researcher, estimates that there’s enough dissolved lithium present in that region to replace U.S. imports of lithium and more. “It is important to caution that these estimates are an in-place assessment,” she points out. “We have not estimated what is technically recoverable based on newer methods to extract lithium from brines.”

This new discovery is also significant because the U.S. relies on imports for more than 25% of its lithium. The USGS estimates there is enough lithium brought to the surface in the oil and brine waste streams in southern Arkansas to cover current estimated U.S. lithium consumption. The low-end estimate of 5 million tons of lithium present in Smackover brines is also equivalent to more than nine times the International Energy Agency’s projection of global lithium demand for electric vehicles in 2030.

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How Will the Election Outcome Impact Supply Chains?

The incoming presidential administration could have a profound impact on global supply chains. Here are some early insights into what could be coming next.

Exactly how the new U.S. presidential administration impacts supply chains is clearly still up in the air, but at least for now it does appear that the winds of change are inevitable. In fact, some of the shifts could begin to surface even before the new president takes office in January.

The changes may be far-reaching and impact global supply chains, not just domestic ones. In “Europe Braces for More US Trade Tensions With Trump’s Imminent Return,” *Bloomberg* says European Union (EU) officials are “preparing for a difficult relationship with the U.S.,” including more White House-generated protectionism and a possible tariff war—on top of existing trade tensions with China.

“The transatlantic list of grievances already includes America’s green subsidies, steel and aluminum levies and a long-running dispute between Boeing and Airbus,” *Bloomberg* reports. It says the new administration could also serve as a catalyst for the Europeans to “boost their autonomy, through possible measures including bolstering defense preparedness or increasing their joint resources.”

Bloomberg says impending tariffs could also drive importers to accelerate shipments ahead of the January presidential swearing-in ceremony—a trend that could drive up freight rates.

What’s Coming Next for Supply Chains?

Reuters says specific supply chain impacts may depend on which deputy and cabinet members are put in place, with Tesla CEO Elon Musk potentially being among them. As of right now, the incoming president has proposed a 10% tariff on all U.S. imports and 60% on Chinese-made products, which if enacted would affect the whole economy by pushing consumer prices higher.

“The Tax Foundation, a non-partisan think tank, calculated Trump tariffs would hike taxes by \$524 billion annually, shrink GDP by at least 0.8%, and cut employment by 684,000 full-time equivalent jobs potentially impacting retail workers, the largest private sector employer,” *Reuters* reports. “He also suggested he might impose a 25% tariff on all imports from Mexico.”

These tariff proposals could significantly reduce American consumers’ spending power, according to the [National Retail Federation](#). Some of the most impacted categories could include apparel, toys, furniture, household appliances and footwear.

“For all categories examined, total average tariffs would exceed 50% in the extreme tariff scenario, up in most cases from single or low double digits currently,” the NRF says. “Even accounting for alternative sources of supply and potential new U.S. production, the proposed tariffs on these six product categories alone would reduce American consumers’ spending power by \$46 billion to \$78 billion every year the tariffs are in effect.”

A Mixed Bag for Logistics

In assessing the election outcome’s effect on the logistics industry, Transport Intelligence’s John Manners-Bell’s recent article in *The Loadstar* discusses the refocus on domestic oil production, proposed tariffs and potential tax reductions and their potential impacts on the sector. For example, he says the focus on domestic oil production could be “positive for shipping, air cargo and international freight forwarding, although this will be countered by Trump’s plans for raising tariffs.”

Manners-Bell also predicts that the higher tariffs would negatively impact domestic shipping, air cargo and international freight forwarding, but could be positive for U.S. warehousing and European regional logistics.

Reductions in corporate taxation on domestic manufacturing would be positive for domestic trucking, rail, intermodal, parcel shipping and warehousing, he adds. “The big winner from Trump’s election will be U.S. trucking and other domestic logistics services,” Manners-Bell writes. “The likely losers will be international shipping, air and freight forwarders, although it must be pointed out that if there is strong U.S. economic growth, [it] will act as a growth driver.”

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What Happens to End-of-Life Solar Panels?

As an alternative energy source, solar presents some unique “circularity” issues when it comes time to replace end-of-life panels.

The solar energy movement got underway decades ago, but it has picked up more speed as governments, organizations and consumers attempt to wean themselves off of traditional energy sources like electricity and fossil fuels. This trend has created a new challenge of what to do with solar panels that have reached end-of-life and are no longer usable.

This isn't a new issue by any means, but it is receiving more attention right now. It also extends to wind turbines—those hulking masses that churn wind into energy on both land and sea, where offshore wind farms have been cropping up on shallow offshore waters. In May, *CNBC* published a piece

acknowledging the growing importance of both solar and wind energy to the U.S. power grid, but also highlighted the massive amounts of waste that will be created as “millions of photovoltaic (PV) solar panels, wind turbines and lithium-ion EV batteries reach the end of their respective lifecycles.”

Wind and solar energy combined to generate 13.6% of utility-scale electricity last year, according to the U.S. Energy Information Administration (EIA), and those numbers will undoubtedly rise as renewable energy continues to scale up. *CNBC* says the average lifespan of a solar panel is about 25 to 30 years, and estimates that there are more than 500 million already installed nationwide.

Currently, about 90% of end-of-life or defective solar panels end up in landfills, largely because it costs less to dump them than to recycle them. “With solar capacity now rising an average of 21% annually, tens of millions more panels will be going up — and coming down,” *CNBC* reports. “Between 2030 and 2060, roughly 9.8 million metric tons of solar panel waste are expected to accumulate.”

Keeping Solar Panels Out of Landfills

Some recycling plants are already focusing on how to better manage the anticipated influx of solar panels and related waste. In Yuma, Ariz., for example, We Recycle Solar processes end-of-life panels, roughly 10% of which are recycled (with 90% winding up in landfills).

Solar panels are mostly made of glass, which accounts for 75% of their weight and is highly recyclable, *azcentral* reports. They also contain plastic and metals like aluminum, copper, silver, tin, lead and cadmium, among others. With a typical lifespan of about 25 years, panels can often continue converting sunlight into energy past that point, although it may be at a reduced output over time.

Many of the panels We Recycle Solar receives can have a second life because their solar cells remain functional and can be sold at a fraction of the original price, often in overseas markets. CEO Adam Saghei told *azcentral* that his company can recycle up to 60% of the materials in the panels. It uses a large robotic arm that lifts the heavy panels and places them on a conveyor belt. The materials separation process involves powerful magnets that isolate the metals from the glass and separate them from each other by type.

Addressing PV Waste Challenges

In the European Union (EU), French photovoltaic (PV) recycler ROSI opened its first facility in 2023 and is opening a second site in early 2025. The company uses an innovative pyrolysis process—heating in an oxygen-poor environment—to break down the polymer encapsulant that holds a module together and which can then much more effectively and cleanly separate glass and silicon cells, according to *pv magazine*.

Using the pyrolysis process, ROSI separates and supplies highly pure glass cullet back to glass manufacturers, the publication adds. The company has been working with a European glass manufacturer to test the quality of its recycled glass material.

For now, ROSI is paid to provide solar module recycling as a service, underlining the importance of clear regulation in the sector and the specialized legislation that PV Cycle and others are advocating. “As PV waste begins to mount up,” *pv magazine* states, “the processes and business models for solar recycling will be key to keeping materials in circulation.”

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California Updates its Low Carbon Fuel Standard

The California Air Resources Board updates its Low Carbon Fuel Standard with a declining carbon intensity target for transportation fuels used in the state.

Earlier this month, the California Air Resources Board (CARB) updated the state’s Low Carbon Fuel Standard (LCFS), which focuses on reducing air pollution and greenhouse gases (GHGs) with a declining carbon intensity target for transportation fuels used in the state. **Carbon intensity** refers to the amount of GHG emissions per unit of some activity or output—transportation, in this specific case.

With the new, lower standard, CARB wants to increase cleaner fuel and transportation options for consumers; accelerate the deployment of a zero-emission infrastructure; and ensure that California meets legislatively-mandated air quality and climate targets.

“The LCFS reduces air pollution and greenhouse gas emissions by setting a declining carbon intensity target for transportation fuels used in California; producers that don’t meet established benchmarks buy credits from those that do,” CARB explains in a [press release](#). “This system has generated \$4 billion in annual private sector investment toward a cleaner transportation sector.”

CARB says that the LCFS has been “very effective to date,” and that it has helped reduce the carbon intensity of California’s fuel mix by almost 13% and displaced 70% of the diesel used in the state with cleaner alternatives—to the tune of about 320 million metric tons of carbon dioxide (CO2) that were being emitted by gasoline and diesel engines.

“The proposal approved today strikes a balance between reducing the environmental and health impacts of transportation fuel used in California and ensuring that low-carbon options are available as the state continues to work toward a zero-emissions future,” said CARB Chair Liane Randolph. “Today’s approval increases consumer options beyond petroleum, provides a roadmap for cleaner air, and leverages private sector investment and federal incentives to spur innovation to address climate change and pollution.”

Just the Facts

In a [fact sheet](#) on the LCFS program, CARB highlights some of the program’s key goals, which include:

- In health cost savings, Californians are expected to save almost \$5 billion by avoiding the impacts of pollution.
- Californians will be saving 42% in fuel costs per mile, paying \$0.12 per mile traveled—translating to savings of over \$20 billion in fuel expenditures every year.
- For the light-duty sector, the savings will be even more pronounced, with costs going from \$0.19 per mile to \$0.08 per mile by 2045, a reduction of over 50%.
- \$300 million has gone to support more public transit projects and nearly \$1 billion has gone towards light duty zero emission vehicles (ZEVs).
- LCFS has displaced fossil diesel with cleaner fuels for over 70% of the demand in the state.
- Moving forward, it is expected to “supercharge investment in clean fuels and infrastructure into the billions,” CARB adds.

CARB says the state has also taken action to hold oil refiners accountable for gas price spikes and increase transparency, with more tools to ensure that refiners maintain supplies to help avoid increased costs on consumers.

A Mixed Bag

Not everyone is onboard with this new lower carbon fuel standard. [CalMatters](#) reports that environmentalists and consumer advocates both oppose the new rules and warn that the changes will boost alternative fuels while also allowing oil

companies to stay in business (because they can buy credits or switch to producing those fuels).

However, electric vehicle (EV) advocates and some biofuel companies support the new rules, saying they will “provide billions of dollars in funds and incentives to move California toward eliminating carbon that warms the planet.”

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U.S. Manufacturers Brace for Potential Tariff Hikes

A significant supply chain shuffle could be in order if the new presidential administration fulfills its promise of raising tariffs on imported goods.

There's a lot of buzz around the incoming presidential administration tariff proposals right now, but according to news reports it appears that some U.S. companies are already taking steps to ensure that their supply chains are shielded from some or all of the anticipated impacts. This could mean good news for consumers, whose wallets may be impacted by the proposed tariff hikes on goods being imported from China and other countries.

In an in-depth report on the issue, the *Wall Street Journal* says manufacturing executives expect the promised tariff increases to "trigger shifts in supply chains, but they're divided on the direction of the changes." The WSJ says other company

executives feel that raising tariffs on goods from countries like China would likely cause them to shift production to other low-cost countries.

"Our experience has been that, for our products, the ship has literally sailed for U.S. manufacturing," Steve Greenspon, chief executive at Honey-Can-Do International, told WSJ. "I have not heard stories about success moving these products back to the United States."

Some of the other examples of companies that are already taking steps to get ahead of the higher tariff issue include:

- Recreational vehicle maker Polaris started to buy some components from Mexico to avoid the tariffs.
- Stanley Black & Decker says it will likely "raise prices and shift production out of China" if the additional tariffs are placed on goods imported from the country.
- Electronics manufacturers have already begun "migrating to Southeast Asia from China as a result of tariffs and what they describe as increased risks when doing business in the country."

Absorbing the Impact

Companies that source or make goods in Mexico are also on high alert right now. In October, President-elect Donald Trump suggested "he could impose tariffs higher than 200% on vehicles imported from Mexico, saying his aim would be to prevent the selling of cars from Mexico into the United States," *AP* reported.

Automakers are also taking steps now to address any tariff increases that may be put in effect next year. For example, *FleetOwner* reports that Daimler Truck North America is one manufacturer that's "well positioned to absorb the impact" of possible tariffs targeting Mexico under the incoming administration.

For example, the automaker says it can move production "relatively easily" and that its Freightliner, Western Star and Thomas Built Buses models can be made at either its U.S. or Mexican plants. Shifts could be added where needed. "We have a lot of flexibility when it comes to our production footprint," the company's chairwoman and CEO told analysts at a recent meeting. "There's no single dependency on a particular product in Mexico. We do believe we are well positioned."

Ready, Set, Go

Other industries are making similar moves to shield themselves from the impacts of any higher tariffs that may be imposed. Just days after the presidential election, for example, shoe manufacturer Steve Madden announced that it would "halve its Chinese production" to avoid any potential tariff hikes, *CNN* reports.

"We have been planning for a potential scenario in which we would have to move goods out of China more quickly," the company's CEO said. "And so, as of yesterday morning, we are putting that plan into motion. And you should expect to see

the percentage of goods that we sourced from China to begin to come down more rapidly going forward."

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Energy Sector's Achilles' Heel: Third-Party Vulnerabilities

New report finds that third-party risk is responsible for 45% of all cybersecurity breaches impacting the energy sector's supply chains.

The U.S. energy sector could be facing more vendor-related supply chain security risks in the near future according to a new report from SecurityScorecard and KPMG. In fact, nearly two-thirds of all breaches (12 of 18, to be precise) now come from the software and IT vendors that energy organizations work with. And, third-party risk is responsible for 45% of breaches, compared to a global rate of 29%.

These are some of the eye-opening findings highlighted in *A Quantitative Analysis of Cyber Risks in the U.S. Energy Supply Chain*, which offers up a detailed analysis of cybersecurity vulnerabilities across the energy sector and its supply chains.

SecurityScorecard and KPMG say frequent threats like ransomware attacks on conventional IT systems are often enough to cause widespread disruption across the energy sector.

Much attention has also been paid to potential attacks on industrial control systems (ICS) and operational technology (OT), which will continue to be a focus for risk mitigation. Clean energy initiatives are another prime target for bad actors looking for systems to exploit. "As the shift to cleaner energy accelerates," the reports states, "the sector's vulnerabilities may grow, as a greener, more interconnected grid becomes increasingly reliant on software, making it more susceptible to cyberattacks."

Disproportionately High Third-Party Risks

In their new report, SecurityScorecard and KPMG say third-party risks are disproportionately high in the energy sector. In fact, third-party risk drives almost half (45%) of breaches in the sector—a number that's significantly higher than the global rate of 29%. Additionally, 90% of companies that suffered multiple breaches were hit via third-party vendors.

"The energy sector's growing dependence on third-party vendors highlights a critical vulnerability — its security is only as strong as its weakest link," SecurityScorecard's Ryan Sherstobitoff continues, in a [press release](#). "Our research shows that this rising reliance poses significant risks. It's time for the industry to take decisive action and strengthen cybersecurity measures before a breach turns into a national emergency"

Here are some of the other key report findings:

- The U.S. energy industry scores a "B" on average based on SecurityScorecard's scoring methodology. 81% of companies have either an A or B rating, but the remaining 19% with weak scores pose a significant risk to the entire supply chain.
- Software and IT vendors are the leading cause of third-party breaches: Software and IT vendors outside the energy sector are the main source of third-party breaches. Of the incidents studied, 67% of third-party breaches were due to software and IT vendors, with only four involving other energy companies.
- Oil & natural gas companies scored well above average with an "A-," while renewable energy firms lagged behind with a "B-" score.
- 92% of companies had their lowest scores in just three of 10 risk factors: application security (40%), network security (23%), and DNS (Domain Name System) health (29%).

5 Ways to Manage the Growing Problem

SecurityScorecard's STRIKE team offers these tips for energy organizations that want to improve their cybersecurity stances

and take proactive steps to thwart the "bad actors" that could exploit vulnerabilities in their systems:

- 1. Prioritize software and IT vendors.** Focus on mitigating risks from software and IT vendors, which pose the highest third-party risks.
- 2. Emphasize product security in new acquisitions.** Help ensure that new technology acquisitions are secure, following initiatives like CISA's "Secure by Design" and integrating the U.S. Department of Energy Supply Chain Cybersecurity Principles.
- 3. Prioritize the improvement of security around renewable energy sources.** Strengthen security programs to protect against potential supply chain risks and geopolitical threats, particularly from nation-states.
- 4. Prepare for disruptions and balance other risks.** Prepare for disruption without neglecting the pervasive risk of data breaches and other common cyberthreats.
- 5. Learn from attacks on foreign targets.** Gain valuable insights by studying ransomware attacks on foreign counterparts to improve resilience and cybersecurity defenses.

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TSMC Arizona Awarded CHIPS Act Direct Funding

The U.S. Department of Commerce awards Taiwan Semiconductor Manufacturing Company Arizona up to \$6.6 billion under the CHIPS & Science Act.

The U.S. Department of Commerce has awarded TSMC Arizona Corporation (TSMC Arizona), a subsidiary of Taiwan Semiconductor Manufacturing Company Limited (TSMC), up to \$6.6 billion in direct funding under the CHIPS Incentives Program’s Funding Opportunity for Commercial Fabrication Facilities.

The award will support the company’s planned investment of more than \$65 billion in three greenfield leading-edge fabs in Phoenix, Ariz. The department will disburse the funds based on TSMC Arizona’s completion of project milestones.

“Two years ago, shortly after I signed the CHIPS & Science Act, I visited Arizona to announce a commitment by TSMC to invest in America, create American jobs, and shore up American supply chains,” said President Joe Biden in an [award announcement](#).

“Today’s final agreement with TSMC – the world’s leading manufacturer of advanced semiconductors – will spur \$65 billion dollars of private investment to build three state-of-the-art facilities in Arizona and create tens of thousands of jobs by the end of the decade,” he added. “This is the largest

foreign direct investment in a greenfield project in the history of the United States.”

Reliable Domestic Chip Supply

Through this new investment in TSMC Arizona, the CHIPS Program Office wants to strengthen U.S. economic and national security by helping to provide a reliable domestic supply of the chips. The first of TSMC’s three facilities is on track to open early next year. At that point, an American manufacturing plant will be producing the leading-edge chips used in advanced technologies, including smartphones, autonomous vehicles and data centers that power artificial intelligence (AI).

Reuters says TSMC will produce the world’s most advanced 2 nanometer technology at its second Arizona fab, which is expected to begin production in 2028. TSMC also agreed to use its most advanced chip manufacturing technology called “A16” in Arizona.

“When we started this there were a lot of naysayers who said maybe TSMC will do 5 or 6 nanometer in the United States,” Commerce Secretary Gina Raimondo told *Reuters*. “Actually they are doing their most sophisticated chips in the United States.”

Key Facts

Once at full capacity, TSMC Arizona’s three fabs will be manufacturing “tens of millions of leading-edge logic chips that will power products like 5G/6G smartphones, autonomous vehicles, and high-performance computing and AI applications,” according to the U.S. Department of Commerce, which also says that:

- Early production yields at the first TSMC plant in Arizona are on par with similar factories in Taiwan.
- The advanced chips that TSMC manufactures for its customers are the backbone of central processing units (“CPUs”) for servers in large-scale datacenters and of specialized graphics processing units (“GPUs”) used for machine learning.
- The investment is expected to create approximately 6,000 direct manufacturing jobs and more than 20,000 total unique construction jobs.

- Along with the direct funding, the CHIPS Program Office will provide up to \$5 billion of proposed loans to TSMC Arizona under the award.

- CHIPS for America will distribute direct funding to recipients for capital expenditures based on the completion of construction, production, and commercial milestones, and disburse loans to TSMC Arizona for amounts invested in capital expenditures.

- The program will track the performance of each CHIPS Incentives Award via financial and programmatic reports.

“Entering this phase of the U.S. CHIPS and Science Act marks a pivotal step in strengthening the semiconductor ecosystem in the United States,” said TSMC Chairman and CEO Dr. C.C. Wei, in the announcement.

“TSMC appreciates the continual collaboration with customers, partners, local communities and the U.S. government beginning in early 2020,” Wei continued. “The signing of this agreement helps us to accelerate the development of the most advanced semiconductor manufacturing technology available in the U.S.”

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