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WHAT'S INSIDE

- Business Briefs..... A15
- Classified Advertisements A15
- Scrap Metals Market Watch... A12
- Equipment SpotlightB4

- Republic Services reports increased income
Page A2
- Recology San Francisco Artist in Residence Program celebrates 35th anniversary
Page A6
- Amazon rolls out 25,000 electric delivery vans across the U.S.
Page A10
- U.S. Steel appoints new directors to board
Page A12

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The evolving landscape of lithium-ion battery recycling

by MAURA KELLER

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Electric vehicle (EV) production is expanding and evolving at a considerable rate, resulting in an increased need to identify sustainable methods of recycling lithium-ion batteries. As EV batteries reach their end of life, a myriad of new lithium-ion technologies and recycling centers are emerging to meet this growing need, while promoting the circular economy of the EV movement.

As EV battery manufacturers partner with recyclers, it is crucial that battery components are returned to the product lifecycle.

There are essentially two key ways of recycling lithium-ion batteries – hydrometallurgical and direct recycling. During the hydrometallurgical process, valuable metals like lithium, nickel and cobalt are extracted. And while the direct recycling process is still being refined, its goal is to restore EV battery components without having to dismantle the battery.

“One of the most significant advancements in lithium-ion battery recycling is the shift from traditional pyrometallurgical methods toward more sustainable hydrometallurgical and direct recycling processes,” said Chris Rentsch, process development manager at Koch Modular Process Systems. “Hydrometallurgy allows for the recovery of high-purity critical materials like lithium, cobalt and nickel, using chemical separation and purification steps.”

David Regan, vice president of commercial at Aqua Metals, said that one of the most significant advancements in lithium-ion battery recycling is the development of innovative refining technologies that make domestic recycling more cost-effective and environmentally sustainable. Aqua Metals has pioneered a proprietary process called AquaRefining that enables the clean and efficient recovery of battery-grade lithium, nickel, cobalt and manganese from black mass.

According to Jennifer Ott, deputy director, Nevada Tech Hub, lithium battery recycling is advancing rapidly, and several Nevada companies are leading the way. Redwood Materials recently launched Redwood Energy, demonstrating how reused EV batteries can power a clean microgrid, proving that circular economy solutions are already in motion. Aqua Metals has developed a proprietary “aqua-refining” process to refine black mass from recycled batteries back into battery-grade minerals, using minimal chemicals, offering a cleaner path to reuse.

American Battery Technology Company has developed a universal lithium-ion battery recycling system that



As EV batteries reach their end of life, a myriad of new lithium-ion technologies and recycling centers are emerging to meet this growing need, while promoting the circular economy of the EV movement.

separates and recovers each individual elemental metal, including lithium, cobalt, nickel and manganese from end-of-life batteries. The company has invested in R&D with the University of Nevada, Reno to find new ways to recover critical minerals with higher yields and lower environmental impact.

“Innovators like these companies demonstrate that Nevada is at the forefront of building a sustainable, circular lithium economy,” Ott said. “One of the biggest challenges in lithium-ion battery recycling is scaling up capacity to match the rapidly growing volume of EV batteries reaching end-of-life. Redwood Materials is addressing this by building infrastructure that can process large quantities of used batteries and integrating them into clean energy systems, such as the microgrids previously mentioned.”

Another key challenge is recovering high-purity materials efficiently and sustainably. As Ott explained, Aqua Metals addresses this with its proprietary, water-based refining technology. Their ability to extract battery-grade metals from black mass is a major step forward, but widespread adoption of these technologies requires investment, regulatory support, and streamlined logistics.

“Ultimately, building a circular battery economy is more than innovative technology, it also means creating the environment for success, including investments and workforce development – something the Nevada Tech Hub consortium is actively working toward,” Ott said.

Nevada Tech Hub, led by the College of Business at the University of Nevada, Reno, is a consortium of governmental, industry, educational, and nonprofit

organizations all aligned toward a common goal: to leverage Nevada’s rich natural resources and develop a full spectrum lithium economy within the state. The Nevada Tech Hub is one of 31 Tech Hub designees nationally. The program invests in regional partnerships to grow critical industries, strengthen national security, and create high quality jobs. Nevada Tech Hub is focused on building a complete “Lithium Loop” – a closed-loop lithium economy that includes extraction, processing, battery manufacturing, and recycling.

Rentsch added that one major challenge is the variability in battery chemistries and formats across different EV manufacturers. This inconsistency complicates the design of standardized recycling processes.

“Another obstacle is logistics and disassembly, as batteries are often difficult and costly to collect, transport and break down safely. Crushing or shredding a lithium-ion battery can cause the electrolyte solution to ignite, starting a fire inside the process equipment,” Rentsch said. “Therefore, the packs are typically shredded under a continuous water spray to prevent fires, but the unburned organic electrolytes then contaminate the water.” Koch Modular has engineered and constructed distillation equipment to safely remove and recover the electrolyte from the quench water.

From an engineering perspective, Rentsch said the separation and purification of recovered materials remain technically complex.

“Extracting lithium and other high-value metals at high purity levels requires See LITHIUM-ION BATTERY RECYCLING, Page A4

Ocean Legacy Foundation launches Marine Plastic Membership Program



Ocean Legacy Foundation (OLF), an organization accredited by the United Nations Environment Programme (UNEP) and global leader in marine plastic recovery and recycling, has launched the Marine Plastic Management Program (MPMP), an innovative initiative designed to support British Columbia's fishing and aquaculture industry in responsibly managing fishing gear disposal while driving Canada's circular economy. The MPMP is part of OLF's Strategic Management of Ghost Gear in Coastal Land, an initiative endorsed by the United Nations Educational, Scientific, and Cultural Organization's (UNESCO) Ocean Decade under the Ocean Practices of the Decade Programme.

"At the heart of the Marine Plastic Management Program is a commitment to innovation and environmental leadership," said Chloé Dubois, executive director, Ocean Legacy Foundation. "This program represents a transformative step forward in addressing the mounting challenge of marine plastic pollution. Through the integration of waste

recovery, tracking, sorting, and recycling technologies, the MPMP makes it possible to close the loop on marine plastics by turning waste into valuable resources." By participating in this program, businesses join a growing network of change-makers who are reducing plastic leakage into ecosystems and improving material traceability. The program supports plastic-carbon footprint reporting and aligns with extended producer responsibility (EPR) principles, helping businesses prepare for regulatory shifts while promoting long-term environmental and operational resilience.

Membership Benefits

The MPMP offers businesses a range of benefits designed to drive the recovery, recycling, and reintegration of marine plastics into the plastic supply chain. Members gain access to enhanced ESG reporting, a tier-specific annual membership decal, up and coming plastic-carbon accounting metrics, access to products which use their gear as well as a swath of other benefits.

Ohio EPA grants \$1.6 million for recycling

Forty-one governments, businesses, schools, and nonprofits in northeast Ohio are receiving \$1.6 million in Recycle Ohio Grants. Funding will provide litter prevention and cleanup programs, education and outreach, scrap tire collections, recycling market development, and expansion of recycling facilities and infrastructure.

Statewide, Ohio EPA is issuing more than \$5.9 million in grant funding to 147 recipients, with more than \$2.9 million specifically for community and litter prevention programs.

Some of the larger projects funded for program year 2025 include:

- Ashtabula County Commissioners - \$10,000 – Drop-off recycling, tire amnesty events, household hazardous waste collection

- City of Elyria - \$136,469 – Organic material diversion
- City of Lakewood - \$200,000 – Curbside recycling
- Cuyahoga County Solid Waste District - \$81,000 – Organic material diversion
- Keep Akron Beautiful - \$76,410 – Keep America Beautiful renewal fee, litter clean up events
- Medina City School District - \$300,000 – Scrap tire for civil engineering or construction projects
- North Olmsted City Schools - \$86,363 – Scrap tire for civil engineering or construction projects
- Summit Akron Solid Waste Authority - \$200,000 – Organic material diversion

Republic Services reports increased income

Republic Services, Inc. reported net income of \$550 million, or \$1.75 per diluted share, for the three months ended June 30, 2025, versus \$512 million, or \$1.62 per diluted share, for the comparable 2024 period. Excluding certain expenses and other items, on an adjusted basis, net income for the three months ended June 30, 2025, was \$556 million, or \$1.77 per diluted share, versus \$509 million, or \$1.61 per diluted share, for the comparable 2024 period.

"We are pleased with our second quarter results, which demonstrate the resilience of our business model and the benefit of the investments in our differentiated capabilities," said Jon Vander Ark, president and chief executive officer.

Second-Quarter and Year-to-Date 2025 Highlights:

- Total revenue growth of 4.6 percent includes 3.1 percent organic growth and 1.5 percent growth from acquisitions.
- Core price on total revenue increased revenue by 5.7 percent. Core price on related business revenue increased revenue by 7.0 percent, which consisted of 8.6 percent in the open market and 4.6 percent in the restricted portion of the business.
- Revenue growth from average yield on total revenue was 4.1 percent, and volume increased revenue by 0.2 percent. Revenue growth from average yield on related business revenue was 5.0 percent, and volume increased related business revenue by 0.2 percent.
- Net income was \$550 million, or a margin of 13.0 percent.

- EPS was \$1.75 per share, an increase of 8.0 percent over the prior year.
- Adjusted EPS, a non-GAAP measure, was \$1.77 per share, an increase of 9.9 percent over the prior year.
- Adjusted EBITDA, a non-GAAP measure, was \$1.36 billion, and adjusted EBITDA margin, a non-GAAP measure, was 32.1 percent of revenue, an increase of 100 basis points over the prior year.
- Year-to-date cash flow from operations was \$2.13 billion.
- Year-to-date adjusted free cash flow, a non-GAAP measure, was \$1.42 billion.
- Year-to-date cash invested in acquisitions was \$888 million.
- Year-to-date cash returned to shareholders was \$407 million, which included \$45 million of share repurchases and \$362 million of dividends paid.

The Company's average recycled commodity price per ton sold at its recycling centers during the second quarter was \$149. This represents a decrease of \$24 per ton over the prior year.

The Company completed and commenced operations on four renewable natural gas projects during the quarter.

Company Increases Quarterly Dividend

Republic continues to increase cash returns to shareholders, and previously announced that its board of directors approved a 4.5 cent increase in the quarterly dividend. The quarterly dividend of \$0.625 per share for shareholders of record on October 2, 2025, will be paid on October 15, 2025.



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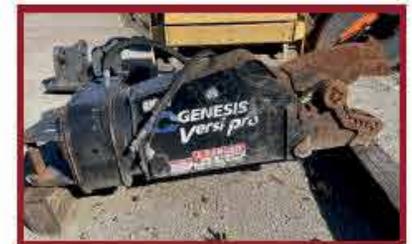
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Lithium-ion battery recycling

■Continued from Page A1

precise, multi-step chemical processes where specialized process development and modular design capabilities can add significant value,” Rentsch said.

Regan added that the biggest challenge currently facing EV battery recycling is the cost of acquiring black mass, the shredded material from spent batteries that serves as feedstock for refining.

“Due to subsidized and artificially inflated pricing from Chinese and Korean buyers, domestic recyclers are struggling to secure black mass at sustainable margins,” Regan said. “This pricing pressure makes it extremely difficult for U.S.-based refiners to compete, even with advanced technology. Without federal intervention or policy support, the economics of recycling EV batteries domestically remain constrained – despite the growing availability of spent batteries.”

Expanding Opportunities

With the global push for electrification and on-shoring of the supply chain, Ott believes the lithium-ion battery recycling industry will continue to see rapid innovation and expansion.

“In the years ahead, I would expect to see major advancements in efficiency, scalability, and more integration between recyclers and manufacturers,” Ott said.

Another area of expansion within the lithium-ion battery recycling segment of industry is in workforce training. As these companies scale up, Ott indicated that they will require a pool of skilled workers to fill positions. Nevada Tech Hub is working to fill this need by collaborating with industry partners and higher education to develop the training and degree programs needed to upskill existing employees and train new hires. For example, one program through Western Nevada College being developed now specifically addresses the need for employees in the lithium battery recycling sector.

“Domestic battery recycling is a core component of national energy and security strategies, with support from both public and private sectors,” Ott said. “Continued research, automation and policy alignment will accelerate progress, which is something we’re already seeing within the Nevada Tech Hub consortium.”

While several companies – including Aqua Metals – are building pilot and commercial-scale facilities, Regan said EV battery recycling in the United States is still in its early stages.

“Market conditions have limited growth, especially over the past year. A sharp drop in lithium, cobalt and nickel prices – combined with the high cost of black mass – has discouraged investment in new recycling capacity,” Regan said. “As a result, much of the black mass generated in the U.S. is still being exported to Asia, where it’s processed under less stringent environmental standards. Until there is greater pricing stability and policy support, the build-out of domestic infrastructure will remain slower than the pace of EV adoption requires.”

That being said, Rentsch said the modularization of recycling plants is



transforming how quickly and efficiently these facilities can be deployed. Modular systems enable faster commissioning, reduced risks, and scalability – critical advantages for an industry trying to keep pace with EV battery demand and upcoming regulatory pressure.

The United States is in the early stages of scaling EV battery recycling infrastructure. A number of pilot and commercial-scale plants have come online or are under development, led by companies like Redwood Materials, Cirba Solutions, ABTC, Li-Cycle, and Ascend Elements. The Department of Energy has also committed funding toward building a domestic recycling supply chain to support EV battery production.

“Koch Modular sees strong market signals and investment activity, and we anticipate continued growth in modular recycling facilities – particularly those that can be built faster and more flexibly using horizontal modular construction, reducing the time to commercial readiness,” said Rentsch, who stressed that the process technology to recycle end-of-life batteries must continue to evolve as new cathode materials, silicon-enhanced anodes, and sodium-ion batteries enter commercial service.

“Newer solid electrolyte batteries may require additional solvent dissolution steps after shredding,” Rentsch said. “Koch Modular anticipates a rise in demand for modular process systems tailored to this market – systems that can recover metals at battery-grade purity, reduce waste, and support closed-loop manufacturing. Ultimately, recycling will be a key pillar in reducing the environmental impact of EVs and ensuring the security of critical materials.”

Regan said that as global lithium prices rise and demand for critical minerals increases, economic conditions will become more favorable for domestic lithium-ion recycling. He said this shift will unlock the investment needed to scale up U.S.-based infrastructure and processing capacity.

“We believe the industry will evolve toward a regionally integrated, circular supply chain, in which the materials from spent batteries are recycled, refined and returned to manufacturers within North America,” Regan said. “With the right market signals and federal support, lithium-ion battery recycling can become a foundational component of America’s clean energy economy.”

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Recology San Francisco Artist in Residence Program celebrates 35th anniversary



Art made from garbage.

The Recology San Francisco Artist in Residence (AIR) Program announced a special partnership with Minnesota Street Project (MSP) to commemorate the AIR Program's 35th anniversary.

In keeping with past anniversary celebrations, this milestone exhibition, Art/Education/Community – 35 Years at Recology AIR, features work by Recology artists-in-residence from the past 5 years, along with a screening of videos and films from various years. Featured in Gallery 107 is work by university and college student artists from the Student Artist in Residence Program, AIR board members, staff who have participated in the program, and artists from a special partnership with Creativity Explored. Together, this work highlights the lasting

impact and enduring legacy of one of the Bay Area's most beloved and long-standing programs.

Founded in 1990, the Recology AIR Program is a pioneering art and education initiative that supports Bay Area artists. As part of the Recology Sustainability Education Program, the four-month residency provides artists with access to studio space, a stipend, and materials recovered from the Public Reuse and Recycling Area at the company's transfer station. This immersive experience encourages artists to reimagine waste as a resource, fostering creative exploration while educating the public and deepening our understanding of the importance of environmental sustainability.

LRS releases sustainability report highlighting smarter recycling

LRS, an independent recycling and waste diversion provider based in Chicago, has released its 2024 Sustainability Report, offering a transparent look at how the company is turning environmental values into measurable results.

The report details company-wide improvements in employee safety, environmental sustainability, and community engagement. Now, in its second year of reporting, LRS is building a long-term sustainability strategy rooted in measurable action and public accountability.

Among the report's findings: LRS significantly improved employee safety in 2024, reducing its Lost Time Injury

Frequency Rate by 67 percent. LRS diverted more than 330,000 tons of recyclable material from landfills through its network of material recovery facilities. The company also deepened its municipal partnerships, securing 24 new or renewed service contracts.

In addition to core operations, LRS continued to invest in public education and outreach. The company hosted over 175 community events last year and welcomed residents and students into its facilities for hands-on recycling education. The Exchange, LRS' flagship material recovery facility, was named Recycling Facility of the Year by the National Waste and Recycling Association.

Recycling leaders acknowledged for innovation in plastic, textile recycling

Six standout companies, organizations and agencies were honored this year by the California Product Stewardship Council (CPSC) for their innovative strategies in addressing some of California's most challenging waste stream issues. The prestigious 2025 Arrow Awards were unveiled with pride at the state's largest and most influential gathering for waste and recycling professionals: the California Resource Recovery Association's 49th Annual Conference and Tradeshow. CPSC has been recognizing business leaders in California for over 18 years, and this year, several winners are from the San Francisco greater Bay Area.

Crazy Puppy Company is the winner of the 2025 Green Arrow Award for system and design innovations. The Green Arrow Award is given to an organization demonstrating an innovative systems approach that removes or reduces toxic or other problematic attributes present in products. Crazy Puppy Company demonstrates these principles with their innovative approach of turning recycled ocean plastic into stylish, high quality, hand-crafted dog collars and leashes. Every stage of the product is focused on reducing waste and using sustainable materials as seen through their compostable and recycled packaging. Crazy Puppy Company is committed to sustainability and with their vegetable-based inks and water-activated packaging tape, they are keeping toxins out of our oceans and waste streams.

Reuse Alliance is the winner of the 2025 Bow & Arrow Award for coalition building and creative partnerships. Bow & Arrow Award recipients demonstrate synergistic relationships between producers, distributors, retailers, public agencies and other stakeholders. Through their outreach, education, and advocacy work, Reuse Alliance draws attention to the benefits of reuse in preventing waste and recirculating resources. Reuse Alliance runs a Repair Fair program through Sonoma and Marin Counties and will open a Reuse Hub

in September 2025. CPSC partnered with Reuse Alliance for a solar panel reuse pilot project in Marin County. Through this collaboration, they published a case study on how to create a small micro-grid, using reused solar panels.

SCRAP is the winner of the 2025 Infinity Arrow Award for service and take-back. The Infinity Award is given to an organization to recognize efforts to initiate an outstanding Take Back program for one or more products as an additional convenience and service to their customers. SCRAP accomplishes this by collecting donated old arts and crafts supplies such as textiles, buttons, paper and even wood and plastic, to reuse for educational art programs within the community. Through collection and reuse, SCRAP has been able to reduce waste by diverting over 200 tons of materials heading to landfill every year. This organization takes donated reusable materials, sorts them and makes them available to teachers, parents, artists and organizations, to give back to the community, continue to foster creativity and bolster environmental awareness.

Last Chance Mercantile is the recipient of the 2025 Golden Arrow Award for overall excellence in product stewardship. The Golden Arrow Award is given to an organization that exemplifies all the characteristics of the Green, Bow & Arrow, and Infinity Awards. Last Chance Mercantile has established themselves as a resource to their community. By providing education about waste and reuse and as well as providing jobs to veterans, Last Chance Mercantile emphasizes the importance of fostering relationships between public agencies and non-profits while protecting the environment. For instance, in 2024, Last Chance Mercantile diverted over 1.1M pounds of goods away from landfills.

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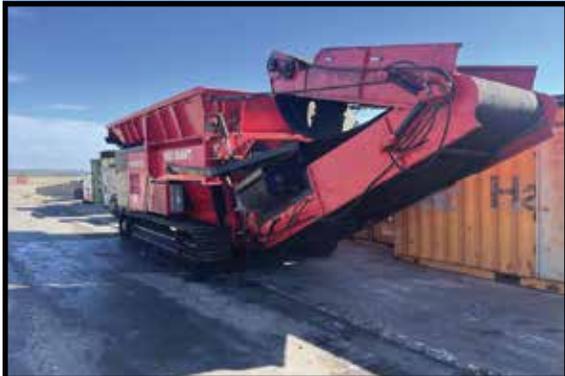
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AUTOMOTIVE

Amazon rolls out 25,000 electric delivery vans across the U.S.



Amazon co-founded The Climate Pledge in 2019 and made a commitment to achieve net-zero carbon by 2040. As part of that pledge, Amazon announced a partnership with Rivian to bring 100,000 electric delivery vehicles on the road by 2030 and got to work on designing a new state-of-the-art delivery vehicle.

In three short years, a simple sketch turned into the custom electric delivery vehicles on the road today. With its commitment to have at least 100,000 electric delivery vehicles on the road by 2030, Amazon will eliminate millions of metric tons of carbon per year.

Amazon began rolling out its electric delivery vans in the summer of 2022 and now has more than 25,000 across the U.S.

Amazon has also brought the custom vans to Europe and announced more than 300 will hit the road in Germany, joining a fleet of thousands of electric vans already in operation in Europe.

Amazon's custom electric vans are on the road making deliveries in thousands of cities across the country, including Alpharetta, Anaheim, Austin, Baltimore, Boston, Cleveland, Charlotte, Chicago, Cincinnati, Dallas, Denver, Grand Rapids, Green Bay, Houston, Indianapolis, Kansas City, Las Vegas, Lexington, Madison, Miami, Nashville, New York, Newark, Oakland, Omaha, Orlando, Philadelphia, Phoenix, Pittsburgh, Portland, Provo, Rochester, Salt Lake City,

San Diego, San Jose, Santa Rosa, Seattle, Silver Spring, St. Louis, Tampa and Toledo.

Amazon's custom electric vehicles are packed with industry leading safety, navigation and design features, including the following:

- A safety-first design focused on superior 360 degree visibility, and vehicle features that protect drivers and pedestrians.
- A suite of innovative safety features, including sensor detection, a large windshield to enhance driver visibility, automatic emergency braking, adaptive cruise control, and collision warnings.
- First-of-its-kind embedded technology that fully integrates the delivery workflow with the vehicle, enabling seamless access to routing, navigation, driver support, package organization and more.
- Features to enhance the driver experience and create ease on the road, such as automatic door locking/unlocking as the driver approaches or leaves the vehicle and a powered bulkhead door that opens when drivers reach their delivery location.
- Ventilated seats for fast heating and cooling.
- A strengthened door on the driver's side for additional protection and an ergonomically designed driver's cabin and cargo area for safe, easy movement inside the van.

Junk Car Medics rebrands as Junk Car Inferno

Junk Car Medics has rebranded, marking a complete overhaul for the nationwide junk car buyer that has delivered \$65 million in payouts to 125,000+ sellers since 2016. The rebrand reflects a sharper focus



JUNK CAR INFERNO

on speed and value, promising to torch the hassle of selling dead cars while delivering the hottest cash offers in the market.

Todd Bialaszewski, company founder, sparked the change to match the company's actual service. "We don't heal cars. We buy them – fast. The Inferno name captures our speed and the fire we bring to every offer," Bialaszewski stated.

The transformation includes a new website at JunkCarInferno.com, updated branding and AI-powered quote tools. The team, phone number and service quality stay the same. Current customers experience zero disruption while new sellers gain access to improved online tools that make selling even faster.

Junk Car Inferno evaluates cars based on total value, not just scrap weight. The company's nationwide buyer network creates competition that drives offers higher than typical local yards. Sellers receive cash offers based on salvage and resale potential, free pickup within 24 to 48 hours, instant payment at pickup,

no-haggle pricing, price matching when available and complete paperwork handling. This approach regularly beats local junkyards that only factor in scrap metal prices.

Bialaszewski launched the company in 2016 from Rochester, New York. The business expanded from regional operations to nationwide coverage, maintaining a 4.8 star rating across customer review platforms. What started as a small operation now processes thousands of cars monthly through a vetted network of buyers competing to deliver the best offers.

The rebrand comes at a time when junk car values fluctuate wildly based on metal prices, parts demand and export markets. Junk Car Inferno's network approach shields sellers from these swings by tapping into multiple buyer types, including salvage yards, parts resellers, mechanics and exporters. Each car is evaluated by buyers who see its highest value, whether that's in parts, restoration, or recycling.

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in f d y i

METALS

U.S. Steel imports down 9.6 percent

Based on preliminary Census Bureau data, the American Iron and Steel Institute (AISI) reported that the U.S. imported a total of 2,246,000 net tons (NT) of steel in June 2025, including 1,643,000 NT of finished steel (down 9.6 percent and 7.6 percent, respectively, vs. May 2025). Total and finished steel imports are down 4.7 percent and 7.8 percent, respectively, year-to-date vs. 2024. Over the 12-month period July 2024 to June 2025, total and finished steel imports are down 1.2 percent and 1.6 percent, respectively, vs. the prior 12-month period. Finished steel import market share was an estimated 19 percent in June and is estimated at 21 percent over the first six months of 2025.

Key steel products with a significant import increase in June compared to May are reinforcing bars (up 71 percent), wire rods (up 41 percent), cut lengths plates (up 26 percent), standard pipe (up 21 percent) and sheet and strip hot dipped galvanized (up 21 percent). Products with a significant increase in imports over the 12-month period July 2024 to June 2025 compared to the previous 12-month period include tin plate (up 84 percent), wire rods (up 17 percent) and line pipe (up 13 percent).

In June, the largest suppliers were Brazil (422,000 NT, up 5 percent vs.

May), Canada (343,000 NT, down 15 percent), Mexico (194,000 NT, down 35 percent), South Korea (180,000 NT, down 42 percent) and Vietnam (136,000 NT, up 40 percent). Over the 12-month period July 2024 to June 2025, the largest suppliers were Canada (5,883,000 NT, down 13 percent compared to the previous 12-months), Brazil (4,565,000 NT, up 4 percent), Mexico (3,353,000 NT, down 12 percent), South Korea (2,742,000 NT, down 3 percent) and Germany (1,253,000 NT, up 31 percent). Below are charts on steel imports by country and estimated finished steel import market share in recent months.

In June, the largest suppliers were Brazil (422,000 NT, up 5 percent vs. May), Canada (343,000 NT, down 15 percent), Mexico (194,000 NT, down 35 percent), South Korea (180,000 NT, down 42 percent) and Vietnam (136,000 NT, up 40 percent). Over the 12-month period July 2024 to June 2025, the largest suppliers were Canada (5,883,000 NT, down 13 percent vs. compared to the previous 12-months), Brazil (4,565,000 NT, up 4 percent), Mexico (3,353,000 NT, down 12 percent), South Korea (2,742,000 NT, down 3 percent) and Germany (1,253,000 NT, up 31 percent).

Nucor reports second quarter results

Nucor Corporation announced consolidated net earnings attributable to Nucor stockholders of \$603 million, or \$2.60 per diluted share, for the second quarter of 2025. By comparison, Nucor reported consolidated net earnings attributable to Nucor stockholders of \$156 million, or \$0.67 per diluted share, for the first quarter of 2025 and \$645 million, or \$2.68 per diluted share, for the second quarter of 2024.

In the first six months of 2025, Nucor reported consolidated net earnings attributable to Nucor stockholders of \$759 million, or \$3.26 per diluted share, compared with consolidated net earnings attributable to Nucor stockholders of \$1.49 billion, or \$6.14 per diluted share, in the first six months of 2024.

“Our team delivered a solid second quarter, with sequential earnings growth from all three of Nucor’s reporting segments and did so while setting another safety record in the first half of 2025,” said Leon Topalian, Nucor’s chair, president and chief executive officer. “As we head into the second half of 2025, we are encouraged by resilient demand across key end markets, a healthy order backlog and recently enacted tax and trade policies that promote American manufacturing.”

Nucor’s consolidated net sales increased 8 percent to \$8.46 billion in the second quarter of 2025 compared with \$7.83 billion in the first quarter of 2025 and increased 5 percent compared with \$8.08 billion in the second quarter of 2024. Average sales price per ton in the second quarter of 2025 increased 8 percent compared with the first quarter of 2025 and decreased 3 percent compared with the second quarter of 2024. A total of approximately 6,820,000

tons were shipped to outside customers in the second quarter of 2025, which was comparable with the first quarter of 2025 and was an 8 percent increase compared with the second quarter of 2024. Total steel mill shipments in the second quarter of 2025 were comparable to the first quarter of 2025 and increased 10 percent compared to the second quarter of 2024. Steel mill shipments to internal customers represented 22 percent of total steel mill shipments in the second quarter of 2025, compared with 19 percent in the first quarter of 2025 and 21 percent in the second quarter of 2024. Downstream steel product shipments to outside customers in the second quarter of 2025 increased 9 percent compared with the first quarter of 2025 and increased 6 percent compared with the second quarter of 2024.

In the first six months of 2025, Nucor’s consolidated net sales of \$16.29 billion was comparable with consolidated net sales of \$16.21 billion reported in the first six months of 2024. Total tons shipped to outside customers in the first six months of 2025 were approximately 13,650,000 tons, an increase of 9 percent compared with the first six months of 2024 and the average sales price per ton in the first six months of 2025 decreased 8 percent compared with the first six months of 2024.

The average scrap and scrap substitute cost per gross ton used in the second quarter of 2025 was \$403, a 2 percent increase compared to \$394 in the first quarter of 2025 and \$396 in the second quarter of 2024. The average scrap and scrap substitute cost per gross ton used in the first six months of 2025 was \$398, a 3 percent decrease compared to \$409 in the first six months of 2024.

U.S. Imports of Steel Mill Products by Country of Origin
(thousands of net tons)

COUNTRY	JUNE 2025 PRELIM	MAY 2025 FINAL	% VAR. JUNE VS. MAY	YTD 2025 (6 MON.)	YTD 2024 (6 MON.)	% VAR. 2025 VS. 2024	JULY 2024 TO JUNE 2025	JULY 2023 TO JUNE 2024	% VAR.
Canada	343	405	-15.4%	2,805	3,480	-19.4%	5,883	6,724	-12.5%
Brazil	422	401	5.2%	2,582	2,515	2.6%	4,565	4,380	4.2%
Mexico	194	299	-34.8%	1,788	1,952	-8.4%	3,353	3,811	-12.0%
South Korea	180	313	-42.4%	1,450	1,517	-4.4%	2,742	2,839	-3.4%
Germany	99	107	-7.5%	627	448	40.1%	1,253	959	30.7%
Vietnam	136	98	39.7%	469	673	-30.3%	1,159	979	18.4%
Japan	60	93	-35.2%	529	588	-10.0%	1,121	1,170	-4.2%
Taiwan	118	108	9.2%	612	519	17.9%	1,104	741	49.0%
Netherlands	44	59	-25.3%	284	277	2.6%	621	556	11.7%
China	31	54	-42.6%	255	230	11.0%	533	440	21.0%
Romania	46	41	11.7%	264	258	2.3%	484	410	18.1%
Turkey	50	82	-39.1%	288	266	8.4%	453	375	20.7%
India	55	45	20.6%	272	106	157.1%	419	218	92.1%
United Arab Emir.	32	28	11.7%	184	192	-4.2%	396	366	8.3%
Spain	41	24	70.0%	184	125	47.4%	348	246	41.6%
All Other	395	327	21.0%	2,028	2,196	-7.7%	3,716	4,287	-13.3%
Total	2,246	2,484	-9.6%	14,620	15,340	-4.7%	28,150	28,500	-1.2%
memo EU-27	359	344	4.3%	2,241	2,063	8.6%	4,465	3,981	12.2%

Steel shipments up 4.6 percent



American Iron and Steel Institute

The American Iron and Steel Institute (AISI) reported that for the month of June 2025, U.S. steel mills shipped 7,854,290 net tons, a 9.8 percent increase from the 7,152,135 net tons shipped in June 2024. Shipments were up 4.6 percent from the 7,507,349 net tons shipped in the previous month, May

2025. Shipments year-to-date in 2025 are 45,139,579 net tons, up 3.2 percent vs. 2024 shipments of 43,759,681 net tons for six months.

A comparison of shipments year-to-date in 2025 to the first six months of 2024 shows the following changes: corrosion resistant sheet and strip, up 1 percent, hot rolled sheet and strip, down 2 percent and cold rolled sheet and strip, down 4 percent.

AISI releases Annual Statistical Report

The American Iron and Steel Institute (AISI) announced the release of its 2024 Annual Statistical Report (ASR), which provides comprehensive data on the American steel industry and select data on the North American steel industry as a whole.

The report highlights that, in 2024, shipments from domestic steel mills measured 87 million net tons (NT), down three percent from the previous year. U.S. raw steel production was 88 million net tons in 2024, a two percent decrease from 2023. The report also shows that total steel imports into the U.S. increased by three percent in 2024 compared to the previous year, while finished steel imports increased by four percent over the same period and captured a 22 percent share of apparent steel consumption. The

report also notes that the construction and automotive industries continued as the leading end-use markets for shipments of U.S. steel products.

The AISI ASR report is the most comprehensive reference of its kind, providing extensive coverage of the American steel industry and selected statistical data on the Canadian, Mexican and world steel industries. It features dozens of charts and graphs, including selected statistical highlights on shipments, apparent supply, imports, employment and raw steel data over a 10-year period; selected financial highlights; shipments by products and markets over a 10 year period; raw steel production (including selected state-level production data) and capability utilization; and detailed imports and exports data.

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METALS

Crude steel production drops

World crude steel production for the 70 countries reporting to the World Steel Association (worldsteel) was 151.4 million tonnes (Mt) in June 2025, a 5.8 percent decrease compared to June 2024.

Crude steel production by region

Africa produced 1.7 Mt in June 2025, up 3.0 percent on June 2024. Asia and Oceania produced 112.9 Mt, down 6.2 percent. The EU (27) produced 10.4 Mt, down 8.2 percent. Europe, Other produced 3.3 Mt, down 8.4 percent. The Middle East produced 4.3 Mt, down 4.9 percent. North America produced 8.7 Mt, up 1.2 percent. Russia & other CIS + Ukraine produced 6.7 Mt, down 8.8 percent. South America produced 3.5 Mt,

up 1.3 percent.

Top 10 steel-producing countries

China produced 83.2 Mt in June 2025, down 9.2 percent on June 2024. India produced 13.6 Mt, up 13.3 percent. Japan produced 6.7 Mt, down 4.4 percent. The United States produced 6.9 Mt, up 4.6 percent. Russia is estimated to have produced 5.6 Mt, down 7.4 percent. South Korea produced 5.0 Mt, down 1.8 percent. Turkey produced 2.9 Mt, down 3.5 percent. Germany produced 2.7 Mt, down 15.9 percent. Brazil produced 2.8 Mt, down -0.5 percent. Iran is estimated to have produced 2.2 Mt, down 15.5 percent.

Top steel-producing countries				
	Mar 2025 (Mt)	% change Mar 25/24	Jan-Mar 2025 (Mt)	% change Jan-Mar 25/24
China	83.2	-9.2	514.8	-3.0
India	13.6	13.3	80.9	9.2
Japan	6.7	-4.4	40.6	-5.0
United States	6.9	4.6	40.2	0.8
Russia	5.6 e	-7.4	34.8	-5.6
South Korea	5.0	-1.8	30.6	-2.8
Turkey	2.9	-3.5	18.3	-1.7
Germany	2.7	-15.9	17.1	-11.6
Brazil	2.8	-0.5	16.5	0.5
Iran	2.2 e	-15.5	15.6	-10.3

e-estimated. Ranking of top 10 producing countries based on year-to-date aggregate

No restrictions imposed on copper industry's ability to export

Recycled Materials Association (ReMA) president, Robin K. Wiener, released the following statement, after President Trump announced action to address the national security threat of copper imports, as part of the Section 232 investigation:

ReMA is grateful to President Trump and his Administration for recognizing that the data and facts provided by our industry during the course of this investigation did not support the imposition of export restrictions on recycled copper, commonly known as copper scrap.

ReMA provided extensive data to the White House and the Department of Commerce demonstrating that the domestic copper recycling industry is strong and robust, and that export restrictions were not warranted given the current strength of the domestic industry. Accordingly, the White House agreed and declined to impose any restrictions on the copper industry's ability to export.

The President also directed the secretary of Commerce to pursue, to the extent necessary, domestic sales mandates for high quality copper scrap in order to supply any shortfall in national defense needs. ReMA represents over 90 percent of the domestic recycled copper industry and is proud of its' members' ability year after year to meet America's national defense supply requirements, including the sectors that indirectly support the defense industrial base. ReMA looks forward to working with the Commerce Department as it assesses any shortfalls in national defense needs and the most effective ways to address such shortfalls should they arise.

The action taken by President Trump recognizes the critical role that recycled copper plays in the country's manufacturing supply chains, critical infrastructure, national security and economy.

U.S. Steel appoints new directors to board



United States Steel Corporation together with Nippon Steel Corporation and its wholly owned subsidiary Nippon Steel North America, Inc., has appointed three independent U.S. directors to U.S. Steel's board of directors.

The U.S. Steel Board is now comprised of seven directors, four of whom are U.S. citizens, including three Independent U.S. Directors.

The new U.S. directors are:

- John M. Donovan brings substantial experience leading a large multinational company with deep expertise in technology and innovation. Donovan served as chief executive officer of AT&T Communications, a wholly-owned subsidiary of AT&T Inc., where he oversaw the company's communications division from August 2017 until his retirement in October 2019. Donovan has served on the board of directors of Palo Alto Networks, Inc. since 2012, the board of directors of Lockheed Martin Corporation since 2021 and was a member of the President's National Security Telecommunications Advisory Committee from 2019 to 2023.
- Robert J. Stevens brings extensive executive leadership experience and a deep understanding of the complexities of operating a global business,

strategic planning and regulatory matters. Stevens previously served as chairman, president, and chief executive officer of Lockheed Martin Corporation, from 2005 to 2012 and served as executive chairman in 2013. Stevens serves on the advisory board of the Marine Corps Scholarship Foundation and is a member of the Council on Foreign Relations. He has been an independent director of T. Rowe Price Group since 2019. From 2002 to 2018, he was the lead independent director of Monsanto Corporation.

- Admiral Timothy J. Keating, USN (Ret.), brings proven leadership, extensive experience engaging with global partners and sophisticated national security knowledge. Keating currently serves as the chief executive officer and vice chair of the board of directors at Keating Global, LLC, a veteran-owned security consulting firm that provides expertise in security and crisis response capabilities. Keating retired in December 2009 following his tenure as the commander of the United States Pacific Command, where he was responsible for overseeing a vast region encompassing over 3.4 billion individuals. Keating's distinguished career includes previous roles as the commander of the United States Northern Command and the North American Aerospace Defense Command.



Commodity		Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
FERROUS						
#1 Bushelings	per gross ton	\$419.00	\$419.00	\$417.00	\$420.00	\$419.00
#1 Bundles	per gross ton	389.00	397.00	398.00	400.00	403.00
Structural	per gross ton	326.00	325.00	328.00	324.00	345.00
#1 & #2 Mixed Steel	per gross ton	280.00	282.00	280.00	281.00	279.00
Crushed Auto Bodies	per gross ton	204.00	205.00	203.00	205.00	210.00
Shredded Auto Scrap	per gross ton	370.00	365.00	379.00	383.00	386.00
NON FERROUS						
#1 Copper Bare Bright	per pound	4.87	4.39	4.40	4.30	4.42
#2 Copper Wire & Tubing	per pound	4.67	4.19	4.21	4.10	4.22
Aluminum Cans	per pound	.80	.79	.78	.79	.80
Al/Cu Radiators	per pound	2.39	2.35	2.28	2.19	2.20
Aluminum Radiators	per pound	.58	.57	.58	.60	.59
Heater Cores	per pound	1.43	1.45	1.48	1.46	1.45
Stainless Steel	per pound	.58	.56	.54	.55	.58

All prices are expressed in USD. Printed as a reader service only.

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AUTO PARTS & SALVAGE YARD FOR SALE



This second generation, family-owned for 56 years, auto parts and salvage yard is in Rice County, MN and includes a 3 bedroom home on 2.5 acres with a huge detached garage/shop (64x38') and car hoist. The salvage/auto parts business is on 10 acres adjoining. All equipment and inventory are included. Among the featured inclusions: 2 car crushers, 2 loaders with attachments, a Bobcat with attachments, 2 roll backs, a car hauler, a tow truck and rim crushers, tools and all pallet racking, a shop (81x50') with 16' sidewalls and an office/store front (30x18'), an additional 80x40' warehouse building and over 800 whole vehicles for parts, along with hundreds of thousands of pulled parts, ready for resale. A conditional use permit is in place and all is commercial/industrial zoned.



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WASTE

Mack Trucks delivers first Mack LR Electric refuse vehicle



Mack Trucks delivered its first electric refuse vehicle as part of "The Bronx Is Breathing: Reimagining a Cleaner Hunts Point" project.

Mack delivered its first electric refuse vehicle as part of "The Bronx Is Breathing: Reimagining a Cleaner Hunts Point" project. The delivery to Royal Waste Services, Inc., a Waste Connections subsidiary, marks a significant milestone in bringing clean transportation solutions to one of New York's most underserved communities. The delivery of the Mack® LR Electric refuse truck represents progress toward commitments made under a \$10 million award from the New York Clean Transportation Prizes program, administered by the New York State Energy Research and Development Authority (NYSERDA) in partnership with the NYS Department of Public Service (DPS) and the NYS Department of Environmental Conservation (DEC).

The electric refuse truck deployment coincides with the New York City Economic Development Corporation's (NYCEDC) announcement of MN8 Energy's selection to build the city's first community-driven, freight-focused electric vehicle charging depot in the Hunts Point Food Distribution Center. Additionally, the Fulton Fish Market Co-Op, the largest fish market in the U.S., will receive four medium-duty Mack® MD model electric vehicles to aid in zero tailpipe-emissions logistics. This comprehensive approach supports both environmental and economic goals in Hunts Point, home to nearly 13,000 residents in the southern tier of the poorest urban congressional district in the United States.

"This delivery represents more than just a new vehicle," said Jonathan Randall, president of Mack Trucks North America. "It's a tangible step toward advancing sustainable transportation and demonstrates how the transportation industry can support community environmental goals. The Mack LR Electric offers zero-emission operation while providing Royal Waste Services with a reliable solution for its operations."

Advanced Electric Technology for Urban Operations

The next-generation Mack LR Electric delivered to Royal Waste Services features a standard 376 kWh total battery capacity, providing 42 percent more energy and increased range between charges, compared with earlier models. Twin electric motors produce 448 continuous horsepower and 4,051 lb.-ft. of peak torque output from zero RPM, making it ideally suited for the stop-and-start nature of urban refuse collection.

The vehicle is equipped with four NMC (nickel manganese cobalt oxide) lithium-ion batteries charged through a 150 kW, SAE J1772-compliant charging system. Energy from the two-stage regenerative braking system is recaptured from the hundreds of stops the LR Electric makes each day, maximizing efficiency as its load increases throughout collection routes.

The LR Electric is easily recognizable by its copper-colored Bulldog on the cab, denoting the all-electric powertrain, while offering the same driver- and passenger-side configurations and customization options as the diesel-powered Mack LR model.

Supporting Comprehensive Infrastructure Development

The vehicle will utilize charging infrastructure at the planned MN8 Energy charging depot, which will include 32 direct charging fast chargers and 10 Level-2 chargers on a 3.2-acre brown-field site. The facility will support both medium-duty, heavy-duty and light-duty electric vehicles, creating an ecosystem for zero-tailpipe emissions freight operations in Hunts Point.

Advancing Sustainability Goals

The delivery supports Mack's goal to reduce CO₂ emissions per vehicle kilometer by 40 percent by 2030 and aligns with New York State's goal of an 85 percent reduction in greenhouse gas emissions by 2050 as outlined in the Climate Leadership and Community Protection Act.

Landmark settlement with DuPont valued at over \$2 billion

New Jersey Attorney General Matthew J. Platkin and Department of Environmental Protection (DEP) Commissioner Shawn M. LaTourette announced a groundbreaking environmental settlement, valued at over \$2 billion, to remedy long-standing contamination stemming from PFAS (per- and polyfluoroalkyl substances), also known as "forever chemicals," as well as other pollutants originating from four industrial sites. It is the largest environmental settlement ever achieved by a state.

PFAS are synthetic chemicals that have been manufactured in the United States since the 1940s. They are used to make a variety of household, consumer, and industrial products. Known as "forever chemicals," they do not degrade or break down over time and continue to accumulate in the environment and our bodies.

The proposed settlement will resolve the Chambers Works case, a 2019 lawsuit against Delaware-based E.I. DuPont de Nemours and Co. (now known as EIDP, Inc.) and other DuPont-related entities and comes after a month of trial proceedings in U.S. District Court for the District of New Jersey. The agreement will also resolve three other lawsuits regarding specific sites in New Jersey, the statewide claims for the firefighting material known as aqueous film-forming foam (AFFF), and DuPont and its related entities' responsibilities under a PFAS Statewide Directive.

Besides EIDP, the other corporate defendants are The Chemours Company and The Chemours Company FC, LLC, both of which DuPont spun off in 2015; DuPont Specialty Products USA, LLC; Corteva Inc.; and DuPont de Nemours, Inc. In addition, DEP and the attorney general reached a settlement with co-defendant 3M in May, just a week before the Chambers Works trial was scheduled to start.

The companies have agreed to fully clean up contamination at four New Jersey sites and to pay \$875 million in natural resource and other damages to the State for the harm that was caused to land, water and other sensitive natural resources, and to fund abatement projects, which will include drinking water treatment.

The affected sites are:

- Pompton Lakes Works, in Pompton Lakes and Wanaque, Passaic County;
- The Parlin site, in Sayreville, Middlesex County;
- The Repauno site, in Greenwich Township, Gloucester County; and
- Chambers Works, in Pennsville and Carney's Point, Salem County.

With the addition of this latest victory, New Jersey will recover over approximately \$3 billion from lawsuits it has commenced since 2019 to compensate the State and remediate the damage caused by PFAS and other pollutants.

In May 2025, 3M agreed to pay up to \$450 million for PFAS contamination at the Chambers Works and Parlin sites and throughout the State. In 2023, Solvay Specialty Polymers agreed to spend \$393 million to ensure the remediation of contamination and compensate the public for PFAS contamination near Solvay's facility in West Deptford, Gloucester County. More recently, co-defendant Arkema, Inc. agreed to settle its responsibility for contamination at the same site, including paying \$33.95 million for remediation and damages combined and guaranteeing \$75 million for a reserve fund.

Settlement Terms

The payments by the DuPont settling entities will occur annually over 25 years. The settlement payments include the following:

- \$875 million will be allocated primarily between damages for restoration of injured natural resources and abatement funds, to be held by DEP in a dedicated trust account to address PFAS and other contamination, including through the provision of drinking water treatment;
- Approximately \$125 million of the \$875 million will go towards costs, fees, penalties, and punitive damages.

To ensure that all the cleanup work is paid without public funds, the companies also agreed:

- To create a remediation funding source of up to \$1.2 billion; and
- To establish an additional reserve fund of \$475 million to ensure that if any one of the companies goes bankrupt or otherwise fails to fulfill their responsibilities to the state, taxpayers won't be left with the bill.

This extra financial protection is critical to the settlement to ensure that there is enough funding to protect human health and the environment at these sites, as DEP's lawsuit alleged that DuPont attempted to avoid this liability when it spun off Chemours.

The DuPont settlement will be published in the New Jersey Register and available for public comment. The 3M settlement was published in the New Jersey Register on July 21 and comments can be submitted through September 19. Both settlements are subject to approval by the U.S. District Court.

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BUSINESS BRIEFS

TOMRA appoints Sherwood, VP of sales, Americas

■ TOMRA Recycling, a global leader in sensor-based sorting solutions, makes a major step forward in continuing its growth in the Americas by appointing Nicodemus Sherwood as the new vice president of sales Americas and managing director for the company's Charlotte, North Carolina Americas headquarters.

Offering extensive sales, service, project management and operations experience, Sherwood will lead the business operation in the Americas. He will also engage in sales and business development activities for TOMRA Recycling's optical sorting and deep learning artificial intelligence (AI) solutions, helping customers to meet target purity, yield and throughput goals by offering tailor-made solutions across numerous industries. In addition, he will direct operations at the company's expanding endeavors at the Charlotte headquarters facility, which will include a new Test and Training Center in early 2026.

Sherwood has spent nearly a decade of his professional career in various roles within the recycling industry. He served as the vice president of operations and expansion-project executive for Natura PRC, LLC, managing all aspects of operations and feedstock purchasing and commodity grade development pricing for the post-consumer resin (PCR) recycler. He spent nearly five years with Stadler America, GmbH as after-sales director and sales manager for the global specialist in the design, production and assembly of automated sorting systems for the recycling industry. Managing three territories, including large enterprise organizations, he also served as the special applications and OEM sales manager for the global MRF equipment and systems supplier, Bulk Handling Systems.

Houston City Council appoints new director, solid waste management

■ The Houston, Texas City Council voted and confirmed Larius Hassen as the new director of solid waste management.

Hassen served as the department's interim leader since March after the former director resigned.

Hassen's confirmation comes a week after he presented a report that found the director's offices hasn't been working 40 hour workweeks and trucks continue to break down. According to the report, an average of 30 trucks are down each day, and another 20 break while they're in use.

Hassen has been described as a no-nonsense leader, committed to cutting waste.



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Positive strides: E-waste recycling on the right track

by MAURA KELLER

mkeller@americanrecycler.com

Globally, only about 25 percent of electronic waste (e-waste) is recycled by both consumers and businesses alike. Increasing the amount of e-waste being recycled would remove environmentally harmful pollutants, but also recover valuable materials like platinum, palladium and copper.

Dr. Pragathi Darapaneni, senior materials scientist – battery systems and grid storage, said that the traditional view of e-waste as a disposal challenge has shifted, and is currently seen as a materials recovery opportunity.

“The rise of EVs, grid-scale batteries and AI/data center infrastructure has introduced a new generation of high-value, high-complexity waste streams, especially lithium-ion batteries and critical electronics,” said Darapaneni, who pointed to some key technological innovations reshaping the electronics recycling industry, including:

- Hydrometallurgical and direct recycling techniques that preserve cathode chemistries without fully reverting to elemental metals

- Non-thermal delamination processes, which reduce energy input and preserve active materials for second-life use

- AI-enabled sorting and robotic disassembly systems to process mixed e-waste more efficiently

- Integration of digital battery passports to track state-of-health, chemistry and recycling pathways, supporting closed-loop systems

“E-waste is no longer just a liability – it is a strategic resource for recovering lithium, cobalt, nickel and rare earth elements that are increasingly difficult to source sustainably,” Darapaneni said.

The e-waste recycling industry is undergoing rapid infrastructure expansion as well, especially in EV battery recycling. Since the passage of the Inflation Reduction Act (IRA), the industry has had over a dozen new U.S. battery recycling facilities established or started by companies like Redwood Materials, Li-Cycle and Ascend Elements.

As Darapaneni pointed out, these facilities aim to localize supply chains, reduce import reliance, and meet federal

incentives for recycled content in new batteries. At the same time, she said that consumer-facing e-waste efforts are still uneven. Some states have strong take-back programs and public-private partnerships, while others lag due to lack of awareness or funding. Businesses, especially those in tech and mobility, are more proactive – motivated by ESG goals and raw materials cost volatility.

“Overall, regulatory alignment, brand accountability and consumer incentives are improving, but we’re still in the early stages of scaled, systemic circularity,” Darapaneni said.

Facing Challenges

As the e-waste industry continues to evolve and grow, there are a wealth of challenges, such as economic viability and lack of standardization. Electronics contain varying amounts of high purity materials. Recovering these high purity materials is still cost intensive. In addition, there is a wide variation in design in electronics, which makes automated disassembly challenging.

As Darapaneni further explained, improperly handled lithium-ion batteries found within today’s electronics can be hazardous and a cause of safety concerns.

“For IT and consumer electronics, secure destruction of data-bearing components remains a barrier to return,” Darapaneni said. “The industry also grapples with policy fragmentation – a patchwork of state-level rules that complicate national logistics, reporting, and compliance. Long-term success will depend on consistent regulatory frameworks and investment in safer, lower-cost processing technology.”

Gene Genin is the chief executive officer and founding partner of OEM Source, Inc., a company founded in 2004 that specializes in sustainable asset recovery, secure data destruction and sustainable e-waste solutions within the global telecommunications industry. Genin said the gap between the number of electronics being disposed and recycling rates is widening, adding to the industry challenges.

“The rate of hardware refresh cycles has not reduced notably, even in businesses operating on the enterprise levels. However, the speed to secure disposal is still shunned, especially due to



The gap between the number of electronics that are being discarded and recycling rates is widening in the e-waste industry, adding to industry challenges.

the lack of education and accessible means to consumers and smaller businesses,” Genin said.

E-Waste Laws

The e-waste recycling industry is seeing a notable policy shift toward producer responsibility and cost internalization. While the United States has not enacted a comprehensive federal law specifically regulating e-waste management across the country, the Extended Producer Responsibility (EPR) laws are gaining momentum. Eleven states proposed new EPR regulations in 2023 and California, Colorado, Maine and Oregon have successfully passed EPR bills and manufacturing companies in these states will need to place more emphasis on manufacturing products designed with durability, recyclability, and minimal environmental impact.

The proposed Massachusetts Senate Bill 653 would adopt a more comprehensive approach to e-waste management through the introduction of an EPR framework. Under the bill, manufacturers – not municipalities – would finance and operate end-of-life collection and recycling programs for the products they sell, making them accountable for the environmental costs of their design decisions. There are also several new amendments

being proposed on the state levels, which will introduce additional rules for battery-embedded products and requiring manufacturers to list covered and exempt products in an annual notice to retailers and regulatory agencies.

“The goal is to make OEMs and importers share the burden of collection and recycling. At the federal level, the EPA is updating its National Strategy for Electronics Stewardship, and there’s growing interest in harmonizing lithium-ion battery labeling and handling rules,” Darapaneni said. “Additionally, the DOE has launched a Battery Recycling Prize and Lithium-Ion Battery Supply Chain Strategy that explicitly include end-of-life management. We are also seeing more federal funding for public-private pilot programs and infrastructure grants that aim to standardize e-waste logistics and increase domestic processing capacity.”

Many states have implemented their own e-waste laws, focusing on residential and business collection programs, designated drop-off locations, and increased manufacturer responsibility. There are currently 25 states and the District of Columbia that have passed legislation related to electronics recycling. Several

See E-WASTE RECYCLING, Page B6



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Gold from e-waste opens a rich vein for miners and the environment

An interdisciplinary team of experts in green chemistry, engineering and physics at Flinders University in Australia has developed a safer and more sustainable approach to extract and recover gold from ore and electronic waste.

Explained in the leading journal, Nature Sustainability, the gold-extraction technique promises to reduce levels of toxic waste from mining and shows that high purity gold can be recovered from recycling valuable components in printed circuit boards in discarded computers.

The project team, led by Matthew Flinders Professor, Justin Chalker, applied this integrated method for high-yield gold extraction from many sources – even recovering trace gold found in scientific waste streams.

The progress toward safer and more sustainable gold recovery was demonstrated for electronic waste, mixed-metal waste and ore concentrates.

“The study featured many innovations, including a new and recyclable leaching reagent derived from a compound used to disinfect water,” said Professor of Chemistry, Justin Chalker, who leads the Chalker Lab at Flinders University’s College of Science and Engineering.

“The team also developed an entirely new way to make the polymer sorbent, or the material that binds the gold after extraction into water, using light to initiate the key reaction.”

Extensive investigation into the mechanisms, scope and limitations of the methods are reported in the new study and the team now plans to work with mining and e-waste recycling operations to trial the method on a larger scale.

“The aim is to provide effective gold recovery methods that support the many uses of gold, while lessening the impact on the environment and human health,” indicated Professor Chalker.

The new process uses a low-cost and benign compound to extract the gold. This reagent (trichloroisocyanuric acid) is widely used in water sanitation and disinfection. When activated by salt water, the reagent can dissolve gold.

Next, the gold can be selectively bound to a novel sulfur-rich polymer developed by the Flinders team. The selectivity of the polymer allows gold recovery even in highly complex mixtures.

The gold can then be recovered by triggering the polymer to “un-make” itself and

convert back to monomer. This allows the gold to be recovered and the polymer to be recycled and re-used.

Global demand for gold is driven by its high economic and monetary value but is also a vital element in electronics, medicine, aerospace technologies and other products and industries. However, mining the precious metal can involve the use of highly toxic substances such as cyanide and mercury for gold extraction – and other negative environmental impacts on water, air and land including CO₂ emissions and deforestation.

The aim of the Flinders-led project was to provide alternative methods that are safer than mercury or cyanide in gold extraction and recovery.

The team also collaborated with experts in the U.S. and Peru to validate the method on ore, in an effort to support small-scale mines that otherwise rely on toxic mercury to amalgamate gold.

Gold mining typically uses highly toxic cyanide to extract gold from ore, with risks to wildlife and the broader environment if it is not contained properly. Artisanal and small-scale gold mines still use mercury to amalgamate gold. Unfortunately, the use of mercury in gold mining is one of the largest sources of mercury pollution on earth.

Professor Chalker said interdisciplinary research collaborations with industry and environmental groups will help to address highly complex problems that support the economy and the environment.

“We are especially grateful to our engineering, mining and philanthropic partners for supporting translation of laboratory discoveries to larger scale demonstrations of the gold recovery techniques.”

Lead authors of the major new study – Flinders University postdoctoral research associates, Dr. Max Mann, Dr. Thomas Nicholls, Dr. Harshal Patel and Dr. Lynn Lisboa – extensively tested the new technique on piles of electronic waste, with the aim of finding more sustainable, circular economy solutions, to make better use of ever-more-scarce resources in the world. Many components of electronic waste, such as CPU units and RAM cards, contain valuable metals such as gold and copper.

“This paper shows that interdisciplinary collaborations are needed to address the world’s big problems managing the growing stockpiles of e-waste,” said Dr. Mann.

Fatty acids as solvents: Extracting silver from electronic waste

A new technique enables the use of, for example, cooking oil from fast-food restaurants to dissolve and separate silver. The process requires light and diluted hydrogen peroxide. The technique makes it possible to secure the supply of silver and reduce the burden on the environment.

“Recycling silver from waste materials is becoming increasingly important for securing the supply of this precious metal. It is highly desirable to design new sustainable separation and recycling strategies to replace current processes that strain the environment,” said postdoctoral researcher, Anže Zupanc, from the University of Helsinki and the University of Birmingham.

Less than 20 percent of silver produced annually is recycled, even though the green transition is increasing the amount of waste containing silver. Silver is used, for example, in solar panels. At the same time, mineral resources available for extraction through mining are running out. In the past 25 years, the price of silver has risen sixfold, making its recycling financially viable.

A new recycling concept developed by researchers from the University of Helsinki and the University of Jyväskylä was recently published in Chemical Engineering Journal.

Why does metal dissolve in fats?

To dissolve silver, the most commonly used fatty acids – oleic, linoleic and linolenic – were combined with an aqueous hydrogen peroxide (30 percent) solution as a green oxidant under mild conditions. This combination effectively dissolved

silver into the fatty acids, which acted as both a medium and stabilizing ligand for silver ions.

“Computational chemistry enabled us to understand the solubility of metals by investigating the effect of solvents on the thermodynamics of dissolution,” said Professor Karoliina Honkala from the University of Jyväskylä.

The results made it possible to explain whether the insolubility of metals is caused by surface passivation or a thermodynamic barrier. Adding ethyl acetate to the silver–fatty acid solution enabled the separation of silver as silver carboxylates from the unreacted fatty acids, which can be recycled. The silver carboxylates were in turn reduced to metallic silver in a light-assisted reduction reactor, an efficient and safe method for separating silver.

Toward urban mining

Using fatty acids as solvents has many benefits over using traditional mineral acids and aqueous solutions. In addition to originating in waste material, they are biocompatible, biodegradable, low in acid and non-volatile. This makes them safe and non-corrosive compared with other acids and organic solvents, enabling recycling and reuse.

Since fatty acids are not water-based, metal compounds can be separated from unreacted reaction mixtures by using ethyl acetate and other antisolvents. This allows for both straightforward metal recovery and the recycling of fatty acids. In addition, the possibility of using 30 percent aqueous hydrogen peroxide as a green oxidant under mild conditions enables urban mining.

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Techbros launches the first AI-driven ITAD & E-waste facility in the Southwest

In a groundbreaking move that's redefining electronics recycling, Techbros Electronic Recycling has officially launched the Southwest's first fully AI-integrated, R2v3-certified ITAD and e-waste processing facility a next-generation operation that fuses sustainability, automation, and military-grade data destruction under one roof.



With global e-waste projected to exceed 74 million tons by 2030, Techbros is rising to meet the challenge by leveraging artificial intelligence across all facets of its business from intelligent logistics planning and real-time inventory workflows to automated device diagnostics, downstream tracking and marketing optimization.

"We believe AI isn't just about efficiency. It's a powerful tool for creating sustainable systems, minimizing waste, and extending the lifecycle of valuable electronics," said Sarkes Mkrdichian, of Techbros. "We've built a facility that's smarter, greener, more secure and one that sets a new benchmark for ITAD and recycling in America."

Built to meet the highest industry certifications, including R2v3, ISO 9001, ISO 14001, ISO 45001. The newly expanded facility features a live customer portal powered by ERP and diagnostic

integrations that provide clients with real-time visibility, compliance records, and asset tracking.

Strategic Tech & Sustainability Ecosystem:

The company is working with a growing network of AI-powered partners to ensure every aspect of its operations drives value and reduces environmental impact:

- WipeOS – Secure, AI-integrated data wiping and reporting
- Makor ERP – Real-time inventory, compliance and downstream logistics
- SEMRush, Uplead, Mailchimp & HubSpot – AI-driven lead generation, remarketing and customer engagement
- Advanced Diagnostic Platforms – AI-based hardware testing and resale evaluation
- Predictive Route Optimization – Reducing emissions through AI-enhanced scheduling and pickup logistics.

"From the moment a client schedules a pickup to the final stage of asset resale or certified destruction, AI helps us make smarter, more sustainable decisions at every step," added Mkrdichian.

Techbros services a growing client base that includes data centers, healthcare networks, Fortune 500 enterprises, and public institutions, offering free electronics pickup, full audit reporting and environmentally responsible recycling with a strict, zero-landfill policy.

Producing circuit boards from leaves would prevent tons of e-waste

In a literally green technological advance, a team of researchers has found a way to replace the conventional printed circuit board (PCB) in electronic devices with a biodegradable alternative made out of tree leaves. Reported earlier this month in *Science Advances*, such "leaftronics" could help reduce the tens of millions of tons of electronic waste, or e-waste, humanity produces every year.

The idea is "very exciting" and "quite promising," said Lan Yin, a materials scientist and engineer at Tsinghua University, who works on developing biodegradable electronics but was not involved in the study.

E-waste is everywhere and piling up fast. In 2022, manufacturers produced 62 million tons of e-waste globally. And that figure is expected to increase by more than 30 percent by 2030, because modern electronics are designed to be disposable, said Rakesh Nair, a postdoctoral researcher and engineer with the Institute for Applied Physics at the Dresden University of Technology (TU Dresden). "We can easily make electronics that last for 10 or 20, 30 years, but we deliberately make them so that you buy the new model," Nair said.

By mass, circuit boards make up as much as 60 percent of e-waste. PCBs are typically made of extremely tough plastic or fiberglass infused with epoxy, an unrecyclable substrate that is "the core of the problem," said Hans Kleemann, an experimental physicist at TU Dresden and Nair's adviser. "It really stops you from all these important things like recycling and reusing components." So Kleemann, Nair and colleagues set out to find a greener alternative.

Nair first thought of using paper for the boards but was dissuaded by the amount of water and pollutants needed to generate paper. One day, when looking at the large magnolia tree near his institute, "it just clicked": He could use its leaves instead.

Biodegradable yet tough enough to withstand hurricanes, leaves get their strength from their "skeleton," a highly ramified network of fine veins made of a woody compound called lignocellulose. To turn a magnolia leaf into circuit board material, Nair first stripped it down to its skeleton by chemically removing the leaf's cells. He then filled in the skeleton's holes with ethyl cellulose, a tough biodegradable polymer. The resulting flexible board withstood all sorts of electronics manufacturing processes, including cutting shapes into the boards with lasers, printing circuits on top of them with commercially used silver inks, and soldering components to them.

Nair even put a leaf in the team's



Photo Courtesy of IC & PCB Union

state-of-the-art physical vapor deposition machine and laid down layers of material to make organic light-emitting diodes, resulting in a light-up leaftronic. Nair said he told Kleemann about that test only after its success, because it was possible it could have damaged the expensive machine.

Not only do Nair's leaftronics perform well, they break down well, too. The team was able to remove the expensive metals and circuit components by placing leaftronics in an ultrasonic acid bath. The boards themselves began to degrade after just one month in a compost heap.

Leaftronics also generate much lower emissions during production than regular boards, the researchers calculate. Nair ultimately envisions an electronics manufacturing and recycling plant situated next to a tree farm, so leaves could be sustainably harvested, made into leaftronics, then recycled (the circuitry) or degraded and used as fuel (the leaf). "Nothing is wasted," he indicated.

As with any budding technology, the biggest challenge will likely be convincing electronics manufacturers to adopt leaftronics. Although the materials performed well in laboratory tests, that may not be enough to induce manufacturers to switch to them. Because of their biodegradability, leaftronics also likely won't meet certain industry standards.

Current PCB materials are practically unbeatable in terms of robustness, and they are the benchmark for current rules regarding electronic components, Kleeman notes. "Maybe [regulators] have to lower the barrier [on stability] by 5 percent to allow us to get into this market," he said.

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EQUIPMENT SPOTLIGHT

Pulverizers

When recycling WEEE (waste from electrical and electronic equipment), optimal size reduction equipment is vital in achieving high purity and recovery of materials. Examples of WEEE may involve household appliances to computer equipment. Proper recycling and disposal of WEEE is crucial, due to the potential hazards of the materials they may contain and the environmental impact of improper handling. Most of the materials involved are comingled with other types of commodities that are often challenging to separate and recycle – to then be converted for use in new products. Through pulverizing, shredding, crushing or other processes (magnetic technology, dry or wet density separation technologies), liberation and sorting of materials into individual constituents can be achieved. Regardless of the technology used for the proper recovery of these materials, the generation of global e-waste continues to grow and is estimated to reach 74.7 million metric tons by 2030.

The Eldan Heavy Duty Granulator (HDG) is modified for recycling tough material, including electrical waste such as ASCR cables, low-grade cables with some impurities – as well as nonferrous metals, refrigerators, industrial waste and more. The product's new knife system with integrated

rotary knives/knife holders with a rotor, provides a solid foundation for the resistance required when processing heavy objects. The knives are straight, can be used on all four sides and grind materials easily. Friction clutches protect the machine from material overload and the belt drive involved ensures a simple transmission. The HDG also processes RDF well and can produce 20 mm material size. The HDG also performs well as a pre-chopper for these materials and other Cu or Al cables and can include various screen hole sizes down to 12mm and upwards, according to customer requirements.

A summary of HDG features includes: adjustable knife clearance, which optimizes the cutting function; product knives that can be reground multiple times on a "flat-bed" grinder, ensuring long life and low operation costs; the HDG design allows for the quick and easy change of knives and screens; the rotor is manufactured and designed for minimum wear with hard-face welding; screens provide different hole sizes for flexible production; five pieces of screens per set are included and interchangeable, depending on wear and exchangeable wear parts "provide operators with a virtually indestructible machine," remarked Carsten Nielsen, product manager.

Lindemann ZM metal crushers are efficient, low-maintenance metal processing products for pre- and post-shredding. Most often used in scrap yards, the equipment is used in ferrous and nonferrous recycling applications, including the processing of electronic scrap.

"Our products offer impressive performance, with good material breakup at favorable specific energy consumption and maximum availability. At the same time, the ZM shredders are easy to maintain and resistant to unshreddables," said Gunard Polite, general manager sales, North America. Product features include: top loader design; optimum double-grid/anvil combination – a design that helps to reduce power consumption and increases throughput at the same time; hydraulic removal of coarse pieces – so unshreddable parts are removed during the shredding process without interruption and without crossing the material flow; effective wear and maintenance prevention – these related costs are kept to an absolute minimum by the tiltable



Eldan Recycling A/S

housing, the special wear protection of house parts subject to heavy loads, the design and arrangement of wear protection elements and the nature and arrangement of their fixtures; rotor lifting device – this facilitates access to the base section of the machine, as the rotor can be lifted together with the center part of the housing; optional hydraulic pin puller, which facilitates and speeds up the exchange of the hammers and hammer pins.

The machine is available in two sizes with 250 to 370 kW drive power, the capped rotor size (impact circle diameter) is 1,500 mm and offers individual speed control with throughput/hour up to 25t.

Schutte Hammermill's DataKiller Pro and RAS models are designed to meet the evolving demands of the electronics recycling industry. The DataKiller Pro combines a dual-shaft shredder and dual-stage hammer mill into one, compact unit, destroying data and reducing materials to sub-2mm particles in a single pass. The machine processes

up to one hard drive per minute and up to twelve solid-state drives per minute, handling various electronic media without reconfiguration.

The RAS Series Dual Stage Hammer Mill features two stacked gravity discharge hammer mills, ideal for reducing bulky
See Pulverizers, Page B5



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Pulverizers

■ Continued from Page B4

e-waste and achieving consistent fine grind in a single pass. The dual-rotor design suspends material between grinding chambers, maximizing reduction efficiency and throughput.

“As electronic devices continue to evolve rapidly, so does the volume of outdated and discarded equipment. For recyclers, the efficient processing of e-waste, while ensuring data security and material recovery, presents both a challenge and an opportunity. With industry demand for secure, high-throughput, and fine particle size reduction on the rise, equipment that is purpose-built for this situation is the ideal solution. Our RAS and DataKiller Pro models have become go-to solutions for recyclers seeking durability, flexibility, and consistent results in today’s fast-paced electronics recycling environment.” Bill Castine, general manager, stated.

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rugged, reliable, and precisely engineered machines, the company serves a wide range of markets including e-waste recycling, data destruction, wood processing, and industrial recycling. As a part of



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FEATURED EQUIPMENT

OCT Automotive — Fluid Removal
NOV Paper/Plastics — Granulators
DEC Metals — Eddy Currents

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American Recycler News is not responsible for non-inclusion of manufacturers and their equipment. Manufacturers are to contact American Recycler to ensure their company is listed in the Equipment Spotlight.

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To be listed in the appropriate spotlight, please call 877-777-0043 or e-mail sales@americanrecycler.com.

UPCOMING EVENTS

SEPTEMBER
9/15-9/17
Colorado SWANA Fall Conference
Hilton Fort Collins
Fort Collins, Colorado
www.coloradoswana.org/fall-conference
720-413-6142

OCTOBER
10/6-10/8
Northeast Recycling Council Conference
Hyatt Regency Boston Harbor Hotel
Boston, Massachusetts
www.nerc.org
802-254-3636

10/15-10/18
Automotive Recyclers Association Annual Convention, Birmingham
Jefferson Convention Complex & Sheraton
Birmingham, Alabama
www.a-r-a.org
571-208-0428

10/19-10/21
2025 Litter Control & Solid Waste Management Educational Conference
Canaan Valley Resort
Davis, West Virginia
www.awvswa.org
304-455-5262

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NO. 1 PREFERRED PUBLICATION



E-waste recycling

■ Continued from Page B1



more states have proposed legislation in the past or are considering such legislation.

Genin noted that over the years, e-waste legislation has changed noticeably, and new laws that are more restrictive have developed in order to meet the environmental consequences of emitting waste.

“Nevertheless, the laws changed consumer behavior and caused more people to choose responsible recycling of their electronics. These trends indicate that consumer awareness and action in e-waste management can only increase as regulations get increasingly strict,” Genin added.

As the regulatory environment begins to play catch up, the laws in additional states have come under review and the concept EPR is gradually emerging.

“However, the majority of these transformations do not offer incentives towards consumers yet. Unless proper recycling can be as easy and reliable as putting your trash out at the curb, we can expect to continue piling up technology in garages, attics, storage facilities and landfills,” Genin said. “At OEM Source we treasure

what others throw away. However, we desire more policies and better awareness so that responsible recycling becomes the norm and not the exception.”

Bob Bilbruck, chief executive officer at Captjur, added that the e-waste recycling market is really picking up steam as more people replace their old electronics faster than ever.

“Experts expect the market to grow significantly over the next few years, especially with valuable materials like lithium and rare earth metals being recovered. At the same time, states are updating their laws to make recycling easier and more appealing,” Bilbruck said. “Many now offer free drop-off programs or require retailers to take back old electronics when you buy new ones. Some even give small financial incentives or cover recycling costs through fees at the time of purchase. It’s all about making it less of a hassle and more worthwhile for consumers to do the right thing.”

BIR releases its Business Digest: New trade rules for end-of-life electrical and electronic materials

The Bureau of International Recycling (BIR) has released the second edition of its Business Digest, a dedicated membership resource offering practical guidance on complex regulatory developments impacting the recycled materials industry.

This edition focuses on the new international trade rules for end-of-life electrical and electronic materials, following the entry into force of the Basel Convention E-Waste Amendments in January 2025.

The Digest provides:

- A concise overview of the new rules and procedures
- Guidance on implementation across the Basel Convention, OECD, and EU legal systems
- A breakdown of the new trade codes and control mechanisms

- Practical case studies to illustrate shipment procedures under different regimes

“As regulatory frameworks evolve, it is crucial that our members are equipped with clear, practical tools to manage change,” indicated BIR president, Susie Burrage, OBE. “This second edition of the Business Digest is another milestone in our commitment to support members navigating increasingly complex international trade rules.”

The Business Digest, which is a Members Only publication, reflects BIR’s dedication to advocacy and member services, providing real-time resources in a rapidly changing regulatory environment. As with all issues in the series, this Business Digest is intended as a practical tool – not a legal document – to support corporate decision.

Online giants to pay their fair share for electrical waste in UK

Online marketplaces and vape producers will soon be paying their fair share towards the cost of recycling waste electricals, from toasters to vapes and hair curlers, levelling the playing field for UK retailers, Circular Economy Minister, Mary Creagh has announced.

Ensuring large online retailers pay their fair share is fairer for UK businesses that already pay to cover the costs of recycling. It comes as the government delivers on its Plan for Change, and reflects a further step in the government’s mission to boost growth.

The changes will also help fund recycling services and kick-start the country on the road to a circular economy, which is a priority for the Government.

Before now, UK-based firms were shouldering the majority of costs around collection and processing of electronic waste and operating at a disadvantage. With 100,000 tonnes of household electricals binned every year, the changes will for the first time make sure the burden of these costs does not unduly fall on UK based retailers compared to their online rivals.

Waste electricals are difficult to recycle – and represent a huge drain on resources, when they are not collected separately. Valuable metals – such as copper – are chucked away needlessly, while electrical components and chemicals can pose a health and safety risk in the waste industry.

In conjunction with this government’s wider actions to tackle waste and end the throwaway society, this announcement will help ensure that businesses take responsibility for the huge quantities of waste that might otherwise end up being littered or fly-tipped, and support efforts to protect the environment.

“Electrical equipment like vapes are being sold in the UK by producers who are failing to pay their fair share when recycling and reusing of dealing with old or broken items. Today we’re ending this – creating a level playing field for all producers of electronics, to ensure fairness and fund the cost of the treatment of waste electricals. As part of our Plan for

Change, we are helping UK businesses compete and grow, and we continue to get more households recycling, cracking down on waste and ending the throw-away society.” said Creagh.

These changes to regulations will mean that online marketplaces, many of which are selling FastTech and other electricals, must take on producer responsibilities and contribute their share of the costs for recycling. Creating a separate category for vapes also means that those who have been profiting from the boom in their sales can be held responsible for providing public take-back, communications and most importantly pay for recycling them.

Material Focus estimates that British households throw away over 100,000 tonnes of smaller household electrical items every year. In addition, an estimated 880 million unwanted items containing valuable commodities such as gold and platinum, are abandoned or ignored in the back of the UK’s cupboards and drawers.

Under the plans, online marketplaces will need to register with the Environment Agency and report data on UK sales of their overseas sellers. This data will be used to calculate the financial contribution the online marketplace will make toward the collection costs and treatment of waste electricals collected by local authorities and returned to retailers. The cost of that annual registration will be subject to a consultation led by the Environment Agency.

A new category of electrical equipment for vapes will also be introduced to ensure that the costs of collecting and treating vapes fall fairly on those who produce them.

Material Focus found almost 5 million vapes are discarded every week in the UK. Vapes are rarely designed with end of life in mind and are difficult and time consuming to recycle, a cost that is not always being borne by those who produce them.

Acting on these important issues now will help address unfairness and deliver on a commitment to kick-start the push towards a circular economy.

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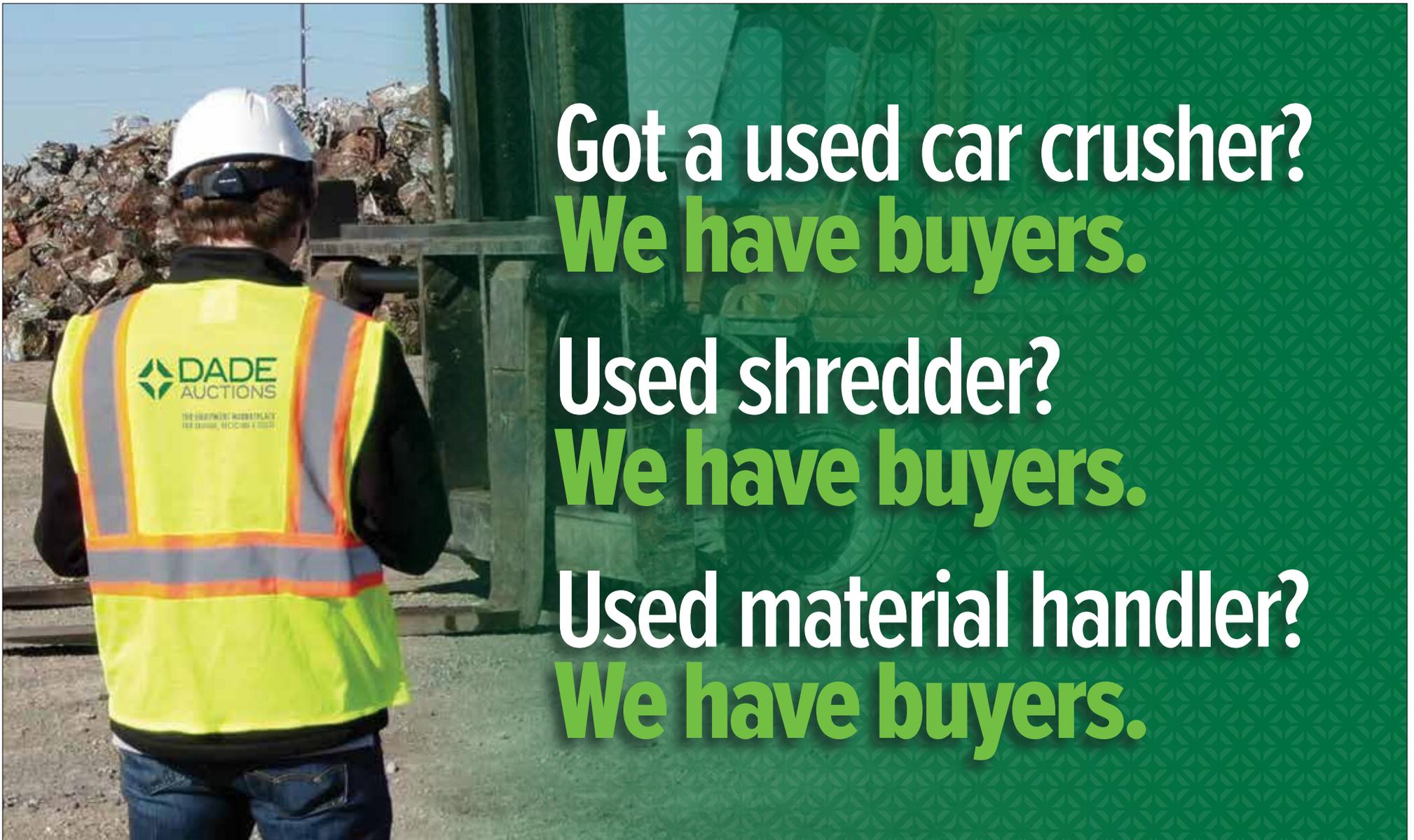
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