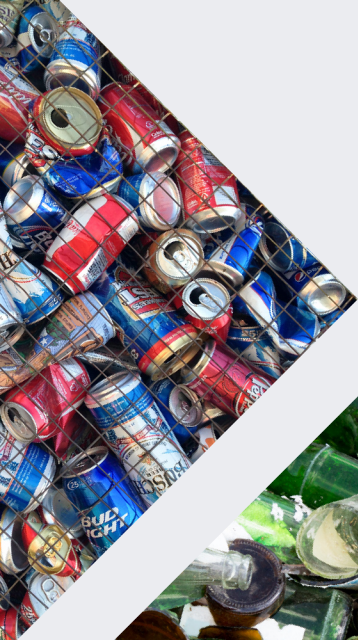




NEBRASKA  
RECYCLING  
COUNCIL

*-waste nothing-*



# 2025 STATE OF RECYCLING WHITE PAPER



# NEBRASKA RECYCLING COUNCIL

## **2025 State of Recycling White Paper**

The Nebraska Recycling Council is a statewide, member-based, 501(c)(3) nonprofit organization. Our mission is to maximize the economic and environmental benefits of resource recovery in Nebraska. The following document outlines historical context, problem materials, and important considerations regarding sustainable material management (SMM) in Nebraska. The content was developed collaboratively by industry professionals to educate residents, businesses, NGOs, local governments, and state senators. We ask stakeholders to participate in a strategic and systematic approach to sustainable materials management and economic development.

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## **Historical context:**

- [Integrated Solid Waste Management Act](#) is a broad Nebraska State statute that addresses requirements and authority associated with the proper management of solid waste, such as permitting municipal solid waste disposal areas and municipal solid waste processing areas.
- The Nebraska Department of Water, Environment, and Energy (NDWEE) last completed a waste [characterization study in 2009](#), one of the oldest in the country. Waste streams continually evolve and without current information it is increasingly difficult to effectively manage waste and recognize diversion and economic development opportunities.
- [Legislative Bill 1101](#) tasked the NDWEE with conducting a study to examine the status of solid waste management programs operated by the department and make recommendations to modernize and revise such programs. Key outcomes of the 2017 study were:
  - Merge the Department's Grants Programs
  - Assess Data and Information Needs
  - Prioritize Solid Waste Management Needs
  - Expand Educational and Outreach Opportunities
  - Evaluate the Department's Expertise
  - Strengthen State Agency Opportunities
- [Legislative Resolution 163](#) was introduced by Senator Jana Hughes in 2023 as an interim study to examine opportunities that increase recycling of municipal solid waste while also facilitating economic development and growth. [The Study's Final Report](#) has the following recommendations:
  - Conduct an updated, state-wide waste characterization study
    - NDWEE is currently undergoing the [SWIFR Waste Characterization Study](#) to be completed 2026.
  - Review Nebraska's Integrated Solid Waste Management Act
  - Create a favorable regulatory environment for value-added recycling systems
  - Encourage pilot programs
  - Develop Online Resources for Recycling

- Support Nebraska State College and University Research
- Encourage Public-Private Partnerships to Increase Recycling
- Examine proposed legislation against the goals of the Integrated Solid Waste Management Act and NDWEE Climate Action Plans
- [Nebraska's State Climate Action Plan](#) “waste management” related objectives:
  - Establish Hub-and-Spoke Anaerobic Digester/Biogas Hubs for Agricultural Waste: Establish three regional biogas cleaning facilities near existing natural gas pipelines, with biogas supplied by digesters at nearby animal feeding operations to benefit multiple producers.
  - Incentives for Production and Use of Biochar to Reduce Organic Waste and Sequester Carbon in Soil

## **Resource Opportunities:**

- **Renewable Energy** (solar panels and wind turbines): Solar panels and wind turbines are essential tools for building a clean energy future, but they also bring new challenges for recycling and end-of-life management. These technologies promise decades of low-carbon power, yet they are not immune to wear, damage, or eventual replacement. As the first wave of large-scale installations reaches maturity, communities are beginning to face an emerging waste stream that requires forward-thinking solutions. Solar panels contain valuable resources such as aluminum, copper, silver, glass, and rare minerals, all of which can be recovered and reused. Without proper systems in place, however, these panels risk ending up in landfills, where their potential value is lost and where legacy materials in older panels may pose environmental risks. Similarly, wind turbines present a mixed picture: the steel towers and nacelles are highly recyclable, but the massive fiberglass blades are far more challenging to process. At present, many are cut up and landfilled, though promising innovations are emerging—from reprocessing the composites into [cement additives](#) to designing blades with next-generation recyclable materials.
- **Batteries:** There are a wide variety of battery types and some of these are problematic when disposed of in the trash, resulting in fires in collection trucks, materials recovery facilities (MRFs), landfills, and elsewhere. Irresponsible battery disposal poses serious safety concerns to waste management professionals and the financial issues associated with facility downtime. Consumers generally don't (or can't) differentiate between the battery types, so a comprehensive collection of batteries is more effective, rather than relying on the consumer to differentiate. Current "best practice" is to establish State extended producer responsibility (EPR) laws. [LB 36](#) serves as Nebraska's first EPR law and will address disposal of small and medium format portable, non-embedded lithium ion batteries upon implementation.

- Embedded batteries. These are batteries within products/devices and that are not designed to be removable/replaceable by the consumer. They are problematic in that some products/devices then have other regulatory requirements for disposal and/or there are simply no existing means for collection and recycling. Embedded batteries are common in myriad products and EPR laws (excepting California) do not include these “embedded battery” products.
- **Vapes and similar products:** Vapes and similar products with batteries (many/most being embedded) contain nicotine or other chemicals/materials that fall under additional regulatory requirements, which makes the collection of these products problematic. The lack of a vape industry oversight association/organization is a major problem in addressing the embedded battery in vapes and related products. Safety is a concern for mismanaged products and improperly disposed vapes. Lithium-ion batteries are often used in vape devices and recovery of these valuable lithium-ion batteries and critical minerals is crucial for the green energy transition and decreased dependence on Outsourced materials/mining.
- **Household Hazardous Waste (HHW):** Household hazardous waste (HHW) collection and handling in Nebraska operates through a patchwork system of brick-and-mortar collection centers and special collection events. While these programs provide critical services, they are limited in scope and accessibility. Most facilities and events are designed to serve residential HHW only, leaving small businesses, farms, and other small-quantity generators with few affordable disposal options. A handful of programs, such as the Lincoln/Lancaster County facility, offer a Very Small Quantity Generator (VSQG) program, but participation requires paying fees that can be a barrier for some. Furthermore, the state’s reliance on special collection events and grant funding makes the system unsustainable and uneven across Nebraska’s 93 counties. Many rural communities have no permanent HHW facility nearby, meaning residents must either wait months for a one-day collection event or store materials indefinitely. This creates risks of

unsafe storage, illegal dumping, or improper disposal through household trash, which can harm water quality, soil, and human health. HHW extended producer responsibility (EPR) should be explored—this could be an important step toward building a more sustainable, equitable system for HHW management statewide.

- **Agricultural chemical waste:** The HHW collection centers in the state generally do not take agricultural waste such as pesticides and chemical containers. There is currently no data on how these large amounts of hazardous waste are being disposed of. Irresponsibility disposal methods pose a significant threat to soil, water, and air quality.
- **Agricultural plastic waste:** Modern agriculture relies heavily on plastics: silage wrap, bale netting, irrigation tubing, seed and chemical containers, mulch film, greenhouse coverings, and more. These materials are durable and lightweight, but they are designed for short-term use. Because these plastics are often contaminated with soil, moisture, or crop residue, they are more difficult and costly to recycle than cleaner post-consumer packaging. Rural geography compounds the problem—collection systems are scattered, hauling costs are high, and markets for recovered material are inconsistent. At the end of their useful life, most agricultural plastics have limited local recycling options, leaving landfills—and sometimes open burning or illegal dumping—as the default disposal pathways.
- **Tires:** Tires are a challenging material all over the world. Tires are hard to recycle items and are often discarded illegally. Illegally discarded tires cost municipalities and taxpayers money. They are also sizable and take up a lot of physical space if they end up in landfill. Tire ingredients can pollute soil, air, and groundwater resources when they degrade. Existing tire recycling and disposal options are retreading, powdering or crumbing, devulcanization, chemical recycling, pyrolysis, and incineration. Most of Nebraska's waste tires go out of state to be processed and then come back as crumb rubber for projects. Grant funding is available for the use of this material in turf fields, playgrounds etc. The Nebraska state legislature makes

funding for tire derived fuel projects prohibitive. Other states can use scrap tires as an alternative to fossil fuels.

- **Mattresses:** Mattresses present a unique challenge in the solid waste system. They are bulky, expensive to transport, and difficult to compact in landfills, which means they take up a disproportionate amount of space. Many facilities charge additional fees for mattress disposal, and improper dumping along roadsides or in alleys is common, creating both environmental and public health concerns. Yet mattresses are also rich in recoverable materials. A typical mattress is made of steel springs, foam, wood, and textiles—all of which can be separated and recycled. The steel can be melted down for reuse, foam can be repurposed into carpet padding or insulation, and textiles and wood components have secondary markets as well. States such as California, Connecticut, and Rhode Island have already implemented mattress extended producer responsibility (EPR) programs that fund collection and recycling through modest fees at the point of sale. These programs have diverted millions of mattresses from landfills while creating jobs in recycling and remanufacturing. A coordinated approach—whether through statewide EPR legislation, regional collection hubs, or partnerships with nonprofits and recyclers—could help address the problem while turning mattresses from a costly disposal issue into a resource recovery opportunity.
- **Paint:** Generally made of a mix of pigments, solvents, binders, along with other chemicals, which are often difficult to separate and process effectively. Depending on the type (oil-based, water-based, etc.) and composition, each requires a different handling and recycling method to dispose of safely. Due to this complexity, fewer facilities are equipped to responsibly manage waste paints. Programs, such as PaintCare, a national extended producer responsibility (EPR) program, have been implemented in several states to fund collection, recycling, and safe disposal of paint through a small fee (visible or invisible) added at the point of sale. PaintCare provides a model for creating year-round, accessible paint drop-off sites and has successfully diverted millions of gallons of paint from improper disposal.

- **Textiles:** Textiles are a rapidly rising category of waste, going from 9.5 million tons generated in the US in 2000, up to 17 million in 2018, making up 6% of the waste in 2018. A high percentage of the material are a blend of plastic and organic fibers, contributing to challenges in closed loop recycling and methane emissions when landfilled. Even if the estimated 95% of recyclable material was captured, there is no closed loop recycling for textile waste. Of the material captured in the recycling process, 45% is sent abroad for reuse - some countries (i.e. Ghana, Chile) have become overwhelmed and as much as 50% of that material is dumped, instead of reused or recycled. The remaining 50% of material is cut for single use wiping rags, or shredded into insulation, moving blankets, and other such products. Because of these limits, the greatest opportunity lies upstream—reframing how we produce, purchase, and use clothing and textiles in the first place. Extending product life through reuse, repair, and resale systems can dramatically increase diversion while reducing the strain on international markets. Building local and regional reuse networks, investing in textile recovery innovation, and promoting durable product design are critical steps toward addressing this fast-growing waste stream.
- **Glass:** Glass is highly versatile, 100% recyclable, and can be recycled endlessly. It is best to collect glass for recycling separately from other materials to maximize cleanliness, reduce contamination, and address safety concerns regarding processing. Due to its weight and therefore, the cost of freight to end markets, glass presents some challenges for effective recycling. Nearly all glass collected for recycling in Nebraska goes to Denver or Kansas City; it does not stay in Nebraska. In the future, NRC will support existing glass recycling programs and hopes to learn how to attract glass end markets to Nebraska.
- **Organics:** Roughly one-third of all food produced globally is wasted each year, much of it still edible. This loss occurs throughout the food supply chain—from farms and processors to retailers and households—consuming vast amounts of land, water, and fossil fuels in the process. It's also a major contributor to greenhouse gas emissions, particularly methane from

organics in landfills. Meanwhile, global food insecurity and inequality remain urgent challenges. Redirecting surplus food to those in need must be the first priority. Beyond that, expanding the infrastructure to recover and process organic waste is essential for both climate mitigation and resource efficiency. Existing solutions such as anaerobic digestion, composting, and biochar production offer powerful pathways to reduce emissions and restore soil health. Composting, in particular, delivers multiple environmental benefits: it avoids anaerobic landfill methane emissions, displaces fossil fuel-based fertilizers, and improves soil's capacity to retain water, resist erosion, and sequester carbon. Compost enriches soil with essential nutrients, beneficial microorganisms, and organic matter—critical for building resilient, living soils. Investing in these systems now is key to creating circular, climate-smart food systems that reduce waste while rebuilding ecological health.

- **Construction and Demolition (C&D):** C&D debris was sighted in more than 75% of the sampled loads during the 2009 Waste Characterization Study. C&D material makes up a significant volume of total waste. [EPA estimated](#) that 600 million tons of C&D debris were generated in the United States in 2018, which is more than twice the amount of generated municipal solid waste. Material not recovered for recycling or reuse is a resource lost. Additionally, according to the [EPA REI Report](#), the ferrous metals industry provides the largest contribution to all three categories (job, wage, and tax revenue), followed by construction and demolition (C&D) and non-ferrous metals such as aluminum. C&D landfills in Nebraska do not pay into NDWEE grant funds.

## **Considerations:**

- Reframing how we view “waste”
  - Reframing how we view “waste” is essential for building a sustainable future. The dominant narrative positions discarded items as useless—something to get rid of as quickly and cheaply as possible. But when we shift our perspective from “waste” to “resources,” we begin to see opportunities for value recovery, innovation, and economic development.

Reframing “waste” as “resources” also requires cultural change. It means helping the public understand that throwing something “away” doesn’t make it disappear—it means losing the energy, materials, and labor that went into creating it. A sustainable system views disposal as the last resort and prioritizes strategies that maximize value recovery, from reduction and reuse to recycling and composting.

- “Convenience”
  - Making recycling convenient means designing systems that meet people where they are—integrating collection into daily life, minimizing friction, and making the sustainable choice the easy choice.

Regardless of their motivation, people will often fall back on the simplest option when managing their waste. In our current systems throwing something in the trash is almost always faster and easier than figuring out how and where to recycle it. We see that often curbside collection programs tend to achieve far higher diversion rates than drop-off centers because they integrate into existing household routines. It is critical that these systems have clear signage, consistent bin colors, and the ability to recycle common items without sorting each piece individually all help reinforce behavior.

This principle is especially true with materials like batteries, electronics, or plastic film. Even though many consumers know these items shouldn't go in the trash, if the recycling option requires driving across town or holding onto materials for weeks, many people will default at disposal. In short: if recycling isn't as convenient as throwing something away, many people won't make the extra effort.

- Chemical Recycling

- Chemical recycling is an umbrella term used to describe processes that break plastic waste down into molecular building blocks with high heat or chemicals and convert them into fuel or new products. Chemical recycling has the potential to complement traditional mechanical recycling and address the limitations of mechanical recycling by breaking down plastics using heat and chemical processes. This method is particularly valuable for plastics that are challenging to recycle mechanically and for applications such as food-contact materials. The adoption of chemical recycling technologies must be scrutinized for their environmental impact, community effects, economic feasibility, and scalability. The Nebraska Recycling Council advocates for transparency and stresses the need for data and science-based assessments of new technologies to ensure they deliver genuine environmental benefits for communities and are economically viable. Additionally, the NRC advocates for the highest and best use of wasted resources, keeping materials in the economic value chain. Waste to fuel or landfill should be considered a last resort.

- “Horrible Hybrids”

- [“Horrible Hybrids”](#) are products made from multiple materials that are fused together in ways that make them nearly impossible to recycle. While convenient for manufacturers and consumers, these hybrid designs are a recycling nightmare because they cannot be easily separated by existing systems, often contaminate recycling

streams, and cost more to process than the value of recovered materials. The result is that most of these items end up in landfills or incinerators, wasting valuable resources and contributing to pollution. The solution lies in designing products for recyclability—favoring single, compatible materials or separable components—while holding manufacturers accountable through extended producer responsibility (EPR) policies. Consumers can also play a role by choosing simpler packaging and supporting innovations that reduce the need for mixed-material products in the first place.

- Extended Producer Responsibility (EPR)
  - Extended Producer Responsibility (EPR) is a policy approach that holds producers responsible for the entire lifecycle of their products — especially for the take-back, recycling, and final disposal of those products. The goal is to shift the financial and operational burden of waste management from governments and consumers to the producers, encouraging companies to design products that are easier to reuse, recycle, or safely dispose of.
- Right to Repair
  - Right to Repair is the principle, movement, and policy approach that gives consumers and independent repair shops the legal right and practical ability to repair, modify, or maintain the products they own—such as electronics, appliances, vehicles, and farm equipment, etc.. It requires manufacturers to make repair information, tools, parts, and software available to the public so that products can be fixed rather than discarded. This aims to reduce waste, extend product lifespans, and give people more control over the things they buy.
- Truth in Labeling
  - Truth in Labeling (as related to recycling & composting) ensures that product labels accurately reflect how a product and/or its packaging should be disposed of—whether it can be recycled, composted, or

requires landfill disposal. The goal is to prevent misleading claims that could confuse consumers, contaminate recycling or composting streams, and undermine waste management systems. This approach promotes honest labeling to help consumers make the right disposal choices and support effective recycling and composting programs.

- Deposit/Return systems
  - Deposit/Return Systems(bottle bills) are programs in which consumers pay a small refundable deposit when purchasing certain products, typically beverage containers (bottles and cans). After use, the consumer can return the container to a collection point (like a store or reverse vending machine) to get their deposit back. These systems encourage recycling, reduce litter, and improve the recovery rate of materials. . For most of the 20th century, soda and beer companies voluntarily operated deposit-return systems as a fail-safe way to get their valuable glass bottles back for washing and refilling. These systems were gradually phased out as bottling and distribution became centralized in the 1960s and 1970s. As the quantity and variety of one-way beverage container sales proliferated, so did bottle and can litter.
  
- Nebraska Department of Water Environment and Energy (NDWEE) Funds
  - The Nebraska Department of Water, Energy, and Environment (DWEE) administers litter and waste funds that provide essential support for recycling, composting, litter reduction, and waste diversion programs. Many municipalities, non-profits, and recycling organizations rely on these grants, and LB 167 (2025 legislative session) extended the sunset date for these funds to 2030, ensuring continued access for long-term planning and operations. To better utilize these funds, organizations should strategically plan multi-year projects that build capacity, leverage matching or complementary funding from local governments, businesses, or private donors, and invest in infrastructure that improves collection and processing efficiency, such as recycling equipment, automated sorters, or

community drop-off hubs. Funding can also support public engagement and education campaigns that reduce contamination in recycling streams, as well as the development of markets for recovered materials to ensure economic sustainability. Additionally, tracking and reporting outcomes—such as waste diversion rates, participation levels, and litter reduction—strengthens the case for future grants. Coordinating across programs and focusing on gaps in service, rather than duplicating existing efforts, can further maximize the impact of these state funds.

- Nebraska Environmental Trust (NET) Funds
  - The Nebraska Environmental Trust (NET) offers vital funding to conserve, enhance, and restore Nebraska's natural environment through grants supported by Nebraska Lottery proceeds. These grants are available to individuals, nonprofits, and public entities for projects that align with NET's five priority categories: habitat conservation and restoration, surface and groundwater protection, waste management improvements, air quality initiatives—including greenhouse gas reduction—and soil health management. To maximize the impact of these funds, applicants should develop projects that address specific environmental needs within their communities, ensuring that the proposed activities are both technically feasible and environmentally beneficial. Leveraging matching funds, though not required, can strengthen applications by demonstrating community investment and support. Projects can receive funding for up to three years, allowing for phased implementation and long-term impact. Additionally, effective public engagement and education components can enhance project outcomes and community involvement. By aligning projects with NET's priorities and demonstrating clear environmental benefits, applicants can effectively utilize NET funds to advance Nebraska's environmental goals.

- Landfill bans. The following items are banned from all regulated solid waste landfills in Nebraska, pursuant to Neb. Rev. Stat. 13-2039.
  - Waste Oil
  - Paint in liquid form (dried paint can be accepted)
  - Lead-Acid Batteries
  - Household Appliances
  - Waste Tires (in any form)
  - Unregulated Hazardous Waste

## **Priority Areas:**

- Standardized reporting of recycled materials. Accurate and consistent reporting of recycled materials is critical for understanding the effectiveness of recycling programs, guiding policy, and building trust among stakeholders. Currently, one of the major challenges in recycling is the lack of a uniform system for measuring and reporting recycled quantities, which makes it difficult to compare data across municipalities and regions within the state.
- Battery Extended Producer Responsibility (EPR). LB36, The Safe Battery Collection and Recycling Act, was signed into law in 2025. The law takes effect in January 2028 and prior to that the NRC will lead the buildout of a voluntary battery collection network that will then transition to the Battery Stewardship Organization (BSO) in January 2028.
- NDWEE received grant funding from the EPA to complete a Waste Characterization Study. The objectives are 1) Conduct a new waste characterization study, 2) Quantify the impact of existing recycling programs, 3) Identify opportunities to increase waste diversion and 4) Develop recommendations for programs and policies that reduce solid waste landfilled and increase the marketability of recycled materials. It is critical that a Statewide Waste Diversion Strategic Plan be developed by either NDWEE or an entity such as the Nebraska Recycling Council. The Fall Sorts are being completed and the Study Report will be available in early 2026.
- Revisit the recommendations made in LB 1101 and LR 163. Avoid analysis paralysis. The majority of the content and suggestions made in both studies is still valid and should be acted on. Nebraska is falling further and further behind our neighboring states regarding sustainable (environmental and economical) waste management.

- The Nebraska Recycling Council and stakeholders should take a formal position on “chemical recycling.”
- The general narrative of recycling needs to shift away from waste management to economic opportunity. Extensive collaborative efforts must take place in order to ensure progress is made in sustainable material management.
- C&D waste and landfills do not currently pay into grant funds. This should be revisited and addressed.

Nebraska is in its journey toward sustainable materials management. The state’s recycling and resource recovery systems have evolved over decades, yet outdated infrastructure, inconsistent access, and gaps in policy and funding continue to limit both environmental and economic potential. The challenges outlined in this white paper—from household hazardous waste and batteries to agricultural plastics, textiles, and “horrible hybrids”—highlight the urgent need for forward-looking strategies that prioritize convenience, accessibility, and systemic efficiency.

Opportunities abound to reframe recycling not merely as waste management, but as economic development, resource conservation, and climate action. Expanded extended producer responsibility programs, improved data and standardized reporting, investment in circular economy infrastructure, and statewide collaboration between government, industry, and communities can transform discarded materials into valuable resources. Nebraska has the expertise, stakeholders, and momentum to lead in sustainable materials management, but coordinated action is essential.

By embracing innovation, reinforcing public-private partnerships, and committing to long-term planning and education, Nebraska can build a resilient, equitable, and economically vibrant recycling system—one that not only reduces environmental impact but also drives local job creation, market development, and community engagement.

The time to act is now: a strategic, systematic, and collaborative approach will ensure Nebraska captures the full economic and environmental benefits of its materials, leaving a legacy of sustainability for generations to come.

We invite all stakeholders—residents, businesses, NGOs, local governments, and state legislators—to share insights, provide updates, and contribute their perspectives to help shape a more effective and equitable statewide recycling and resource recovery strategy. Email comments and feedback to [info@nrcne.org](mailto:info@nrcne.org).