



2023 Recycling and Waste Reduction Report

Information about recycling in Nevada, the 2020 and 2021 statewide recycling rate, and possible directions for recycling in Nevada.



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Executive summary

Recycling has always been an essential aspect of waste management; however, to further Nevada's sustainability goals, the Bureau of Sustainable Materials Management (BSMM) must broaden the scope of our planning to include additional materials management actions.

Recycling remains a priority for BSMM as it conserves our natural resources for future generations, saves energy by reprocessing materials instead of producing new ones, and has positive economic impacts on our communities. Additionally, effective recycling programs can lead to job creation, reductions in pollution caused by improper waste handling, and reduced landfill costs to communities. Recognizing the importance of recycling, the Nevada Legislature adopted a recycling goal of 25% in 1991 to meet the demands of waste diversion and to extend the life of many landfills within the state. Since 1991, the Nevada Division of Environmental Protection (NDEP), which oversees BSMM, has tracked the State's recycling efforts. The 2021 recycling rate for the State of Nevada was 24%.

To enhance our recycling planning efforts, BSMM began Partners for a Sustainable Nevada (PSN) in August 2021. This stakeholder group – made up of government agencies, non-profits, and private organizations – focuses on statewide sustainability issues and opportunities and works to identify and implement innovative solutions. With this progress and additional advancements, BSMM has an opportunity to integrate PSN's efforts into improving our recycling systems, decreasing waste generation, and increasing waste diversion across Nevada.

As Nevada transitions from seeing used materials as “waste” to viewing them as valuable commodities, our understanding of opportunities for these materials will continue to evolve. All materials, especially recyclable materials, need to be evaluated at all stages of their life cycles to identify new uses. We need to market those materials as beneficial to the state's economy and environment. We also must embrace other models of thinking to meet our recycling goals, such as the sustainable materials management framework, which is a holistic approach that evaluates more than just the end-of-life management of products and encompasses product design, material use, manufacturing, transportation, and other elements across a product's life cycle.

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Glossary

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| Assembly Bill | AB |
| Bureau of Sustainable Materials Management | BSMM |
| Construction and Demolition | C&D |
| Environmental Protection Agency | EPA |
| High-Density Polyethylene | HDPE |
| Household Hazardous Waste | HHW |
| Industrial and Special | I&S |
| Municipal Solid Waste | MSW |
| Nevada Division of Environmental Protection | NDEP |
| Nevada System of Higher Education | NSHE |
| Partners for a Sustainable Nevada | PSN |
| Sustainable Materials Management | SMM |

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Recycling Legislation

In accordance with Nevada statutes¹, the director of the Department of Conservation and Natural Resources must submit a biennial report on or before January 31 of each odd-numbered year, detailing the status of current and proposed programs for the recycling and reuse of waste materials.

This report contains information about recycling in Nevada during 2020 and 2021, the statewide recycling rate, and possible directions for recycling in Nevada.

¹ NRS 444A.070 and 444A.110

Legislation Overview

Nevada's recycling program began with the passage of Assembly Bill (AB) 320 in 1991, which established three guiding principles:

- 1. A goal to recycle 25% of the municipal waste generated in Nevada*
- 2. A preferential procurement policy for goods made with recycled materials*
- 3. A directive to NDEP to provide education and technical assistance concerning waste reduction and recycling*

With the principles created by these statutes, the State Environmental Commission adopted regulations² to fulfill the statutory mandate. These regulations have allowed NDEP to establish recycling goals and objectives that help conserve resources and reduce landfill disposal.

Various updates to the statutes and regulations regarding recycling have been made since the initial legislation was passed; these updates are listed in Appendix 1. Changes include requiring Washoe and Clark Counties to develop recycling plans for public buildings and provide recycling information to business license applicants, and requiring school districts and the Nevada System of Higher Education (NSHE) to recycle paper products. A legislative attempt was made to require that recycling containers are made available at apartment complexes, the outcome being that construction or renovation permits must incorporate space for recycling containers. This resulted in recycling access being available at a small percentage of complexes, as haulers charge extra for the service, and having recycling bins is not mandatory. The most recent regulation changes were to allow State agencies to keep the proceeds from the sale of recyclable materials for use in their recycling programs, include e-waste in the definition of recyclable materials, and require some state agencies to report their waste diversion annually.

While statutes mandate certain requirements, there are no consequences for not complying which limits the enforceability of the provisions.

Funds collected through the Solid Waste Management Account are the primary source of funding for the State's Solid Waste and Recycling Program at NDEP and a contributing funding source for solid waste management for the Washoe County and Southern Nevada Health Districts.

² NAC Chapter 444A

Recycling Program Requirements

NRS 444A.040 provides mandatory recycling program requirements based on the county population. Many counties provide programs above and beyond their requirements, such as Carson City who included residential curbside yard waste collection in their updated franchise agreement. Table 1 outlines the different levels of recycling services required of counties and municipalities based on population thresholds as of the 2020 U. S. Census.

Table 1: County Recycling Program Requirements

| County/Municipality Population Threshold* | Program Components | Applicable Counties |
|---|--|--|
| 100,000 or more | Shall: <ul style="list-style-type: none"> • Provide curbside recycling from residential premises and public buildings • Establish recycling centers as needed • Provide for collection and disposal of household hazardous wastes • Encourage businesses to reduce solid waste and recycle where possible | Clark Washoe |
| 45,000 – 100,000 | Shall: <ul style="list-style-type: none"> • Establish recycling centers as needed • Provide for collection and disposal of household hazardous wastes May: <ul style="list-style-type: none"> • Provide curbside recycling from residential premises and public buildings | Carson City Douglas Elko Lyon Nye |
| Less than 45,000 | May: <ul style="list-style-type: none"> • Provide curbside recycling from residential premises and public buildings • Establish recycling centers as needed • Provide for collection and disposal of household hazardous wastes | Churchill Esmeralda Eureka Humboldt Lander Lincoln Mineral Pershing Storey White Pine |

*As of the 2020 U.S. Census



Recycling Rate Information

All data compiled in this report includes counties that meet population requirements and have a recycling program. This includes Carson City, Clark, Douglas, Elko, Lyon, and Washoe counties.

Solid Waste Disposal

In Nevada, solid waste is categorized as either Municipal Solid Waste (MSW) or Industrial and Special (I&S). Most of the waste imported to and generated in Nevada is categorized as MSW. MSW is general trash from everyday products, such as food waste, furniture, packaging, and clothing. Waste categorized as I&S includes debris from construction and demolition (C&D) projects such as wood, concrete, asphalt, and drywall. Also included are several types of solid waste that have specific management requirements for permitted landfill disposal, such as asbestos and biohazard waste. Typically, about 90% of industrial and special waste, by weight, is C&D waste.

About 62% of waste landfilled in Nevada is from MSW generated in-state. Industrial and special waste make up roughly 33%. About 5% of waste disposal in Nevada comes from out-of-state sources. Solid waste imported from other states is not included in the recycling rate calculation.

While Nevada continues to focus on increasing the volume of waste diversion, reducing the total amount of waste produced will also lead to an increase in the recycling rate.

Table 2: Disposal Tonnages of Required Counties

| Category | 2020 Tonnage | 2021 Tonnage |
|-------------------------------------|--------------|--------------|
| In-State MSW Disposal | 3,183,965 | 3,301,912 |
| Industrial & Special Waste Disposal | 1,828,799 | 1,833,293 |

Recycling

The main categories of recycled MSW materials include scrap metal, organic material, paper, plastic, special wastes (e.g., used oil, antifreeze, batteries, and paint), glass, and textiles (Table 3). Three materials make up 90% of the recycled tonnage collected in Nevada: scrap metal, paper products (including cardboard), and organic materials. Glass, at 2%, and plastics at 1%, comprise a small percentage. The remaining 7% includes special wastes and other wastes.

The collection of recyclable materials is impacted by the trends and changes within the domestic and international commodity markets – i.e., markets for selling primary (virgin) and secondary (scrap and recyclable) materials. Like many other conventional recycling programs across the nation, Nevada's are built around these volatile commodity markets. For example, if the cost to collect, transport, and process a recyclable material is greater than the cost to extract, transport, and process the raw material, then there is little incentive to collect and process that recyclable material. However, if recyclable and scrap materials provide cost, energy, and/or environmental savings when used instead of raw materials, then

manufacturers perceive these secondary materials as valuable and drive-up demand.³ These recycled commodity values change over time based on supply, demand, and other market factors. Except for high-density polyethylene (HDPE) plastics and glass, there has been a general downward trend in recycled commodity values in the U.S. from 2010-2018.⁴

However, while recycled commodity values for HDPE and glass have increased, HDPE values have been volatile, and glass values remain some of the lowest of the recycled materials.⁵ Due to these volatile markets, recycling programs can benefit from policies and programs that help spur demand for recyclables – such as requiring the government procurement of products containing recycled materials. Currently, Nevada has a few legislative requirements to help spur the demand for products with recycled material. Such legislative requirements involve the State procurement of recycled paper and the use of recycled aggregate, recycled bituminous pavement, and recycled rubber from tires in certain Department of Transportation projects (e.g., construction, maintenance, and repair of highways).

Table 3: Recycling Tonnages

| Commodity | 2020 Tonnage | 2021 Tonnage | Average Percentage |
|---------------|------------------|------------------|--------------------|
| Metals | 327,410 | 357,098 | 33% |
| Organics | 354,283 | 325,279 | 33% |
| Paper | 219,835 | 254,670 | 23% |
| Special Waste | 23,523 | 24,125 | 2% |
| Glass | 25,724 | 21,241 | 2% |
| Plastic | 23,741 | 10,267 | 2% |
| Other | 46,751 | 50,471 | 5% |
| Textiles | 517 | 105 | 0.03% |
| Total* | 1,021,784 | 1,043,256 | 100% |

Note: Weights are rounded to the nearest ton

³ Institute of Scrap Recycling Industries. (2020). 2019 Recycling Industry Yearbook. <https://www.isri.org/recycling-commodities-old/recycling-industry-yearbook>

⁴ EPA. (2020). Historical Recycled Commodity Values. https://www.epa.gov/sites/default/files/2020-07/documents/historical_commodity_values_07-07-20_fnl_508.pdf

⁵ EPA. (2020). Historical Recycled Commodity Values. https://www.epa.gov/sites/default/files/2020-07/documents/historical_commodity_values_07-07-20_fnl_508.pdf

2020 and 2021 State Recycling Rate

To assess the counties and the State's overall progress toward the 25% recycling goal, NDEP conducts an annual survey of recyclers and businesses to determine the recycling rate. While all recycling centers are strongly encouraged to participate in this annual survey, only those in counties with population requirements and recycling programs are required to report. Between 2010 to 2020, six counties met this requirement: Carson City, Clark, Douglas, Elko, Lyon, and Washoe. However, Lyon County has not yet adopted a recycling program. The population of Nye County has grown to over 45,000 as of the 2020 U.S. Census and will be included in the recycling rate calculations beginning with the 2022 Recycling Rate Reporting. Although regulations require recycling centers in these counties to report, there are no State penalty provisions for failure to submit data.

While reporting the quantities of all the recycled materials may seem straightforward, it demands the combined efforts and cooperation of the State and municipal governments, recycling centers, and disposal services to gather, record, and report accurate data. Often, NDEP does not receive complete and accurate reports on time, thus requiring prompting and follow-up with the recycling centers.

NDEP must also take measures to ensure that double counting of materials is avoided. This happens when a recyclable material generator and the receiving recycling center both report the same material as recycled. However, recycling centers and generators often do not report on destinations for their recycled material, which makes addressing double counting difficult. Additionally, any abnormal or inconsistent numbers are flagged, which then necessitates NDEP staff to contact the reporting facility for additional information or clarification to resolve the discrepancies.

The recycling rate is the ratio of recycled MSW to total MSW generated, which is comprised of recyclables, household waste, and commercially generated waste. It is calculated using the following equation:

The Southern Nevada Health District has recycling facility permit conditions that allow them to take enforcement action for facilities that fail to report.

$$\text{Recycling Rate} = \frac{\text{MSW Recycled Tonnage}}{\text{MSW Recycled Tonnage} + \text{MSW Disposed Tonnage}}$$

Table 4: Recycling Rate Calculation (6 required counties only)

| Category | 2020 | 2021 |
|----------------------------------|--------------|--------------|
| MSW Recycled (tons) | 1,021,784 | 1,043,256 |
| MSW Disposed (tons) | 3,183,965 | 3,301,912 |
| Recycling Rate Percentage | 24.3% | 24.0% |

Nevada's most recent recycling rate is 24.0%. While the recycling rate goal was not met, Nevada has met or exceeded the 25% recycling rate for three consecutive years – from 2011

to 2013. The years with the highest recycling rate did not necessarily divert the largest volume of recyclable materials. Instead, total waste generation was lower in the years with the highest recycling rates, confirming that recycling rates improve when less waste is generated.

To resolve these issues, Nevada must improve access to recycling collection, work to reduce contamination of recyclable materials, improve statewide and domestic markets for recyclables, use its purchasing power to procure products made with recycled content, and educate the public on proper recycling and ways to reduce overall waste generation.

County Recycling Rate Information

As depicted in Table 5, the recycling rate for each county varies. This is mainly due to the types of recycling programs that are available to households and the type of waste streams generated in an area. For example, despite it not having curbside collection of recyclables, Douglas County has consistently had the highest recycling rate in the State, largely because of the composting programs that operate in the county.

Both Clark County and Washoe County moved to single stream collection starting in 2016. It is important to note that as Nevada's most populated county, Clark County's diversion and disposal rates significantly affect the State's recycling rate. The large drop in Carson City's recycling rate was mainly from one facility that reported about 20,000 tons fewer recycled organic materials in 2021 compared to 2020.

Finally, while curbside recycling is available to Elko residents in single-family homes, other communities in the county have limited or no opportunities to recycle locally. Additionally, rural counties' recycling rates are often impacted by when stockpiled materials, often scrap metal, are sold.

Table 5: County Recycling Rates

| | 2020 Rate | 2021 Rate |
|--------------------|-----------|-----------|
| Carson City | 32.4% | 19.4%* |
| Clark | 23.3% | 23.4% |
| Douglas | 51.3%** | 49.7% |
| Elko | 8.1% | 3.1% |
| Lyon | 6.8% | 2.6% |
| Washoe | 27.4% | 29.4% |

**The large drop in Carson City's recycling rate was mainly from one facility that reported about 20,000 tons fewer of recycled organic materials in 2021 compared to 2020.*

*** Douglas County's high recycling rate is due to having drop-off sites that accept organic material including yard waste and biosolids, which makes up 90% of the waste diversion in the county.*

State Agency Reporting

State agencies within the executive branch are now required to report the tonnages of materials they recycle each year since the passage of AB353 in 2019. As recycling tonnages were not required to be tracked before 2019, many State agencies did not have this data available and used best estimates. Subsequent reports are expected to have better data as agencies are now informed of the reporting requirements. The State agencies required to report have provided data in the same categories that are used to calculate the state recycling rate.

Recycling Challenges

Not only has Nevada struggled to reach a 25% recycling rate, but it falls far behind the national average of 32%.⁶ Improving Nevada's recycling rate has been difficult to achieve for many reasons:

Market volatility and low commodity values: As mentioned, if it costs more to collect and process recyclable materials than it does to extract and process raw materials, then the collection and processing of recyclable materials will remain low. Moreover, markets are not always stable or predictable; they respond to world events, demand, and supply. However, there is an opportunity to increase demand and develop local demand for certain recyclable materials, such as organics, within the State.

Transportation costs to get materials to market: Especially in rural areas, transporting recyclable materials long distances may not be financially feasible in the current market. One potential solution involves setting up a hub and spoke recycling system. Hubs serve as regional collection and processing centers in the larger communities, while spokes are collection points in smaller communities that deliver their recyclables to these hubs. By implementing the hub and spoke recycling model, Nevada may be able to find innovative ways to make recycling more cost-effective in these rural communities. While some progress has been made in this area, a lack of infrastructure and transportation options has limited widespread expansion or adoption of hub and spoke programs in Nevada.

High contamination rates of recyclable materials: Although single-stream collection increases participation and volume of materials, it can also result in much higher levels of contamination, reaching 25-30% at material recovery facilities. This often occurs when residents, and even visitors to the area, are unsure of what materials can go in their recycling bins.

Lack of programs or policies targeting specific materials with unique opportunities or problems: Since the State has not characterized its MSW, we cannot estimate the tonnage amounts for the main categories of MSW materials. If a waste characterization were completed, this study could estimate a general recycling rate for each material type. The recycling rate for each material type would provide insight into which materials could benefit

⁶ EPA. (2022, March 22). National Recycling Goal: Recycling Rate Measurement Comment Period. <https://www.epa.gov/recyclingstrategy/national-recycling-goal-recycling-rate-measurement-comment-period>

from targeted programs and policies, such as policies that spur demand for these materials or programs that incentivize waste minimization of that waste stream.

Lack of emphasis and incentives for waste prevention: Assuming MSW generation stays the same, increasing the collection of recyclable material is just one way to raise the recycling rate. Focusing on programs and policies that reduce the denominator of the recycling rate equation (i.e., total MSW generated) will also improve the recycling rate. This is especially important for materials that have weak end-use markets or have no feasible methods to be recycled.

Lack of collection services for commercial properties, multi-family buildings, and rural communities: As waste haulers charge extra for recycling at multi-family complexes and commercial properties, only a small percentage of these buildings have access to recycling. Additionally, rural communities face some unique obstacles that limit recycling access: lack of infrastructure for collection, basic processing, and storage of materials, long transportation distances to existing recycling centers, and a relatively small volume of materials generated.

Low tipping fee at landfills: When it's cheaper to dispose of a material rather than recycle it, there is less incentive to recycle. For example, one barrier to commercially composting organic material is the cost of the tipping fee. When landfill tipping fees are cheaper than compost facility tipping fees, organic matter is more likely to be landfilled than recycled.



Recycling Education and Outreach

A comprehensive education and outreach program is vital to improving recycling throughout Nevada.

Outreach to Schools

NDEP regularly conducts ongoing education and outreach in K-12 schools throughout the State. NDEP created a curriculum focused on solid waste and recycling that aligns with the Common Core and Next Generation Science Standards for 5th grade and is adaptable to school grade levels 4-12. The curriculum is updated periodically and is available free online.⁷

The Clark County School District has an incentive program that pays schools that recycle based on the savings gained by reducing the number of trash dumpsters or the frequency of pickup. The Carson City School District has a nationally known Sustainability Action Team that works to implement sustainable practices in all their schools, such as recycling activities, food waste composting, and other measures to reduce waste and energy consumption. The Washoe County School District provides recycling bins and dumpsters at all facilities and annually trains its Site Facility Coordinators in proper waste diversion.

NDEP partnered with Keep Truckee Meadows Beautiful, UNR Cooperative Extension, the Carson City School District, the Great Basin Outdoor School, and others to offer teacher training events during 2020 and 2021. In the training, NDEP staff presented lessons and activities from NDEP's recycling curriculum and was able to provide professional development credits to participating teachers. The workshops were offered virtually in 2020, allowing teachers from rural counties the chance to participate more easily. Additionally, NDEP staff participates in the annual Elko Environmental Education Field Trips for 5th graders where students engage in learning about waste reduction, reuse, and recycling.

In celebration of America Recycles Day, NDEP has been sponsoring various recycled art events. The Recycled Poster Contest started in 2021. Submissions are accepted through October of each year, with winners announced in November. Winning posters were featured in the "rider alert" space inside RTC Southern Nevada buses. The 2022 contest featured the winning designs in RTC buses, at the Carson City Library, and several other venues. Entry photos can be found on the [Sustainable Nevada website](#). Several winning entries were from rural counties.

Recycling Grants

NDEP has the authority to provide grants to municipalities, educational institutions, and non-profit organizations to enhance solid waste management systems and promote solid waste recycling.⁸ Due to the COVID-19 pandemic, the Nevada Recycles Grant Program was suspended for the 2020, 2021, and 2022 grant cycles. NDEP intends to resume awarding grants in the Summer of 2023.

⁷ <https://ndep.nv.gov/nevada-recycles/education>

⁸ NRS 444A.110

Recycling Hotline, Website, Listserv, and Social Media

NDEP operates a toll-free Recycling Hotline (1-800-597-5865) to provide information on local recycling services by county. Callers can get information on common materials such as paint, fluorescent light tubes, batteries, and more unusual recyclable items, like electronics, refrigerators, cars, and propane tanks. The hotline receives approximately 30 calls a month.

Nevada Recycles and PSN partnered together to help facilitate the promotion of sustainability-related educational materials and resources. In the fall of 2022, the Nevada Recycles website became the Sustainable Nevada website. The website will continue to be a hub for recycling resources. The Sustainable Nevada website will also act as a centralized clearing house for all sustainability topics, with the main goal of providing resources that will help Nevadans recognize and implement the sustainable use of all resources.

The Nevada Recycles Program has a group under the Nevada Department of Conservation and Natural Resources Facebook page. The group highlights efforts in Nevada communities regarding waste reduction and recycling, shares national and local news and initiatives regarding waste and recycling issues, and informs the public on issues and events such as e-waste collections, Earth Day, clean-ups, and educational opportunities. A Listserv is also used to send periodic email messages regarding events, notifications for grants, and other pertinent information.

Outreach to Rural Communities

NDEP has been actively promoting the importance of recycling in rural communities. However, there are major obstacles to increasing recycling in these communities:

- Lack of infrastructure for collection
- Basic processing and storage of recycled materials
- Long travel distances to existing recycling centers
- Small volume of recyclable materials generated
- Fluctuating market value of the materials

To offset some of these challenges, NDEP staff have been evaluating a “Hub and Spoke” system to connect rural recyclers (spokes) to amass larger volumes of recyclable materials in centralized locations (hubs). This type of system will help to decrease transportation costs and create a more reliable volume of materials for buyers. The plan is to establish funding and infrastructure to begin the implementation of a Hub and Spoke pilot program in rural Nevada. There have also been discussions with other states to cooperate on a regional hub and spoke system. Arizona State University is researching a regional Hub and Spoke system across the western United States to determine how states can work cooperatively to increase recycling.

Despite these challenges, many rural communities have established basic recycling programs, such as drop-off bins, that are accessible to the public. Rural recycling options exist in Douglas, Churchill, Eureka, Humboldt, Lyon, Nye, Storey, Pershing, and White Pine Counties.

Infrastructure and accessibility vary widely from county to county, but most landfills in Nevada currently accept scrap metal (e.g., appliances and cars), automotive batteries, motor oil, and antifreeze for recycling.

Other Community Outreach and Assistance Activities

NDEP recycling staff participate in community events such as Earth Day, America Recycles Day, Aces Education Days, Nevada Day, and Silver Springs Fall Festival and serve on several recycling-oriented organizations across the state. While most in person events were canceled or postponed due to the COVID-19 pandemic, NDEP participated in virtual events in the meantime. Several events have since resumed in-person.

Partners for a Sustainable Nevada

NDEP BSMM brought together stakeholders from governmental agencies, non-profit organizations, and the private sector to form the Partners for a Sustainable Nevada (PSN). This stakeholder group focuses on statewide sustainability issues and opportunities and works to identify and implement innovative solutions. In 2022, the PSN produced its [Menu of Options](#), suggesting potential ways for pursuing sustainability in the State. As part of that document, the PSN proposed many project and policy ideas to further recycling efforts, including circular economy initiatives, source reduction strategies, organics diversion policies, solutions for improving markets for recyclable materials, and reuse programs. This initiative hopes to benefit future generations by identifying and promoting opportunities to advance and expand sustainability efforts statewide.

As part of the PSN Education and Outreach Committee, NDEP is furthering the development of a consistent statewide message about sustainability and recycling that focuses on outreach to businesses, governmental agencies, and the general public.



Current Trends and Looking Forward

Recycling in Nevada has several challenges, as well as several opportunities to improve throughout the State.

Economic Impact

The 2020 Environmental Protection Agency (EPA) Recycling Economic Report⁹ found that on average in the United States there are 1.17 jobs, \$65,230 in wages, and \$9,420 in tax revenues attributable, for every 1,000 (US) tons of recyclables collected and recycled. Nevada recycled 1,043,255 tons of materials in 2021, which would equate to about 1,220 jobs, \$68 million in wages, and \$9.8 million in taxes.

To strengthen markets for products made with recycled materials, Nevada should commit to increasing the preferred purchasing of products with recycled content. AB 320, passed in 1991, requires State agencies to have a preferential procurement policy for goods made with recycled materials. NDEP is currently planning a State agency evaluation program to identify agencies to improve their preferential purchasing and recycling capabilities.

Statewide Public Education Campaign about Contamination

Many municipalities have implemented single-stream recycling collection, which allows residents to deposit all types of recyclable materials in one container. This collection method encourages residents to recycle by making it more convenient and by providing customers with a single, larger mobile container, instead of smaller crates. This collection method is also more cost-effective for haulers as it can be readily automated, reduces the time spent collecting materials, and reduces trips to transfer stations to empty trucks with partial loads due to uneven filling of compartments in divided trucks. Reno, Sparks, Las Vegas, North Las Vegas, Henderson, Carson City, and Elko, as well as unincorporated Washoe and Clark Counties, have all implemented single-stream recycling programs. Although single-stream collection increases participation and volume of materials, it can also result in much higher levels of contamination (on the order of 25-30% contamination) at material recovery facilities.

Problems with contamination issues could be addressed with a statewide public education campaign, as there is confusion over what materials to put into recycling bins. A statewide campaign would need to consolidate information and make it accessible and relevant to citizens. There are toolkits available to assist with creating messaging about recycling from the US EPA and The Recycling Partnership. Standardizing labels on recycling bins can also help, effectively reducing confusion and contamination by using simple, consistent messages statewide – or even nationwide.

⁹ EPA. (2022, Dec 22). Recycling Economic Information (REI) Report.
<https://www.epa.gov/smm/recycling-economic-information-rei-report>

Materials Processing and Market Development

To increase the diversion of recyclable materials, there is a need for basic material processing, such as sorting, shredding, baling, or crushing, for materials to be readily marketed and used in Nevada. There are companies that are looking to sell their materials, and there are others who are looking to purchase materials to use in their products. However, there is often no way to get the material from the generator to the user in the necessary form. To be able to use recycled materials more efficiently and especially to reduce transportation costs, the process should be localized.

Extended Producer Responsibility Legislation

Extended producer responsibility (EPR) laws are initiatives to make manufacturers responsible for recycling or safely disposing of their products once consumers are done with them. When manufacturers are responsible for managing their products at end-of-life, they are often motivated to make environmentally beneficial design changes that make products more sustainable throughout the product's lifecycle. Product stewardship can reduce the financial burden on taxpayers and state and local governments for material collection and management.

Many product categories have EPR legislation across the country. Currently, thirty-three states have created producer responsibility laws specific to individual product categories or packaging material. Most laws focus on difficult-to-recycle products like electronic devices, paint, mattresses, or batteries. Model legislation by product category is available for use and modification through the [Product Stewardship Institute](#).

Standardized Labeling

Problems with contamination of recyclables are often caused by poor, confusing, or inconsistent labeling of recycling containers. Standardized labels are a simple and effective solution. Using standardized labels can eliminate confusion as to what goes into recycling bins helping to reduce contamination and increase efficient processing to achieve high-quality recycled materials. [Recycle Across America](#) is a non-profit organization that works to promote standardization of labeling across the country and supports national efforts to recycle effectively.

Sustainable Materials Management

The Bureau of Sustainable Materials Management updated its name in 2019 from the Bureau of Waste Management. BSMM is focusing on broader sustainability issues including systemic changes that encourage materials to be used to a greater extent over their lifetime. Sustainable materials management (SMM) is an approach to using and reusing materials more productively and changing how society thinks about the use of natural resources and environmental protection.

BSMM has developed a Sustainable Materials Management Plan to reflect the direction of the work more accurately being done by the Bureau. Some components of the SMM framework are using materials most productively, with an emphasis on using less, reducing the use of toxic chemicals and their environmental impacts throughout the material life cycle, and assuring that we use resources efficiently to meet future needs. By looking at a product's entire life cycle from materials extraction, to product design, use, repairability, reuse, recyclability, and end-of-life management, we can find new opportunities to minimize environmental impacts, conserve resources, and reduce costs.



At Each Lifecycle Stage





Conclusions

How to continue moving Nevada towards a more sustainable future

In 2021, Nevada's annual recycling rate was 24%, which was an uptick from a 22% average since 2007. Prices for recyclable materials are again dropping after an earlier rebound due to inflation pressures and lower demand for cardboard. Domestic markets for recyclable materials are being developed across the U.S. in response to China not accepting recyclable materials from the U.S. and Europe. Higher gas prices have increased the cost of transportation which is impacting recycling across the country. Nevada's small population and large geographic area continue to present challenges, especially in the rural areas of the State. Establishing a "Hub and Spoke" system in the rural parts of the State and developing regional partnerships with neighboring states such as Arizona, Utah, and Idaho, could make recycling and access to markets more economically feasible for rural communities.

Waste reduction and market development for recycled materials should be considered top priorities if Nevada is going to meet or exceed the State recycling rate goal of 25%. Investment in recycling infrastructure is needed, along with:

- A statewide public education campaign to reduce contamination and increase participation
- Consistent and on-going public education/information
- Standardized labeling
- Increased processing capabilities
- Market development for recycled materials
- Effective and enforced State regulations

With the new reporting requirements for State agencies, and the ability of BSMM to gather statewide recycling and waste diversion data, NDEP is better able to track and monitor trends in the State. With the newly created PSN, NDEP's diverse partnerships continue to expand and improve, helping Nevadans become more aware of recycling and waste reduction issues and opportunities across the State.

To meet our recycling rate goals, the State must look at all factors that affect the recycling rate. Nevada must not only increase our recycled material volumes, but also focus on reducing the volume of waste generated overall. NDEP will continue to support and implement recycling programs in tandem with SMM concepts, utilizing a holistic approach that encompasses and evaluates product design, material use, manufacturing, transportation, and other elements of a product's life cycle. These concepts will play a key role in Nevada's success now and well into the future. The Sustainable Materials Management initiative will allow us to reduce environmental impacts, conserve resources, and reduce costs. To move toward a future with less waste, Nevada needs to find innovative ways to manage resources sustainably, while working with and educating industry stakeholders, municipalities, academic institutions, non-profits, the public, and others.



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Appendix 1

*Amendments to the Nevada Revised Statutes & Nevada
Administrative Code*

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Legislative Solid Waste History Since 1991

| YEAR | BILL # | SUMMARY | NRS # |
|------|--------|--|-----------------|
| 1991 | AB 320 | Added \$1 per vehicle tire fee to fund programs for the management of solid waste, established 25% recycling goal, directive to NDEP to provide education and technical assistance concerning waste reduction and recycling, requiring state procurement of certain recycled paper, guidelines for disposal of household hazardous waste. | 444A.020 - .110 |
| 1991 | AB 320 | Designate projects that use at least 15 percent by weight recycled asphalt or other recycled products and use equipment used in highway construction that are made from recycled products. | 408.281 |
| 1995 | AB 449 | Raised the county population threshold for requirement to offer curbside collection of recyclables from 40,000 to 100,000. | 444A.040 |
| 1999 | AB 564 | Clark & Washoe to offer curbside collection of recyclables at public buildings; NDEP to assist State agencies to recycle; school districts to recycle paper. | Various |
| 2001 | AB 650 | Changed the county population threshold for requirement to offer recycling drop-off centers from 25,000 to 40,000. | 444A.040 |
| 2001 | SB 424 | Illegal dumping; authorities, enforcement, penalties. Clark Health District may establish a hearing officer to adjudicate alleged solid waste violations. | 444.621-444.640 |
| 2005 | SB 396 | Allows SEC to establish a fee schedule for solid waste disposal sites within areas of NDEP jurisdiction. | 444.560 |
| 2005 | SB 396 | Limits the authority of NDEP personnel to conduct an inspection without a search warrant. | 444.570 |
| 2005 | SB 396 | Counties of 100,000 or greater must make information on recycling opportunities available to businesses at time of business license application. | 444A.040 |
| 2005 | SB 396 | Counties of 40,000 or greater must review/propose changes at least every two (2) years; submit a report to the NDEP by July 30 of each even-numbered year. | 444A.050 |
| 2005 | SB 396 | Gives authority to NDEP to award grants to specific entities for projects that enhance solid waste and recycling. | 444A.110 |
| 2007 | SB 331 | Requires NDEP to encourage the NV System of Higher Education to research and develop methods for reduction/reclamation/conversion of solid waste. | 444A.110 |
| 2007 | AB 178 | A county whose population is over 400,000 shall establish a pilot program for collecting and separating recyclable material with a potential as a source of renewable energy or renewable fuel. | 444A.120 |
| 2009 | AB 426 | Requires NDEP to conduct an electronic waste study to include an inventory of existing programs and report the results with recommendations to legislation. | N/A |
| 2009 | SB 137 | Municipalities with curbside recycling must offer the service to multi-family dwellings (as defined in NRS 444A), and for approval, plans for construction or major renovation of an MFD must provide space for collecting recyclables on the premises. Authorizes the System of Higher Education to use proceeds from recycling programs to support said programs. These moneys must be accounted for separately. | 444A, 268, 278 |

| | | | |
|-------------|--------|---|--------------------------|
| 2009 | SB 186 | Requires solid waste management authorities to permit facilities for the management of waste tires. Said facilities must obtain a permit to operate prior to commencing operations. Once a permit is issued a tire disposal ban is to be implemented in the county where located. Requires penalties for non-compliance and provides for specific exemptions to the disposal ban. | Various |
| 2011 | AB 427 | Appointed a committee to conduct an interim study concerning the establishment of a program for requiring the payment and refund of deposits on recyclable products sold in this State. | N/A |
| 2011 | AB 545 | Increased the population threshold for availability of recycling programs. Changed the 40,000 threshold to 45,000. | 444A.040 |
| 2011 | SB 417 | Revise the requirement concerning the adoption of regulations by the Commission and the Division for the separation of recyclable material at the source to require those regulations to include provisions for the placement of recycled containers on the premises of apartment complexes and condominiums where those services are provided. | 444A.020 & .030 |
| 2011 | SB 236 | Adopt policies for the use of recycled aggregate, bituminous pavement, and rubber from tires in projects for construction, reconstruction, improvement, maintenance, and repair of highways; cannot restrict use of recycled material unless scientific evidence indicates that the material compromises the soundness of the project. | 408.201, .313 |
| 2013 | AB 44 | Restricts the authority of an association of a planned community to regulate the storage and trash recycling containers on the premises of attached or detached residential units with curbside trash and recycling collection. | 116 |
| 2013 | SB 449 | Increases the penalties for a person who is found guilty of illegally disposing of solid waste, sewage, or certain other materials three or more times from two years to four years and adds involving the illegal disposal of any cesspool or septic tank effluent or solid waste. | 444.63 |
| 2013 | SB 123 | Adds remediation and reuse of coal-fired generation sites under the jurisdiction of NDEP. | 444.495 |
| 2015 | SB 110 | Requires a municipal solid waste landfill shall accept a recreational vehicle for disposal. | 444.559 |
| 2019 | AB 353 | Adds electronic waste, paper and paper products to the term "recyclable material", requires money received for recycling to used to carry out the provisions of recycling; DCNR to deliver biennial report to LCB on the status of current and proposed programs for recycling and reuse of materials. | 444A.020, .070, 218F.310 |

Brief History of Solid Waste Bills That Did Not Pass

| YEAR | BILL # | SUMMARY | Reason for not Progressing |
|------|--------|--|--|
| 2011 | SB 183 | Requiring communities to allow a unit's owner or tonnage to store a recycling container on the premises of his or her unit | Died in the Senate Committee on Judiciary. |
| 2011 | SB 389 | Establishes a bottle bill deposit program with a refund value of 5 cents. | Died in the Senate Committee on Natural Resources. |
| 2013 | ACR2 | Encourages boards of county commissioners to make available programs for single-stream recycling. | N/A, resolution read. |
| 2013 | SB 183 | Establishes an electronic device recovery and recycling program | Did not pass Senate vote. |
| 2013 | AB 269 | Increased the Class II disposal site daily tonnage from less than 20 tons per day to less than 100 tons per day on an annual average. | Died in the Assemble Committee on Natural Resources, Agriculture, and Mining. |
| 2013 | AB 379 | Requires a municipal solid waste landfill shall accept a recreational vehicle for disposal. | Approved by the Senate, Amended and passed by the Assembly, Senate did not concur with amendment, died in Senate. |
| 2013 | AB 487 | Construction and demolition waste must be disposed of at a materials recycling facility if located within 30 miles of the site of work, increases recycling goal to 40%, requires each county board of county commissioners to report the efforts and progress made by each county to establish single-stream recycling. | Approved by the Assembly, amended and passed by the Senate, died in the Assembly. |
| 2013 | SB 316 | Construction and demolition waste must be disposed of at a materials recycling facility if located within 30 miles of the site of work. | Approved by the Senate, died in Assembly Committee on Ways and Means. |
| 2015 | SB 122 | Construction and demolition waste must be disposed of at a materials recycling facility if located within 30 miles of the site of work. | Died in the Senate Committee on Commerce, Labor and Energy |
| 2017 | SB 315 | Each county whose population is 100,000 or more shall maintain a waste diversion rate of at least 25%, increase the state recycling rate goal to 35%. | Approved in the Senate, died in the Assembly Committee on Ways and Means. |
| 2019 | SB 310 | Authorizes the creation of pilot programs to recycle beverage containers | Died in Senate Committee on Finance. |
| 2021 | SB 349 | Allow the governing body of a county or city to allow the use of certain land for community composting and establish an urban composting zone | Approved in the Senate, do pass from the Assembly Committee on Government Affairs, died in the Chief Clerk's desk. |

Nevada State Environmental Commission Solid Waste Regulatory Development Milestones

| PETITION | LCB # | PETITION SUMMARY | SEC ADOPTED | EFFECTIVE DATE | NAC CHAPTER |
|----------|----------|---|-------------|----------------|-------------|
| N/A | R-183-91 | Tire surcharge fee addition | 12/5/1991 | 1/2/1992 | 444 |
| N/A | R-103-92 | Solid Waste landfill regulations for approved Subtitle D program | 7/23/1992 | 9/2/1992 | 444 |
| N/A | R-168-92 | Minimum standards for solid waste reduction and recycling programs | 9/30/1992 | 11/10/1992 | 444A |
| 93008 | R-051-93 | Solid Waste landfill permitting program amendments | 9/22/1993 | 11/8/1992 | 444 |
| 9300B | R-043-93 | Solid Wastes fees out-of-state | 9/22/1996 | 10/29/1993 | 444 |
| 94001 | R-051-93 | Solid Waste facilities management deadline extensions | 9/22/1993 | 11/8/1993 | 444 |
| * | R-208-93 | Solid Waste landfill technical amendments to R-051-93 | 1/20/1994 | 3/1/1994 | 444 |
| 94018 | R-115-94 | Addition of "inert waste" definition & standard (withdrawn) | N/A | N/A | N/A |
| 94019 | R-116-94 | Addition of waste tire recycling regulations | 11/9/1994 | 12/16/1994 | 444A |
| 95008 | R-030-95 | Solid Waste Financial Assurance date extension | 10/3/1995 | 11/9/1995 | 444 |
| 95013 | R-035-95 | Solid Waste Class II landfill two year time extension | 10/3/1995 | 11/9/1995 | 444 |
| 96011 | R-071-96 | Recycling thresholds & waste tire hauler manifests changes | 9/10/1996 | 10/3/1996 | 444A |
| 96012 | R-072-96 | Class II landfill sites exempt from groundwater monitoring | 9/10/1996 | 10/3/1996 | 444 |
| 97001 | N/A | Class II landfills (federal "rifle-shot reforms for rural landfills", daily cover, final cover, gas monitoring) | 3/6/1997 | 3/10/1997 | 444 |
| 98003 | R-034-98 | Transfer station standards and application requirements, 24-hr. landfill operating day, small landfill flexibility, Class III Site revisions | 3/25/1998 | 4/17/1998 | 444 |
| 2000-02 | R-173-99 | Materials Recovery Facility standards and application requirements | 12/16/1999 | 2/9/2000 | 444 |
| 2001-03 | R-038-01 | Recycling at public buildings | 9/18/2001 | 10/25/2001 | 444A |
| 2001-03 | R-39-01 | Procedures for recycling by State agencies | 9/18/2001 | 10/25/2001 | 444A |
| 2002-12 | R-105-02 | Remote open burning of yard waste & extended waste storage, Solid Waste landfill 5-year capacity survey, and compost plant permit requirements | 9/11/2002 | 10/18/2002 | 444 |
| 2005-09 | R176-05 | Procedures for grants to enhance Solid Waste Management Systems and promote the efficient use of resources | 3/8/2006 | 5/4/2006 | 444A |
| 2012-02 | R123-11 | Amends NAC 444.748 to clarify the jurisdictional responsibilities associated with appeals concerning the management and disposition of solid waste by Nevada's three Solid Waste Management Authorities | 2/15/2012 | 5/30/2012 | 444 |
| N/A | R037-13 | Authorizes NDEP to collect solid waste management fees | 10/8/2014 | 10/24/2014 | 444 |