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Municipal Waste in Southern Nevada: Understanding the Obsession with Garbage

Zachary Billot
December 2022

Abstract

This policy brief will analyze the current state of municipal waste, both residential and commercial, in Clark County Nevada. Southern Nevada's reliance on inexpensive disposal of waste results in lack of support for sustainable investment in waste diversion programs. Clark County lags significantly behind the US in terms of recycling processing due to problems related to collection of materials and limited programs that divert food waste in a city reliant on casinos that dispose tons of food per day. A multifactor approach which includes education, investment in waste diversion, policy change for waste collection and cost, and management of waste hauling monopolization is necessary.

Executive Summary

- Nevada has the highest national per person disposal rate at 8/lbs per day.
- Nevada has the highest recycling rate in the Mountain West (Arizona, Colorado, Nevada, New Mexico, and Utah) at 18% without card/paperboard and 39% with card/paperboard.
- Nevada has the second lowest cost of land in the United States at only \$2,116 per acre and one of the 10 lowest costs nationally for trash collection averaging \$39.90 per ton disposed at a landfill.
- All Southern Nevada municipalities changed to single stream recycling in between 2012-2018. Recycling rates once met the 25% goal but have since decreased and remained well below the requirement set by Nevada Statute.
- Southern Nevada's Apex landfill produces 3.4/11 MW capacity of energy annually that can, if increased, meet the State's 50% renewable energy mandate by 2030.

Municipal Waste in Southern Nevada

Municipal waste and its increasing production is an important policy problem to consider when looking for environmental adaptation in the Mountain West. Municipal waste throughout the report will refer to products sent to the landfill from residential and commercial facilities. Municipal waste can commonly be referred to as trash or garbage. For the purposes of this study, industrial waste will not be examined since it is subject to contrasting systems of disposal and pickup compared to commercial and residential garbage. The majority of states across the United States are experiencing large increases in their municipal waste production, leading to an impending crisis of overflowing landfills, oceanic garbage patches, and more. Southern Nevada has an especially poor relationship with waste that this policy brief will describe in detail.

Waste Removal Options

The average person in the United States throws away approximately 5 pounds of garbage per day. While this number may not be alarming on the individual level, millions of people disposing this much every day adds up to an alarming 292,400,000 tons in according to the Environmental Protection Agency's 2018 calculations (EPA, 2022). The state of Nevada far exceeds the national average. Each Nevadan produces around 8 pounds of trash per year, a three pound per person difference. Per day the weight seems negligible, but over one year there is a sharp contrast between the US, 1825 pounds, and Nevada, 2920 pounds. It is unfair to characterize Nevadans as careless consumers and disposers though since much of this waste is generated in a very small section of the state, the Las Vegas Strip (Raz, 2016). The transient, tourist-based economy of Southern Nevada relies on convenience and expediency, two things the casino industry of Las Vegas has come to perfect.

The multitude of buffets, restaurants, and bars create an immense food waste

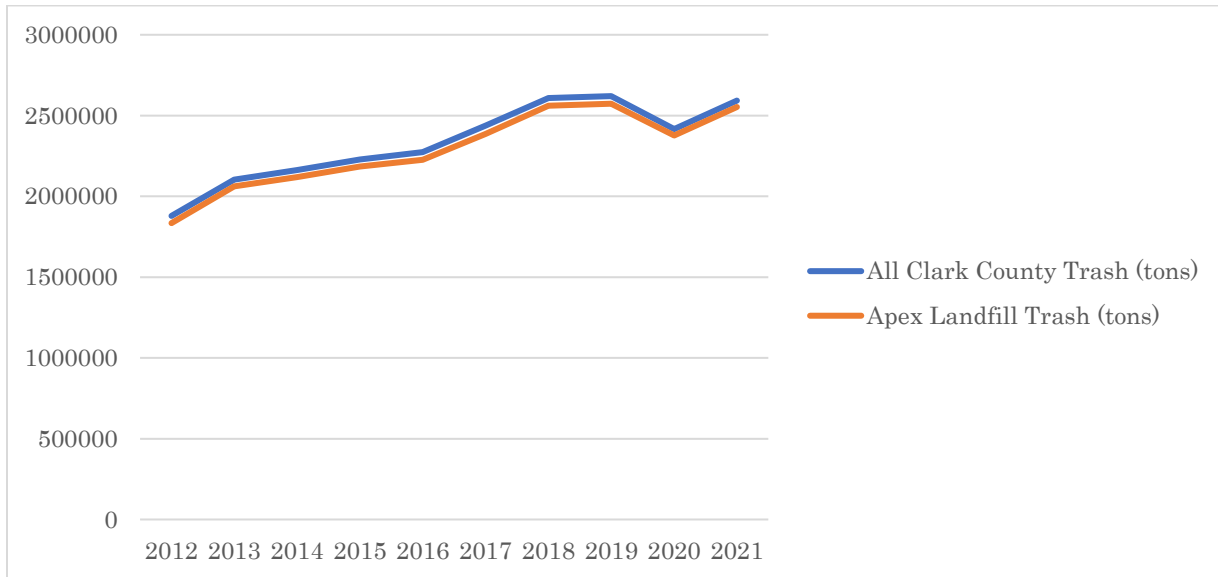
problem. The 12 MGM properties on the Strip alone produce 160,000 pounds of food waste per day (Leonard, 2020). With dozens of other casino properties on the Las Vegas Strip and many more food waste producing businesses across the Southern Nevada valley, the problem grows to immense proportions. Single use plastics, napkins, packaging from products and many other common materials often fill garbage cans on the strip as well. Each of these items contribute a large percentage of waste, often created by visitors from out of state, that Southern Nevada and the state more broadly must dispose. Later in this report, the methods currently used by private and public enterprise will be examined, but for now the importance is understanding the sheer amount of waste that is sent to its final resting place.

Landfill

Depending on where you live in the United States or around the world, there are various ways to dispose of waste: incineration, waste compaction, landfilling to name a few. Southern Nevada has long used landfilling and is home to one of the largest in the United States, Apex Landfill. At 2200 acres, the facility is expected to house millions of tons of municipal waste, providing for Southern Nevada's needs for the next 200 years (Tavares, 2009). Within the past two decades, Apex has quickly become one of the only suppliers of landfilling for the Las Vegas Metropolitan and Southern Nevada. Evidenced by the Figure 1, the difference in tonnage of waste between Clark County and Apex landfill is barely recognizable. In 2021 for all of Clark County, 2,593,184.92 tons were disposed into landfills. Apex landfill processed 2,552,678.97 tons of that total, almost 98.5% (NDEP, 2021) Between 2012 and 2021, the total amount of trash dumped into landfills increased by approximately 714,000 tons. With such a large increase in such a short period of time, it's clear the Southern Nevada problem with Municipal Waste is immense. Apex Landfill is run by Republic Services that has extensive contracting with local entities for trash collection and there is little room for competing landfills in the trash disposal industry of Southern Nevada. This in turn means that unless governmental action is taken, is unlikely that the financially driven company will willingly advocate for reductions in waste

production.

**Figure 1: Weight of trash (tons) received by Clark County landfills/Apex Landfill
2012-2021**



Adapted from “Solid Waste Facility Management And Recycling Reports” Nevada Division of Environmental Protection <https://nvwastemanagementreports.ndep.nv.gov/>

Food Waste Diversion

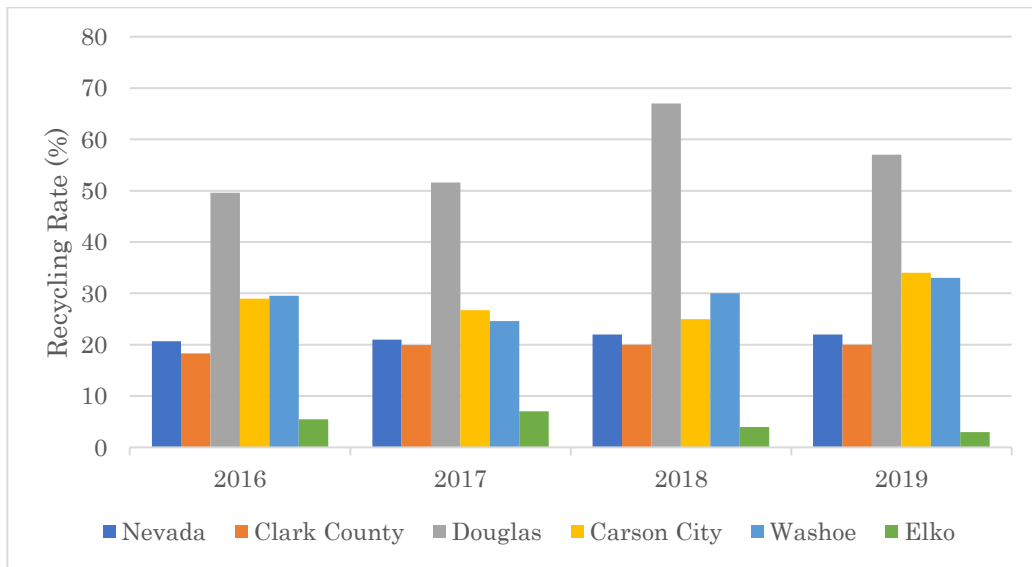
Even though much of Southern Nevada’s food waste is sent to landfills, there are various methods employed to divert at least a portion from Apex Landfill. Several of the Strip’s casinos send their food waste, at least 20 tons per day, to the Las Vegas Pig farm (Morris, 2022). The Pig Farm, a novel method of food waste diversion, only sees food from a select number of Casino locations including the Aria, Bellagio, and Luxor. In addition, some properties, per guidance by Nevada Senate Bill 178, “Food for People, Not Landfills Program.”, casinos have begun redistributing food to people in need. (Nevada Legislature, 2019). The Bellagio casino received an award from the EPA for its work in food diversion which included 54,400 pounds of donations to Three Square foodbank between 2017-2018 (Cottom, 2019). Many other casinos have started similar programming that redistributes food to those in need across the valley. These actions alone are not sufficient in mitigating the substantial impacts of Las Vegas Strip originated food waste.

Composting is another valuable diversion strategy for both commercial and residential consumers. Here in Southern Nevada, there is a major deficit in composting capabilities. With no centralized compost collection like many other states, the average consumer is at a major inconvenience. There are only two composting private enterprises in Southern Nevada, Terra Firma Organics and Viva La Compost (Nevada Division of Environmental Protection). With the limited capacity and no designated bins distributed by local agencies for compost or yard waste, there are undoubtedly issues with food waste diversion for the average consumer.

Recycling

In 1991, the Nevada Legislature passed adopted NRS 444A.020, a comprehensive recycling plan that created a municipality-based recycling goal of 25% with two years of following standards (Chapter 444-Programs for Recycling). The Nevada Division of Environmental Protection, tasked with compiling the states recycling data determines its published recycling rates by completing a simple proportion of created Municipal Solid Waste (MSW) to diverted MSW. Since 1991, the state has only hit its 25% goal 3 times between 2011-2013, after which the state began to trend downwards (Richardson, 2017). Part of the state's failure to meet its recycling goals can be attributable to Clark County's lower than average rate of recycling and disproportionate composition of the state's waste. Compared to other counties which report recycling data between 2016-2019, Clark County performs second to last in front of Elko (Nevada Recycles, 2021). As shown in figure 2, the state recycling lags well below the 25% goal, stalling at its four years high of 22% in 2019. Clark County rests at a similar 20% whereas smaller counties in the state like Douglas, 57%, and Carson City, 34%, or Washoe, 33% recycle far above the goal in 2019.

Figure 2: Recycling Rate by Nevada County 2016-2019



Adapted from “2021 Recycling and Waste Reduction Report” *Nevada Recycles* [https://ndep.nv.gov/uploads/recycles-docs/2021_Recycling_Report_FINAL_\(6\).pdf](https://ndep.nv.gov/uploads/recycles-docs/2021_Recycling_Report_FINAL_(6).pdf)

Looking beyond Nevada counties, there is a consistent trend in the Mountain West region for poor recycling rates. To compare across the United States, the Ball Corporation compiled an extensive report of recycling data for all 50 states. Unlike the data reported above from the Nevada Division of Environmental Protection, the ball corporation examines only Common Containers and Packaging Materials (CCPM). This report excludes food waste, tires, commercial waste, and other factors that the NDEP report examines. Table 1 breaks down data between CCPM recycling rates including and excluding cardboard/paperboard. Cardboard and Paperboard contribute to a disproportionate weight, volume, and greenhouse gas mitigation impact compared to other recycled materials and is thus examined separately.

As seen in the table, Nevada has the highest recycling rate of all Mountain West states at 18% excluding cardboard/paperboard and 39% including. For that reason, Nevada has the highest national ranking of any Mountain West state at 30 and 25 respectively. Even still, those rankings indicate Nevada performs poorly when compared to its national counterparts.

Table 1: CCPM Recycling Rates and National Rankings by State, 2018

	CCPM without Cardboard/Paperboard	National Ranking	CCPM with Cardboard/Paperboard	National Ranking
Arizona	17%	33	36%	31
Colorado	16%	35	33%	34
Nevada	18%	30	39%	25
New Mexico	13%	41	27%	43
Utah	17%	31	37%	26

Adapted from “The 50 States of Recycling.” *The Ball Corporation*. <https://www.ball.com/getattachment/37f5f87f-d462-44c5-913f-d3075754741a/50-States-of-Recycling-Eunomia-Report-Final-Published-March-30-2021-UPDATED-v2.pdf>

The State of Play in Southern Nevada

A variety of factors can be attributed to the poor performance of Nevada in terms of MSW disposal, recycling, and food waste diversion, abnormally low costs of land in Nevada and poor governance choices are the major causal factors.

Land Costs in Southern Nevada

In 1864, Nevada began to follow the Enabling Act which indicated any land not claimed by the state or its various jurisdictions be transferred to the federal government (Bui and Sanger-Katz 2016). Today over 80% of Nevada land is held by one of several federal agencies and much of this land is considerably cheaper to purchase than land within the jurisdiction of state, city, local governments. For this reason, according to a 2015 analysis, Nevada has the second lowest average land cost in the United States at only \$2,116 per acre, beat only by Wyoming at \$1,558 (Morris 2022). Looking just at average cost is an unfair assessment of the average cost of land closer to the Las Vegas metro, as according to the same report, as of 2015, land in Clark County costs between \$20,000-\$38,000 per acre (Larson 2015). Compared to similar Metropolitan Counties such as Salt Lake City County, Denver County, and Maricopa County, Clark County land is still cheaper by a significant margin. This

ultimately means the large industrial Apex industrial which houses the Apex Landfill is housed on land that was purchased for a relatively low cost. There is little economic incentive compared to other states to divert waste when the cost of digging a new landfill just outside city limits is so low (Raz 2016).

Costs of Processing/Collection

The cost for Nevada facilities to accept one ton of waste, otherwise known as tipping, was \$39.90 in 2020, varying to some degree across the state (Boxman and Staley, 2021). The national average sat well above at \$53.72 per ton of waste. These low tipping costs translate directly into the lower-than-average costs for trash and recycling pickups compared to regional counterparts. In Las Vegas Proper, the 2022 weekly pickup costs for a 96-gallon trash and recycling bin is \$17.31 per month (City of Las Vegas, 2022). With minimal variations across the several other jurisdictions in Southern Nevada, the cost remains below \$20 for most Clark County residents. By comparison, seen in table 2, the City of Phoenix charges customers \$34.48 per month for weekly pickup of the same size trash cans and provides the option for residents to pay an additional charge for a composting bin (City of Phoenix, 2022). Denver and Salt Lake City both provide their customers with composting bins and charge customers a respective \$21 and \$27 (City & County of Denver and Salt Lake City 2022). The only exception of Las Vegas’ lower than average pickup cost in the Mountain West is Albuquerque, NM at \$17.00 (City of Albuquerque, 2022).

Table 2: Waste Pickup Costs by City 2022

City	Cost of weekly pickup for trash & recycle	Compost Bin Availability
Phoenix	\$34.48	Added \$5 per month
Denver	\$21.00	Included
Las Vegas	\$17.31	No
Salt Lake City	\$27.00	Included
Albuquerque	\$17.00	No

Adapted from various online published City curbside waste pickup costs for 2022.

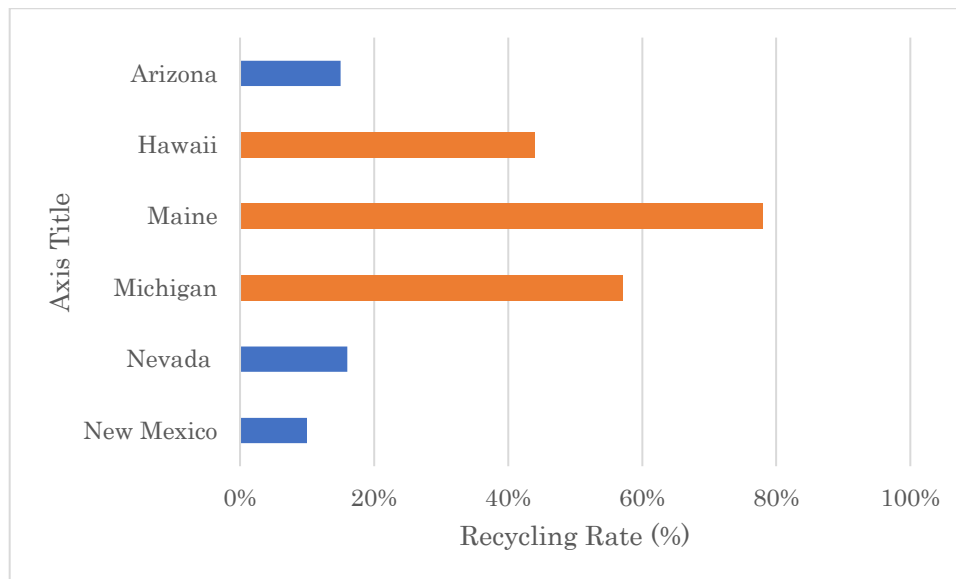
Recycling Infrastructure

As stated previously, Nevada and Southern Nevada only reached the prescribed recycling goal of 25% between the years 2011-2013. Looking to expand the success of Southern Nevadan recycling, governmental bodies across Clark County chose to develop a single stream recycling program. Between 2013 and 2018, North Las Vegas, Las Vegas, Henderson, and Unincorporated Clark County adopted this method and provided most residents of the county with recycling bins that are picked up simultaneously with trash (Constantino, 2021). This method provides greater convenience for the residential consumer but has caused problems for recycling capabilities. Despite the 400% increase in recycling since single stream recycling started, Southern Nevada's contamination rate of materials are incredibly high. The national average of recycling contamination for 2019 is 17% whereas Southern Nevada rest at a staggering 30% (AP News, 2021). For every 10 items thrown into a recycle bin, likely 3 are destined for the landfill after they are collected based on this data.

Despite high rates of cardboard/paperboard evidence by the data presented in Table 1, many materials in the state are recycled at significantly lower rates. Plastic water bottles and aluminum cans for example, are materials heavily recycled by states with more comprehensive recycling programs, some of which institute taxation for recyclable items as an incentive to return them for processing. These states have legislated what is commonly known as a bottle bill. Although the success of bottle bills is not equal among all states that have legislated one, there is a clear trend of higher plastic bottle recycling. Seen in Figure 3 below, states that have bottle bills, in orange, have significantly higher rates of plastic water bottle recycling compared to Mountain West counterparts without them (Ball Corporation 2021). The figure shows the highest performing water bottle recycler for the Mountain West (Nevada) and the highest performer among bottle bill states (Maine) as well as the lowest performing Mountain West state (New Mexico) and the lowest performing bottle bill state Hawaii. This was done to compare the range of recycling rates among states

without referencing every Mountain West state or every bottle bill state. As seen, every Mountain West state performs at almost 1/3 the rate of the lowest performing bottle bill state, Hawaii. The figure also shows the potential increase in recycling rates to the almost 80% level seen in Maine if the legislation were created and adapted. The lack of something like a bottle bill in Nevada is undoubtedly hurting its capability of recycling plastic water bottles in higher quantities.

Figure 3: Plastic Water Bottle Recycling by State, 2018



Adapted from “The 50 States of Recycling.” *The Ball Corporation*. <https://www.ball.com/getattachment/37f5f87f-d462-44c5-913f-d3075754741a/50-States-of-Recycling-Economia-Report-Final-Published-March-30-2021-UPDATED-v2.pdf>

Education

This problem with contamination is a symptom of the lack of education in Southern Nevada but also much of the United States. With the implementation of single stream recycling, “Wish-Cycling” became a more significant problem for recycling processing. This term refers to consumers, aided by single stream recycling, putting items that are not recyclable but that the consumer wishes or hopes were able to be recycled (Farnsworth, 2020). Greasy pizza boxes, jars filled with remaining peanut butter, or excess milk in cartons are all examples of items that should not be recycled or need to be cleaned before recycling. If not, the left-over substance in the material can likely damage other goods in a received batch. Except for small infographics on the top of

recycling bins that show unacceptable items, there is limited outreach to customers. The largest problem facing many recycling processors in Nevada is plastic grocery bags, according to Kayla Alm of the Nevada Division of Environmental Protection (Alm, personal communication, September 22, 2022). Even though plastic bags are not recyclable and every recycling bin will indicate as such, there is not enough information for the average person to understand this problem well enough.

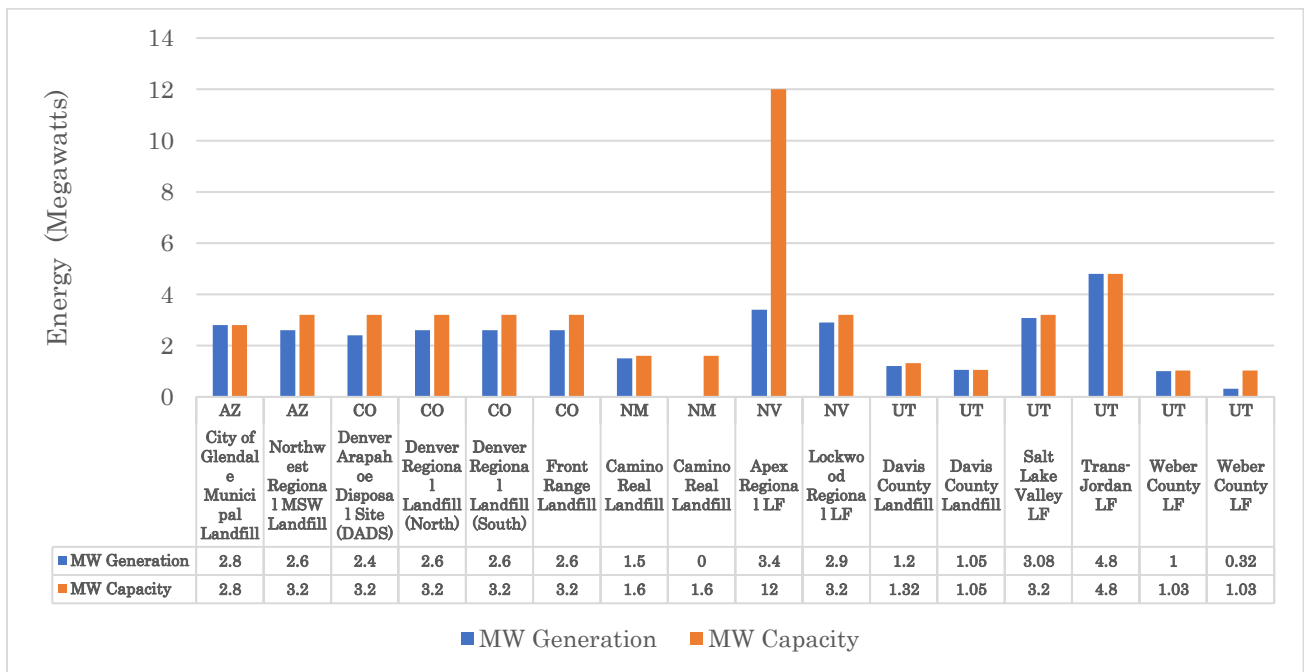
The Environmental Protection Agency and the Nevada Division of Environmental Protection have held informational sessions to learn more about the recycling and food waste diversion processes, including a training that emphasized the food recovery hierarchy. From source reduction, to distributing to hungry people, composting, industrial reuse, and ending with landfill and incineration, food waste has many possible diversions through its lifespan (Turner, 2017). With no systemized or accessible food waste reduction methods for the average consumer, there is limited opportunity for composting and the many other methods for the individual.

Landfill Generated Energy

Municipalities across the United States within the past two decades have started to integrate methane powered energy generation power plants. Located at the site of Apex landfill, the generation plant collects emitted methane gas through a series of pipes to be used as a fuel for combustion. The burning of the Methane gas boils water that turns a turbine in the same manner as a traditional fossil fuel generator. The Apex location has two 5.5 MW capacity facilities that are constantly running to produce electricity (Young, 2022). The EPA produces annual reports on landfill energy generation which includes many landfills located in the Mountain West. According to the data found from these reports seen below in Figure 4, Apex landfill has an approximate 12 MW capacity when several other energy generation mechanisms are accounted for, but only produces 3.4 MW of that capacity. For reference, the 3.4 MW can currently power 11,000 homes daily energy demands (Young, 2022). Looking across the Mountain West in figure 4, it is apparent that the

energy potential of Apex Landfill is underutilized. This is important when considering Nevada voters passed Question 6 in 2020 which mandated a grid composed of 50% renewable energy production by 2030, with sources like Apex Landfill methane generated power plant essential to meeting that goal (Roberts, 2020). Almost every other landfill's energy generation meets their capacity, but Apex has an almost 8.5 MW deficit when its actual energy generation is compared to its capacity as rated by the EPA's Landfill Methane Outreach Program (EPA, 2021). Lockwood landfill in Nevada produces almost as much energy as Apex despite its significantly lower volume of trash and geographical size. The Trans-Jordan Landfill in Utah produces the most energy of any Mountain West Landfill at 4.8 MW and has the second highest capacity only behind Apex at 4.8 MW.

Figure 4: Mountain West Landfill Energy Generation and Capacity in MW, 2021



Adapted from “LMOP Landfill and Project Database” US Environmental Protection Agency Landfill Methane Outreach Program <https://www.epa.gov/lmop/lmop-landfill-and-project-database>

Federal Funding

In November of 2021, the Federal government of the United States approved legislation titled the “Infrastructure Investment and Jobs Act”. This \$1.2 trillion dollar bill provided funding for a variety of infrastructural improvements including

millions of dollars for environmental projects (Fine, 2022). Bills of this nature, as discussed in the Brookings report “Fighting fraud, waste, and abuse—the infrastructure bill and lessons for the future”, have the potential to go under or unused. Despite the importance and value of environmental project funding, the money allocated is only as valuable as state and local agencies applicants make it. In this bill, there was \$375 million allocated for recycling infrastructural projects and recycling education alone (EPA Press Office, 2022). Starting this year in 2022, the federal government made \$100 million available, with \$30 million ear marked specifically for states and \$40 for local entities recycling infrastructure updates and expansion. This is the largest recycling investment in 3 decades and a great opportunity to diversify recycling markets in Southern Nevada and allocate additional funds to improve functions.

Recommendations for Policy

Improving Governance

Multi-stream Recycling: When much of Southern Nevada converted to single stream recycling between 2013-2018, rates of processing for recyclable materials trended downward from their historic highs of a few percentage points above 25%. With contamination rates remaining high for Clark County, around 30%, single stream recycling without proper education has led to a substantial portion of collected materials disposed. Recycling experts suggest greater segmentation to avoid this contamination (Patnaik and Allegretti, 2021). Based on this report, I recommend that Southern Nevada convert back to a multi-stream recycling service offered distributed universally to all residents like current recycling bins have been.

Limiting Monopolies: Republic Services owns almost exclusive rights to waste and recycling hauling for all of the Las Vegas Metro. Despite recent action by the Nevada State Legislature in 2017, there still remains a monopoly through governmental

agreement between most municipalities. The bill attempted to expand recycling requirements to 35% even though the 25% minimum has not been met as of 2019 (Snyder 2017). In hopes of increasing the need for recycling centers and processors, the larger recycling rate is expected to increase competition. With this said, little has been done to directly revise agreements between municipalities and Republic Services. All four Las Vegas Metropolitan municipalities need to revisit and revise agreements to diversify monopolization of the industry. Publicly run recycling options should be considered. An important part of this policy intervention is addressing the methane generated energy production potential of Apex Landfill.

Applying for Federal Funds: Southern Nevada municipalities need to provide ample opportunity for recycling infrastructure to expand improve. With a limited biennial state budget and small funding availability for local government agencies, money directed for recycling infrastructure improvements need to be applied for from the Infrastructure Investment and Jobs Act. If one does not exist, which a review of the Nevada Division of Environmental Protection suggests, a full time grant writer needs to be hired to ensure the state and local government can be well supported in their pursuance of greater recycling success.

Enhancing Food Waste Diversion

Residential Food Waste Reductions: Technology is an important tool for managing food waste in the modern era. Distributors of agricultural products between farm and consumer like grocery stores provide unnecessary losses of product in transport. Although expanding food distribution efforts at casinos is integral to success, it's important that there be residential options for food acquisition. Multiple smart phone applications exist to purchase agricultural products directly from producer to consumer (Strbenoff, 2018). Although there are limited farmers in Southern Nevada, casinos could also serve as the proxy by which consumers can purchase reduced cost goods that would otherwise be discarded.

Offer Universal/Residential Composting: Comparable metropolitan Mountain West cities offer composting services direct to homes. Southern Nevada does not offer such programs, or comparable programs for yard waste that many states offer. In order to improve food waste diversion, Municipalities must invest in robust composting services with private firms. Agreements and contracts should be made with the two current composting services available in Southern Nevada, in hopes of encouraging additional companies to form from the increased supply of compostable products. Municipalities should offer residential composting pickup for free or at an additional cost like some other Mountain West states.

Discussion and Policy Implications

A robust overhaul of Southern Nevada's MSW disposal methods should be initiated promptly. The state of Nevada continues to pass progressive recycling legislation that sets more ambitious goals for waste diversion. In order to meet these goals, Southern Nevada must make a serious effort to revolutionize its current systems to accommodate for the vastly expanded population compared to 1990 when much of the current practice was established. The benefits of the above stated policy solutions have periphery impacts that go far beyond MSW, contributed towards a positive outlook on Nevada's contributions to Global Climate Change, Conservation, and social welfare. Enhanced compost creation in the region will inevitably mean a greater economic opportunity for processing businesses and more access to soils that urban agriculture will need to thrive if it is to expand in Southern Nevada and diversify our nutritional portfolio. Diverting food waste also means the large population of homeless adults and youth alike may have more consistent supplies of nutrition that are otherwise at times inconsistent. Ultimately, Municipal Waste is an interconnected issue that impacts many other factors across the United States and the Mountain West. Moving forward, adapting to the needs of the population and the demands of visitors of the tourism capital of the world will need to be made to further accelerate the prominence of Las Vegas in the global scene. Legislators and Southern

Nevadans alike should be asking questions about the future of municipal waste in region. How can Republic Services power on waste supply chain be reduced and what role can state run enterprise help diversify municipal waste services? How does the Republic Service lobby impact legislation in local and regional scales? What other factors may be contributing to the extraordinarily high contamination rate experienced in Southern Nevada? These will be important questions to consider as the Nevada Legislative session nears and as the drafting process for BDRs begins. Moving forward, local and state entities need to manage private monopolization of enterprise to ensure that customers are supplied the most effective services possible. The problem with Municipal waste will not fix itself over time or with higher recycling rate mandates, but rather with comprehensive policy design that considers the many layers to the problem Southern Nevada has with garbage.

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