LOS ALAMOS

Environmental Sustainability Plan

Updated August 2020

Introduction

Appreciation and respect for the natural environment of northern New Mexico has long been a cultural value shared by the residents of Los Alamos County. In 2005, the Los Alamos County Council recognized the public's desire to preserve this environmental amenity through the adoption of "maintain environmental quality" as one of its six core goals.

The County created the Environmental Sustainability Initiative (ESI) in March 2008. This initiative narrowed the County's focus from the broad concept of sustainability to eight focus areas:

1) Environmental sustainability policy
2) Waste and recycling
3) Hydrocarbon independence
4) Water
5) Land use
6) Economic development
7) Education and outreach
8) Measurement and reporting

Within these eight focus areas, short and long term programs and activities were proposed to enable Los Alamos County to become a more sustainable community. Since then, the County has made significant progress on a variety of short and long term activities identified in the ESI. Policies were passed to ensure sustainability is at the forefront of decisions made now and into the future, and significant infrastructure improvements have occurred, including the formation of the Environmental Sustainability Board. The County has taken actions to educate all its employees on the importance of sustainability in internal operations with the formation of the County Green Team and County Fleet Team. These teams help ensure that the County government is leading the way in transitioning Los Alamos into a more sustainable community.

In addition, the County Council reinforced the importance of the environment in the 2020 Los Alamos County Strategic Leadership Plan by updating one of the goals to read: "Appropriately balancing maintenance of existing infrastructure with new investment in county utilities, roads, facilities and amenities, which will help improve environmental stewardship, sustainability, and quality of life, while allowing for sustainable growth."

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>
> *2020 Los Alamos County Strategic Leadership Plan Goal*

With environmental sustainability included in the County Council's Leadership Plan, what remains is the roadmap. In many ways, the County took progressive steps toward the goal, and a cohesive, expanded vision and strategy as laid out in this document, is proposed as the next step.

Definitions

Before laying a framework to work toward the County's environmental stewardship goals, key terms need to be defined as they pertain to the needs of the Los Alamos community. This Environmental Sustainability Plan proposes the following definitions:

Environmental Stewardship refers to management of the environment, with the intent to provide protection or care.

Environmental Sustainability is the ability to continue a defined behavior indefinitely. It is a broad concept that incorporates a variety of criteria including economics and the environment that will enable the community to thrive well into the future. Environmental sustainability is a state that allows for indefinite support of the community, its built and natural environment, its quality of life, and future ecosystem health. In order to achieve environmental sustainability, it requires a balance between the rates of resource depletion and generation, while minimizing the rate of pollution.

Environmental Quality refers to the current state of the natural environment.

Purpose

The Environmental Sustainability Plan establishes a roadmap for accomplishing the Council's 2020 goal: "appropriately balancing maintenance of existing infrastructure with new investment in county utilities, roads, facilities and amenities, which will help improve environmental stewardship, sustainability, and quality of life, while allowing for sustainable growth." This plan outlines a set of quantifiable goals, referred to as sustainability indicators. In addition, the plan outlines a strategy for tracking progress for each of the sustainability indicators and thus measuring Los Alamos' progress toward reaching Council's goal. The Environmental Sustainability Plan will be updated every two years in order to track progress, evaluate strategies, and when needed, modify or develop new strategies based on data and experience, which is important for attaining the sustainability goals outlined in this document.

Scope

All indicators and goals in this plan apply to the community of Los Alamos County; however, Los Alamos National Laboratory (LANL) energy and water usage is not included in the data reported. The decision to exclude LANL energy and water usage from this plan was based on several reasons:

1. Being a Department of Energy facility, LANL must follow federal mandates that would supersede any local goal developed in this plan.
2. LANL has their own environmental sustainability plan called "Long-Term Strategy for Environmental Stewardship and Sustainability."

On the other hand, LANL waste generation and diversion numbers are included, since LANL is a major commercial customer for Los Alamos County. Almost all waste generated at LANL, excluding radioactive and other special waste, is disposed at the Los Alamos County Eco Station. The County is also responsible for the collection of solid waste and recycling from a few LANL facilities located throughout the community. Given the amount of integration in terms of waste and recycling services, LANL is included in Los Alamos County commercial customer data.

Relation to Energy and Water Conservation Plan by Department of Public Utilities

The Environmental Sustainability Plan is a separate plan from the Los Alamos County Department of Public Utilities Energy and Water Conservation Plan (DPU Plan). The information presented in the DPU Plan is specific to the utility systems operated by the Department of Public Utilities: water, natural gas and electricity. The DPU Plan is a requirement of operating the utility system and it identifies goals for water, natural gas and electricity usage. The

goals and baselines used in the DPU Plan are also used in the Environmental Sustainability Plan to demonstrate how the County is reducing energy and water usage. The Environmental Sustainability Plan looks beyond the areas of energy and water usage by establishing goals in other areas crucial to creating a more environmentally sustainable community. For a visual representation of how these plans relate see Figure 1.

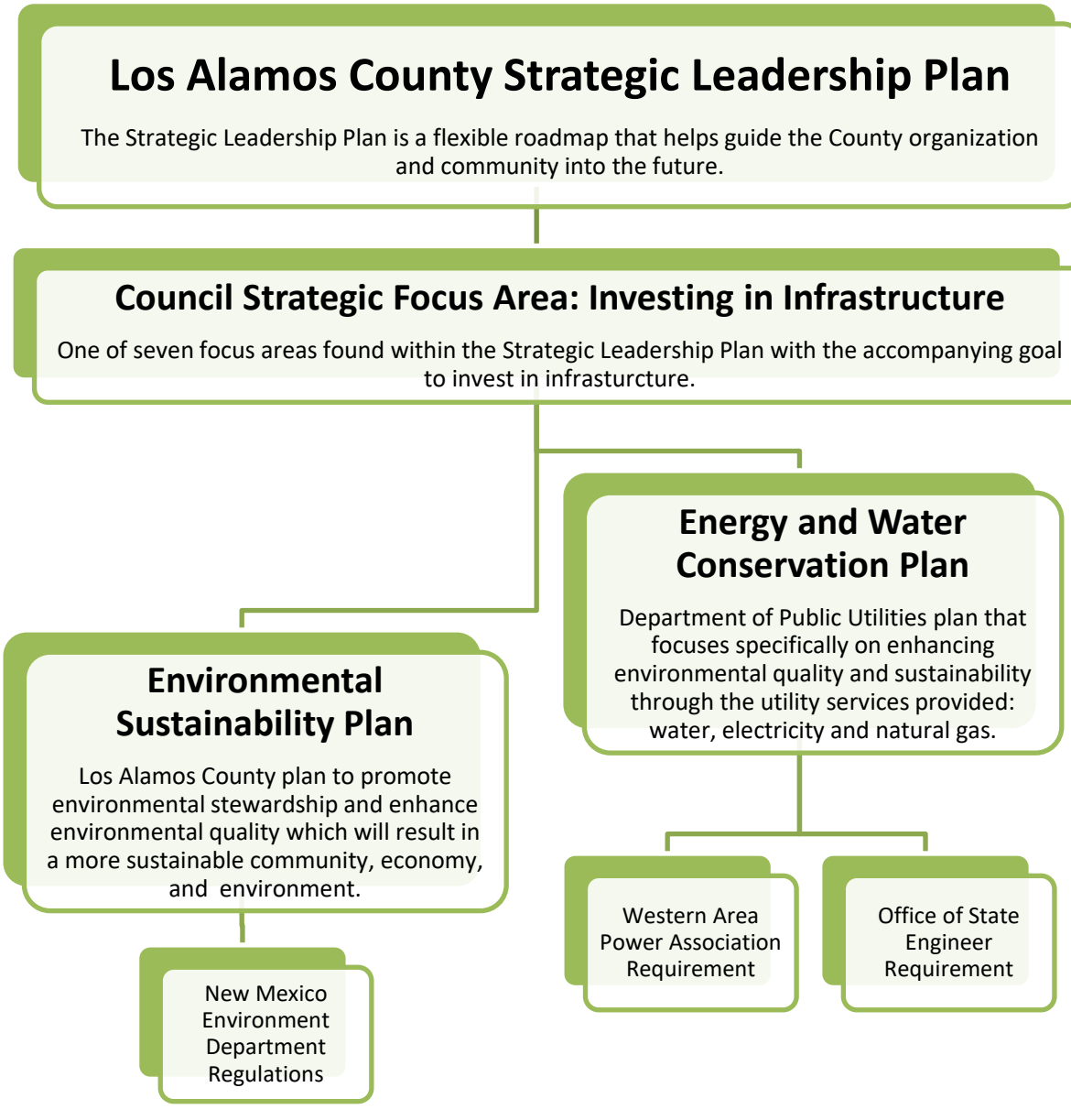


Figure 1: Flow chart showing the relationship of the Environmental Sustainability Plan to Council's Strategic Leadership Plan and the Energy and Water Conservation Plan.

Sustainability Indicators

The Environmental Sustainability Plan includes two distinct categories of sustainability indicators: Community Indicators and Local Government Indicators. These indicators will serve as the County's measuring stick, enabling the County to quantify progress in reaching its sustainability goals. The sustainability indicators incorporated into the Environmental Sustainability Plan are identified in **Table 1** below.

Sustainability Indicators

Community Indicators

1. Community Greenhouse Gas Emissions
2. Public Transit Ridership
3. Municipal Solid Waste (MSW) Recycling Rate
4. Construction & Demolition (C&D) Waste Diversion
5. Quality of Residential Recycling Services
6. Food Waste Prevention/Diversion

Local Government Indicators

1. LEED Certified County Facilities
2. County Operations Greenhouse Gas Emissions
3. Energy Usage of County Facilities
4. Water Usage of County Facilities

Table 1: Sustainability indicators for Los Alamos County Community and Local Government.

Although the sustainability indicators do not cover all aspects of sustainability, they do represent the major focus areas adopted by Los Alamos County Council in the Environmental Sustainability Initiative. This plan represents these focus areas with the least number of indicators possible to enable easier and more effective understanding of County goals and increase the ease of public education. The following is an analysis of each sustainability indicator via three sections:

(1) The **goal section** presents the goal that the County is striving to obtain. Goals were selected based upon research on actions being taken by federal, state, and local entities across the country, and input from knowledgeable individuals within the County.

(2) The **performance section** provides quantitative and qualitative information on how the community is performing in each indicator. Community wide indicators have a baseline year of 2006, based on data availability. The local government indicators have a baseline year of 2012. The local government indicators have a different baseline as a result of the major changes that have occurred since 2006 in the County.

(3) The **strategy section** provides a brief description of proposed actions that will enable the community to reach the established goal for each indicator.

Sustainability Indicator	Goal	Metric	Baseline (2012)	Performance (2019)
Community Indicators				

1. Community greenhouse gas emissions	Decrease greenhouse gas emissions based on 2006 – 2012 average.	Metric tons of CO2e from energy and waste	159,431metric tons CO2e (baseline; average of 2006-2012 emissions)	metric tons of CO2e from energy and waste
2. Public transit ridership	Increase annual transit total passenger trips per vehicle per hour of transit operations to 25 by 2020.	Total passenger trips per vehicle per hour of transit operations	20.59 total passenger trips per vehicle per hour of transit operations	13.51 total passenger trips per vehicle per hour of transit operations
3. MSW recycling rate	Meet or surpass EPA MSW recycling rate of 40% by 2020.	% of total waste recycled	22% of waste recycled	28% of waste recycled
4. C&D waste diversion	Achieve 75% diversion of construction and demolition (C&D) materials and debris (waste) by 2020.	% of total C&D waste diverted	64% of C&D waste diverted	88% of C&D waste diverted
5. Quality of residential recycling services	Receive an excellent or good rating from at least 75% of respondents in 2020 survey.	% of residents rating program as good or excellent in Los Alamos County Customer Survey	73% of respondents ranked as excellent or good	80% of respondents ranked as excellent or good in 2018 survey
6.Food Waste Prevention/Diversion	Reduce food waste sent to the landfill by 50% or 662 tons by 2025	% of total food waste diverted	This may be a new metric when a food waste compost program is Initiated in 2020 - 2021	
Sustainability Indicator	**Goal**	**Metric**	**Baseline (2012)**	**Performance (2019)**
Local Government Indicators				
1. LEED certified County facilities	100% of total County facilities over 5,000 sq. feet shall meet or exceed LEED Silver certification.	% of total County facilities over 5,000 sq. feet that are LEED Silver (or higher) certified	40% of total County facilities over 5,000 sq. feet meet at least LEED Silver certification	60% of total County facilities over 5,000 sq. feet meet at least LEED Silver certification
2. County operations greenhouse gas emissions	Reduce greenhouse gas emissions from County operations by 22% or by 2,771 metric tons below the 2012 levels by 2020.	Metric tons of CO2e from energy and vehicle fuel usage	12,597 metric tons of CO2	12,672 metric tons of CO2. This is a .5% increase in greenhouse gas emissions
3. Energy usage of County facilities	Reduce the energy usage of County facilities by 15% per square foot or 19.61 BTU's/square foot below 2012 levels by 2020.	Million BTU's of energy, includes electricity and natural gas usage	72,907 million BTU's. 130.74 BTU's/square foot	76,944 million BTU's. 137.98 BTU's/square foot. This is a 5% increase in energy usage by County facilities
4. Water usage of County facilities	Reduce potable water usage in Los Alamos County facilities by 20% or 18,252 thousand gallons below 2012 levels by 2020.	Thousands of gallons of water used by County facilities	91,261 thousand gallons of water	81,532 thousand gallons of water. This is a 10.6% reduction in water usage by the County

Table 2: List of sustainability indicators with corresponding goals, metrics and performance

Community Indicators

Community Indicator 1: Community Greenhouse Gas Emissions

Goal: Decrease greenhouse gas (GHG) emissions based on 2006 – 2012 average.

Performance: This measure includes greenhouse gas emissions from electricity usage, natural gas usage and solid waste generation. **Figure 2** shows total energy usage, including electricity and natural gas, for Los Alamos County by customer class from 2007 to 2019. The emissions that resulted from energy usage for the same time period can be found in **Figure 3.** Greenhouse gas emissions from natural gas usage were determined by utilizing World Resource Institute (2008), GHG Protocol tool for stationary combustion, Version 4.0.

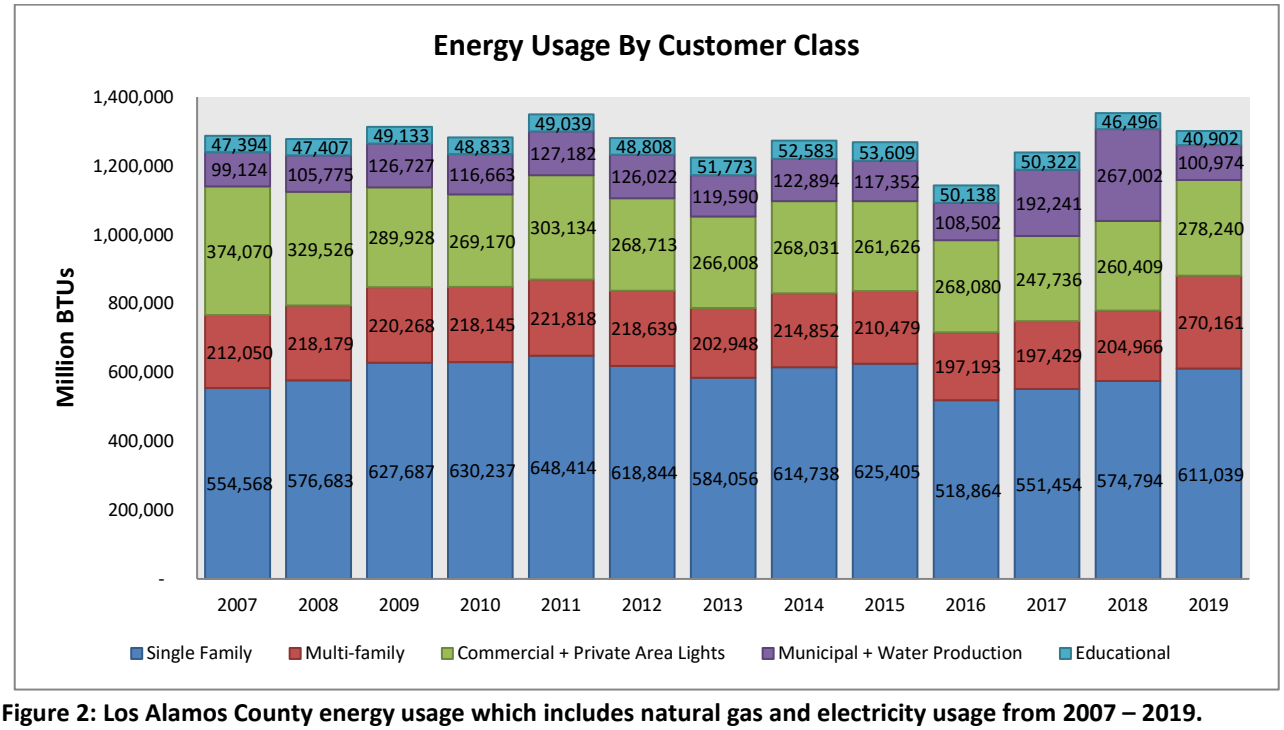


Figure 2: Los Alamos County energy usage which includes natural gas and electricity usage from 2007 – 2019.

Greenhouse gas emissions from solid waste include the emissions from the disposal of municipal solid waste generated by the community and LANL; this does not include the disposal of any non-routine waste from LANL. When waste is deposited in the landfill it breaks down over a 20-plus year timeframe and emits greenhouse gases, specifically methane.

When determining emissions generated from solid waste stored in landfills this plan utilizes the cumulative emissions estimation methodology. Emissions from solid waste were found using the methodology presented in Chapter SW.4 Community-Generated Waste Sent to Landfills of the ICLEI Community Protocol. The International Council for Local Environmental Initiatives (ICLEI) is a global network of local governments dedicated to sustainability, resilience, and climate action. Waste from Los Alamos County is currently shipped 89.4 miles to landfills in Rio Rancho, NM.

Figure 3 summarizes Los Alamos County greenhouse gas emissions from electricity usage, natural gas usage and the disposal of solid waste. The seven year average usage is 159,431 metric tons of carbon dioxide equivalents.
The County, in conjunction with LANL, has recently undertaken two major renewable energy projects that enable the

County to receive electricity without creating harmful greenhouse gas emissions. The first project was the installation of a low-flow turbine at the Abiquiu hydroelectric facility. This turbine generates an additional 6,468 MWH of electricity from a renewable energy source on an annual basis. The other renewable energy project was the installation of a 1 MW solar array on the closed Los Alamos County landfill through a partnership with the Japanese agency NEDO.

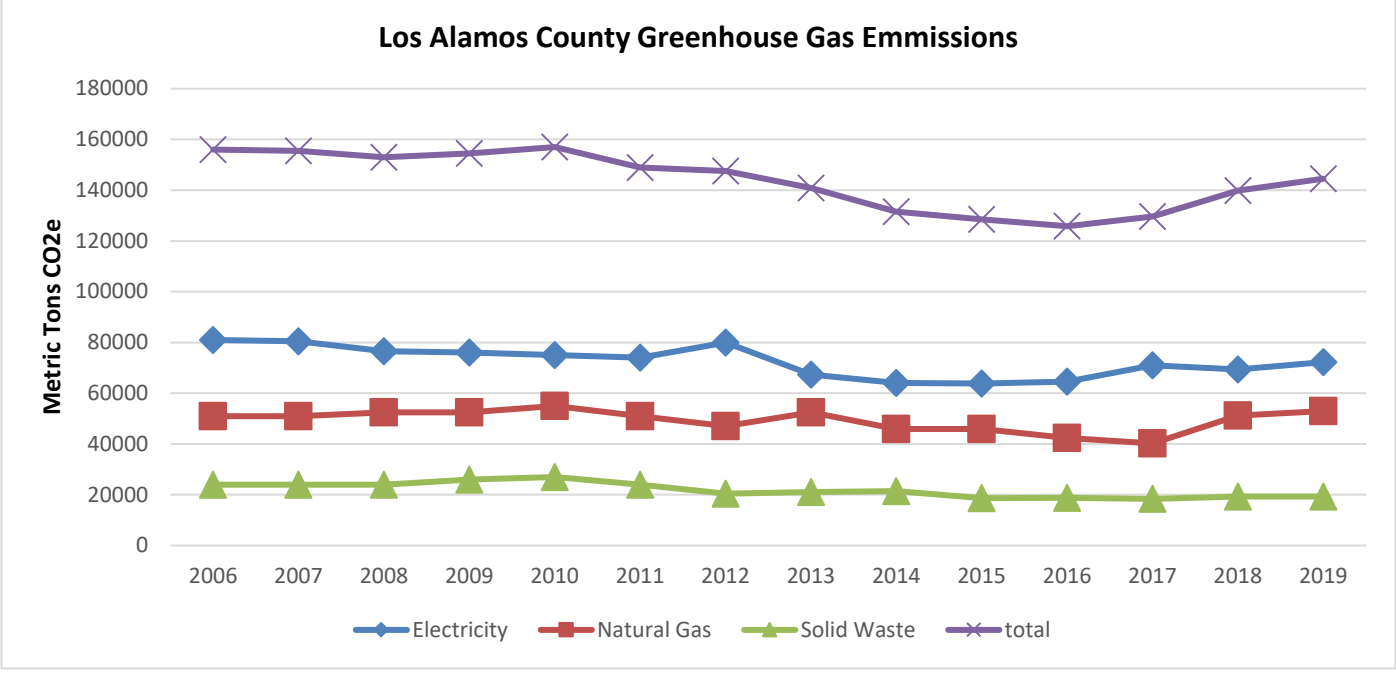


Figure 3: Los Alamos greenhouse gas emissions in metric tons of Carbon Dioxide equivalents for 2006 – 2019.

Strategy: The strategy for decreasing greenhouse gas (GHG) emissions is inherently tied to reducing solid waste along with reducing electricity and natural gas usage. The County should continue to shift the power supply from hydrocarbon electricity sources toward renewable energy sources (see Department of Public Utilities Energy and Water Conservation Plan).

Community Indicator 2: Public Transit Ridership

Goal: Increase annual transit total unlinked trips per revenue hour to 25 by 2020.

Performance: Total passenger trips per vehicle per hour of transit operations is an industry standard used to measure the efficiency and impact of public transit systems. It is determined by dividing the annual ridership by the hours the buses are on route. Atomic City Transit began service in October 2007 and had steady ridership through 2013. Ridership increased 120% from approximately 255,000 riders in 2007-2008 (the first full year of operation) to over 562,000 in 2011-2012. Services have also expanded with the addition of AM/PM peak service in 2008, the addition of routes that serve the Eastern Area neighborhoods and Pajarito Cliffs Site in 2010, and seasonal shuttle service to Bandelier National Monument. From the first full year of operation through 2013, the number of passenger trips per vehicle per hour of transit operations has been approximately 20. For 2014 and subsequent years the ridership numbers have decreased but are still above the national average as depicted in **Figure 4**. The performance indicator from July 1, 2015, through December 31, 2019, is 13.67 passenger trips per vehicle per hour of transit operations. Although the trend is a decrease in trips per hour since 2013, reaching double-digits in unlinked passenger trips per

revenue hour is considered to be a successful ridership program in the transit industry. The other important factors that can be correlated to this decrease in ridership are lower fuel prices as well as an extensive service plan implementation changing almost every route. A drop in ridership is typical when making such changes until the ridership understands how to use the new timetables and services.

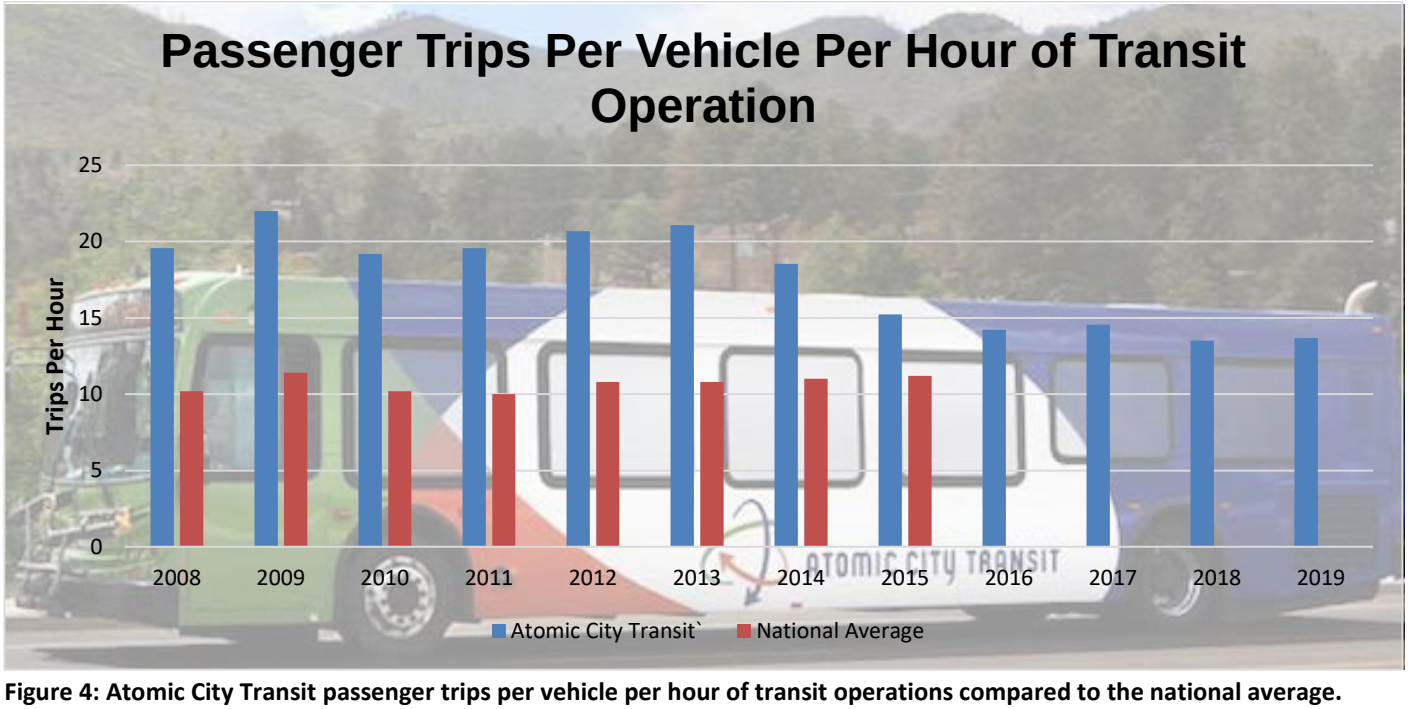


Figure 4: Atomic City Transit passenger trips per vehicle per hour of transit operations compared to the national average. Atomic City Transit ridership includes fixed-route and dial-a-ride services. National average comes from the 2017 Transit Fact Book, Small Urban & Rural Transit Center, 2016 through 2019 data not yet available.

Strategy: In 2014 the County added services that have reduced the amount of personal vehicle miles travelled. The County also partnered with the National Park Service to provide ongoing shuttle service to Bandelier National Monument, which is provided annually from Memorial Day weekend through the end of October. The County is also focused on increasing rider amenities. New bus shelters have been installed throughout the community, with more planned in the future. Automated vehicle location and analytic software was implemented beginning in 2014 to assist transit users in connecting with transit services, as well as transit management in measuring performance and making adjustments to the service where needed – all of which is designed to increase passenger trips per vehicle per hour of transit operations sustainability indicator. Technology advancements that had been implemented in late 2015 include ACTracker on the Atomic City Transit website, which provides real time transit data, including the locations of buses on their routes and a Trip Planner that enables individuals to plan their own trips using a variety of modes; digital message displays at major transit stops; MyStop mobile app on both Apple and Android devices; QR Code on bus stop signs, which leads users to the website; and, for those who do not have a smart phone, SMS texting capability at bus stop signs to obtain next-bus information at individual stops. A comprehensive transit study and five-year plan was completed by an outside contractor and approved by the County Council early in 2015. The plan made recommendations for route and schedule adjustments, as well as vehicle requirements for the service, and was implemented in early 2016.

Community Indicator 3: MSW Recycling Rate

Goal: Meet or surpass EPA MSW Recycling Rate of 40% by 2020.

Performance: Environmental Services handles all waste and recycling functions for the community of Los Alamos and processes the majority of routine municipal solid waste (MSW) and recycling from Los Alamos National Laboratory. In 2012, Los Alamos County recycled 17% of all municipal solid waste received. Since 2012, the County has taken action to increase recycling and waste diversion. In 2014, the County expanded the mixed recycle program to include plastics #1 through #7, instead of only plastics #1 and #2. In 2014, the recycle rate was reported to NMED as 19.1%, and increased to 28% in 2019. The expansion of the mixed recycle program is expected to have a significant impact as now there are more opportunities to recycle plastic products. The County's recycle rate is still below the national average recycle rate of 34.6%.

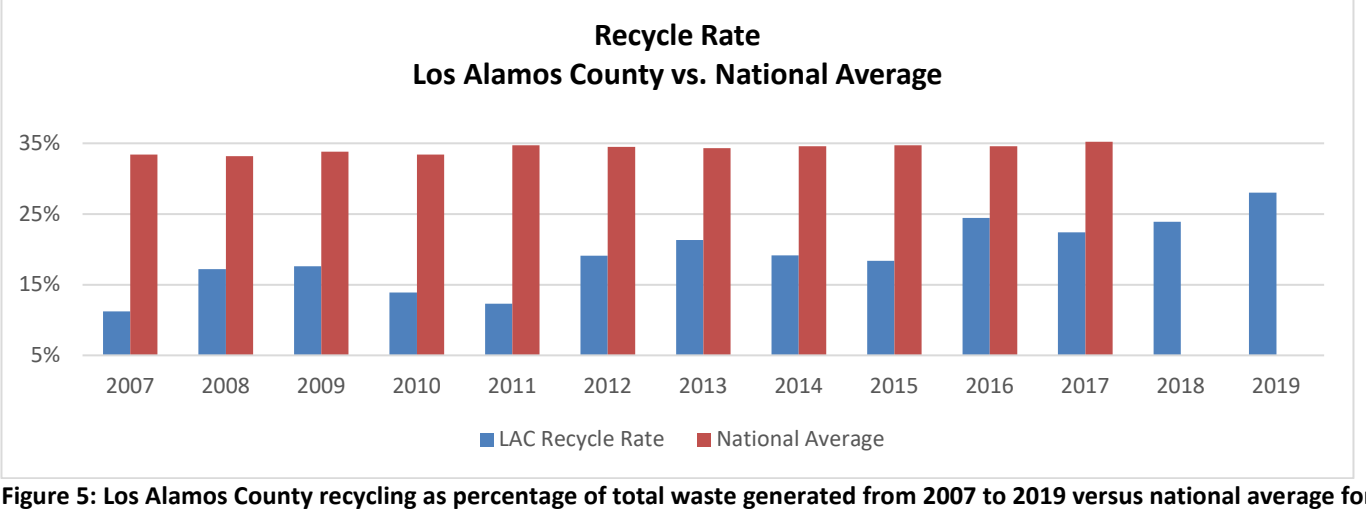


Figure 5: Los Alamos County recycling as percentage of total waste generated from 2007 to 2019 versus national average for same time period, 2018 - 2019 data not yet available. This measurement does not include Wastewater Treatment Plant (WWTP) sludge, asphalt, concrete, clean dirt, or construction and demolition debris.

To determine the recycle rate, the following categories of recycle material are included: residential curbside recycling, commercial recycling, Los Alamos National Laboratory recycling, recycling at the Lemon Lot Recycle Center and Overlook Park Collection Center, residential yard trimmings and recycle received at the Eco Station. The scope of materials included in the standard Municipal Solid Waste (MSW) recycle rate include: routine solid waste currently includes food scraps, glass containers, lead-acid batteries, aluminum/tin/steel cans, other ferrous metals, consumer electronics, household hazardous waste, light bulbs, wood pallets, tires, paper product, plastics #1 through #7, oil, and yard trimmings. This measurement does not include Wastewater Treatment Plant (WWTP) sludge, asphalt, concrete, clean dirt, or construction and demolition debris.

Strategy: In order to develop effective diversion strategies, two waste audits were performed in March and September 2016 to understand the composition of the waste stream. **Table 3** shows the results of the audits performed in 2016.

SORTED MATERIALS	March 25, 2016 Weight in (lbs.)	September 29, 2016 Weight in (lbs.)	Total Weight (lbs.)	Percentage of Material Total
Total Sorted Waste	6,280	8,170	14,450	100%
Food	880	1,580	2,460	17%
Yard Trimmings	720	1,340	2,060	14%
Mixed Recycling	400	600	1,000	7%
Glass	400	475	875	6%
Cardboard	180	20	200	1.4%
Trash	3,700	4,025	7,725	53%

Table 3: Results of waste audits performed on residential municipal solid waste.

The establishment of a composting program in Los Alamos County has enabled the County to better capture organic yard trimmings. In 2013, the County implemented a fully functioning windrow composting facility in Bayo Canyon at the site of the old wastewater treatment plant.

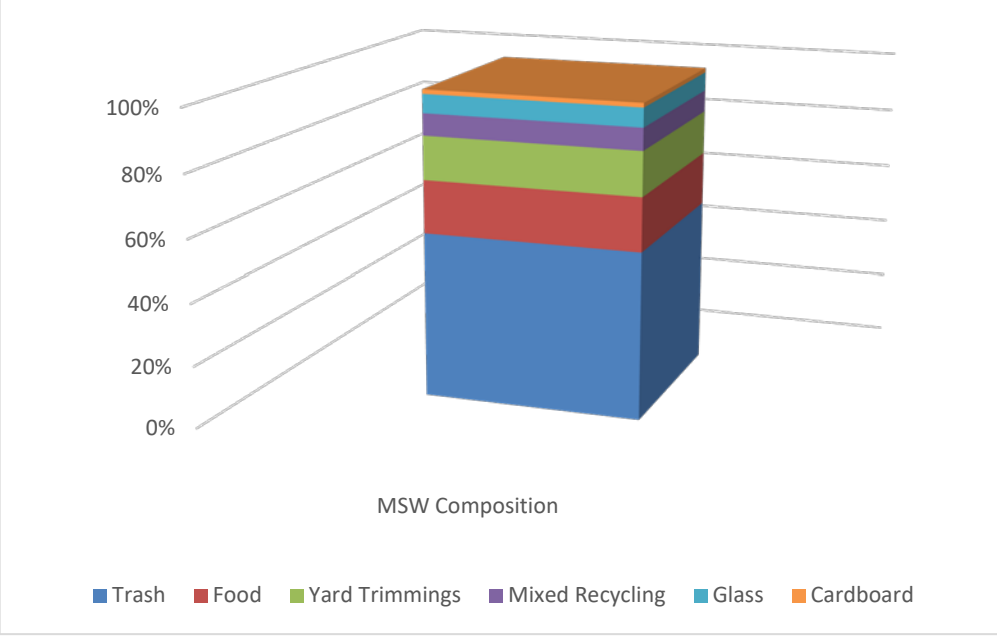


Figure 6 is a breakdown of the Los Alamos County residential waste stream for 2016. More than 30% of the waste typically generated falls into the categories of food scraps and yard trimmings, making these materials important areas to focus recycling efforts.

The windrow composting facility has the potential to provide opportunities to expand beyond organic yard trimmings and accept food scraps which will keep more materials out of the landfill and further decrease greenhouse gas emissions. In 2019 the County Council tasked the Environmental Sustainability Board (ESB) with researching and implementing a pilot program to collect and compost food scraps. Environmental Services Division is currently soliciting proposals to conduct a Food Waste Composting Feasibility Study, while the ESB and Zero Waste team is promoting Food Waste Prevention education.

The County continues working to increase local business participation in the recycling program. An analysis was performed, identifying a handful of businesses that were estimated to generate a decent amount of recyclables including cardboard who were not recycling due to cost. In response, the County decreased the commercial mixed recycle rates to incentivize more commercial recycling. Outreach and education to businesses informing them about these adjusted rates and the benefits

of recycling are ongoing.

The County glass drop-off recycle program started in late September 2012 and has certainly helped increase the recycle rate. Initially, the glass recycle program was estimated to divert 100 tons of glass from the waste stream on an annual basis. In 2012, the County recycled 54.81 tons of glass, by 2019 glass recycling increased to 187 tons. Through 2018 the glass was crushed into cullet and then given away for free for use in landscaping and other projects. The County also used the crushed glass in a variety of different projects including fill material for roads for street projects and also used whole bottles for erosion control on the landfill cap. In 2019 the County started shipping glass to glass recycling plant in Colorado where the glass is recycled into new glass bottles that are used at the MillerCoors bottling plant.

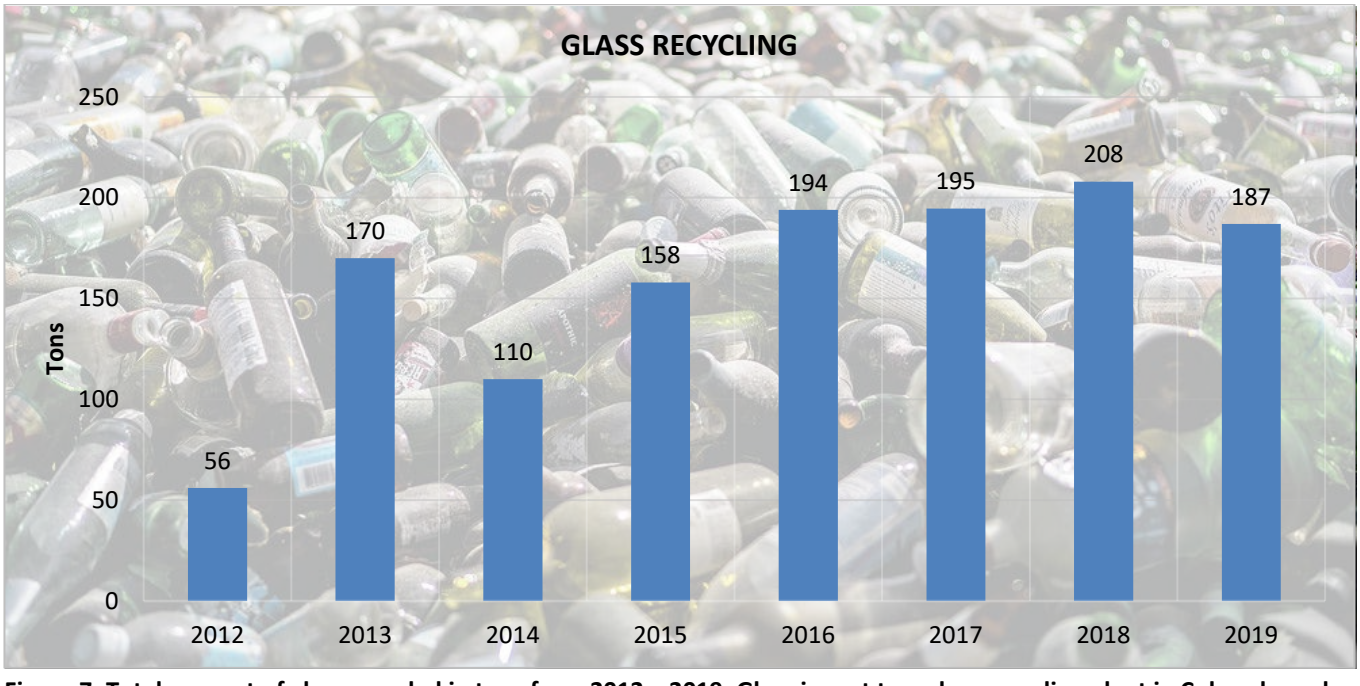


Figure 7: Total amount of glass recycled in tons from 2012 – 2019. Glass is sent to a glass recycling plant in Colorado and recycled into new glass bottles.

The public was asked to prioritize other possible strategies to reach the goal of a 40% recycling rate by 2020. Input was collected during two public meetings and through an online survey, **Table** shows the results.

Rating	Recommended Strategy	Total Score
1	Increase materials accepted in curbside mixed recycling	100
2	County reuse center	96
3	Save-As-You-Throw (SAYT)	72
4	Curbside collection of organic yard trimmings	71
5	Mandatory commercial recycling	70
6	Commercial glass recycling pickup	64
7	Landfill ban	19

Table 4: Results of prioritization exercise in which public was asked to rank their three favorite strategies to reach recycling goal.

The County recently pursued the recommended strategies rated #1 and #2 in Table 4. A new Material Recycling Facility was constructed in Albuquerque that accepts commingled materials including plastics #3 through #7, paperboard, aluminum and tin cans and mixed paper products. In 2014, Los Alamos County expanded the list of materials accepted in curbside mixed recycling including plastics #1-#7, aluminum and tin cans, and mixed paper products. The County also operates a reuse center located at the Eco Station. The reuse center accepts all gently used items and is another opportunity to divert waste from the landfill. Residents can place items for reuse such as tires, old sewing fabric, dishes and furniture. Other residents can collect items from the reuse area free of charge.

Recommended strategy #3 Save-As-You-Throw (SAYT). The Save As You Throw Research Subcommittee was appointed by County Council on April 2, 2019 to Research tiered rate structures for Los Alamos County residential solid waste services; Gather public input regarding a tiered rate structure; and provide a recommendation to the Environmental Sustainability Board.

Summary: Based on the terrific results achieved in SAYT programs across the US, specifically waste reduction, increased diversion, equitable rates, and cost savings, the Subcommittee was initially very enthusiastic about the possibility of implementing a SAYT program in Los Alamos County. However, after much consideration and very thorough research and analysis, it was found that the SAYT program is not beneficial for Los Alamos County at this time for several reasons:

1) The implementation costs are high relative to the cost savings.

2) Additional diversion strategies, including food waste prevention efforts as well as food composting, should be further explored and implemented to achieve the greatest amount of waste reduction. Operating food compost programs locally will result in waste reduction and cost savings by avoiding hauling and disposal fees, while implementing a food waste education campaign will educate residents about food waste and will result in food waste prevention.

3) At present, an economic dis-incentive exists to expand the volume of recycling. As a result of the China Ban, and the increased recycle processing fees that began in September 2019, overall costs increase rather than decrease with additional recycling volume.

Recommendation: For a SAYT program to be successful in Los Alamos County at a future time, a food waste composting program and a food waste prevention campaign should first be implemented to maximize waste diversion from the landfill. Moreover, the recycle market conditions need to return to a state where processing costs return to providing a positive fiscal incentive for communities to further promote recycling.

Recommended strategy #4 Curbside Collection of Organic Yard Trimmings was approved by County Council in February 2017 and Environmental Services began collecting yard trimmings in July 2018. This program has significantly reduced the amount of organic yard trimmings entering the waste stream which was estimated to be 14% or 1,017 tons per year prior to the commencement of this program. As a result of this program collection of yard trimmings has increased from 148.77 tons per year in 2014 to 837.60 tons in 2019. This is an increase of 563% increase over 2014 and reduced carbon dioxide emissions by 1,581 tons in 2019. The program has been extremely successful in keeping valuable organic material out of the landfill. The community has voluntarily embraced the program and approximately 63% or 4,315 household participate in the program.

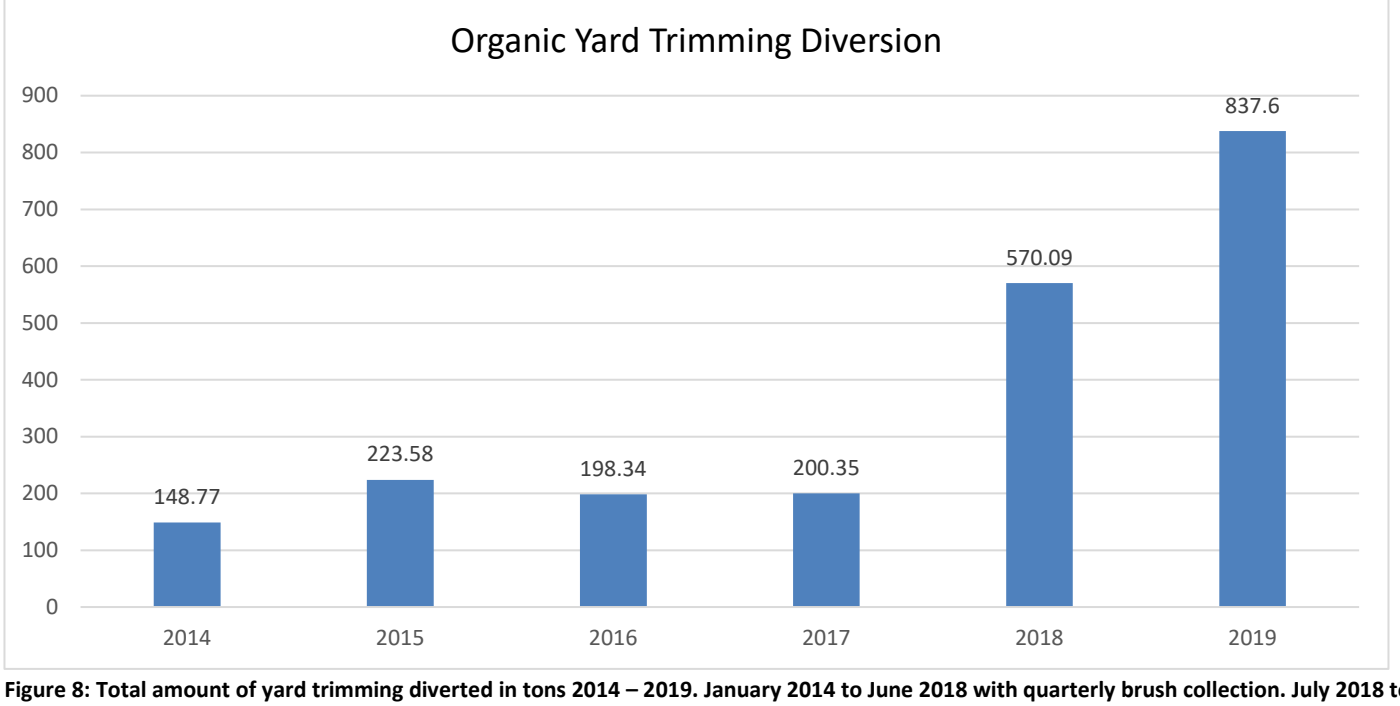


Figure 8: Total amount of yard trimming diverted in tons 2014 – 2019. January 2014 to June 2018 with quarterly brush collection. July 2018 to December 2019 with curbside yard trimming roll cart collection.

Community Indicator 4: Construction & Demolition Waste Diversion

Goal: Achieve 75% diversion of construction and demolition (C&D) materials and debris by 2020.

Performance: The Eco Station receives the majority of construction and demolition materials generated throughout the County and within the LANL complex. In 2012, approximately 64% of construction and demolition materials was diverted from the landfill. By 2019, approximately 88% of construction and demolition waste was diverted from the landfill. The concrete and asphalt were crushed and reused in a variety of construction projects including roads and streets projects. To calculate the C&D diversion rate the following materials are included: C&D debris, asphalt, concrete, shingles, gypsum (drywall), and carpet.

Strategy: Environmental Services will evaluate the current marketing approach to target construction contractors to expand the customer base and increase all opportunities to capture C&D materials at the Eco Station. The County offers a discounted tipping fee of $5.00 per ton for clean asphalt and concrete. As a result of marketing and financial incentives, the C&D diversion rate reached 88% in 2019 surpassing the goal of 75%. The Environmental Sustainability Board will continue investigating other opportunities to divert C&D waste such as roof shingles and lumber.

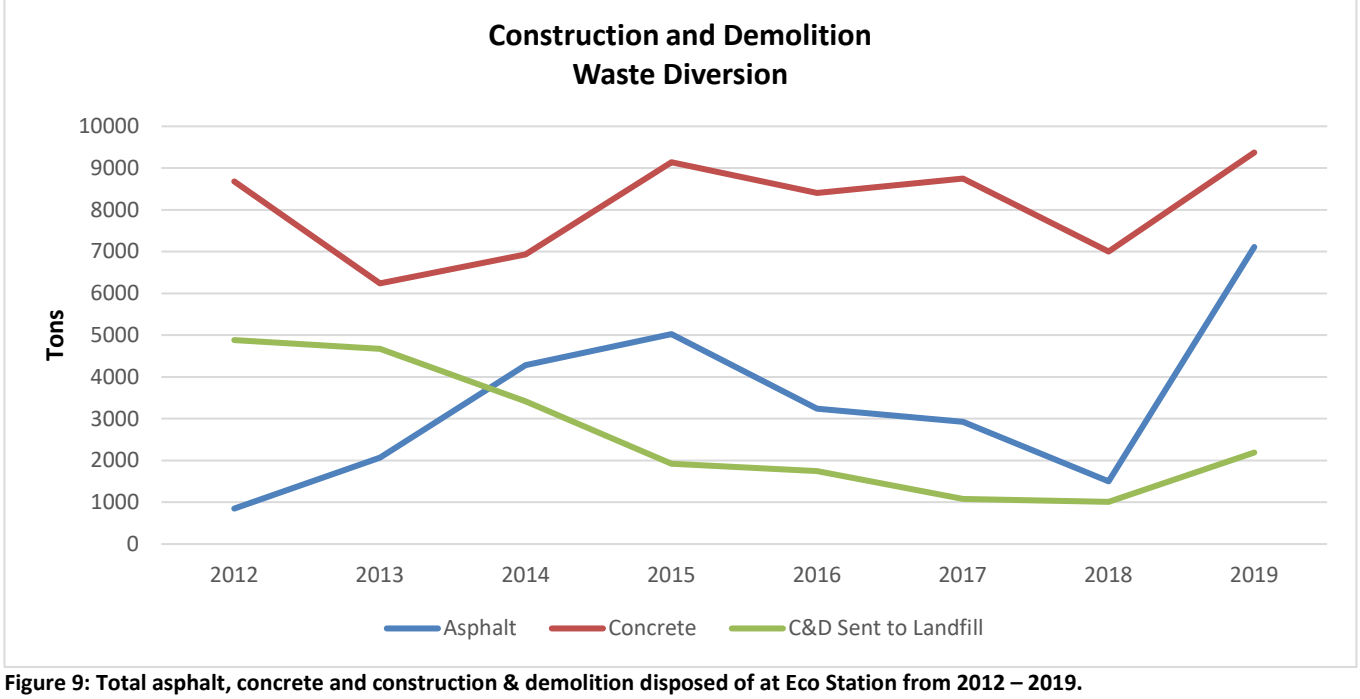


Figure 9: Total asphalt, concrete and construction & demolition disposed of at Eco Station from 2012 – 2019.

Community Indicator 5: Quality of Residential Recycling Services

Goals: Receive an excellent or good rating from at least 75% of respondents in 2020 survey.

Performance: Performance for this measure is based on responses to the following statement in the community

survey conducted every other year: Quality of residential recycling services. **Table 5** shows citizen responses to the statement in the 2010 - 2018 surveys.

Do you feel the quality of residential recycling services is:	2010	2012	2014	2016	2018
Excellent	16%	12%	36%	46%	33%
Good	50%	61%	52%	43%	47%
Fair	24%	22%	10%	7%	13%
Poor	8%	5%	1%	1%	4%

Table 5: Responses from 2010 to 2016 community survey question regarding the quality of the residential recycling services

Before 2014 Los Alamos County only accepted plastic #1 and #2, paper goods (newspaper, office paper, magazines, etc.), aluminum cans, and corrugated cardboard for recycling. In 2014, with the construction of the Friedman Recycling facility in Albuquerque the County was able to add plastics #3 - #7 as well as ridged plastic toys, hard/soft back books, phone books, and cereal/cracker boxes. This change increased the citizen satisfaction with residential recycling services and brought us well above the goal of 75% of residents rating the quality of residential recycling services as excellent or good.

Strategy: County staff will continue to work collaboratively with community groups to increase awareness and citizen education in terms of recycling. Over the past several years, the County has had great success partnering with community groups to develop new programs and increase the effectiveness of existing programs. The work of County government teams focused on the topic of sustainability will also assist greatly in increasing awareness internally and generating more educated employees who can interact with the community. The publication and annual updates to this document will be integral in raising citizen awareness and participation in the community sustainability programs.

Local Government Indicators

Due to many recent changes to County facilities it was determined that in order to accurately set local government goals 2012 should be used as the baseline year for facilities-related indicators. For non-facility related measures 2006 is utilized as the baseline.

Local Government Indicator 1: LEED Certified County Facilities

Goal: 100 percent of new County facilities over 5,000 sq. feet will meet or exceed LEED Silver certification.

Performance: Leadership in Energy and Environmental Design (LEED) is an internationally recognized green building certification system developed by the US Green Building Council. With the completion of the Judicial Complex and Pajarito Cliffs Site in 2010, approximately 40% of the total square footage of County facilities was at least LEED Silver Certified. The Pajarito Cliffs Site and the Municipal Building was awarded LEED Gold and the County will continue to strive towards LEED Gold when cost effective. In 2015, the County completed construction of the Los Alamos Nature Center, a 6,000 square foot building which was awarded LEED Gold certification. In 2016, the Los Alamos Community Building (now the Los Alamos Teen Center) was remodeled and in 2018 was awarded LEED Silver Certification. Due to the Environmental Sustainability Initiative, the County increased the percentage of total building square footage that is LEED certified from 0 to 60%.

Strategy: All new County buildings over 5,000 square feet will meet or exceed the LEED Silver building standards. As old buildings are replaced, LEED Silver certified or better facilities will take their place.

Local Government Indicator 2: County Operations Greenhouse Gas Emissions

Goal: Reduce greenhouse gas emissions from County operations by 22% below 2012 levels by 2020.

Performance: This measure includes emissions from fuel usage in County vehicles, and electricity and natural gas usage in County operations, **Table 6**. One common measure that was not included is emissions from waste due to the fact that there is no accurate way to ascertain County government waste from total County waste figures.

		Electricity (MWH)	Natural Gas (MMBTU)	Gasoline (Gallons)	Diesel (Gallons)	Total Emissions
2011	Usage	10,084	36,501	163,762	141,594	12,105
	Emissions (Metric Tons)	7,131	1,935	1,455	1,584	
2012	Usage	11,014	37,581	183,378	167,164	13,282
	Emissions (Metric Tons)	7,789	1,993	1,630	1,870	
2013	Usage	10,628	42,725	151,487	122,065	12,483
	Emissions (Metric Tons)	7,516	2,265	1,346	1,365	
2014	Usage	9,977	38,165	144,245	131,490	11,832
	Emissions (Metric Tons)	7,055	2,024	1,282	1,471	
2015	Usage	9,779	32,500	143,097	145,507	11,538
	Emissions (Metric Tons)	6,915	1,723	1,272	1,628	
2016	Usage	9,435	32,952	153,035	174,324	11,729
	Emissions (Metric Tons)	6,672	1,747	1,360	1,950	
2017	Usage	10,564	33,371	130,743	148,630	12,065
	Emissions (Metric Tons)	7,471	1,769	1,162	1,663	
2018	Usage	9,619	35,590	128,700	157,962	11,601
	Emissions (Metric Tons)	6,803	1,887	1,144	1,767	
2019	Usage	10,895	39,796	125,077	156,991	12,672
	Emissions (Metric Tons)	7,705	2,110	1,111	1,746	

Table 6: County electricity, natural gas and vehicle usage and the resulting greenhouse gas emissions for 2011 - 2019.

Through the formation of the Green Team, the County has created a centralized body to work on developing policies and implementing specific sustainability initiatives to reduce energy and fuel usage. The team is comprised of County employees from a wide range of County departments and divisions tasked with creating a more sustainable County government. This team has also spawned a new team focused specifically on greening the County vehicle fleet. This internal team combined with ideas and support provided by the Environmental Sustainability Board will ensure that the sustainability efforts of the County continue to move forward.

Strategy: Because buildings play a significant role in energy usage, they also play a significant role in greenhouse gas emissions. Therefore, when focusing on reducing emissions, the County must utilize the strategies mentioned in the following section focused on the energy intensity of facilities. Another approach the County is pursuing is the

installation of on-site renewable energy systems at County facilities. On-site renewable energy systems generate electricity from a renewable source such as sun or wind and result in no greenhouse gas emissions. These sources can be used in place of carbon intensive electricity that results in high levels of greenhouse gas emissions. On-site renewables in the form of solar thermal panels to generate hot water are currently in use at the new Justice Center, Animal Shelter and at the Eco Station.

Local Government Indicator 3: Energy Usage of County Facilities

Goal: Reduce the energy usage of County facilities 15% per square foot below 2012 levels by 2020.

Performance: Energy usage is a measure of the total annual amount of purchased energy used in County facilities; this includes natural gas and electricity, **Figure 10**. In 2012, County facilities utilized a total of 130.74 BTU's per square foot of energy; 46% from electricity and 54% from natural gas. This was a 6% increase from the 123.45 BTU's per square foot of energy used in 2011. In 2014, County facilities utilized a total of 125.82 BTU's per square foot. This is a 4% decrease from the 130.74 BTU's per square foot of energy; 45.6% from electricity and 54.4% from natural gas used in 2012. In 2019, County facilities utilized a total of 137.98 BTU's per square foot of energy; 48.2% from electricity and 52.8% from natural gas. The total energy use increased by 5% in 2019 over 2012.

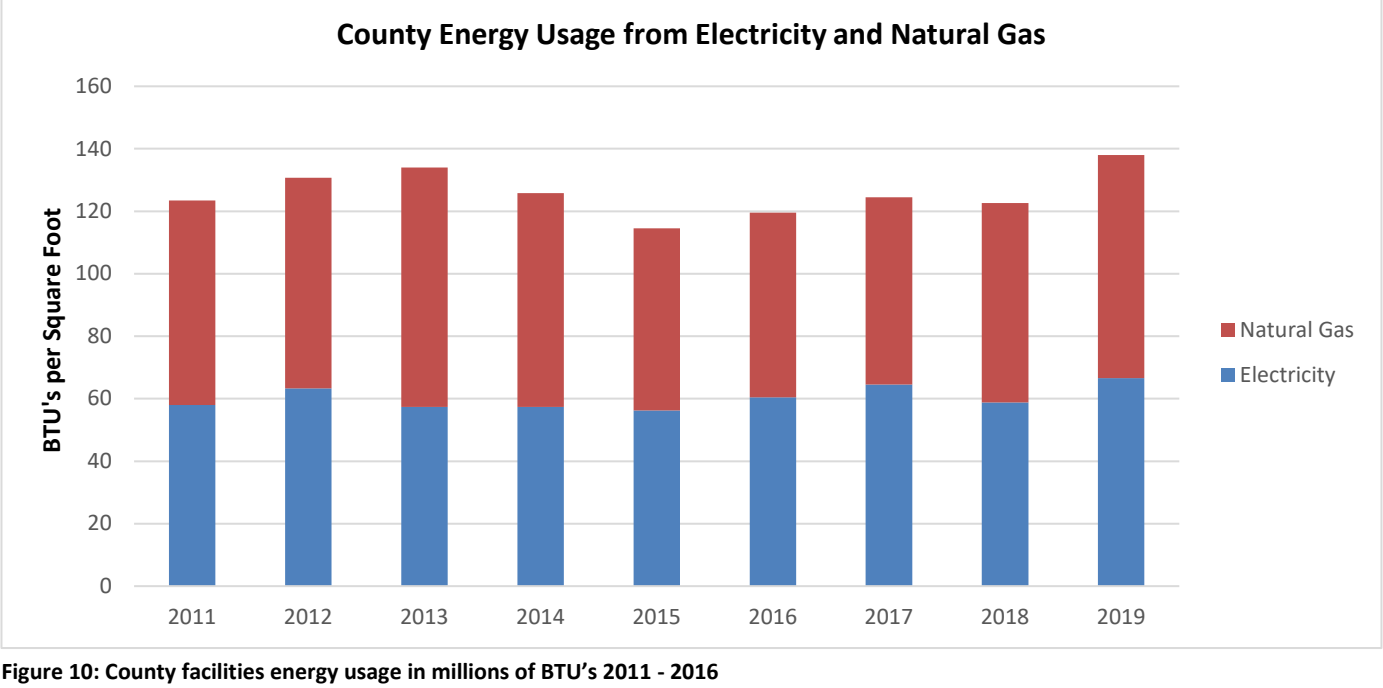


Figure 10: County facilities energy usage in millions of BTU's 2011 - 2016

One policy that will continue to greatly assist in minimizing emissions resulting from energy usage is the County Green Building Policy. This policy reduces energy usage by ensuring that all new County facilities are built in a way that maximizes energy efficiency and promotes alternative transportation. The County also performed building assessments and energy audits on all county facilities expected to be in operation into the foreseeable future. These audits identified approximately 50 potential modifications and energy management changes that have a simple payback of less than ten years. Implementing these changes will greatly reduce building energy usage and save the County money.

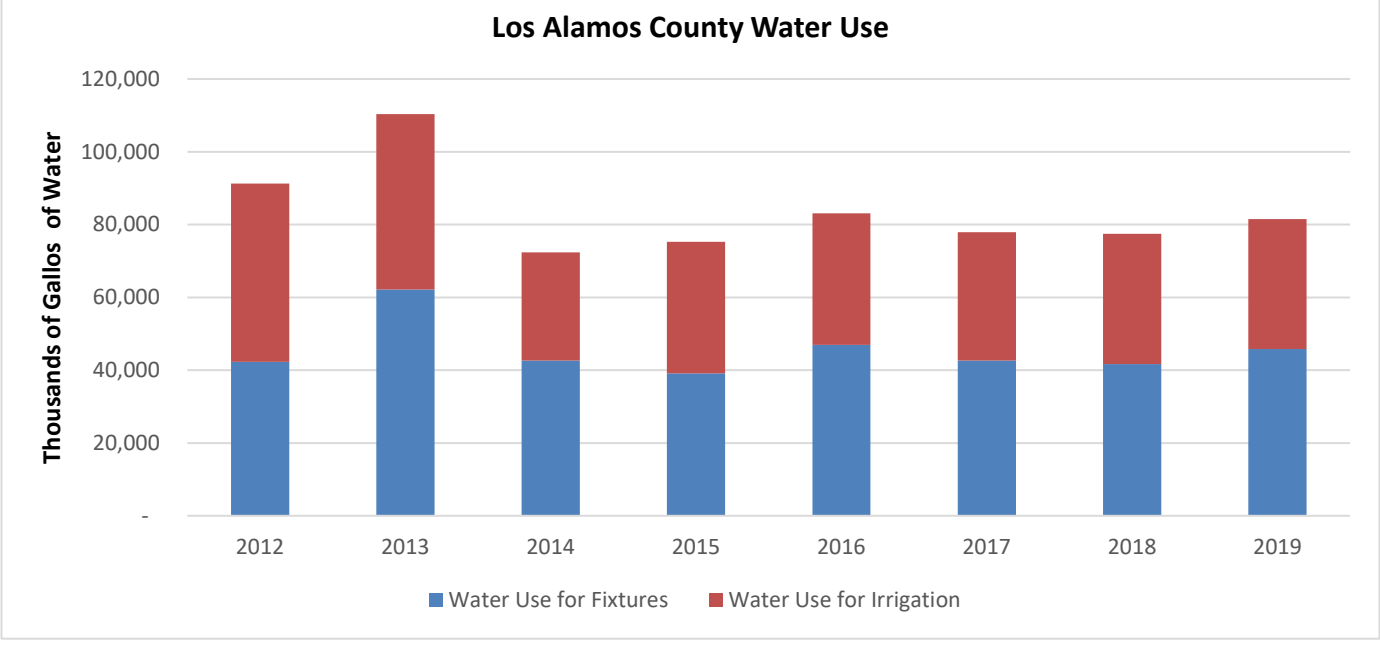
Strategy: The County must ensure that the Green Building Policy continues to be implemented, thereby ensuring new

facilities are energy efficient. In terms of existing facilities, the County needs to enact the energy saving measures identified in the recent energy audits. These energy saving measures may come with a high upfront cost, but all identified measures will pay themselves off within ten years and result in more efficient and greener County infrastructure. The implementation of these energy saving measures in conjunction with the building assessment strategy used by the County will ensure existing facilities are performing efficiently.

Creating energy efficient facilities is only part of the solution since it is the behavior of building occupants that leads to a significant portion of energy usage in County facilities. Therefore, the County will continue to educate its employees in order to reduce inefficient behaviors, such as reminding County employees to turn off their computers at the end of the workday in order to help reduce electricity usage. The amount of education and information disseminated to County employees will increase, spearheaded by the Green Team. Changing wasteful and inefficient behaviors such as leaving the light or computer on when not in the office, or using a space heater during the cooler months, can have a noticeable impact on energy usage, and can also help develop behaviors in employees that will save them energy and money at home.

Local Government Indicator 4: Water Usage by County

Goal: Reduce potable water usage in Los Alamos County facilities by 20% below 2012 levels by 2020.
Performance: In 2012 water fixtures in County facilities used 42,337 thousand of gallons of potable water, while 48,923 thousand of gallons of potable water were used for irrigation of County parks and other green space. In 2019 water fixtures in County facilities used 45,805 thousand of gallons of potable water, while 35,727 thousand of gallons of potable water were used for irrigation of County parks and other green spaces. This is an 8% increase of use by water fixtures and a 23% decrease from use for irrigation. Overall, the total reduction in water usage was 10.6% from 2012 usage. The Parks Division continues to take proactive measures to help minimize the water needs per acre of grass. Frequently aerating grassy areas and planting grass species best fit for the local environment ensure that a beautiful landscape is created while minimizing water use.



Strategy: Reduce the amount of water used by indoor water fixtures and for irrigation through the installation of

timers and evapo-transpiration sensors and expand the availability of an effluent water supply system that will increase the acreage that can be irrigated with effluent water. Reducing water use will require thorough facility water audits and irrigation audits in order to identify potential areas to be converted from high water use to low water use without negatively affecting community usage of facilities and/or significantly increasing labor requirements.

Plan Update Process

A report will be published every two years collaboratively by the Environmental Services Division and Environmental Sustainability Board, updating the County's progress towards the established goals. The report will contain updates on the sustainability indicators, provide information on accomplishments and cite any necessary adjustments to strategy as a result of unsatisfactory performance. The Environmental Sustainability Plan is meant to be a very dynamic document allowing for the addition of new goals or significant changes to current goals. Critical analysis of goals and strategies on a biennial basis by the Environmental Services Division and Environmental Sustainability Board will ensure that issues of environmental sustainability are continually at the forefront of importance in Los Alamos County, guiding the community toward a sustainable future.