1000 Central Avenue
Los Alamos, NM 87544

County of Los Alamos

Agenda - Final

Environmental Sustainability Board

Shannon Blair, Chair; Sue Barns, Vice-Chair; Joseph Chandler; David Hampton; and Erik Loechell, Members

Thursday, December 18, 2025 **5:30 PM** **1000 Central Avenue, Council Chambers**

NOTE: This meeting is in person and open to the public. However, for convenience, the following Zoom meeting link and/or telephone call in numbers may be used for pubic viewing and participation:

Please click this URL to join. https://us02web.zoom.us/j/85656951187
Or One tap mobile:
+17193594580,,85656951187# US
+16694449171,,85656951187# US

1. CALL TO ORDER - ROLL CALL

2. PUBLIC COMMENT

This section of the agenda is reserved for comments from the public on items that are not otherwise included in this agenda.

3. APPROVAL OF AGENDA

4. APPROVAL OF MINUTES

20983-25 Approval of November 20, 2025, Environmental Sustainability Board Minutes

Presenters: Angelica Gurule

Attachments: A - Draft ESB Minutes for November 18, 2025

5. BOARD BUSINESS

20986-25 Presentation of the Draft Fleet Conversion Plan and Community-Wide EV Charging Plan

Presenters: Angelica Gurule

Attachments: A - Draft Fleet Conversion Plan
B - Draft Community-Wide EV Charging Plan
C - Draft Fleet Conversion Plan and Community-Wide EV Charging Plan Presentation

20985-25 Draft the 2026 Work Plan

Presenters: Shannon Blair

Attachments: A - Draft ESB Work Plan 2026

6. REPORTS

A. Chair's Report - Shannon Blair

1). Board of Public Utilities - Sue Barns/Shannon Blair

2). Transportation Board - David Hampton

3). Parks and Recreation Board - Shannon Blair

4). County Council Liaison - Ryn Herrmann

B. Working Groups and Steering Committee

1). Bee City Los Alamos - Britton Donharl

2). Los Alamos Sustainability Alliance - Sue Barns

3). Community-Wide EV Study Working Group

7. STAFF REPORT

20987-25 Sustainability Manager Updates

Presenters: Angelica Gurule

Attachments: A - Residential Sustainability Report - NOVEMBER 2025.pdf

8. PREVIEW OF UPCOMING AGENDA ITEMS
-Armando Gabaldon - Waste Audit Results

9. ADJOURNMENT

If you are an individual with a disability who is in need of a reader, amplifier, qualified sign language interpreter, or any other form of auxiliary aid or service to attend or participate in the hearing or meeting, please contact the County Human Resources Division at 662-8040 at least one week prior to the meeting or as soon as possible. Public documents, including the agenda and minutes can be provided in various accessible formats. Please contact the personnel in the Community Services Administration Office at 662-8163 if a summary or other type of accessible format is needed.

County of Los Alamos

Staff Report

December 18, 2025

Agenda No.:

Index (Council Goals):

Presenters: Angelica Gurule

Legislative File: **20983-25**

.Title

Approval of November 20, 2025, Environmental Sustainability Board Minutes

…Recommended Action Motion

I move that the Environmental Sustainability Board approve the November 20, 2025, minutes as presented.

Or

I move that the Environmental Sustainability Board approve the November 20, 2025, minutes as amended.

.Body

The ESB will review and approve the Environmental Sustainability Board Minutes from November 20, 2025.

.Attachments

A - Draft ESB Minutes November 20, 2025

County of Los Alamos

BCC Meeting Minutes - Draft

Environmental Sustainability Board

1000 Central Avenue
Los Alamos, NM 87544

Shannon Blair, Chair; Sue Barns, Vice-Chair; Joseph Chandler; David Hampton; Erik Loechell; Kella Romero; and Rebecca Paley-Williams, Members

Thursday, November 20, 2025 **5:30 PM** **1000 Central Avenue, Council Chambers**

**NOTE: This meeting is in person and open to the public. However, for convenience, the following Zoom
meeting link and/or telephone call in numbers may be used for pubic viewing and participation:
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+17193594580,,85656951187# US
+16694449171,,85656951187# US**

1. CALL TO ORDER - ROLL CALL

5:30 p.m. Members Loechell and Romero were absent.

2. PUBLIC COMMENT

None.

3. APPROVAL OF AGENDA

Motion to approve the agenda by Member Hampton, second by Member Barns, the motion passed unanimously.

4. APPROVAL OF MINUTES

20898-25 Approval of October 16, 2025, Environmental Sustainability Board Minutes

Presenters: Shannon Blair

Motion to approve the minutes of the Environmental Sustainability Meeting of October 16, 2025, by Member Chandler, second by Member Barns the motion passed unanimously.

5. BOARD BUSINESS

20899-25 Presentation of Green Los Alamos Certification Program and Possible Action

Presenters: Abbey Hayward and Angelica Gurule

Abbey Hayward, Water & Energy Conservation Coordinator, gave a presentation on "Green Los Alamos" program. Presentation will be presented to Council on December 16th and to the Board of Public Utilities on December 17th. If approved the program will then be offered to local businesses.

A motion for the Environmental Sustainability Board to support the Green Los Alamos Certification Program and move forward with the program to Council for approval by Member Chandler, seconded by Member Paley-Williams the motion was approved unanimously.

20897-25 Begin Drafting the 2026 Work Plan

Presenters: Shannon Blair

Discussion on the Environmental Sustainability Board 2025 Draft Work Plan.

20902-25 Discussion of B&C Member Term Limits and Possible Action

Presenters: Angelica Gurule

Discussion and recommendation on B&C member term limits.

Motion to share the ESB recommendations regarding the idea of Board limits and term limits and possible other actions with County Council for evaluation and consideration by Member Chandler second by Member Paley-Williams, motion passed unanimously. Recommendations are attached.

20908-25 Overview of NM Recycling and Solid Waste Conference: Circularity in Action

Presenters: Angelica Gurule

Sustainability Manager Angelica Gurule gave an overview on the highlights of the NM Recycling and Solid Waste Conference she attended.

6. REPORTS

A. Chair's Report - Shannon Blair

Chair Blair thanked Member Paley-Williams for her service on the Board and introduced the newest member, David Hampton.

1). Board of Public Utilities - Sue Barns/Shannon Blair

Chair Blair reported on the Board of Public Utilities meeting, they approved two water line replacement projects, and the gas line project at Elk Ridge is still ongoing and going well. There are eight jobs open directly related to Utilities. The Jemez Mountain Fire Line project is moving along, phase one is done, and is completing phase two. Foxtail Flats renewable energy is slated for January.

Member Barns reported that the Foxtail project has been moved to start January 2027, because they are having problems getting parts. Power Pool agreement with LANL expires at the end of December and has been extended for 90 days.

2). Transportation Board - Vacant

None.

3). Parks and Recreation Board - Shannon Blair

None.

5). County Council Liaison - Ryn Herrmann

Councilor Herrmann gave update on the November 18th Council meeting, bonds for the broadband communication were passed, also artificial turf plan was accepted. Action was passed on election officials' salary, this does not impact current positions, it will be for future officials elected.

6). Inclusivity Task Force - Xeph Ivankovich and KokHeong McNaughton

Inclusivity Task Force Member KokHeong McNaughton reported that this would be her last time she would up ESB, starting in December the task force will be finalizing their report to Council. Report is due to Council in February, and after that Inclusivity Task Force will dissolve.

B. Working Groups and Steering Committee

1). Bee City Los Alamos - Britton Donharl

None.

2). Los Alamos Sustainability Alliance - Sue Barns

None.

4). Community-Wide EV Study Steering Committee - Sue Barns

Sustainability Manager Angelica Gurule reported that the EV Study Working Group is working the EV draft plan and will be presenting to Council on December 2nd and the community meeting is on December 3rd.

5). Plastic Bag Fee Research Group - Shannon Blair, Rebecca Paley-Williams, and Hermann Geppert-Kleinrath

Chair Blair gave a presentation to Council on the plastic bag fee research at the Council Working meeting on October 21st and went very well with good conversation, but didn't get a clear direction as to what the next steps are, maybe should be included in the work plan.

7. STAFF REPORT

20900-25 Sustainability Manager Updates

Presenters: Angelica Gurule

Sustainability Manager Angelica Gurule asked to share the newsletter with friends if you think it is interesting; this month it was focused on America Recycles Day and highlighted how our residents could recycle locally. Subscribers continue to increase each month. EV charging infrastructure is going well, working on clean up and will start installing chargers at Municipal Building. Still working on the design for the Mesa Public Library. Holiday tree will be adorned with recycled ornaments made by Chamisa & Barranca Elementary, Los Alamos High School ECO club, PEEC Center, and County employees also made ornaments. Shared and gave some highlights on the Sustainability Report.

8. PREVIEW OF UPCOMING AGENDA ITEMS

-Recycle Audit - Armando Gabaldon and Barco Waste Connections
-Draft Work Plan
-EV Study Update

9. ADJOURNMENT

7:23 p.m.

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ESB Recommendations Regarding B&C Term Limits, etc

1. Host an Open House with Council and Boards and Commission members to recruit individuals who might be interested in applying for a B&C. Make a video of what it's like to serve as a B&C member.
2. Maintain 2-year term limits, do not extend length of term as this may be a deterrent.
3. Require only written applications for second and third terms, no verbal interviews required if there are no other applicants.
4. At Council's discretion allow members to serve one additional full term, up to three terms.
5. Maintain the required 1 year waiting period after third consecutive term.

Overview of NM Recycling & Solid Waste Conference: Circularity in Action

Angelica Gurule Sustainability Manager November 19, 2025

Statewide Policy

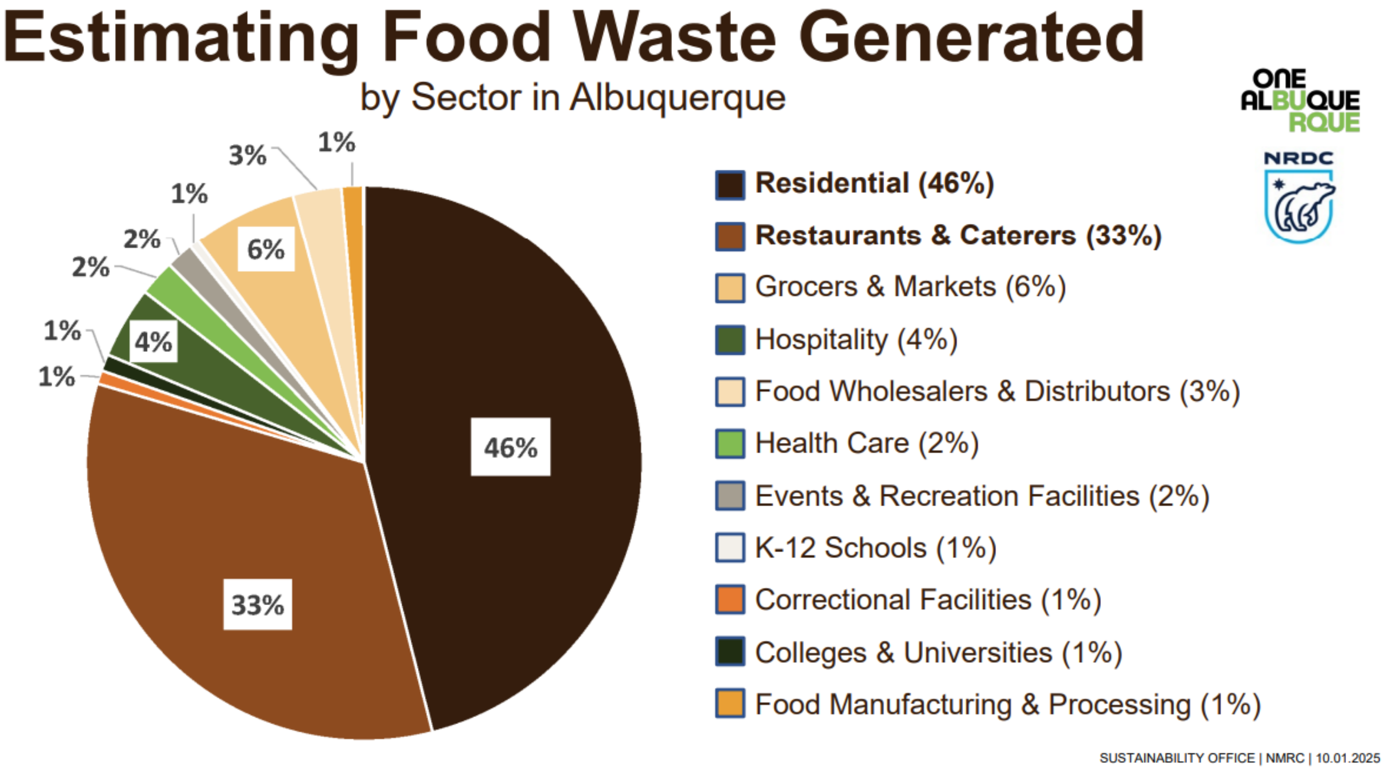
- What to Expect as New Mexico Implements the PFAS in Consumer Products Ban, Shirlene Sitton, NM Environment Dept, Resource Recovery Division
- House Bill 212 –PFAS Protection Act
- House Bill 140 – amends state’s Hazardous Waste Act

Organics Diversion

[Compost Generation and Use in New Mexico](), Erik Martig, SCS Engineers

[Manuresheds: Advancing Nutrient Recycling in U.S. Agriculture](), Frannie Miller, NMSU

[Community Scale Organics Circularity: The City of Albuquerque's Multi-Faceted Approach](), Sandra West, City of Albuquerque



Food Waste Pilot

- One-year Pilot
- Two sites
- Diverted 7.5 tons
- Avoided 5.5 $MTCO_2E$
- Ten bin digs

Breaking Bad Habits NM’s Anti Litter Campaign

Breaking Bad Habits

BreakingBadHabits.nm.gov

The first commercial produced by Vince Gilligan and Sony and managed by the NM Tourism Department featured Walter White from “Breaking Bad” and launched October 2024. The commercial has been seen more than 50 million times

Breaking Bad Habits

BreakingBadHabits.nm.gov

Breaking Bad Habits

BreakingBadHabits.nm.gov

PHASE 2

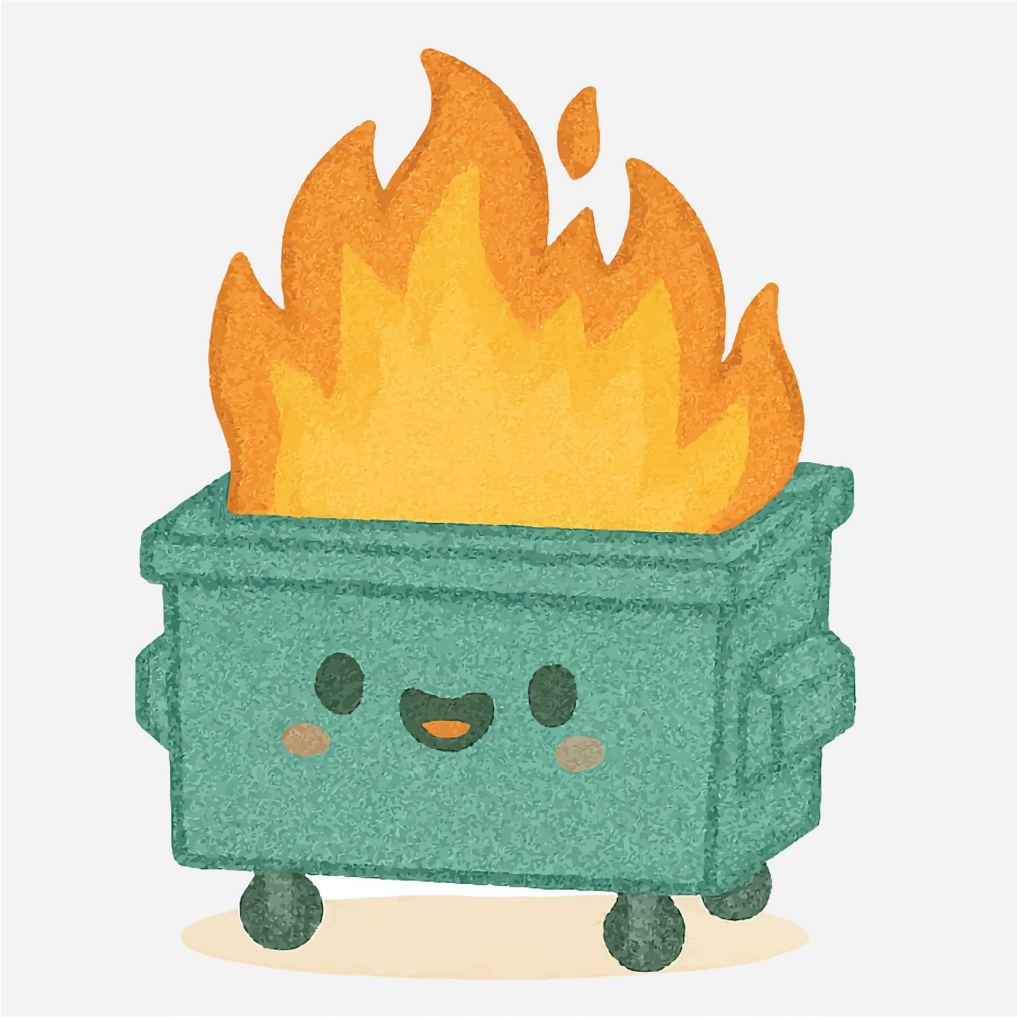
- Additional marketing efforts have been launched featuring local social media influencers that drive traffic to **BreakingBadHabits.nm.gov,** to increase the number of clean-up events, volunteers participating and bags of trash picked up.
- The ads highlight the hashtag **#KEEPLITTEROUT and** feature **KENNY THOMAS, BELLA HINES** and **JOHNNY JAMES**

Breaking Bad Habits

BreakingBadHabits.nm.gov

Hard to Manage Materials

Lithium Batteries: Impacts on Waste Management and Recycling, Frank Pugsley, Parkhill



Source Reduction and Food Waste

Healthy Universal School Meals and School Food Waste Reduction Efforts, Lydia Montoya, NM Public Ed Dept - Student Success and Wellness Bureau

Advancing Sustainability in Santa Fe Public School Cafeterias, Lucy Stanus, Santa Fe Public Schools & Diana Tarasiewicz

Share Table Examples in NM Schools

Food Waste Collection in Cafeterias

Reunity Resources

SFPS SUSTAINABLE

9

Thank you

For full conference details visit:
https://recyclenewmexico.com/recycling_conference/

ESB Recommendations Regarding B&C Term Limits, etc

1. Host an Open House with Council and Boards and Commission members to recruit individuals who might be interested in applying for a B&C. Make a video of what it's like to serve as a B&C member.
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County of Los Alamos

Staff Report

December 18, 2025

Agenda No.:

Index (Council Goals):

Presenters: Angelica Gurule

Legislative File: **20986-25**

Title

Presentation of the Draft Fleet Conversion Plan and Community-Wide EV Charging Plan

Body

The Fleet Conversion Plan and Community-Wide EV Charging Plan is a Council-initiative led by Stantec in partnership with County staff. The project began in March 2025 and supports implementation of the County's Climate Action Plan goals-30% greenhouse gas reduction by 2030, 80% by 2040, and carbon neutrality by 2050.
Stantec will present the draft Fleet Conversion Plan and Community-Wide EV Charging Plan. The Fleet Conversion Plan evaluates the County's current fleet and existing electric infrastructure and identifies a strategic vehicle replacement timeline and implementation strategy through 2025. Stantec compared the current EV policy of adopting two vehicles per year to a proposed Climate Action Policy that aligns EV adoption with the goals set forth in the Climate Action Plan. Using this approach Stantec conducted financial analysis of each option, along with greenhouse gas emission reduction estimates, and assessed electrical power needs.

Additionally, the Community-Wide EV Charging Plan developed by Stantec is a 25-year road map to enhance EV charging infrastructure within Los Alamos. This plan was developed by assessing existing public EV charging infrastructure, analyzing current consumption patterns, identifying optimal charging locations, engaging with the community on their needs and determining electrical requirements.

Part of publishing the draft plans included gathering public comment. The public comment period was open through December 17. All feedback will be incorporated into the final plan which will be presented to Council in February 2026.

Attachments

A - Draft Fleet Conversion Plan
B - Draft Community-Wide EV Charging Plan
C - Draft Fleet Conversion Plan and Community-Wide EV Charging Plan Presentation

Stantec

DRAFT Los Alamos County Fleet Conversion Plan

The County Fleet Conversion Plan is a comprehensive report guiding strategic decision-making and ensuring a smooth transition to a sustainable fleet.

Stantec Consulting Ltd.
November 17, 2025
Project/File: 1720001020

Revision Record

Revision	Description	Author	Date	Quality Check	Date	Independent Review	Date
1	Draft Report	Ian Lowell	11/1/2025	Analy Castillo	11/5/2025	Jonathan Garrett	11/5/2025
2	Final Report	Ian Lowell	11/17/2025	Analy Castillo	11/17/2025	Jonathan Garrett	11/17/2025
3	-	-	-	-	-	-	-

Disclaimer

The conclusions in the Report titled Los Alamos County Fleet Conversion Plan are Stantec's professional opinion, as of the time of the Report, and concerning the scope described in the Report. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not take into account any subsequent changes. The Report relates solely to the specific project for which Stantec was retained and the stated purpose for which the Report was prepared. The Report is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient's own risk.

Stantec has assumed all information received from Los Alamos County (the "Client") and third parties in the preparation of the Report to be correct. While Stantec has exercised a customary level of judgment or due diligence in the use of such information, Stantec assumes no responsibility for the consequences of any error or omission contained therein.

This Report is intended solely for use by the Client in accordance with Stantec's contract with the Client. While the Report may be provided by the Client to applicable authorities having jurisdiction and to other third parties in connection with the project, Stantec disclaims any legal duty based upon warranty, reliance or any other theory to any third party, and will not be liable to such third party for any damages or losses of any kind that may result.

Prepared By:	Reviewed By:	Approved By:
Signature	Signature	Signature
Printed Name	Printed Name	Printed Name

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Executive Summary

To evaluate how to contribute to the carbon reduction goals outlined in the 2024 Climate Action Plan, Los Alamos County has contracted Stantec to develop a Fleet Conversion Plan. And while the County is not affected by the 2023 Governor's executive order, this Plan indirectly evaluates the feasibility of aligning with New Mexico's order to reach 100% zero-emission (including hybrid and low-emission vehicles) state-owned fleets by 2035. The innovative and progressive environment for Los Alamos County to pursue fleet electrification will be assessed against the operational and capital constraints, all while considering the emission reduction goals of the Climate Action Plan.

Assessment of the County fleet included a Fleet Operational Assessment and an Electric Vehicles (EVs) market scan for all County fleet vehicles. The results of this assessment provided data to determine to what degree currently available EVs could serve the County's operational requirements. While not all County vehicles can currently be transitioned successfully to EVs, the development of Transition Phases enables the County to continue planning for transition over the next 25 years as vehicle technology improves.

Phase 1

Vehicles most suitable for electrification, targeted for transition between 2025-2035.

Phase 2

Vehicles with moderate operational constraints and limited market options, targeted for 2035-2043 transition.

Phase 3

Vehicles with significant constraints and no available market options, targeted for 2044-2050 transition, when the EV market may have advanced and more EVs may be available.

Critical to planning the deployments of EVs over the next 25 years was the projection of current and future vehicle retirement. Projections of potential vehicle procurement were developed by relying on current vehicle conditions like vehicle age, mileage, and maintenance costs, all while considering the County's Vehicle Replacement Policy. Assuming that the replacement vehicles would be in service for the same length, Stantec developed four cycles of procurement to identify when and which vehicle would need to be replaced through 2050.

Using the developed Fleet Procurement Timeline two strategies for EV implementation were evaluated:

Scenario 1: EV Policy

Evaluates the fleet transition to zero-emission vehicles by relying on the County's existing two vehicle per year transition policy

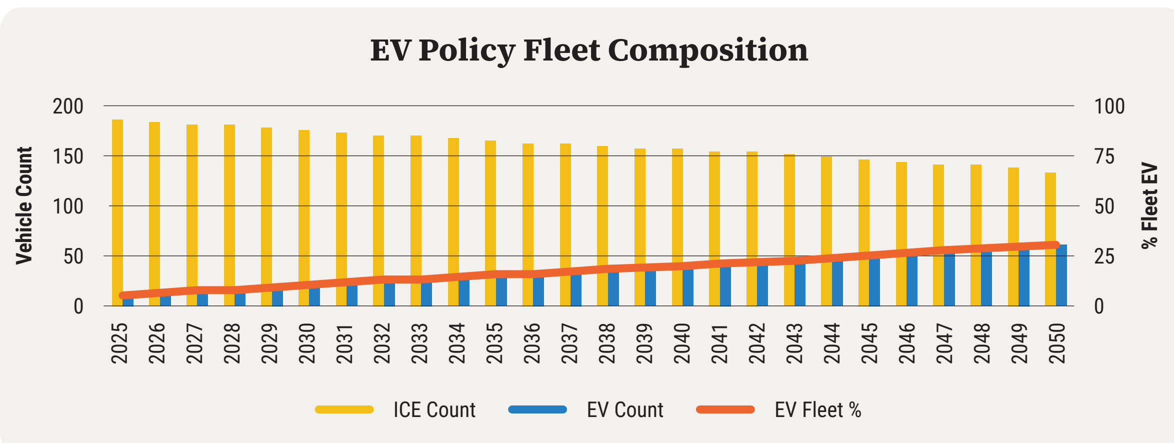
Scenario 2: Climate Action Plan (CAP) Policy

Evaluates the fleet transition to zero emission vehicles that aligns with the County's Climate Action Plan Goal of achieving carbon neutrality by 2050.

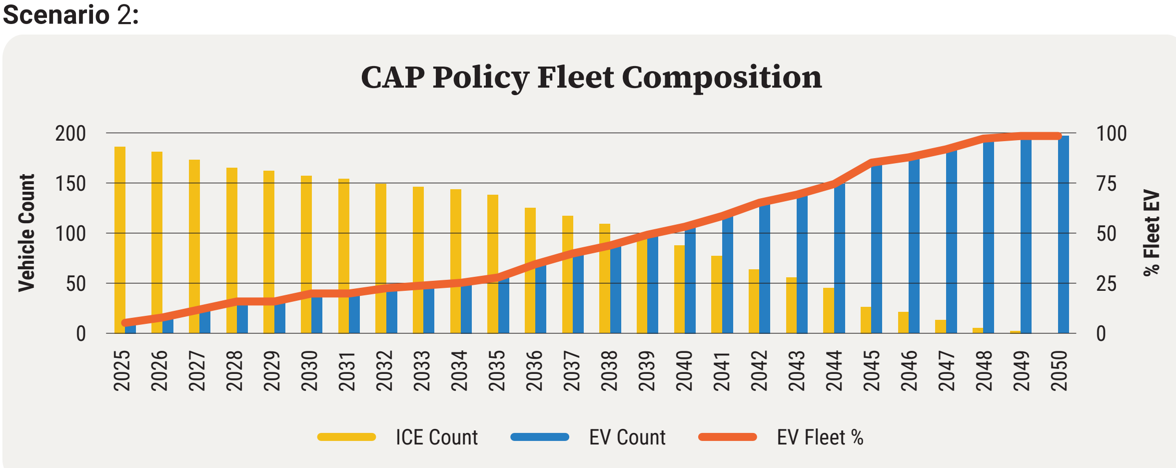
The EV Policy implementation Scenario 1 sees a steady increase of the total fleet percentage of EVs through 2050 as every year the County transitions two vehicles. The total number of EVs purchased each year varies as the fleet percentage EV increases. In addition to the two vehicles being transitioned each year, older EV ready for retirement are replaced with EVs, thus increasing the number of EV procurements by the number of EVs being replaced in any given year. However, this scenario only reaches an electrification of 31% of the County's fleet by 2050 greatly limiting the potential for emissions reduction. This implementation strategy does exclude 33 vehicles from the transition due to imminent operational constraints such as specialized vehicles that are essential for emergency response.

In Scenario 2, the CAP Policy implementation assumes a more ambitious procurement timeline to achieve full electrification (100%) of all vehicles eligible for transition by 2050, excluding (33) vehicles that are not currently considered transitional due to imminent operational constraints such as specialized vehicles that are essential for emergency response. Operational constraints and defined transition phases dictate which vehicles can transition to an EV instead of a strict number or percentage of vehicles. The developed phasing methodology also ensures that no conventional vehicles will be retired before meeting the County's replacement policy and provides sufficient time for additional vehicle options to become commercially available rather than acquiring early prototype versions.

Scenario 1:



Scenario 2:

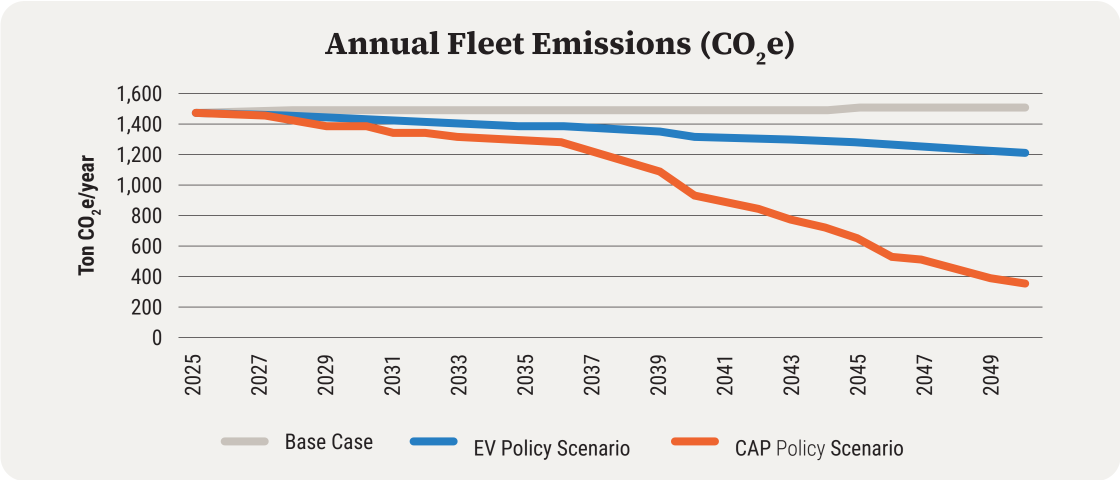


Infrastructure recommendations are based on total build out of facility charging, able to support the 86% of the fleet that can transition to EVs. Transitioning 86% of the County's 229 vehicle fleet represents 197 vehicles with 33 vehicles not included in the fleet transition. As part of a phased approach to charging infrastructure deployment, infrastructure phases align with the timelines developed within the Conversion Phases. The number of charging infrastructure and type (level 2 or 3) is based on the CAP Policy implementation strategy, to achieve 86% EV fleet. Total power load projections are also provided for each site that houses an EV.

The financial assessment evaluated the capital and operational cost of implementing the EV-Policy and CAP Policy scenarios, using a total cost of ownership assessment that was then compared to a business-as-usual scenario (i.e., no additional transition to EVs). The EV Policy has a 10% increase in the total cost of ownership over the implementation timeline (between 2026 and 2050) when compared against the business-as-usual scenario. The savings in maintenance and fuel economy are not enough to offset the added procurement cost and infrastructure investment. The CAP Policy scenario would represent a 35% increase in the total cost of ownership when compared against the baseline. The total cost of ownership of EVs is due to the significantly higher purchase price of EVs, and the large investment required for the charging infrastructure. While there may be available funding opportunities to mitigate the added purchase price, it will be critical for the County to secure sustainable funding strategies and incentives that would enable the implementation of this Fleet Conversion Plan.

Importantly, the environmental emissions for the two different options were analyzed. If the County were to continue implementing their EV purchase policy of two new electric vehicles per year, reaching a 31% fleet electrification would only eliminate 9% of the total greenhouse gas emissions over the implementation period (2026-2050), and once the County reaches a max 31% EV fleet, (past 2050), there would be a net 18% annual emissions reduction when compared to the ICE-only scenario.

For the CAP Policy scenario, reaching 86% fleet electrification would result in a 30% GHG emissions reduction over the implementation period (2026-2050) and after full implementation (of 86% of the fleet) past 2050, the County would eliminate 76% of the yearly emissions when compared to the ICE-only scenario.



In conclusion, the County Fleet Conversion Plan provides guidance for implementation, charging infrastructure considerations, guidance regarding training, and foundation skills, as well as specifics regarding charging infrastructure equipment and necessary upgrades.

Acronyms / Abbreviations

Acronym / Abb.	Full Name
AC	Alternating Current
AHJs	Authorities Having Jurisdiction
ASEP	Automotive Service Educational Program
ASSET	Automotive Student Service Educational Training
BEB	Battery Electric Bus
BEV	Battery Electric Vehicle
CAT III/IV	Category III / Category IV (electrical measurement safety standards)
CO2e	Carbon Dioxide Equivalent
DC	Direct Current
DCFC	Direct Current Fast Charger
ESS	Energy Storage System
EV	Electric Vehicle
FCEV	Fuel Cell Electric Vehicle
GHG	Greenhouse Gases
ICE	Internal Combustion Engine
KPIs	Key Performance Indicators
kW	Kilowatt (power)
kWh	Kilowatt Hour (energy)
LAC	Los Alamos County
L2	Level 2, in reference to a type of charger
NFPA	National Fire Protection Association
OCPP	Open Charge Point Protocol
OEM	Original Equipment Manufacturer
PPE	Personal Protective Equipment
SOC	State of Charge
V2G	Vehicle-to-grid
EV	Zero Emission Vehicle

Glossary

Term	Definition
Arc-flash	A dangerous electrical explosion caused by a short circuit or fault in a high-voltage system, producing intense heat and light.
Burn-out Zones	Designated areas where burning vehicles can be isolated to prevent fire spread and limit damage.
Demand Charges	Utility fees based on the highest level of power drawn during a billing period, often affecting charging costs.
DCFC	Direct Current Fast Charger with a max power output of 150 kW or higher
Fire Isolator Systems	Equipment such as fire blankets or aerosol suppression units designed to contain and slow vehicle fires, particularly in enclosed spaces.
Grid Greening	The process of increasing the share of renewable and low-carbon energy sources in the electrical grid mix.
L2 Charger	Charging equipment with a plug-in type of connection that ranges between 7 kW and 20 kW for the max output capacity.
Multiplexing	A vehicle wiring approach that reduces the number of wires by transmitting multiple signals over a shared pathway.
Oscilloscope	An electronic instrument used to visualize and measure electrical signals over time.
Smart Charging	Software-controlled EV charging that optimizes timing, rate, and energy use based on operational needs and electricity costs.
SOC (State of Charge)	The measurement of the available battery capacity in a vehicle, expressed as a percentage of its total capacity.
Thermal Runaway	A rapid, uncontrolled increase in temperature within a battery cell that can lead to fire or explosion.

1 Introduction

In support of the Climate Action Plan, to reduce greenhouse gas emissions, increase zero emission vehicles, decrease air pollution, and increase fuel efficiency, Los Alamos County (the County) is preparing to transition its fleet to zero-emission vehicles (ZEV) through a phased and strategic approach. Furthering the goals of carbon neutrality by 2050 as part of the County's Climate Action Plan (CAP), this transition plan will assess the strategies available to the County to continue and plan for replacing fossil fuel vehicles that reach the end of their useful lives with electric vehicles (EV).

The pace and direction of this transition are defined by the County's CAP but influenced by a policy environment at both the state and local levels.

Additionally, regulatory drivers provide a supportive environment for transition to EVs. These include the New Mexico Alternative Fuel Acquisition Act, mandating that 75% of light-duty fleet acquisitions meet alternative fuel or hybrid/electric criteria, and the Energy and Fuel Cost Savings Contracts program, enabling fleet owners to finance EVs and charging infrastructure through operational cost savings. While these do not have jurisdiction in Los Alamos County, they indicate the state's support of transitioning to EVs.

Authority over emissions standards between the EPA and individual states is subject to ongoing legal review, New Mexico remains committed to supporting EV adoption through incentives and partnerships, signaling continued momentum for public fleet transitions. Locally, the County's CAP reinforces these efforts with targeted strategies to expand EV infrastructure, integrate EV readiness into building codes, and consider transitioning the County fleet in alignment with the NM state target to achieve a zero-emission vehicle fleet by 2035[1].

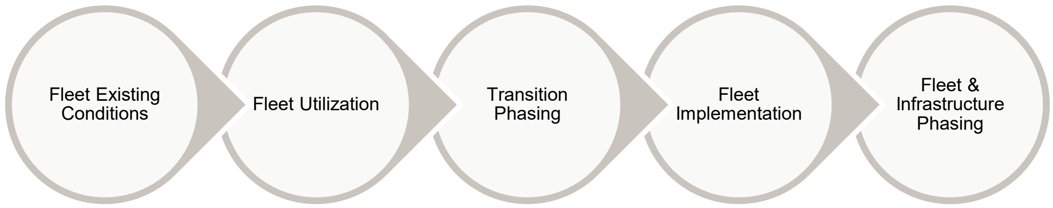
Taken together, these policies create a supportive framework for fleet electrification, ensuring that the County's vehicle replacement planning, infrastructure development, and operational modeling are aligned with community climate goals.

1.1 Conversion Plan Strategy

To support the County's transition to EV technology, a fleet conversion plan was developed to provide the County with appropriately sized and timed deployment of technology and infrastructure. The approach outlined in Figure 1-1 favors a logical transition informed by existing conditions, fleet utilization, and County operational and purchasing constraints. This culminates in a Fleet Implementation Strategy that provides two approaches to EV adoption, permitting the planning and budgeting for the deployment of supporting infrastructure.

[1] 2024 Los Alamos County Climate Action Plan; Strategy T1.4

Figure 1-1: Fleet Conversion Plan Approach



The Existing Conditions and Market Scan Report (Appendix B) identified available battery-electric vehicles (BEVs) and fuel cell electric vehicles (FCEVs) across light-, medium-, and heavy-duty classes. While light-duty BEV options are widely available and align well with the County's operational needs, medium- and heavy-duty offerings may still require interim hybrid or near-zero emissions solutions for certain applications. FCEVs offer potential in electrifying medium- and heavy-duty vehicle propulsion but the existing market lacks availability and proven deployments. Due to the uncertainty of FCEVs, the Fleet Conversion Plan identifies BEVs as a more viable option for fleet transition and are referred to simply as electric vehicle (EV) throughout the plan.

To gain a nuanced understanding of the County's fleet operations, site visits were conducted to observe how each facility functions and to incorporate this information into the infrastructure planning process. The resulting preliminary charging locations (Appendix C) identify each facility's full EV buildout and align with the Fleet Implementation plan, providing the County with clear guidance on when and at which sites to implement infrastructure.

In addition to vehicle and infrastructure deployment, County processes will need to support the accompanying changes to operations and maintenance. As part of supporting recommendations, training programs are outlined to help County employees adapt to new EV technologies and maintenance practices, ensuring a smooth and well-supported transition. These programs are oriented towards operators, maintenance staff (including original equipment manufacturer (OEM) provided maintenance trainings), as well as emergency response coordination.

To support fiscal planning for the County's transition, a detailed financial analysis, incorporating all key elements across the vehicle lifecycle, was completed and included:

- Capital Costs: Initial investments in vehicles and charging infrastructure.
- Operational Costs: Ongoing fuel (diesel, gasoline, or electricity) and maintenance costs.

The financial model projects costs in future value, corresponding to dollar value of the expense year, offering an accurate forecast of the overall financial impact. The inclusion of this model can help the County target sources of funding and better prepare to estimate the capital requirements.

2 Fleet &Vehicle Analysis

Leveraging information gained from the existing conditions and market scan review (Appendix B), an approach to how the County could transition its fleet was developed. This first included understanding how the County utilizes its vehicles and where that utilization would be served by existing EV technology. Not all vehicle use cases can be currently served by commercially available technology and therefore it was critical to develop a strategy for the County to consult as they plan vehicle replacements.

To provide a strategy for transitioning to EVs, first the vehicle operations were assessed to determine nuances in composition and how the County uses their fleet. Next, transition phases were developed that incorporated the County's vehicle operations and market research, ensuring implementation occurs without compromising operational effectiveness.

Aiming to provide the County with a long-term tool for EV implementation, an EV Transition Dashboard was developed to view and analyze fleet data from the perspective of fleet implementation. Using the County's fleet list, service life, and operational information, the current condition of the fleet can be viewed.

2.1 Fleet Operational Assessment

Stantec conducted several meetings with fleet managers to identify how the County utilizes its fleet vehicles. From these conversations, ten operational categories were identified including:

- Emergency Response – does the vehicle respond to emergencies?
- Schedule – how frequently is the vehicle used? (infrequently, daily, 24/7)
- Lunch – is a midday break taken at a facility (Municipal, Justice, etc.)?
- Distance – does the vehicle stay within the County?
- External load – is there accessory equipment being powered by the vehicle?
- Added equipment – does the vehicle have a specialized body type?
- Use type – does the vehicle tow, haul, or remove snow?
- Overnight location – is the vehicle taken home?
- User – is the user considered a supervisor or regular user?
- Notes – are there any specific details on utilization that would be valuable to know?

Each operational category was assigned responses based on the understanding of vehicle operation, gained through conversations with fleet users, division managers and department directors. Responses to each category (which are elaborated on below as operational constraints) were then assigned to each vehicle. These operational constraints provide data inputs, which were validated by County division managers

Results from this assessment provided data on how the Transition Phasing was developed and informed fleet insights pertaining to the EV Transition Dashboard.

2.2 Transition Phasing

The process to identify an appropriate and realistic timeline for EV transition first requires an understanding of how well EVs can operate under the County's unique service conditions. Analysis of fleet operations (Section 2.2.1) and understanding of the EV market (Section 2.2.2) determines if each vehicle in the fleet could be transitioned to an EV.

Next, to translate operational and market constraints into a timeline, Stantec applied a phased approach to EV transition. This approach (explained in Section 2.2.3) identifies three phases in which first "easy-to-electrify" vehicles (like sedans and pickup trucks) and then increasingly "difficult-to-electrify" vehicles (like incomplete truck chassis with specialized bodies and attached equipment) are eligible for EV transition. By doing this, vehicles are transitioned based on expected improvements in EV technology.

2.2.1 Operational Constraints

To assess operational constraints that could impact EV transition, Stantec created a scoring methodology based on utilization data gathered through fleet user interviews.

The chart below provides a visual representation of the operational assessment, where each operational use attribute was qualitatively scored based on its effect on EV suitability. Scores in green, marked as "No Impact," indicate that this attribute has little to no impact on the vehicle's ability to transition to an EV. This contrasts with the "Considerable Impact" scores in red that indicate this attribute would have significant impact on the vehicle's ability to transition to an EV.

Figure 2-1: Operations scoring options which when selected identified vehicle operational constraints (color coding to indicate scoring metric)

Emergency Response	No	Yes		
Schedule	Daily use	<Daily	On-call	
Lunch	Yes	No	N/A	
Distance	In county	Out of county		
External load	N	Y		
Added equipment	Non-modified	Service body	Specialized	
Use type	N/A	Snow removal	Towing	Hauling
Overnight Location	Facility	Take home		
User	Supervisor	Regular		

No impact
Some Impact
Significant Impact
Considerable Impact

Through interviews with fleet managers each vehicle was "scored" based on the attributes above. Each vehicle attribute (Emergency Response, Schedule, etc.) was assigned

The score values applied to each category vary depending on the importance fleet users placed on operational categories. Therefore, the score 'Service Body' in the 'Added Equipment' score is greater than the 'Take Home' score in the 'Overnight Location' category because the County identified where a vehicle "overnights" as more of a challenge to electrification than the added equipment on a vehicle.

The summation of scores across operational use attributes provided an overall transition score which is paired with the EV market index to provide a transition phase recommendation for each vehicle. Scores range from zero, “very easy to electrify”, to 22, “considerably difficult to electrify”.

2.2.2 EV Market Index

The next step in identifying a transition phase is to develop a recommendation based on the evaluation of external EV market conditions as they apply to the County’s fleet. This EV Market Index utilizes research completed during the Existing Conditions & Market Scan Report (Appendix B) and scores each vehicle type by how well it’s represented by the existing EV market. Vehicles are identified by body type and gross vehicle weight rating (GVWR) or class.

The chart below shows that some vehicle body types are well represented by existing light duty EVs but heavier medium- or heavy-duty vehicles less so. Using a 0-3 rating scale, lower value scores identify vehicles that are well represented in the market and are expected to be transitioned to EVs on a one-to-one basis. As numbers increase in value, the transition becomes harder with fewer or no EV equivalents within the current market.

Figure 2-2: EV Market Index by vehicle class and body type

	Pickup	SUV	Truck	Refuse Truck	Incomplete - Single Cab	Incomplete	Cargo Van	Van	Sedan	Step Van	Cutaway	Minivan	Incomplete - Double Cab
Class 1									0				
Class 1C	0	0											
Class 1D	1	0					0	0					
Class 2												2	
Class 2E	1	1										2	
Class 2F	1	1											
Class 2G	2						1						
Class 2H	2					3	1	1					3
Class 3	3				3	3					0		3
Class 4					3						0		
Class 5			3		3								
Class 6			3	3						3			
Class 7			3										
Class 8			2	2	3								

0	Well Represented
1	Most available
2	Challenging
3	Difficult or N/A

Stantec includes this evaluation because while an EV may appear to be equivalent to an existing fossil fuel vehicle, other user experiences, other specifications or operating capabilities are not equivalent, suggesting that it may be prudent to let the EV market further mature before purchasing.

This is exemplified with incomplete (double or single) cab pickup trucks which could be replaced with an EV of a higher class (due to greater weights from more battery and power requirements to move the same amount of mass) but would not have clearance or idling ability of existing ICE vehicles. Alternatively, while cutaways (specialized incomplete chassis outfitted to carry passengers) are similar classes to the challenging to electrify incomplete chassis, the EV market for these vehicles is well represented due to the proliferation of electrification in transit operations.

2.2.3 Transition Phase Recommendations

Finally, Stantec took the operational constraints paired with the EV Market Index to produce a Transition Phase for each of the County's vehicles. The summation of the Utilization Scoring Matrix (Figure 2-1) and the Market Index (Figure 2-2) produced Transition Scores with ranges shown below in Table 2-1.

The intent of Transition Phases is to strategically and gradually increase the types of vehicles eligible for transitioning to EVs. By assigning timelines to transition scores, considerable time is provided for vehicle technology to mature and adequately meet the operational needs of County vehicles.

Each vehicle's Transition Score determines when it becomes eligible for EV replacement. Phase 1 vehicles (score < 7) can transition to EV at their next replacement, regardless of timing. Phase 2 vehicles (score 7-14) become eligible starting in 2035. Phase 3 vehicles (score > 14) become eligible starting in 2043. Until a vehicle reaches its phase threshold, it will be replaced with another internal combustion vehicle.

Table 2-1: Transition Phase score and timelines

Transition Phase	**Transition Score Range**		**Timeline**
Phase 1	0	7	2025 - 2035
Phase 2	8	13	2036 – 2043
Phase 3	14	23	2044 - 2075

The Transition Phase recommendation pairs with the County's natural vehicle replacement timeline which Stantec has projected in Section 3.1 Fleet Procurement Plan. The Fleet Procurement Plan identifies how many vehicles are expected to transition to EV each year and informs the charging infrastructure Implementation Phases.

3 Fleet Implementation Strategy

Developing an implementation strategy for the County's fleet requires integrating Stantec's vehicle Transition Phasing recommendations with existing fleet procurement timelines and policies. To adequately plan for the installation of charging infrastructure, it is important to know how many and of what type of vehicle will be charging. A replacement timeline through 2050 provides the County with necessary information to ensure charging infrastructure projects are adequately sized for future demand.

First, a replacement timeline projecting four service cycles was developed to project vehicle retirement and replacement through 2050. The first cycle relies on current vehicle conditions: age, mileage, and maintenance costs. The following cycles (two through four) use a projected service life (age in 2025 plus projected years until retirement) to estimate the subsequent retirement years. Where the projected total service life was outside the bounds of reasonable retention, the County's vehicle retention policy provided service life years, which is dependent on the vehicle type and use specified in the retention policy.

Next, Implementation Strategies were developed under two scenarios: implementation through a two EV transitions per year policy and a CAP-based policy to transition 86% of the fleet to EV operations by 2050. Both implementation strategies use the Fleet Procurement Timeline to identify total number of vehicles (internal combustion engine (ICE) and EV) replaced each year as well as previously developed Transition Phases to determine which vehicles are transitioned to EV.

These scenarios provide the County with two actionable options in which to plan their EV deployments. Integrated into the ZEV Transition Dashboard, the Fleet Procurement Timeline identifies when a vehicle needs to be retired, and the Implementation Plans identify what type of vehicle (ICE or EV) to procure. The County will need to use this information to plan vehicle procurements further in advance, ensuring that infrastructure projects (Section 4) are completed before EVs are delivered.

3.1 Fleet Procurement Timeline

Currently, the County plans its vehicle replacements based on several factors including the replacement policy, fleet manager knowledge of the vehicles, and available funds. This approach serves the County well, maximizing vehicle utility, but can be improved to provide long range projections for when vehicles could be retired. Stantec took factors used by the County to determine service life into account to create a projection of when each vehicle could be expected to be retired and replaced.

Stantec's retirement year projection relies on Los Alamos' replacement policy to set vehicle retention benchmarks. Where it differs is in including allowances for retaining a vehicle longer if the total maintenance cost is currently low; below 75% of purchase price. To achieve this projection, vehicle retention benchmarks are averaged, including current age, mileage, and maintenance costs. This provides a measure of the amount of service life a vehicle had consumed and based on the age of the vehicle, an estimation of remaining service years.

Once remaining service years were estimated, a retirement timeline for the County fleet could be projected. This fleet procurement timeline represents the vehicles projected to be retired in any given year based on the service life consumed, and further projects retirements based on the total number of years a vehicle operated to consume all its service years.

This projection provides a timeline that is inclusive of transitioning about 20 vehicles a year and allows integration of Transition Phasing (as outlined in the prior section) to identify the number of EV procurements each year through 2050. This Fleet Procurement Timeline is critical to determine when the appropriate amount of infrastructure is needed to charge EVs and attempts to be more representative of the actual vehicle retention practices of Los Alamos County.

3.2 Implementation Strategies

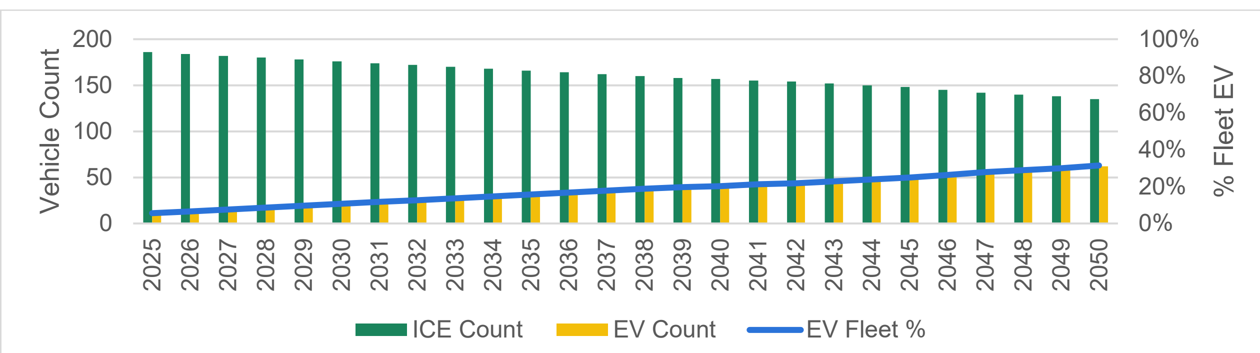
Two 25-year EV transition strategies were developed: an EV Policy plan (gradual, conservative) and CAP Policy plan (accelerated transition, aligned to meet 2050 emission reduction targets).Comparing these two strategies allows the County to balance emission reduction goals against increased capital investment, explored further in the Financial (Section 6) and GHG Emissions (Section 7) analyses.

Both strategies exclude 33 vehicles (14% of the 229-vehicle fleet) deemed infeasible for electrification due to specialized operational requirements like forest firefighting, bomb response, and fuel transportation. Due to the challenging nature of the operations completed by these vehicles, excluding them from transition insures uninterrupted operations. Financial and GHG analyses address the full fleet, including these excluded vehicles in annual costs and emission analysis.

3.2.1 EV Policy Implementation

This scenario (EV Policy) utilizes the County's existing EV implementation policy of transitioning two vehicles from ICE to EV every year. The application of this policy on the procurement timeline, shown in Figure 3-1 results in a steady increase in the percentage of EVs within the County's fleet.

Figure 3-1: EV Policy Fleet Composition through 2050

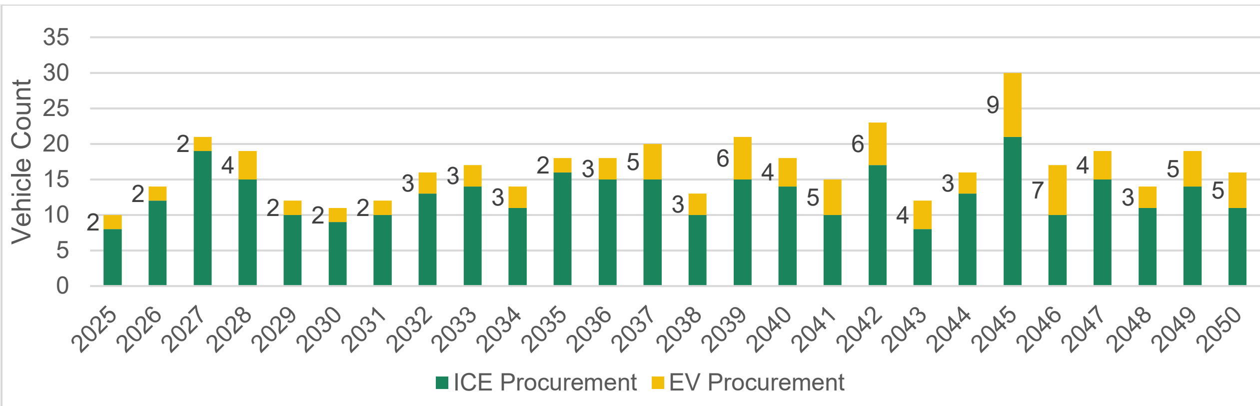


Through this EV Policy timeline, this EV implementation strategy will result in 31% (62 vehicles) of the County's fleet being transitioned to EVs by 2050; well short of the 100% carbon neutral emission goals outlined in the CAP.

Transition Scores (as outlined in Section 2.2) were used to determine which vehicles would be transitioned each year. Of the vehicles projected for retirement, the two with the lowest Transition Score (most suited for transition) were identified to be replaced with EVs.

Each year, the County replaces two gas vehicles with two electric ones. As the number of EVs in the County fleet increases and older EVs wear out, they will also be in need of replacement. Figure 3-2 shows yearly vehicle purchases, with EV purchases highlighted in yellow and labeled. This includes both new EV transitions and replacements of old, worn out EVs.

Figure 3-2: EV Policy Vehicle Procurement through 2050 (count of EV purchases labeled)



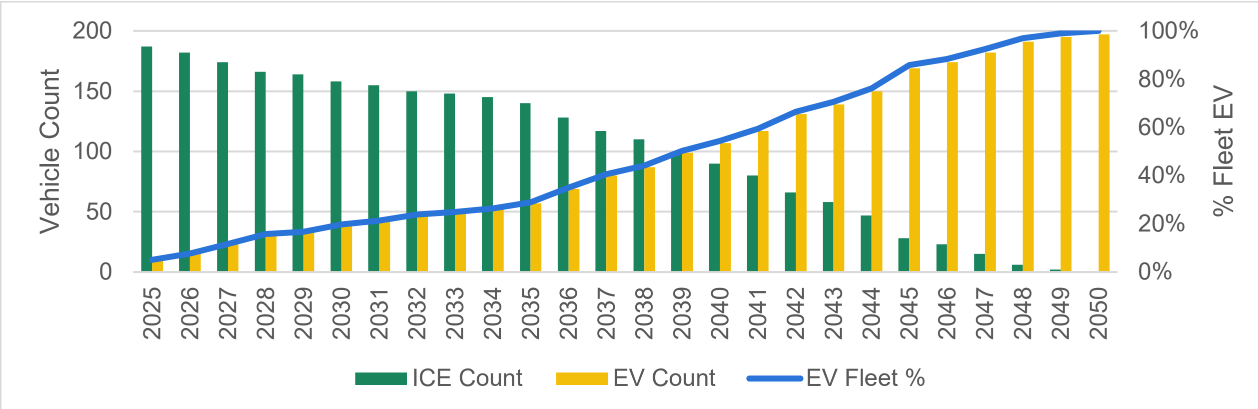
The County's oldest EV is a 2014 Ford C-Max plug-in hybrid-sedan. The County has two of these vehicles which are estimated to be replaced in 2028, which is the first year where more than two EVs are procured. In 2028 two vehicles are transitioned, replaced by EVs and the two 14-year-old plug-in hybrid-sedans are replaced also with EVs. A total of four EVs are purchased in 2028. As a larger percent of the County's fleet are EVs, the number of old, worn out EVs needing to be replaced increases. In any given year, no more than seven EVs are replaced in addition to the two vehicles transitioned for a maximum of nine EV purchased in any given year.

The above figures represent projected vehicle acquisition for each vehicle in the fleet. When the County plans vehicle acquisition and infrastructure development, they can access vehicle specific recommendations via the ZEV Transition Dashboard. The EV Policy timeline provides the County with insight into how their current policy will shape the rate of EV adoption.

3.2.2 CAP Policy Implementation

Los Alamos County has identified targets to achieve carbon neutrality by 2050 and one key strategy is to reduce emissions from the County's fleet. The CAP Policy Implementation scenario (CAP Policy) balances aggressive carbon reductions with operational feasibility, ensuring the County can maintain service delivery and fiscal responsibility while making meaningful progress towards its carbon neutrality goals.

Figure 3-3: CAP Policy Fleet Composition through 2050



This approach sees a more rapid transition to EVs. Through the 25-year timeline, 86% of the County's fleet vehicles are transitioned to EV.

Using the Fleet Procurement Timeline in Section 3.1, the CAP Policy scenario transitions ICE vehicles to EVs based on the Transition Phase Recommendations (described Section 2.2.3) which progressively increases the variety of vehicles eligible to be transitioned to EV.

Figure 3-4: CAP Policy Vehicle Procurement through 2050 (count of EV purchases labeled)

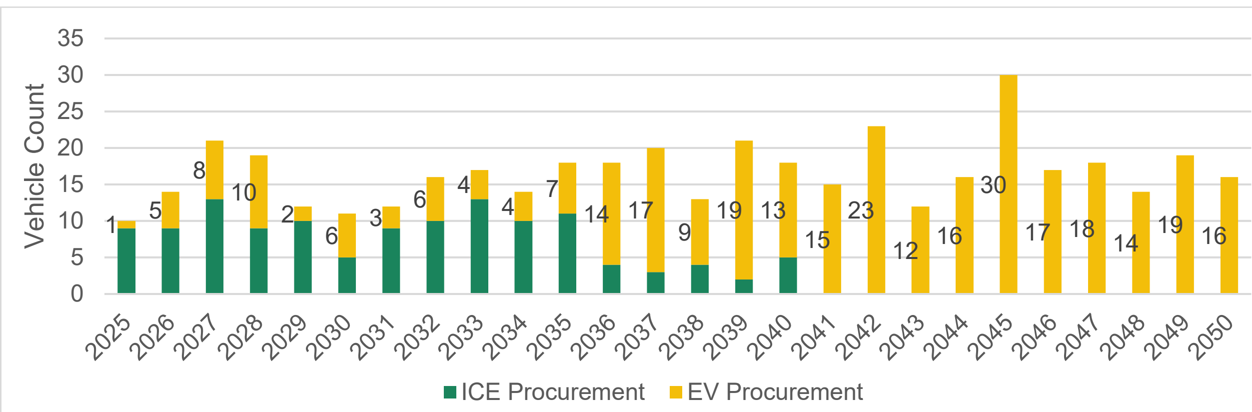


Figure 3-4 above shows the total number of vehicles projected to be procured annually and differentiates between a recommended EV or ICE procurement. Instead of a strict quantity of vehicles or percentage of the fleet, the CAP Policy approach identifies vehicles that operationally can transition to EV and are projected to be replaced. By utilizing a phased implementation of EVs, over the 25-year timeline, vehicles that are more difficult to electrify would be replaced with ICE vehicles early and then transition to an EV in future years as technology matures.

The next section identifies the "final buildout" EV charging infrastructure requirements for 86% EV fleet. To align the amount of infrastructure needed as vehicles transition to an EV fleet, the County will need to determine the most appropriate implementation strategy. Sections 6 and 7 discuss the financial and greenhouse gas reduction impacts to provide additional perspective for the County to chart a path forward.

4 Facilities Assessment and Infrastructure Upgrades

Transitioning to an EV fleet will require substantial infrastructure support and operational changes. The infrastructure assessment is a critical step in evaluating the readiness and suitability of each facility to support current and future operational needs.

This section outlines not only the quantity, phase, and location of charging infrastructure but also the coordination between the County and the Department of Public Utilities (DPU) while deploying EV supportive infrastructure. Including risk assessment, fire protection, electrical safety, and emergency response planning, this creates an integrated plan to protect personnel, property, and operations. By addressing these elements alongside site-specific conditions and phased recommendations, the Facilities Assessment provides a holistic roadmap for a safe and scalable transition to a sustainable fleet.

4.1 Infrastructure Assessment

Evaluating the readiness and suitability of each County facility to support current and future operational needs, the necessary upgrades to deploy EVs are outlined in Table 4-1.. Through site visits and desktop reviews, existing assets, deficiencies, and opportunities for charging were identified. Infrastructure development aligns with fleet transition timelines and operational requirements. The analysis includes site-specific conditions, electrical capacity, parking configurations, and phased recommendations for charger installations, all designed to support a strategic and scalable transition to a sustainable fleet.

The following table summarizes observed conditions and relevant notes for each assessed facility, including key operational details, parking lot characteristics, and any ongoing or planned modifications. Of the 21 sites included in the Fleet Conversion Study, 16 received site visits with one unplanned visit to the Aquatic Center which was not initially part of this study. This included a full walkthrough of the Pajarito Cliff Sites (PCS) which comprise PCS 1 through 5.

Table 4-1: LAC Facilities Assessment Summary with CAP Policy charging recommendations

Facility	Comments	Parking Lot Conditions	Existing Electrical Equipment	Existing Charging Handles/Plugs[2]	Proposed Charging Handles/Plugs
Municipal Building, 1000 Central Ave, Los Alamos • 27 light-duty vehicles 　○ 5 EVs (2 PHEV, 3 EV) • 1 medium-duty vehicle	• ADA spots are being added with construction projects currently occurring in this lot. • Recommendations for charging: 　○ Fleet charging – RFID 　○ Public charging – paid	• Consistently flat, large parking lot in the center of Los Alamos	• 225kVA transformer	• Level 2 chargers are currently under construction. Once completed there will be (12) Level 2 handles.	• Phase 2: (3) Level 2; one charger shared each among PW Engineering, County Assessor, and Community Development-Building • Six vehicles identified as take home
Justice Center 2500 Trinity Drive, Los Alamos • 52 light-duty vehicles • 2 medium-duty vehicles • 1 heavy-duty vehicle	• Fleet charging – rear (W) lot for police • Public charging – front (E) lot • Initial EV deployment planned for traffic enforcement • No EV use planned for prisoner transport • Long-term goals include EVs for road patrol and trucks for off-road use • Employee concerns: Some officers take vehicles home, up to 60+ miles; reduced battery performance in cold weather • Public chargers can use Level 2 equipment	• Side (E) lot and half of front (S) lot – flat, public use • Side (W) lot and half of front (S) lot – flat, fleet/police use	• 480/277kVa Main - 1200 AMP • There is 1 spare breaker on the panel, but it's not enough to support charging. • The backup generator cannot cover EV's if power loss occurs. • Transformer on (W) corner of lot is 750kVA	• No existing charging infrastructure.	• Phase 2: (3) Level 2, LAPD Management. (2) DCFC shared among Emergency Management • Phase 2: 30 vehicles identified as take home transition • Phase 3: 16 vehicles identified as take home transition • 4 vehicles excluded from transition. • (10) Level 2 and (7) DCFC handles proposed as part of Community Infrastructure Plan.
Mesa Public Library 2400 Central Ave, Los Alamos • 1 light-duty vehicle	• Fleet charging – loading dock area • Fleet vehicle used for book transport	• Upper (public) lot graded toward main road; flattest spots are nearest to library • Loading dock slightly graded	• Loading Dock: 1200 amp panel, 480kVA - can support L3 for (1) fleet vehicle.	• Public DCFCs (4) handles are being implemented.	• No additional proposed fleet charging infrastructure; Library Services vehicle assumed to use public DCFC
PCS 1 101 Camino Entrada, Los Alamos • 21 light-duty vehicles • 16 medium-duty vehicles • 9 heavy-duty vehicles	• Shared building and parking lot with Atomic City Transit • Fleet vehicles parked on side (W) lot near building and along back (S) lot • In winter, garage space used for snow plow trucks; common-use fleet vehicles remain outside	• Side (W) lot – flat; rows near building for fleet use, opposite rows for Atomic City Transit • Back (S) lot – flat; located in front of garage doors along rear of building • Front (N) lot – employee parking; relatively flat	• 500kVA transformer, to be replaced with 1000kVA • 1000kVA transformer will be at full capacity for the bus chargers & defrosters • Existing 480AMP panel, need to add another	• 3 EVs are operated out of PCS1 and utilize Level 1 chargers plugged into a 110V wall outlet.	• Phase 1: (6) Level 2; one shared among Transit Division. • Phase 2: (3) Level 2; two shared among Transit Division and one shared among Traffic and Streets. (4) DCFC shared among Traffic and Streets • Phase 3: (3) Level 2; two for Facilities Maintenance and one shared among Transit Division. (12) DCFC • Atomic Transit (not phased in this report): (9) Level 2 and (9) DCFC
PCS 2 101 Camino Entrada, Los Alamos • 0 assigned fleet vehicles	• PCS 2 is used for vehicle maintenance but does not have any vehicles assigned.	• Not reviewed	• Not detailed.	• No existing charging infrastructure.	• No proposed fleet charging infrastructure.
PCS 3 101 Camino Entrada, Los Alamos • 3 light-duty vehicles • 2 medium-duty vehicles • 3 heavy-duty vehicles	• Facility is L-shaped • Backup generator cannot support EV charging load. Stantec mentioned programming the generator to prioritize how energy would be distributed in case of an emergency.	• Side (E) lot – lined with garage doors; some parking for employee/fleet • Loading dock (SE) – flat; contains two NPR vehicles • Common (E) lot – flat; used by LAPS buses and fleet vehicles	• Electrical room near center of the building could support EVs, but the spaces outside would block doors • Bottom of L (SE) has massive (300-1500kVA) transformer, 1600amp panel with pressure switch, additional	• No existing charging infrastructure.	• Phase 2: (1) DCFC shared among Fleet Management. • Phase 3: (1) Level 2. (1) DCFC • Three vehicles excluded from transition

[2] Throughout this report, 'charging handles' or 'plugs' refers to the number of individual charging ports available, each serving one vehicle parking space. A single charger unit many have multiple plugs.

Facility	Comments	Parking Lot Conditions	Existing Electrical Equipment	Existing Charging Handles/Plugs[2]	Proposed Charging Handles/Plugs
			150amp panel w/ block heater on a timer		
PCS 4 (LAPS) 101 Camino Entrada, Los Alamos • 12 light-duty vehicles • 28 medium-duty vehicles • 23 heavy-duty vehicles (school buses)	• Los Alamos Public Schools (LAPS) have not expressed initial interehigh-levelh level analysis was included.	• Bus parking (S) – flat; adjacent to nearby transformer/panel • Side (W & E) lots – flat; used for fleet and employee parking	• Would tie into infrastructure proposed on PCS3 • 480AMPs panel – to be confirmed if separate	• No existing charging infrastructure.	• (20) Level 2 proposed to charge support fleet. (12) DCFC to charge school bus fleet
PCS 5 101 Camino Entrada, Los Alamos • 34 light-duty vehicles • 14 medium-duty vehicles • 5 heavy-duty vehicles	• Employee concern about losing parking spaces to EVs in front (N) lot • Client requests separate meters or cost-tracking for each department • Back row (S of building) fully occupied by fleet vehicles by end of day	• Front (N, NE) lots – flat; employee parking • Back (S) lot – flat; fleet use	• The electric room has a fixed generator • 480/800AMPs Panel • Transient voltage surge suppressor	• 2 EVs are operated out of PCS1 and utilize Level 1 chargers plugged into a 110V wall outlet.	• Phase 1: (13) Level 2; one each shared among Water Production, Parks Maintenance, and Meter Readers, all others dedicated. • Phase 2: (3) Level 2. (8) DCFC; one each shared among GSW, Water Production, Parks Maintenance, and Domestic Water. • Phase 3: (13) DCFC one each shared among Water Production and Parks Maintenance • Three vehicles identified as take home • Six vehicles excluded from transition.
Los Alamos Senior Center 101 Bathtub Row, Los Alamos • 4 light-duty vehicles • 2 medium-duty vehicles	• Back parking lot and overflow lot, behind building (S) commonly used for Senior Citizen Services vehicle parking.	• Back (N) lot – flat; suitable for EVs • Side (E) lot – flat; contains existing ADA spots; has building entrance • Front (S) lot – graded; less ideal for public EV charging; contains existing ADA spots; main entrance to building	• 300kVA transformer (back of building) • 225amp panel in closet (120/208)	• No existing charging infrastructure.	• Phase 1: (4) Level 2; one shared and three dedicated among Senior Citizen Services.. • Phase 2: (2) Level 2; one shared and one dedicated among Senior Citizen Services. • (4) Level 2 handles proposed as part of Community Infrastructure Plan.
Eco Station 3701 E. Jemez Rd, Los Alamos • 3 light-duty vehicles • 2 medium-duty vehicles • 12 heavy-duty vehicles	• F-150 used for travel between White Rock and this facility • Overnight charging is acceptable at this location	• Side (E) lot – flat; fleet vehicle parking only	• 208/120V 3-Phase 4-Watt 400amps • Small panel can support 1 charger • Main Panel: 800 AMP	• No existing charging infrastructure.	• Phase 1: (1) Level 2 • Phase 2: (5) DCFC: four shared and one dedicated among Environmental Services • Phase 3: (1) Level 2 shared among Environmental Services. (2) DCFC; one shared and one dedicated among Environmental Services. • One vehicle excluded from transition.
Fuller Lodge/Overflow 2132 Central Ave, Los Alamos • 6 light-duty vehicles			• Desktop review; existing electrical unknown.	• No existing charging infrastructure.	• Phase 1: (5) Level 2; one charger shared among PW Custodial and four dedicated. • Phase 2: (1) Level 2
Los Alamos Fire Station 4 4401 Diamond Dr, Los Alamos • 4 light-duty vehicles • 2 medium-duty vehicles • 1 heavy-duty vehicles			• Desktop review; existing electrical unknown.	• No existing charging infrastructure.	• Phase 2: (1) DCFC • Two vehicles identified as take home. • One vehicle excluded from transition.
Fire Department Training Center 132 DP Rd, Los Alamos • 0 assigned fleet vehicles			• Desktop review; existing electrical unknown.	• No existing charging infrastructure.	• No proposed fleet charging infrastructure.
Golf Course 4290 Diamond Dr, Los Alamos • 1 light-duty vehicle • 1 medium-duty vehicle	• Fleet charging – RFID • Public charging – paid • Fleet data won't capture the new golf carts and golf course isn't open. Golf carts have separate charging area.	• Proposed Area (Near dumpster) is slanted towards building. Great spot for EV's but not within ADA requirements • Middle row hase less grade change	• Cart Barn: 208V, 1200 amps (likely using 400amp max) • Front corner: 300kVA - 800 amps	• No existing charging infrastructure.	• Phase 1: (1) Level 2 • Phase 3: (1) DCFC • (6) Level 2 handles proposed as part of Community Infrastructure Plan.

Facility	Comments	Parking Lot Conditions	Existing Electrical Equipment	Existing Charging Handles/Plugs[2]	Proposed Charging Handles/Plugs
		• Parking outside cart barn is relatively flat with existing ADA spots			
Los Alamos Wastewater Treatment Plant 3598 Pueblo Canyon Rd, Los Alamos • 3 light-duty vehicles • 1 medium-duty vehicle • 5 heavy-duty vehicles	• Vehicles shared between White Rock and Los Alamos wastewater facilities	• Side (E) lot – flat; employee and fleet parking • Side (NE) lot – slight grade; employee and fleet parking	• 110amps, 500kVA transformer, 480-volt panel	• No existing charging infrastructure.	• Phase 1: (1) Level 2 • Phase 2: (1) DCFC shared amount Utilities – Waste Water. • Phase 3: (2) DCFC. • Four vehicles excluded from transition.
Ice Rink 4475 West Jemez Rd, Los Alamos • 2 light-duty vehicles	• Vans used daily for travel between locations • Occasionally used for towing • Occasionally driven long distances (e.g., 350 miles to Hobbs, NM	• Front (N) lot – flat; public use • Side (W) lot – slight grade; public and fleet use	• Overhead Lines - primary, transformer, Secondary (Likely won't be used for EV's, will propose a tap off the primary wires and utilize a new transformer)	• No existing charging infrastructure.	• Phase 1: (2) Level 2 • (8) Level 2 handles proposed as part of Community Infrastructure Plan.
LAC Aquatic Center 2760 Canyon Rd, Los Alamos • 0 assigned fleet vehicles	• Side Lot (W, Only); Public & Ice Rink fleet, relatively flat	• Fleet vehicles are shared with ice rink • Add Public charging	• (2) 480/800 amp panels, 750kVA transformer	• No existing charging infrastructure.	• No proposed fleet charging infrastructure.
Los Alamos Airport 1040 Airport Rd, Los Alamos • 2 light-duty vehicles • 1 heavy-duty vehicle	• Two light- and one heavy-duty vehicles make up the Airport fleet. Both light-duty vehicles could be smaller (courtesy car a smaller 4 seat sedan) while the ¾ ton pick-up does snow plowing and hauling but 95% of trips could be done by golf cart. Heavy-duty vehicle plows snow and is excluded from transition.		• Desktop review; existing electrical unknown.	• No existing charging infrastructure.	• Phase 3: (1) Level 2 • One vehicle excluded from transition.
WR Senior Center 133 Longview Dr, White Rock • 2 light-duty vehicles	• Both vehicles are grant funded.		• Desktop review; existing electrical unknown.	• (1) Level 2 charger	• No additional proposed fleet charging infrastructure.
WR Library 10 Sherwood Blvd, White Rock • 0 assigned fleet vehicles			• Desktop review; existing electrical unknown.	• No existing charging infrastructure.	• No proposed fleet charging infrastructure.
WR Visitor Center 115 State Road #4, White Rock • 0 assigned fleet vehicles	• Common parking lot for visitors to Bandelier National Monument • Average visitor stay is 3–5 hours	• Side (W) lot and back (N) lot – public parking; slight grades throughout	• Existing 75 kVA transformer (not big enough to support additional EV Chargers)	• (2) Level 2 charger	• On-route charging for Atomic Transit located at WR Visitor Center; see Appendix A.
WR Fire Station #3 129 State Road #4, White Rock • 0 assigned fleet vehicles	• Public and fleet charging planned • Building used for council meetings; EV chargers can be placed in east lot • Fleet includes three trucks; two (Fire Marshal vehicles) can be converted to EVs	• Side (E) lot – flat; public use • Back (N) lot – employee and fleet parking; gated; grade not observed due to restricted access	• 277/480 60 amps	• No existing charging infrastructure.	• No proposed fleet charging infrastructure. • (4) Level 2 handles proposed as part of Community Infrastructure Plan.
Wastewater Treatment Plant and Parks 580 Overlook Dr, White Rock • 0 assigned fleet vehicles	• Fleet vehicles shared with Los Alamos Wastewater, where vehicles are parked	• Front (SW) lot – flat; small; employee and fleet use only	• Massive brand-new generator • 750kVA transformer • 277/480 1200 amps panel • Eaton Transfer Switch • Main panel: 100 amps • 30kVA transformer (3-phase)	• No existing charging infrastructure.	• No proposed fleet charging infrastructure.

Not included in this study is Los Alamos National Laboratory (LANL) which has implemented significant infrastructure developments for their EV and PHEV deployments. Currently, LANL has 99 Level 2 chargers and 3 Level 3 chargers to support their 67 EVs and 110 PHEV (177 total) fleet. Most of their charging infrastructure has been deployed with ChargePoint with a few exceptions including chargers from Schneider and Leviton. As LANL moves forward with expanding their electric fleet, 14 Level 2 and 4 Level 3 chargers are planned to come online in 2025. Charging infrastructure at LANL is only for LANL employees and not open to the public.

LAPS was involved in the development of the conversion plan but not included in the phased implementation. Review of LAPS specific data showed similar potential for electrification with school buses as “easy” to electrify but more evaluation of topography impacts are needed. The total charger count required to electrify LAPS vehicles operated out of PCS4 were included in planning. Due to the uncertainty of when LAPS vehicles will be electrified, all infrastructure is assumed to be deployed in Phase 3.

Power loads associated with Atomic City Transit were also included in planning. A review of the Atomic City Transit ZE Transition Plan can be found in Appendix A. Sharing parking with PCS1, Atomic City Transit support vehicles were included in charging implementation at PCS1. Transit vehicle loads were included in projections for PSC1. Additionally, the Transition Plan identifies on-route charging at White Rock Visitor Center and Atomic City Transit Center; the power loads at White Rock Visitor Center reflect the added power requirements and are assumed to be deployed in Phase 3.

4.2 Infrastructure Implementation Plan

To identify the quantity and level of charging needed to support a future EV fleet, vehicle specifications were used to project the level of power needed from a charger. The underlying assumption is that larger vehicles have and will continue to have larger batteries, providing more energy to move the vehicle throughout a workday. Larger batteries require higher capacity chargers to transfer more energy over a given charging window.

Figure 4-1: Charger assignments by class & make

	Pickup	SUV	Truck	Refuse Truck	Incomplete Single Cab	Incomplete	Cargo Van	Van	Sedan	Step Van	Cutaway	Minivan	Incomplete Double Cab
Class 1									0				
Class 1C	0	0											
Class 1D	1	0					0	0					
Class 2												0	
Class 2E	1	1										0	
Class 2F	1	1											
Class 2G	2						1						
Class 2H	2					3	1	1					3
Class 3	3				3	3					1		3
Class 4					3						1		
Class 5			3	3	3								
Class 6			3							3			
Class 7			3										
Class 8			3	2	3								

0	L2	2-to-1
1	L2	1-to-1
2	DCFC	2-to-1
3	DCFC	1-to-1

The figure above shows the charger level and configuration based on vehicle class and body type. Charger assignments identify between shared and dedicated, as well as between level 2 and direct current fast charging (DCFC) infrastructure. Shared infrastructure indicates that two vehicles would share a single charger. At the implementation level, sharing is only between vehicles operated by the same department.

The Implementation of charging infrastructure requires the determination between continuing the County's current two EV procurement policy (EV Policy) or pursuing a more aggressive decarbonization strategy to align with the CAP Policy transition.

The count, configuration, and year of charging infrastructure available to support EVs for both scenarios are identified below.

Table 4-2: Phased charger implementation (EV Policy top row, CAP Policy second row)

Facility	Present Day	Scenario	Phase 1 (2035)		Phase 2 (2043)		Phase 3 (2050)	
	Existing Handles/Plugs		**L2**	**DCFC**	**L2**	**DCFC**	**L2**	**DCFC**
Municipal Building	(12) Level 2 (in progress)	EV Policy		-	2	-	2	-
		CAP Policy		-	3	-	-	-
		Community						
Justice Center [3]	-	EV Policy	-	-	-	-	-	-
		CAP Policy	-	-	3	2	-	-
		Community			10	7		
Mesa Public Library	(4) DCFC (in progress)	EV Policy	-	-	-	-	-	-
		CAP Policy	-	-	-	-	-	-
		Community	-	-	-	-	-	-
PCS1	2 Level 1	EV Policy	2	-	2	1	3	-
		CAP Policy	6	-	3	4	3	12
		Atomic Transit	-	-	-	-	9	0
PCS3	-	EV Policy	-	1	-	1	1	-
		CAP Policy	-	-		1	1	1
PCS4	-	LAPS		-	-	-	20	12
PCS5	2 Level 1	EV Policy	2	1	3	-	-	-
		CAP Policy	13		3	8		13
LA Senior Center	-	EV Policy	3	-	1	-	1	-
		CAP Policy	4	-	2	-	-	-
		Community	4					

[3] No immediate need was identified to install DCFC chargers at the Justice Center to support fleet charging at this location. Given that majority of police vehicles are taken home, any future DCFC at this location will provide flexibility and resiliency to the County vehicles at this location and it will help further develop a network of fast chargers across the County that can be shared with the community.

Facility	Present Day	Scenario	Phase 1 (2035)		Phase 2 (2043)		Phase 3 (2050)	
	Existing Handles/Plugs		**L2**	**DCFC**	**L2**	**DCFC**	**L2**	**DCFC**
Eco Station	-	EV Policy	-	1	-	-	-	
		CAP Policy	1	-	-	5	1	2
Fuller Lodge	-	EV Policy	3	-	-	-	-	
		CAP Policy	5	-	1	-	-	-
Fire Station #4	-	EV Policy	-	-	-	-	-	-
		CAP Policy	-	-	-	1	-	-
Golf Course	-	EV Policy	1	-	-	-	-	-
		CAP Policy	1	-	-	-	-	1
		Community	6	-	-	-	-	-
LA Wastewater Treatment Plant	-	EV Policy	-	-	-	-	-	-
		CAP Policy	1	-	-	1	-	2
Ice Rink	-	EV Policy	-	-	-	-	-	-
		CAP Policy	2	-	-	-	-	-
		Community	8	-	-	-	-	-
Los Alamos Airport	-	EV Policy	-	-	-	-	-	-
		CAP Policy	-	-	-	-	1	-
White Rock Senior Center	-	Community	-	-	-	-	-	-
White Rock Library	-	Community	-	-	-	-	-	-
White Rock Visitor Center	(2) Level 2	Community	-	-	-	-	-	-
		Atomic Transit	-	-	-	-	-	1 on-route
White Rock Fire Department	-	Community	4	-	-	-	-	-
Wastewater Treatment Plant and Parks	-	EV Policy	-	-	-	-	-	-
		CAP Policy	-	-	-	-	-	-
Aquatic Center	-	Community	8	-	-	-	-	-
Los Alamos Nature Center	-	Community	-	-	2	-	-	-
North Mesa Sports Complex	-	Community	-	-	6	-	-	-

The recommendations above are based on a total build-out of infrastructure to support EV transition based on an EV Policy scenario (top row of each facility) compared to CAP Policy scenario (bottom row of each facility) for a 100% transition of the feasible vehicles by 2050.

On a year-by-year- basis, charging infrastructure deployments are shown below. As high-level estimates the costs below aim to give an indication of how much all-in infrastructure development could cost. This includes electrical upgrades, site work, charger, and labor costs based on the cost sheets and estimates provided by the County from its charger project at Municipal.

Table 4-3: Charging infrastructure cost and deployment timeline for EV Policy Scenario

	EV Policy[4]	Phase	Proposed Charging Infrastructure Location
2026	$965,682	Phase 1	PCS1-PCS5
2027	$592,964		LA Senior Center-Eco Station
2028	$855,311		Fuller Lodge
2030	$24,806		Golf Course
2034	$74,419	Phase 2	PCS5
2035	$220,742		PCS1-PCS3
2036	$49,613		Eco Station-Municipal Building
2041	$24,806		Justice Center
2043	$124,176	Phase 3	Fuller Lodge
2045	$24,806		Fire Station #4
2047	$24,806		LA Senior Center

The implementation under the CAP Policy Scenario differs substantially as shown below.

Table 4-4: Charging infrastructure cost and deployment timeline for CAP Policy Scenario

	CAP Policy	Phase	Proposed Charging Infrastructure Location
2026	$1,252,213	Phase 1	PCS1-PCS5
2027	$539,284		LA Senior Center-Eco Station-LA Wastewater Treatment Facility
2028	$564,090		Ice Rink-Fuller Lodge
2030	$24,806		Golf Course
2034	$1,106,849		PCS5
2035	$655,148		PCS1-PCS3-Fire Station #4
2036	$502,243	Phase 2	Eco Station-Municipal Building
2037	$96,806		Justice Center
2039	$24,806		Fuller Lodge
2040	$85,565		LA Wastewater Treatment Facility
2041	$49,613		LA Senior Center

[4] See section 6.1.2.4-Facility Infrastructure and Charging Equipment for cost inputs breakdown

	CAP Policy	Phase	Proposed Charging Infrastructure Location
2042	$195,936		Eco Station
2043	$1,101,197		PCS1
2045	$281,501	Phase 3	LA Wastewater Treatment Facility-PCS3
2047	$1,112,343		PCS5
2049	$171,130		Golf Course-LA Airport

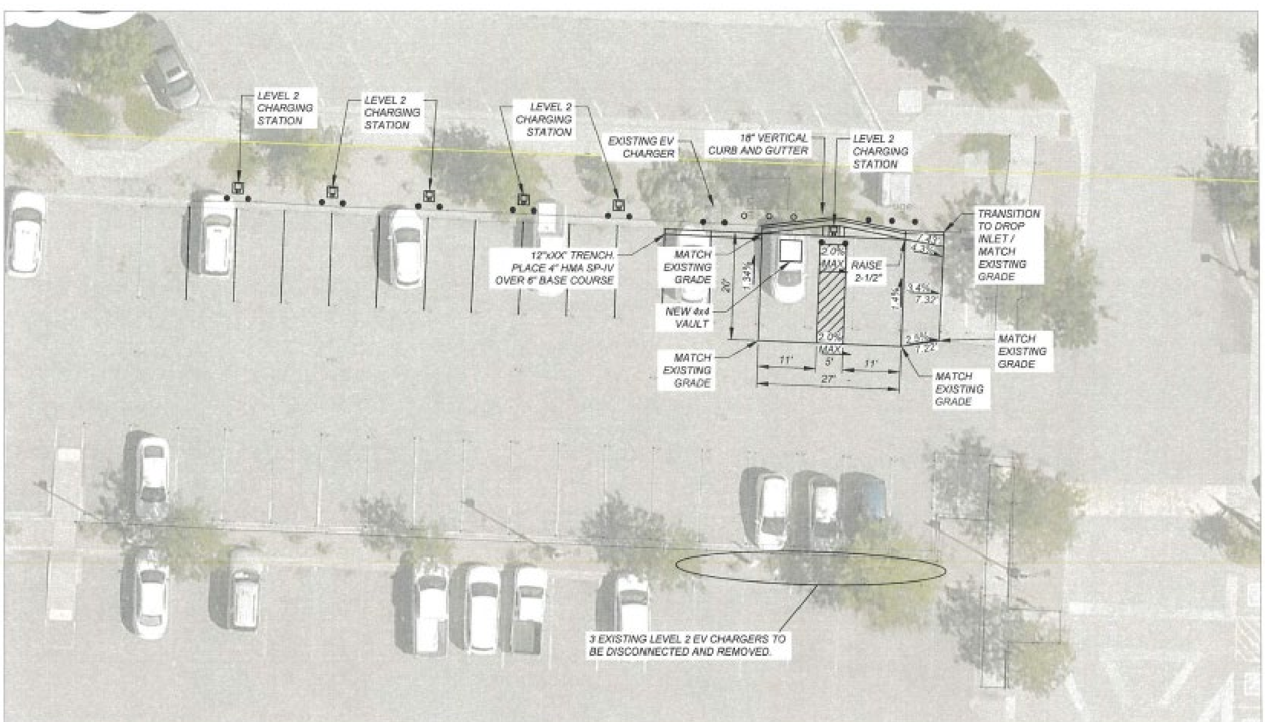
The investment in infrastructure not only depends on deployment of EVs but also the capacity of existing electrical equipment. Due to substantial power needs, electrical systems often need to be upgraded when deploying. Close coordination between the County and DPU will be essential, and EV charging infrastructure needs should be incorporated into general electrification plans for County facilities.

4.2.1 Preliminary Charger Siting

As part of facility site visits and desktop review, a high-level consideration of where charging could be located was developed. Preliminary charging siting was identified for the ten County facilities with charging under the CAP Policy Implementation in Phase 1. Ariel views of these facilities can be found in Appendix C.

Importantly, preliminary charging siting differs substantially from detailed design. Shown in Figure 4-2 are the site plans developed for the 12 charging handles under construction at Municipal.

Figure 4-2: Detailed design for charging at the Municipal Building



The County should pursue the development of facility-specific designs using this Conversion Plan as a framework. Each facility requires a master electrical plan that includes the phases of infrastructure installation. This approach allows the County to construct charging infrastructure incrementally while ensuring designs accommodate full buildout capacity.

4.2.2 Resiliency

To maintain power during both scheduled and unscheduled power outages, one practical approach includes using temporary mobile diesel generators, as these offer a flexible and scalable solution. A generator with sufficient capacity to run for one full day is recommended for short-term outages, while longer durations can be accommodated with additional diesel fuel storage on-site or through scheduled fuel deliveries. The anticipated outage length, local policies, and environmental regulations will influence the total fuel requirements and storage needs.

Whether a permanent or mobile generator is selected, the generator should be positioned close to its distribution panel to streamline the connection process. If the County opts for a permanent generator, protective barriers like bollards are recommended around the equipment yard for security, though mobile generator setups may allow for removable or adjustable barriers to accommodate different scenarios.

Temporary mobile generators are primarily intended for short-term emergency situations, such as imminent or actual blackouts. Backup power generation at the scale the County will need to charge a full EV fleet is substantial. It is recommended that backup power generation is acquired via a mobile generator service.

4.2.3 Take Home Charging

Transitioning take-home vehicles to zero-emission models requires addressing residential charging infrastructure and establishing clear policies for equipment installation, energy cost reimbursement, and employee eligibility. The County has several strategic options to support this transition while managing costs and operational complexity.

The County could pursue one of two primary strategies for take-home EV charging. First, the County could prioritize plug-in hybrid electric vehicles (PHEVs) over BEVs and require all charging to occur at County facilities. This approach minimizes upfront infrastructure investment and maintains centralized control over charging operations. However, this strategy places significant demand on the County's fleet charging network, potentially requiring infrastructure expansion and creating scheduling constraints for employees who must charge vehicles during work hours or return to County facilities specifically for charging.

Alternatively, the County could establish a residential charging program that installs Level 2 charging equipment at eligible employee residences. This approach distributes charging demand, provides greater operational flexibility for employees, and maximizes the electric range utilization of both PHEVs and BEVs. The County should establish clear eligibility criteria including availability of dedicated off-street parking, home ownership or landlord coordination and approval, adequate electrical service capacity at the residence, and employee commitment to the take-home EV program. The County will need to determine if the charging infrastructure is owned by the county of not and what policies or regulations impact this. This model requires higher upfront capital investment but reduces strain on centralized fleet charging infrastructure and better supports the County's long-term electrification goals.

Regardless of the infrastructure approach selected, vehicle telematics will play a critical role in tracking energy consumption and supporting employee reimbursement for residential charging costs. Telematics-based monitoring is the preferred method for measuring electricity use because it is agnostic to charger type, charging network, or charging location—whether employees use County-provided Level 2 chargers, public charging stations, or standard 120-volt outlets. The telematics system records all charging events with corresponding energy consumption (kWh), enabling accurate calculation of reimbursement amounts. The County would reimburse employees for actual electricity consumed by applying local utility rates, which can be uploaded to the telematics platform to account for variable time-of-use pricing structures. This approach ensures transparency, creates auditable records for compliance, and avoids the administrative complexity and potential inequity of flat-rate stipends.

Successfully integrating take-home vehicles into the County's fleet transition strategy requires clear, comprehensive policy documentation and proactive communication with affected employees and the public. It is strongly recommended that the County develop a formal Take-Home Electric Vehicle Policy prior to assigning any electrified take-home vehicles. This policy should clearly define eligibility criteria for take-home vehicle assignment, restrictions on commute distance or daily mileage, responsibilities for charging equipment installation and maintenance, procedures for energy cost reimbursement and documentation requirements, allocation of infrastructure costs between the County and employee (if any), equipment return protocols upon separation or reassignment, and insurance and liability considerations. Clear policy communication will help manage employee expectations, ensure equitable treatment across departments, and establish the administrative framework necessary for successful program implementation and scaling as the County's EV fleet expands.

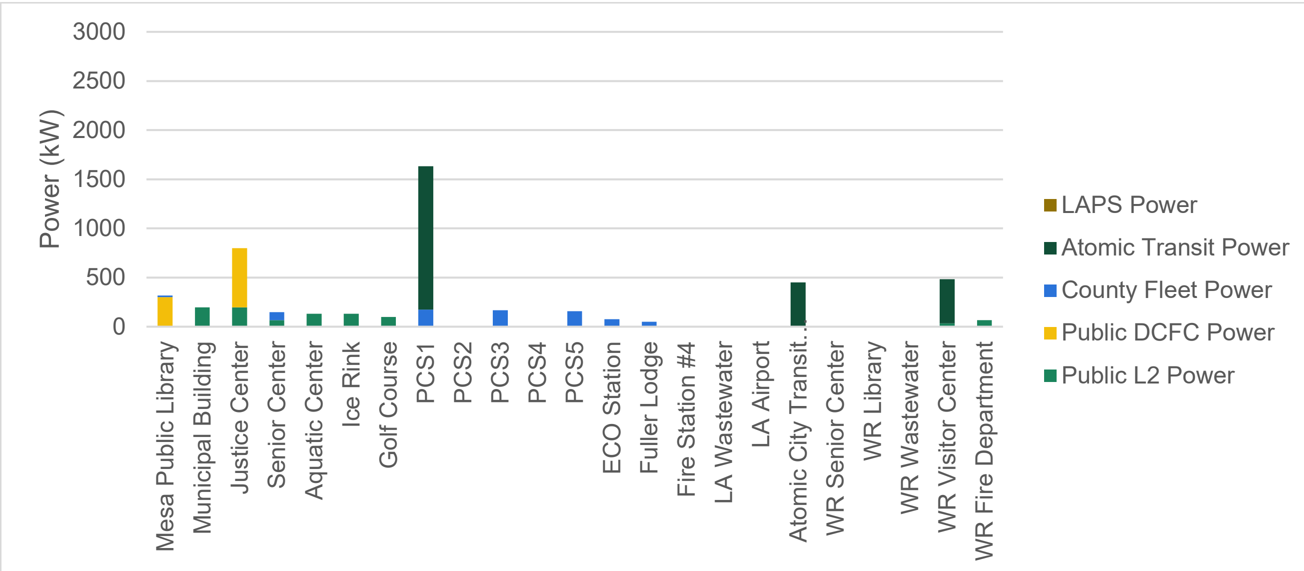
4.3 Utility Coordination

The Los Alamos County 30-Year Electrification Forecast projects substantial load growth driven by the rapid adoption of EVs, building electrification, and distributed energy technologies. The analysis, prepared by Burns & McDonnell 1898 & Co. as part of a separate report, establishes three scenarios of low, medium, and high adoption spanning residential, commercial, and fleet electrification through 2055.

The forecast supports the County’s CAP target of carbon neutrality by 2050 and serves as a foundation for the 30-Year Distribution System Master Plan. The analysis examined how growing electrification will affect energy use and grid demand in Los Alamos County. It looked at expected increases in power consumption, strain on the electrical system, and future investment needs to support the transition. The scenarios were shaped by interstate policies like Advanced Clean Cars II, Advanced Clean Trucks, and the Heavy-Duty Omnibus standards, all of which aim to phase out gasoline and diesel vehicle sales by the mid-2030s.

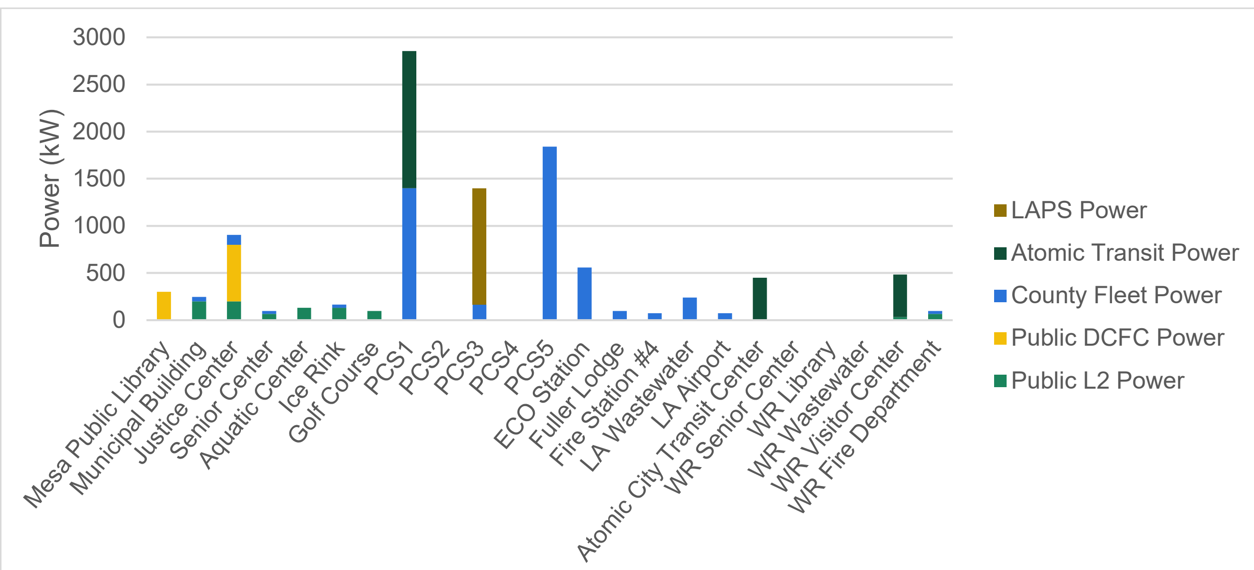
The amount of power demand from County operations from each implementation scenario are identified in the figures below. These projections include the total connected load from Atomic City Transit, which operates out of PCS1, as it was calculated in Zero Emission Transition Plan (Appendix A).

Figure 4-3: EV Policy total projected connected load (kW) by facility and type



The connected load from the EV Policy scenario differs substantially from the CAP Policy as it pertains to the total connected load as shown in Figure 4-3.

Figure 4-4: CAP Policy total projected connected load (kW) by facility and type



The figures above (Figure 4-2 and Figure 4-3) show where the electrification of County fleet will add to the increase in demand. Phase 1 at PCS1 includes the total connected load required from Atomic City Transit for both transition scenarios.

In terms of infrastructure implications, the shift toward electric vehicles will steadily increase electricity demand and influence how the Los Alamos Department of Public Utilities plans future grid capacity. As more medium- and heavy-duty electric vehicles are added, power needs will become concentrated around County facilities and charging hubs. Public charging infrastructure is also expected to expand significantly: by 2040, the County may need between 65 and 217 Level 2 chargers and 6 to 8 fast chargers, growing to about 135-432 Level 2 and 12–36 fast chargers by 2055, depending on how quickly EV adoption occurs (see accompanying Los Alamos Public Charging Infrastructure Readiness Plan.)

4.3.1 Communication Infrastructure Enhancements

The transition to EVs requires upgrades to the County's communication infrastructure to support efficient charging, optimize fleet performance, and enable data-driven decision-making. Effective utility coordination for charging infrastructure extends beyond infrastructure upgrades, it requires advanced communication systems that allow fleets, chargers, and utilities to share real-time information.

Two key technology pillars in this transition are smart charging systems and fleet tracking software (telematics). Together, these tools allow for real-time coordination between vehicles, chargers, and fleet management systems while ensuring secure and reliable data transmission across departments.

4.3.1.1 Smart Charging

Smart charging refers to the integration of software, artificial intelligence, and control systems to determine when and how much charging occurs for each vehicle. Rather than charging all vehicles simultaneously, smart charging platforms strategically manage energy distribution based on factors such as time of day, number of connected EVs, state of charge (SOC), and scheduled dispatch times. This approach optimizes energy use while avoiding excessive demand charges and time of use utility rates.

Key benefits of smart charging include:

- Optimized dispatch readiness: Prioritizing vehicles based on route needs (e.g., charging vehicles scheduled for earlier departure first).
- Reduced utility costs: Minimizing charging during peak-rate periods to lower demand charges and overall electricity expenses.
- Grid-friendly operations: Coordinating vehicle charging to smooth facility power demand and align with utility programs.

To achieve these benefits, chargers must be capable of remote management, and the software must effectively aggregate and control them. Selecting chargers that support the Open Charge Point Protocol (OCPP) is a best practice to ensure interoperability across platforms and vendors.

The County can choose between native charging software (offered by most manufacturers) or third-party fleet charging platforms such as Synop, AMPLY Power, Siemens, and BetterFleet (formerly Evenergi). While native software often integrates seamlessly with chargers, third-party platforms often provide more robust fleet-wide insights, including real-time SOC, charging efficiency, and performance data for vehicles on route. These platforms typically involve per-vehicle subscription fees (often exceeding $100 per vehicle per month) but deliver significant operational and cost-saving advantages. Charging software helps reduce electricity costs by optimizing charging schedules to avoid peak demand charges and take advantage of lower off-peak rates. Operationally, it improves fleet reliability by coordinating charging to ensure vehicle availability, prevents overloading infrastructure, and supports better energy management across the system.

4.3.1.2 Fleet Tracking Software and Telematics

As fleets transition to EVs, fleet tracking software becomes essential for monitoring vehicle and charger performance, managing maintenance, and optimizing operations. These platforms provide real-time data on SOC, charging sessions, energy consumption, mileage, and route performance, allowing operators to make informed decisions regarding scheduling, dispatch, and maintenance planning.

Key performance indicators (KPIs) that telematics can track include:

- EV vs. non-EV miles traveled
- Energy consumption and fuel economy per mile
- EV vs. non-EV fuel/energy costs (per kWh vs. per gallon)
- Fleet availability and mean distance between failures
- Maintenance costs per mile by vehicle type

By leveraging this data, the County can compare EV performance across different routes and environmental conditions, support predictive maintenance, and calculate total cost of ownership.

Examples of leading telematics solutions include Geotab, Synop, Fleet Complete, and RouteSmart, all of which support advanced analytics for electric fleets. When selecting a telematics provider, the County should prioritize platforms adhering to ISO/IEC 27001:2013 information security standards to ensure that sensitive fleet and operational data are encrypted, securely stored, and compliant with municipal cybersecurity requirements.

4.3.1.3 Platform Integration and Scalability

To increase the value of these technologies, smart charging systems and telematics platforms must be integrated into a unified data management ecosystem. This will allow the County to monitor charging infrastructure performance, track fleet energy use, and align operational decisions with utility data.

All EV equipment should be connected to existing municipal data networks using secure, encrypted VPNs and integrated with current data collection architecture. Over time, these systems can be expanded to incorporate advanced features such as vehicle-to-grid (V2G) communications, enabling the fleet to interact dynamically with the electric grid, further optimizing energy use and cost management.

4.4 Safety Considerations

Safety is a paramount concern in the operation and maintenance of any municipal fleet, especially as new technologies introduce different risks and requirements. The transition to EVs necessitates comprehensive planning to protect personnel, facilities, and equipment. This involves conducting thorough risk assessments, developing emergency preparedness procedures, coordinating with emergency services, and implementing robust training and safety protocols.

4.4.1 Risk Assessment and Planning

Conducting a risk assessment is recommended to determine the specific equipment, protocols, and resources required to ensure the safe operation and maintenance of EVs within the County's fleet. This assessment should account for the unique characteristics of electric drivetrains, high-voltage systems, and battery chemistries, and it will serve as the foundation for the development of detailed safety and preparedness measures. Key outcomes of this process include:

- Emergency preparedness procedures tailored to EV-specific risks, such as lithium-ion battery fires, thermal runaway events, and high-voltage electrical hazards. These procedures should integrate both preventative strategies and response protocols to minimize risk to personnel and property.
- Employee training programs for both maintenance staff and operations personnel, emphasizing safe handling practices, proper use of personal protective equipment (PPE), and protocols for responding to EV malfunctions or emergency situations.
- Engagement plans for emergency service providers, including local fire departments and other emergency responders. Early coordination will help align response procedures and possibly identify opportunities for joint training.

Regular reviews of these plans are necessary as EV technology evolves, and new vehicle models are introduced into the fleet. Regular reassessments can help the County stay aligned with industry best practices, regulatory requirements, and lessons learned from early adopters of fleet electrification.

4.4.2 Fire Protection

Lithium-ion batteries present unique fire risks due to the potential for thermal runaway. Formal codes specific to EVs and charging infrastructure are still being developed, so agencies should coordinate with local fire authorities for guidance. NFPA 855 can serve as a reference for energy storage systems, but its requirements may exceed what is necessary for outdoor EV charging areas.

Practical measures to enhance safety include:

- Coordination with the local Authorities Having Jurisdiction (AHJs), including the fire marshal and building officials, to determine additional fire protection needs.
- Installing emergency shut-off (shunt) switches to quickly disconnect power to chargers during an incident
- Using physical barriers (bollards) to protect high-voltage equipment
- For enclosed parking structures, consider designated "burn-out" zones for vehicles experiencing thermal events
-

Additionally, fire isolator systems (e.g., EV fire blankets, aerosol suppression units) are supplemental tools and should be used to complement existing safety measures. Coordination with local fire authorities is essential to ensure compliance with evolving standards and site-specific needs. Detailed considerations for fire isolator use during thermal runaway are presented in Table 4-3 and shown in Figure 4-1.

Table 4-5: Key considerations for fire isolator use during thermal runaway

Topic	Key Considerations
Fire Risks in EV charging Areas	Most EV charging stations are outdoors, reducing fire spread risk due to open-air heat dissipation. However, parking garages, especially underground, present greater dangers because: • Limited access to firefighting equipment makes suppression more difficult • Closely parked vehicles increase fire spread potential • Structural integrity concerns arise from prolonged heat exposure in enclosed environments In these locations, traditional fire suppression systems such as sprinklers are still the primary method of controlling fires, but fire isolators serve as an essential supplement to enhance protection.
How Fire Isolators Improve Safety	Fire isolators, including fire blankets and aerosol-based suppression systems, provide an additional layer of fire containment by: • Containing flames and smoke at the source to reduce the risk of fire spreading to other vehicles and structural elements • Minimizing collateral damage to surrounding infrastructure and assets • Enhancing firefighter response by slowing fire progression, giving responders more time to arrive and act effectively Best practices suggest placing fire isolator kits near every 8-10 EV charging station to ensure rapid deployment in case of an emergency.
Components of a Fire Isolator System	A comprehensive fire isolator setup includes: • EV Fire Blanket (9x6 meters) – designed to cover large vehicles, reusable up to six times, withstands temperatures up to 2,950°F • Aerosol Units – Deployed under the fire blanket, directly targeting the battery to reduce fire intensity • Fire Isolator Trolley – Allows for easy transportation of fire suppression equipment within the parking facility • Fire Isolator Standing Cabinet – A dedicated storage unit for quick access to fire blankets and aerosol suppression tools (See Figure 4-1) These fire suppression solutions have already been adopted by various parking garage operators worldwide, providing a proven means of reducing EV fire risks.
Implementation Considerations	While fire isolators provide valuable supplemental protection, they should be integrated alongside existing fire suppression systems, such as sprinklers and fire alarms, to increase safety in EV charging environments. In particular: • Facilities with EV chargers in enclosed parking structures should include fire isolator stations nearby • Staff training is essential to ensure proper deployment • Clear signage and accessibility enhance emergency response efficiency

Figure 4-5: Fire isolator cabinet

4.4.3 Electrical

Ensuring electrical safety is critical when transitioning to EVs, as the high voltage charging infrastructure introduces significant risks that are substantially different from those associated with conventional fleets. Without proper safeguards, these risks can result in serious injury, equipment damage, or service disruptions. To mitigate these hazards, a comprehensive electrical safety framework should be established that incorporates the following measures:

- Proper insulation and grounding of all high-voltage equipment, ensuring that stray currents cannot create shock hazards or damage connected systems.
- Clear signage and restricted-access barriers around high-voltage areas to limit exposure to authorized and trained personnel only. Visual warnings and lockout/tagout procedures should be standardized across all facilities.
- Routine maintenance and inspections of charging infrastructure, cables, connectors, and protective devices to detect and resolve issues.
- Strict adherence to safe power-down protocol, including disconnecting 12V batteries, removing high-voltage service disconnects and fuses, verifying zero voltage with CAT III/IV-rated multimeters, and observing OEM-specific discharge waiting periods (often up to 10 minutes)
- Emergency Shunt Switches
- Bollards to protect equipment and users

Beyond these core measures, training and continuous reinforcement of electrical safety practices should be prioritized for maintenance staff, operators, and emergency responders. Establishing clear standard operating procedures, reinforced through recurring safety audits and drills, will further ensure that EV operations remain safe as infrastructure scales and new vehicle technologies are introduced.

4.4.4 Personal Protective Equipment Best Practices

These recommendations reflect widely adopted best practices for personnel working with EVs and high-voltage systems. Staff involved in routine charging or high-voltage maintenance face elevated risks, including potential arc-flash events and battery-related hazards, which require enhanced PPE beyond standard automotive workplace requirements. Essential PPE includes:

- High voltage insulated gloves and tools rated to appropriate voltage levels, with gloves tested regularly for integrity to prevent electrical shock.
- Arc-flash and flame-retardant clothing designed to withstand heat and minimize burn injuries in the event of electrical discharge or battery thermal events.
- Face shields and electrical safety hooks to protect against flying debris, molten metal, and to provide safe distancing during emergency interventions.
- Foot protection designed for high-voltage environments.

In addition to providing PPE, establishing clear protocols for inspection, maintenance, and replacement of protective equipment is essential, as managed or outdated PPE can compromise worker safety. As EV adoption expands and technology evolves, PPE requirements should be reviewed and updated in alignment with OEM guidance and applicable safety regulations. Regular drills, audits, and refresher courses will help embed these practices into daily operations, creating a culture of safety around high-voltage work.

4.4.5 Ventilation

Although EVs do not emit exhaust, batteries may release hazardous gases, particularly during charging or thermal events. These recommendations reflect current best practices for areas where eVs are serviced or maintained, especially indoor maintenance facilities. For enclosed spaces, facilities should incorporate:

- Robust ventilation systems to maintain a continuous flow of fresh air.
- Gas detection systems to provide early warnings of hazardous gas accumulation.
- Regular inspections of ventilation equipment to ensure ongoing performance.

These measures help safeguard both personnel and infrastructure by reducing exposure risks and ensuring compliance with evolving safety standards. While these features are not included in the financial analysis provided in this report, they should be considered during design and planning alongside safety training and other protective measures.

4.4.6 Coordination with Emergency Responders

EV-specific incidents, such as high-voltage fires or collisions, require specialized emergency response. Establishing collaborative protocols with local emergency services is essential. Key considerations include:

- Developing incident response protocols for collisions, fires, and high-voltage malfunctions.
- Sharing critical resources, such as fleet maps, charger layouts, vehicle schematics, and safety data sheets, to streamline response logistics.
- Conduct mock emergency drills to improve preparedness and refine response strategies.

By embedding these measures into emergency preparedness planning, agencies can not only minimize safety risks but also foster confidence among employees, emergency responders, and the public in safe integration of EV technology.

5 Training and Foundational Skills

Transitioning to an EV fleet introduces new technologies, safety protocols, and operational requirements that must be supported through comprehensive workforce training. All relevant personnel, including operators, maintenance staff, emergency responders, and management, must be equipped with the knowledge and tools necessary to safely and efficiently operate and maintain the new fleet. This section outlines the training framework, key strategies, and resources to support this transition.

5.1 Training Framework and Approach

A multi-pronged training strategy should be implemented to ensure effective workforce development and long-term institutional knowledge. The following methods form the foundation of a strong training framework:

Table 5-1: Potential training methods

Plan	Description
Train-the-Trainer	Small numbers of staff are trained and subsequently train colleagues. This maintains institutional knowledge while reducing the need for external training.
Vehicle Manufacturer Training	OEM training provides critical, equipment-specific operations and maintenance information. Prior to implementing EV technology, staff work with the OEMs to ensure all employees complete necessary training.
Retraining & Refresher Training	Entry level, intermediate, and advanced continuous learning opportunities are offered to all relevant staff.
EV Training from Other Municipalities	The County and its departments leverage the experience of cities/counties who were early EV adopters and collaborate to share lessons learned during their EV transition.
Local Partnerships and Collaborations	The County can partner with local organizations, utilities, and industry groups to host workshops and training sessions that strengthen understanding of EV operations, charging infrastructure, and safety practices.
Professional Associations	Associations such as the EV Alliance[5] offer opportunities for sharing and lessons learned across government agencies. Members collaborate in many areas such as: sharing existing targets for EV deployment; working to establish a shared vision and target for EV leadership jurisdictions; creating and sharing action plans to achieve EV adoption targets; sharing data and best practices to inform target setting and planning; and encouraging and supporting additional jurisdictions to set ambitious EV targets.

Before the initial EV deployment, all staff should undergo a general orientation to familiarize them with new technology, safety protocols, and organizational expectations. This orientation supports a unified understanding of EV operations across departments.

[5] https://EValliance.org/members/

5.2 Operator Training

Operating EVs requires specialized training due to high-voltage systems, regenerative braking, and energy management requirements. The following recommendations reflect current best practices to improve vehicle range and use regenerative braking efficiently.

5.2.1 Operator Training and Skill Development

The handling of electric power systems, regenerative braking, and energy-efficient driving techniques include some unique features of operating EVs. Operators will need to develop proficiency in energy management, maximizing vehicle range through efficient driving practices, managing state-of-charge throughout shifts, and understanding how acceleration and deceleration impact battery life. Familiarity with charging protocols will be essential, including the operation of charging infrastructure, managing charging schedules, and understanding fast-changing requirements. Operators must also be aware of protocols for safely connecting and disconnecting high voltage charging systems for emergency shutoff procedures to disable a vehicle safely in the event of an incident.

Additionally, basic diagnostic awareness will be crucial, as it enables operators to recognize and respond to diagnostic alerts, allowing for proactive issue reporting that helps minimize vehicle downtime.

5.2.2 Adjustments to Operational Schedules

Electric vehicles often have different operational ranges and charging needs compared to conventional vehicles, impacting how daily schedules and routes are managed. Operations personnel will need to adapt in areas including:

- Route Planning and Range Management: Since EVs are limited by battery range, route planning will increasingly depend on factors like distance, elevation, and availability of charging stations. Operational teams will need to coordinate route assignments based on real-time charge levels and charging station accessibility.
- Charging Time Allocation: Charging times, especially during peak demand periods, will require scheduling adjustments to ensure that the vehicles are ready for deployment without delaying operations. Strategic midday, or opportunity, charging intervals may also need to be integrated into shift planning.
- Reduce Idle Times: Unlike combustion vehicles, EVs don't require idling to keep engines warm, which necessitates adjustments in fleet dispatch and staging areas. New policies will emphasize energy conservation by reducing unnecessary power draw when vehicles are stationary.

Adapting operations to these factors will require not only new scheduling and routing practices but also stronger reliance on data-driven decision-making. Telematics systems and communication technologies (see Section 4.3.1) can provide real-time visibility into vehicle status, battery charge, and route conditions, enabling dispatchers to make timely adjustments and optimize fleet performance.

5.2.3 Impact on Operational Staffing Needs

EV adoption may influence the allocation of operational staff. For instance, fewer support staff may be needed for fueling logistics, while additional staff may be required for managing charging operations, scheduling, and performance monitoring. These roles may be combined with other dispatch responsibilities or developed as specialized positions.

Since EVs provide continuous data on energy usage, charge levels, and vehicle health, operations staff may require new data analysis skills to interpret this information and make data-driven decisions. Real-time monitoring can help prevent battery degradation and increase vehicle utilization.

Operations personnel will need specialized training on handling EV-specific emergencies, such as battery fires, which require safety protocols. Operations teams will need to develop a health and safety framework, ensuring that operators are equipped with necessary protective equipment and are trained to respond to potential hazards. Protocols should educate operators on high-voltage risks and offer safe handling guidelines. As new EV models are introduced, operational protocols and best practices may shift, and the County's operations would benefit from regular training and protocol updates, collaboration with manufacturers, and utilizing newer training programs.

5.3 Maintenance Training

As the County transitions to an EV fleet, ensuring a robust and well-trained maintenance team will be crucial. With EVs, the maintenance landscape shifts significantly through the upkeep of electric-specific components. Maintenance staff must be skilled in both foundational electrical tasks and complex system management, adapting to the unique demands of electric propulsion, energy storage systems, and charging infrastructure.

5.3.1 Safety Protocols and Foundational Skills

Safety is paramount when working with high-voltage systems and large-scale lithium-ion batteries. Mechanics should be trained in handling high-voltage components, batteries, and chargers, as well as understanding specific safety protocols to mitigate risk during inspections and repairs. Essential skills include:

- Reading and interpreting wiring diagrams.
- Safely handling and testing high-voltage batteries.
- Troubleshooting and repairing basic circuit faults.
- Demonstrating proficiency in the use of digital multi-meters.
- Repairing wiring and terminals to prevent faults.

It will be critical for mechanics to operate under defined procedures to ensure safe practices and avoid damage to batteries and components during maintenance. Procedures can include properly de-energizing batteries, potential hazards associated with batteries, and emergency preparedness in the event of thermal runaway and the release of flammable or toxic gases.

Creating a safe work environment for high-voltage EV maintenance begins with the implementation of safety barriers and warning signage. Work areas should also be enclosed using high-visibility tape, barricades, or designated high-voltage work zones to prevent unauthorized access and accidental exposure to electrical hazards. Additionally, warning signs must be placed at all entry points, clearly indicating potential dangers such as high voltage, restricted access, and required protective equipment. These measures serve as constant visual reminders for technicians and help maintain a controlled and hazard-free workspace.

Compliance with occupational safety standards is another essential aspect of high-voltage EV maintenance. Facilities must adhere to regulatory requirements, and OEM-specific safety protocols to ensure proper handling of EV systems. To maintain a high level of safety, organizations should conduct regular safety audits, risk assessments, and continuous training for personnel to keep them updated on evolving best practices and compliance measures. Furthermore, despite safety precautions, emergency preparedness is critical, as high-voltage accidents can be severe. Isolating the power source using emergency shutdown procedures and providing first air for electric injuries are essential. To see further safety considerations for high-voltage systems, including proper power-down procedures, voltage verification, and mandatory discharge times, refer to below.

Table 5-2: Safety protocols for EV maintenance

Procedure	Steps and Key Considerations
Safe Power Down and Isolation of High-Voltage Systems[6]	Ensuring a safe working environment when servicing EVs begins with proper high-voltage isolation procedures. Each manufacturer may have specific protocols, but the general steps include: • Disconnect the 12V Battery: This prevents accidental activation of the high-voltage system. • Locate and Remove the High-Voltage Service Disconnect: Each EV has a designated service disconnect that must be removed following OEM guidelines. • Remove High-Voltage Fuses: To ensure the circuits carrying high voltage are completely disconnected. • Isolate the High-Voltage Battery: This may require specialized tools and physical disconnection of key connections as outlined in the manufacturer’s service manual.
Verification of Zero Voltage	Before beginning any maintenance on high-voltage components technicians must confirm that the system is fully de-energized: • May use a CAT III or CAT IV-rated digital multimeter designed for high-voltage measurement. • Measure across battery terminals and high-voltage cables to ensure no residual charge remains. • Confirm zero potential across all high-voltage points to prevent electrical shock risks.
Mandatory Waiting Periods for System Discharge	Even after power is disconnected, high-voltage components can retain electricity due to capacitors and energy storage elements. To ensure full discharge:

[6] https://stedmansgarage.co.uk/electric-vehicles/high-voltage-ev-safety/

Procedure	Steps and Key Considerations
	• A waiting period of up to 10 minutes is typically required after disconnecting power, though OEM recommendations may vary. • Follow manufacturer-specific guidelines for discharge times, as some EV models may require longer periods.

5.3.2 Advanced System Proficiency

The next layer of training focuses on multiplexing skills, which streamline vehicle electrical systems and replace extensive hard wiring. This skill set includes reading ladder logic diagrams, troubleshooting with LED indicators, and understanding input and output electrical symbols, which are critical for efficient fault resolution.

In addition, maintenance staff will require specialized skills in electronics, as nearly all systems in EVs are controlled by advanced electronic devices. Training in electronic maintenance includes:

- Inspecting and testing capacitors, diodes, and other modules.
- Differentiating between analog and digital signals.
- Understanding data communication protocols.
- Proficiency in using oscilloscopes and graphing multimeters.
- Troubleshooting gateway modules and understanding (Direct Current) DC and AC systems.

Equipping personnel with these capabilities will also necessitate access to specialized diagnostic and testing equipment, ensuring that staff can accurately identify faults and perform safe, effective repairs on complex EV systems.

5.3.3 Energy Storage and Propulsion Systems

The Energy Storage Systems (ESS) requires ongoing monitoring, diagnostics, and preventive care to ensure the longevity and performance of EV batteries. Maintenance staff will be trained in:

- ESS management hardware and software, focusing on maintaining optimal battery health.
- Safe practices for handling, storing, and disposing of high-voltage batteries.

Troubleshooting and servicing electric propulsion systems and other balance-of-plant elements are critical for reliable vehicle operation. Amid the shift to EVs, ensuring a robust and well-trained maintenance team will be crucial. With EVs, the maintenance landscape shifts significantly, placing greater emphasis on high-voltage safety protocols, advanced diagnostics, and the upkeep of electric-specific components. Maintenance staff must be skilled in both foundational electrical tasks and complex system management, adapting to the unique demands of electric propulsion, ESS, and charging infrastructure.

5.3.4 Diagnostic Systems and Preventative Maintenance

EVs come equipped with sophisticated onboard diagnostic systems that alert maintenance teams to performance issues, ensuring quick identification and repair of faults. Technicians will need to be trained to use onboard diagnostic systems effectively, interpreting alerts to prevent potential downtime. They will also need to implement preventative maintenance protocols for both buses and smaller fleet vehicles, focusing on high-wear components like brakes and HVAC systems, which experience reduced wear but still require consistent monitoring and servicing.

Early data suggests that EVs may require less reactive maintenance than combustion vehicles due to having fewer moving parts; however, long-term evidence specific to large-scale heavy-duty fleet deployment in North America remains limited.

In terms of preventative maintenance, EV propulsion systems are inherently more efficient than ICE engines and involve approximately 30% fewer mechanical parts. Key considerations include:

- Fluids – EVs eliminate the need for oil changes, transmission fluid replacements, and exhaust system maintenance due to their simplified drivetrains.
- Braking – Regenerative braking reduces wear on brake pads, though early transit data shows maintenance costs remain concentrated in the cab, body, and accessory systems. It is recommended that OEMs provide detailed preventative maintenance schedules, skills, and parts lists for EV compounds.
- Batteries – Battery systems introduce new requirements, such as monitoring thermal regulation and state of health, which demand periodic servicing.
- Tires – Increased vehicle weight and instant torque can accelerate tire wear, adding costs compared to ICE fleets.

Telematics further supports preventative maintenance by providing continuous monitoring of battery health, high-voltage system performance, motor temperatures, and component stress. Alongside regular diagnostic scans, inspections, preemptive replacement of high-wear parts, and calibration of electrical and mechanical systems, telematics allow maintenance to shift from time- or mileage-based schedules toward precision targeting of emerging issues.

In practice, battery health monitoring could replace traditional oil checks, thermal system diagnostics could substitute for coolant changes, and system performance tracking could stand in for many mechanical inspections, marking a significant evolution in maintenance philosophy.

5.3.5 Charging Infrastructure Maintenance

Maintenance of charging infrastructure will also be essential to fleet operations. Technicians will be responsible for diagnosing and repairing charging equipment to maintain reliable operations, preventative care for chargers, with a focus on components prone to wear from high-frequency usage and managing updates to smart charger software to ensure compatibility and performance.

As operations transition to EVs, decisions regarding the maintenance of charging infrastructure are equally critical as those related to vehicle servicing. Both in-house and outsourced approaches to managing charging infrastructure present distinct trade-offs that impact cost, reliability, and operational control.

5.3.5.1 In-House Maintenance

Maintaining charging infrastructure internally provides the highest degree of operational control. Technicians can address issues quickly, incorporate preventative maintenance into regular service schedules, and build organizational expertise that will be valuable as infrastructure expands. This approach also reduces dependency on third-party contractors and aligns with a preventative maintenance model, minimizing downtime through routine inspections, diagnostics, and component replacements.

However, it requires upfront investment in staff training, electrical safety certifications, and potentially specialized diagnostic tools. Agencies may also need to plan for dedicated space and resources to safely support this work.

5.3.5.2 Outsourced Maintenance

Outsourcing charging infrastructure maintenance can reduce internal workforce and training requirements, making it attractive for agencies with limited technical capacity or smaller deployments. Specialized service providers may also offer advanced diagnostic tools, direct OEM support, and warranties that simplify maintenance planning.

The downside, however, is reliance on external contracts, which can introduce higher long-term costs and slower response times if issues arise during critical operational periods. Outsourcing also limits the opportunity for agencies to build internal expertise, potentially creating knowledge gaps as infrastructure scales.

5.3.5.3 Key Considerations

Most fleet operators find a hybrid approach to be the most effective: handling routine inspections and basic preventative tasks in-house while relying on OEMs or specialty providers for complex or warranty-covered repairs. This balances responsiveness and institutional learning benefits of in-house maintenance with the technical expertise and risk management offered by external service providers.

5.3.6 Ongoing Training and Certification

Given the evolving nature of EV technology, ongoing training will be critical to keep maintenance staff up to date on the latest practices and equipment. The County's maintenance team should undergo regular training sessions covering critical topics, including high-voltage systems, safety protocols, and advanced diagnostics, as well as periodic refresher courses and certification renewals to stay current.

Once vehicles are out of general warranty, the County should document inspection and repair protocols, supplementing OEM manuals with real-world insights gained from fleet operations. Maintenance intervals will be aligned with OEM recommendations, but staff should monitor and adapt routines as necessary, refining them based on observed EV performance characteristics.

5.4 Manufacturer Training Programs

OEM-specific training programs provide critical equipment-based instruction. Examples of existing EV manufacturer training programs are summarized below.

1. **General Motors**[7]: General Motors (GM) offers the Automotive Service Educational Program (ASEP) which is designed to train participants in diagnostic and repair techniques on current and future GM vehicles. It is an accredited apprenticeship program that partners with colleges and technical schools across Canada. Training includes:

    a. Engine repair
    b. Heating and air conditioning
    c. Manual drive train and axles
    d. Suspension and steering
    e. Automatic transmission/transaxles
    f. Brakes
    g. Electrical systems
    h. Engine performance

2. **Ford Motor Company**[8]: Ford Motor Company (Ford) offers the Automotive Student Service Educational Training (ASSET) program which includes a curriculum specifically for EVs. The program is a collaboration between Ford, Ford and Lincoln dealers along with community colleges and technical schools. The training is in-person and hands-on with the goal of providing Ford customers with technicians highly trained in Ford service technologies and diagnostic and repair methods. The Ford EV curriculum includes courses on:

    a. High voltage systems safety
    b. Hybrid vehicle components and operation
    c. Battery electric vehicle components and operation
    d. High voltage battery service
    e. Hybrid and electric vehicle operation and diagnosis

3. **Tesla**: Tesla offers two training programs, including the Tesla START[9] and the Tesla Independent Repair Training Program.[10] Tesla START provides training to develop technical expertise and earn certifications through in-class theory, hands-on labs, and self-paced learning. It is a four-year program where participants receive all levels of provincially accredited technical training and on-

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[7] https://www.gm.ca/en/home/careers/asep.html
[8] https://media.ford.com/content/fordmedia/fna/us/en/news/2022/06/06/ford-technician-training-programs-new-locations.html
[9] https://www.tesla.com/en_ca/careers/tesla-start
[10] https://service.tesla.com/docs/Public/training/

the-job training needed to take the Red Seal Examination.[11] Tesla START partnered with British Columbia Institute of Technology to integrate the program into customized curriculums at the Burnaby campus.

The Tesla Independent Repair Training Program is geared towards technicians and repair shops interested in servicing Tesla vehicles. Training modules include:

a. Tesla introduction: basic repairs and maintenance
b. High voltage and electrical systems
c. Infotainment and driver assist systems
d. Body controls, thermal, and chassis systems
e. Closures and glazing
f. High voltage, electrical system, and Noise, Vibration, and Harshness diagnosis
g. Infotainment and driver assist system diagnosis
h. Body controls, thermal and chassis system diagnosis
i. Model 3 battery repairs

The County will need to strategically decide how to pair maintenance staff with OEM training as their EV fleet grows.

5.5 Emergency Responder Training

As mentioned in Section 4.4.6, proactive coordination with emergency services is critical. Firefighters, paramedics, and other first responders should be trained to manage EV-related incidents safely. Training should include:

- High-voltage Awareness: Identifying and managing EV battery risks.
- Battery Fire Protocols: Handling thermal runaway events using fire isolators, water, or approved extinguishing agents.
- Deactivation Procedures: Safely powering down vehicles to prevent unintended discharge.
- Mock Incident Response: Simulated scenarios to practice EV collision and fire response.

Los Alamos County should provide responders with up-to-date maps, schematics, and safety data sheets and host recurring training sessions to refresh and update response protocols.

[11] Automotive service technicians require a Red Seal License in Canada.

6 Financial and Budget Analysis

The financial evaluation of the County's EV transition consisted of the modeling of three cases through a 2050 horizon:

1. ICE-only Case: the 'business-as-usual' scenario and assumes the continued use of the current County fleet.
2. EV Policy: maintains the County's current EV procurement practices of transitioning two (2) vehicles to EVs each year.
3. Climate Action Plan (CAP) Goal: aligns with the County's goal of achieving 80% carbon neutral operations by 2050. Through the 25-year timeline, 86% of the County's eligible fleet vehicles are transitioned to EV.

The ICE-only case and EV Cases are used for illustrative purposes to determine the comparative financial impacts of a transition to an EV fleet compared to business-as-usual. This in turn can provide insight into budget and funding requirements for capital and operating costs.

The financial modeling process is comprised of several steps. First, Stantec worked with the County to collect all relevant financial data including vehicle purchase prices, vehicle mileage, vehicle maintenance costs, and fuel costs. The data, coupled with industry research, was used to determine the model inputs. After the model inputs were complete, costs were projected year by year through 2050 using inflation rates and energy price trends[12] where applicable. The financial modeling is expressed in year of expenditure.

It is important to understand the inherent limitations of financial modeling due to assumptions about costs, operations, asset life cycles, and other factors that are difficult to predict. Additionally, it is important to note that the categories modeled are focused on the impacts of a change in propulsion type. They do not account for service delivery costs (such as operator salaries) as these costs would be largely comparable in both scenarios.

6.1 Financial Model Inputs

The financial model consists of several inputs that can largely be divided into fleet and cost information. The fleet inputs include vehicle useful life, vehicle mileage, and fuel efficiency. Cost inputs includes vehicle purchase costs, vehicle maintenance, fuel, and charging infrastructure. All inputs and assumptions are described in more detail below.

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[12] Energy price projections sourced from U.S. Energy Information Administration (EIA), Annual Energy Outlook https://www.eia.gov/outlooks

6.1.1 Fleet Inputs

To support financial modeling, a set of commonly used fleet vehicles was identified based on body type and duty classification. This selection reflects the overall fleet composition and enables consistent application of financial inputs across vehicle types. Seven vehicles were chosen to serve as representative models for the analysis, summarized in Table 6-1. In addition, Table 6-2 shows a breakdown of LAC's fleet vehicle duty classifications.

Table 6-1: Representative Vehicle groups and most common fleet vehicle

Vehicle Duty	Class	Representative ICE Vehicle	Representative EV
Light-duty Vehicle 1 (LD1)	2E, 2F, 2G	Ford F-150	Ford F-150 Lightning
Light-duty Vehicle 2 (LD2)	1D, 2E	Ford Explorer	Ford Mustang Mach-E
Medium-duty Vehicle 1 (MD1)	2H, 3	Ford F350	Zeus Z-19
Medium-duty Vehicle 2 (MD2)	2H	Ford F-250	Unavailable
Heavy-duty Vehicle 1 (HD1)	6,7	Kenworth T270/T3 Series	Kenworth K270E
Heavy-duty Vehicle 2 (HD2)	8	Peterbilt 520	Peterbilt 520 EV
Heavy-duty Vehicle 3 (HD3)	8	International SA537	Kenworth T880E

Table 6-2: LAC Fleet vehicle duty classification

Vehicle Duty	LAC Fleet Vehicle	Total Vehicle Count
Light-duty Vehicle 1 (LD1)	• CHEVROLET / Silverado • DODGE CREW CAB / 2500 • DODGE PICKUP / 1500 • FORD / F-150 • FORD / Ranger • NISSAN / Frontier	61
Light-duty Vehicle 2 (LD2)	• CHEVROLET / Bolt EV • CHEVROLET / Malibu • CHEVROLET / Tahoe • CHEVROLET / Traverse • CHEVROLET / Uplander • DODGE / Caravan/Grand Caravan • DODGE / Durango • DODGE / Grand Caravan • ELDORADO AMERIV / Grand Caravan • FORD / Crown Victoria • FORD / Escape • FORD / Expedition • FORD / Explorer • FORD / Mustang Mach-E • FORD / Taurus	78

Vehicle Duty	LAC Fleet Vehicle	Total Vehicle Count
	• FORD CARGO VAN / Transit • FORD C-MAX / C-Max • JEEP / Grand Cherokee • JEEP / Renegade • TOYOTA / Camry	
Medium-duty Vehicle 1 (MD1)	• CHEVROLET / Silverado • CHEVROLET / Silverado HD • FORD / E-350 • FORD / E-450 • FORD / F-350 • FORD / F-450 • FORD / F-550 • FORD S/D / F-550 • ISUZU / NQR/NRR • ISUZU / NRR	41
Medium-duty Vehicle 2 (MD2)	• CHEVROLET / Express • DODGE CREW CAB / 2500 • FORD / E-350 • FORD / F-250 • FORD / F-350 • FORD / Transit • RAM / 2500	33
Heavy-duty Vehicle 1 (HD1)	• FREIGHTLINER / FL70 • FREIGHTLINER / MT 55 Chassis • GMC / C7 • INTERNATIONAL / MA025 • INTERNATIONAL / SA537 • KENWORTH / T3 Series • KENWORTH / T4 Series • KENWORTH T270 / T3 Series • KENWORTH T370 / T3 Series	10
Heavy-duty Vehicle 2 (HD2)	• AUTOCAR / ACX Xpeditor • KENWORTH / L770 • KENWORTH T270 / T3 Series • KENWORTH T800 / T8 Series • PETERBILT / 520 • PETERBUILT 520 / 520	10
Heavy-duty Vehicle 3 (HD3)	• ALTEC AM60 / SR525 • FREIGHTLINER / FL112 • INTERNAT SFA / SR525 • INTERNATIONAL / F-2574 • INTERNATIONAL / SA537 • INTERNATIONAL / SA567 • INTERNATIONAL / SF567 • KENWORTH / T880 • KENWORTH DERICK / T8 Series • KENWORTH T470 / T4 Series • KENWORTH T800 / T8 Series • KENWORTH T880 / T880	17

Vehicle Duty	LAC Fleet Vehicle	Total Vehicle Count
	• VACTOR / SA637 • VACTOR / T4 Series	

6.1.1.1 Vehicle Mileage

Annual average vehicle mileage was estimated using fleet data provided by the County. Prior to analysis, the data was cleaned to remove any outliers that appeared unreasonably high or low. For each representative vehicle duty group, the average mileage within that group was used to approximate expected yearly travel distances. EVs were assumed to have the same annual mileage as their fossil fuel equivalents. A summary of these estimates is provided in Table 6-2.

Table 6-3: Annual vehicle mileage by vehicle type

Vehicle	Annual Mileage
Light-duty Vehicle 1 (LD1)	7,572
Light-duty Vehicle 2 (LD2)	5,803
Medium-duty Vehicle 1 (MD1)	5,684
Medium-duty Vehicle 2 (MD2)	6,429
Heavy-duty Vehicle 1 (HD1)	4,797
Heavy-duty Vehicle 2 (HD2)	6,738
Heavy-duty Vehicle 3 (HD3)	2,545

6.1.1.2 Fuel Efficiency

Fuel efficiency for fossil fuel vehicles was calculated using fleet mileage and fueling data provided by the County. Prior to analysis, the data was reviewed and cleaned to remove values that appeared unreasonably high.

EV efficiencies were estimated based on expected performance of comparable vehicle models. For each duty group, individual vehicle efficiencies were modeled and then averaged to produce a group-level estimate. The resulting values are presented in Table 6-4.

Table 6-4: Fuel efficiency by vehicle type

Vehicle	Fossil Fuel Efficiency (mi/gal)	EV Efficiency (mi/kWh)
Light-duty Vehicle 1 (LD1)	14.47	2.00
Light-duty Vehicle 2 (LD2)	16.58	2.00
Medium-duty Vehicle 1 (MD1)	10.02	1.11
Medium-duty Vehicle 2 (MD2)	10.06	0.67

Vehicle	Fossil Fuel Efficiency (mi/gal)	EV Efficiency (mi/kWh)
Heavy-duty Vehicle 1 (HD1)	5.82	0.67
Heavy-duty Vehicle 2 (HD2)	4.40	0.40
Heavy-duty Vehicle 3 (HD3)	3.74	0.40

6.1.2 Cost Inputs

Cost inputs for the financial analysis were developed using data provided by the County. This included vehicle purchase prices, fueling and charging costs, maintenance, and other operational expenses. These inputs were applied to the selected representative vehicles to support consistent and comparative evaluation across duty groups and fuel types.

6.1.2.1 Vehicle Purchase

Vehicle purchase costs were developed using a combination of data provided by the County and market research. First the dataset was reviewed for accuracy, and entries with clear errors were removed.

Fossil fuel vehicle purchase prices were calculated using County fleet data and adjusted to reflect current market conditions. Only vehicles purchased in 2015 or later were included in the analysis. For vehicles acquired between 2015 and 2020, an average 2% yearly increase was applied to account for inflation and market shifts. Then prices were averaged within each vehicle type group to establish baseline purchase costs for the financial model.

EV purchase prices were estimated by applying a cost ratio to the adjusted fossil fuel vehicle prices. This ratio was calculated by comparing LAC’s price of a representative fossil fuel vehicle with a comparable EV within each vehicle type group.

- Light Duty: The Ford F-150 costs $45,364, and the EV equivalent Ford F-150 Lightning costs $66,530. This results in a cost factor of 1.47.
- Medium Duty: The Super Duty F-250 costs $78,000, while the EV equivalent to Bollinger B4 costs $158,758. This results in a cost factor of 2.04.
- Heavy Duty: The Peterbilt 520 costs $454,000, while the EV equivalent Peterbilt 520 EV costs $1,000,000. This results in a cost factor of 2.20.

That factor was then applied to the adjusted fossil fuel vehicle price to estimate the EV purchase price for each representative vehicle group.

After establishing the vehicle purchase prices, a 2%[13] annual inflation rate was then applied from 2025 onward within the financial model. The capital costs for each vehicle type are summarized in Table 6-5.

Table 6-5: Vehicle purchase costs

Vehicle	ICE Purchase Cost	EV Purchase Cost	Cost Factor	Notes
Light-duty Vehicle 1 (LD1)	$38,813	$56,923	1.47	Historical purchase price from 2015 onward and adjusted for inflation
Light-duty Vehicle 2 (LD2)	$41,210	$60,438	1.47	Historical purchase price from 2015 onward and adjusted for inflation
Medium-duty Vehicle 1 (MD1)	$67,876	$138,153	2.04	Historical purchase price from 2015 onward and adjusted for inflation
Medium-duty Vehicle 2 (MD2)	$38,610	$78,585	2.04	Historical purchase price from 2015 onward and adjusted for inflation
Heavy-duty Vehicle 1 (HD1)	$148,646	$327,414	2.20	Historical purchase price from 2015 onward and adjusted for inflation
Heavy-duty Vehicle 2 (HD2)	$277,718	$1,000,000	2.20	Historical purchase price from 2015 onward and adjusted for inflation
Heavy-duty Vehicle 3 (HD3)	$261,722	$576,480	2.20	Average of all class 8 vehicles

6.1.2.2 Vehicle Maintenance

Maintenance cost inputs were developed using annual service data provided by the County. Average costs were calculated for each representative vehicle group and used as baseline values. For EVs, a 10% reduction was applied to reflect lower maintenance needs due to fewer moving parts[14].

Once the cost per mile was established, a 2% annual inflation rate was applied year over year within the financial model. Final values are expressed in dollars per mile, shown in Table 6-6.

[13] Inflation assumption of 2% reflects the Federal Reserve's long-run target and historical averages. https://www.federalreserve.gov/economy-at-a-glance-inflation-pce.htm

[14]

Table 6-6: Vehicle maintenance costs

Vehicle	ICE Maintenance ($/mile)	EV Maintenance ($/mile)
Light-duty Vehicle 1 (LD1)	$0.24	$0.22
Light-duty Vehicle 2 (LD2)	$0.27	$0.24
Medium-duty Vehicle 1 (MD1)	$0.51	$0.46
Medium-duty Vehicle 2 (MD2)	$0.34	$0.30
Heavy-duty Vehicle 1 (HD1)	$0.66	$0.60
Heavy-duty Vehicle 2 (HD2)	$3.32	$2.99
Heavy-duty Vehicle 3 (HD3)	$2.85	$2.56

6.1.2.3 Fuel

Fossil fuel costs were determined using data provided by the County and are expressed in dollars per gallon. The Los Alamos Department of Public Utility (DPU)) average on-peak rate was used for the electricity cost based on an electricity bill provided by the County, expressed in dollars per kWh. All fuel types were also forecasted using the US Energy Information Agency trends for the respective energy types.[15]

After the base fuel costs were determined, an inflation rate of 2% was applied. The fuel cost inputs are summarized in Table 6-7.

Table 6-7: Fuel costs

Fuel Type	Cost	Units
Diesel	$2.64	$/gal
Gasoline	$2.49	$/gal
Electricity	$0.11	$/kWh

6.1.2.4 Facility Infrastructure and Charging Equipment

Estimates for the facility infrastructure and charging equipment were developed based on a combination of sources including recent Los Alamos County project cost breakdown for the installation and equipment cost

[15] https://www.eia.gov/outlooks

of Level 2 chargers at the Municipal building (July 2025). Such estimates were also compared and adjusted based on historical costs from similar project installation that Stantec has conducted. The facility modifications to accommodate charging infrastructure will be phased in overtime in accordance with the vehicle procurement timeline described in Section 3.2-Implementation Strategies and following the equipment and timeline specifications as described in Section 4.2-Infrastructure Implementation Plan. Following the structure of the recent project cost and based on Stantec's experience installing over 800 charger plugs across the US, the infrastructure and charging equipment cost was broken down following the categories and assumptions described in Table 6-8.

Table 6-8: Facility modifications and charging equipment cost assumptions

Cost Category	Cost Type	Included Items	Unit Type	Estimate
Site Preparation, demolition, and construction	Fixed	Site prep/demolition, new concrete and asphalt, landscape, barricades, painting, labor, site clean-up, bonds 3%, mobilization 4%, taxes 7.0625%	Total per site (applied when more than 3 plugs are installed at once)	$290,000
Charger Installation	Per unit	Labor to just install chargers, cost of electrical conduct and related electrical work, charger bases and bollards.	$/plug	$12,000
L2 Charger Equipment Procurement	Per unit	Based on current quote for L2 from Charge Point but assumes a 25% price reduction after standardizing procurement and securing one compatible charge management system.	$/plug	$10,000
DCFC Equipment Procurement	Per unit	Assumes the cost of centralized/ rectifiers units that can be connected between 4 and up to 8 plugs. Power between 75kW and 150kW per plug.	$/plug	$60,000
DPU grid connection upgrade and transformer	Fixed	Power utility related expenses to upgrade connection, cost of transformer and switchgears.	Total per site (applied when more than 50kVA of capacity is needed at once)	$35,000
Contingency	Fixed	Applied as an added percentage to the total site cost estimation.	Total per site	20%

Following this cost assumption breakdown, it was possible to generate an infrastructure related capital investment per site for each year but for simplicity, the aggregated cost estimates per site for each phase are summarized in tables for the EV Policy scenario and for the CAP Policy scenarios, Table 6-9 and Table 6-10 respectively. Additional details about the exact charger count and year of implementation are presented in Section 4.2-Infrastructure Implementation Plan.

Table 6-9: Facility infrastructure and charging equipment costs by year for EV Policy scenario

Facility	2026- 2035	2036 - 2043	2044 - 2050
Municipal	$-	$49,613	$49,757
Justice Center	$-	$-	$-

Facility	2026- 2035	2036 - 2043	2044 - 2050
Mesa Public Library	$-	$-	$-
PCS1	$440,059	$135,178	$74,419
PCS3	$390,446	$85,565	$24,806
PCS5	$525,623	$74,419	$-
LA Senior Center	$464,865	$24,806	$24,806
ECO Station	$128,099	$-	$-
Fuller Lodge	$464,865	$-	$-
Fire Station at Golf	$-	$-	$-
Golf Course	$24,806	$-	$-
LA Wastewater	$-	$-	$-
Ice Rink	$-	$-	$-
LA Airport	$-	$-	$-

The CAP Policy infrastructure costs are summarized by phase below.

Table 6-10: Facility infrastructure and charging equipment costs by year for CAP Policy scenario

Facility	2026- 2035	2036 - 2043	2044 - 2050
Municipal	$-	$74,419	$-
Justice Center	$-	$96,806	$-
Mesa Public Library	$-	$-	$-
PCS1	$539,284	$416,678	$1,101,197
PCS3	$-	$152,905	$110,371
PCS5	$712,929	$1,106,849	$1,112,343
LA Senior Center	$489,671	$49,613	$-
ECO Station	$24,806	$427,824	$195,936
Fuller Lodge	$514,478	$24,806	$-
Fire Station at Golf	$-	$85,565	$-
Golf Course	$24,806	$-	$85,565
LA Wastewater	$24,806	$85,565	$171,130
Ice Rink	$49,613	$-	$-
LA Airport	$-	$-	$85,565

6.2 Comparison and Outcomes

The cost comparison between the ICE-only Case, the EV Policy Case, and the CAP Policy Case is presented in Table 6-9, incorporating both capital and operating expenses. Over the 25-year horizon, the ICE-only Case has a total cumulative cost of $82.6 million, the EV Policy Case has a total cumulative cost of $88.3 million, and the CAP Policy Case has a total cumulative cost of $110 million. The EV Policy and CAP Policy Cases are 7% and 33% more expensive than the ICE-only Case, respectively. However, CAP Policy scenario maintenance and fuel costs are $3 million lower than the ICE-only scenario, and EV Policy scenario maintenance and fuel costs are $750,000 lower than the ICE-only scenario over the 25-year timeline. This reflects the lower cost of electricity compared to gasoline and diesel, as well as reduced routine maintenance requirements of EVs compared to conventional vehicles.

The EV Policy scenario reflects the County's current procurement approach of adding two EVs per year, meaning these costs and benefits would occur under the existing trajectory. In contrast, the CAP Policy scenario represents a more ambitious strategy aligned with the County's climate goals, requiring accelerated fleet electrification and associated infrastructure investments. While this approach is more rigorous and entails higher upfront costs, assuming savings in maintenance and fuel can offset part of the increased purchase price and infrastructure needs. Overall, an additional $27.3 million would be required to achieve the CAP targets, as opposed to following current procurement policy. Is that an average of $1.092M more per year investment?

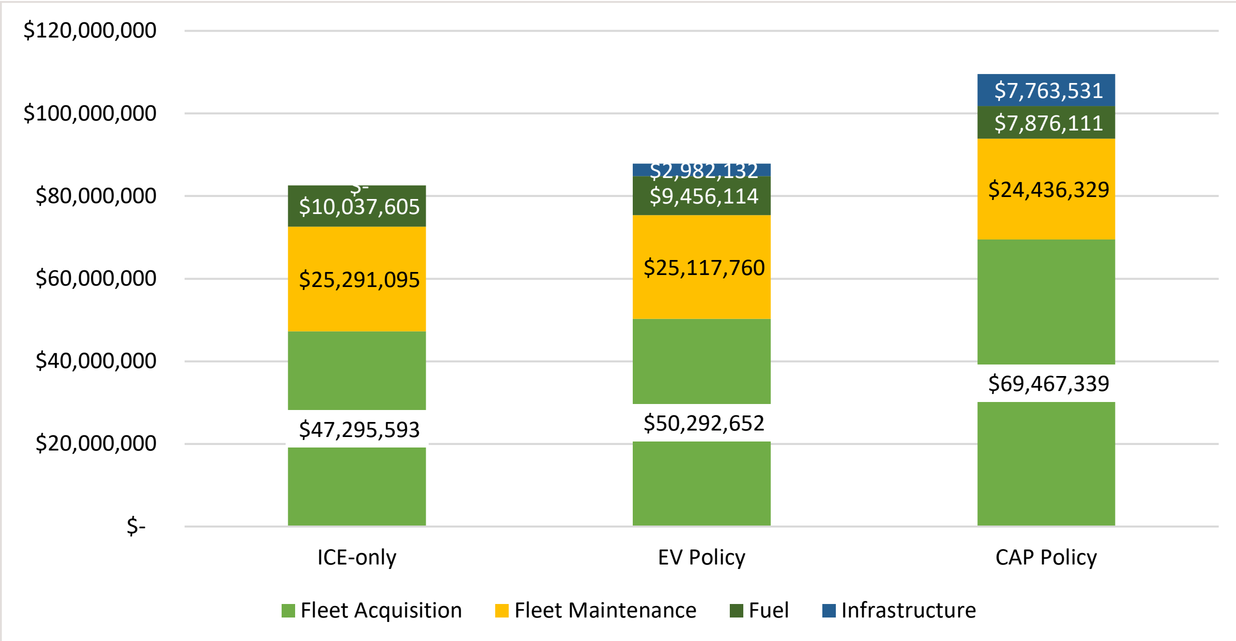
The financial assessment does not consider any grants or other alternative funding mechanisms. Therefore, there may be additional opportunities to offset the difference in the cost between the ICE-only Case and the EV cases.

Table 6-11: ICE-only Scenario, EV Policy Scenario, and EV CAP Scenario comparison

Vehicle	ICE-only Scenario	EV Policy Scenario	CAP Policy Scenario	EV Policy vs CAP Policy Cost Difference
Fleet Acquisition	$47,295,593	$50,292,652	$69,467,339	$19,174,687
Fleet Maintenance	$25,291,095	$25,117,760	$24,436,329	$(681,432)
Fuel/Electricity	$10,037,605	$9,456,114	$7,876,111	$(1,580,003)
Infrastructure	$-	$3,446,997	$8,206,009	$4,759,012
Total	$82,624,293	$88,313,523	$109,985,788	$21,672,264

Figure 6-1 shows a breakdown of costs between the ICE-only scenario and EV scenarios. The procurement of EVs is $3 - $22 million more than the ICE-only scenario due to the higher purchase price of EVs compared to fossil fuel vehicles. Additionally, the conversion and upgrades to the facility for charging infrastructure represents an added cost of $3.5 - $8.2 million. Lastly, the use of electricity represents an economic benefit of $580,000 - $2.1 million over the life of the project when compared to the current use of fossil fuels. These savings are a direct reflection of the improved efficiency that EVs have with respect to legacy technologies, with the added benefit of eliminating tailpipe emissions.

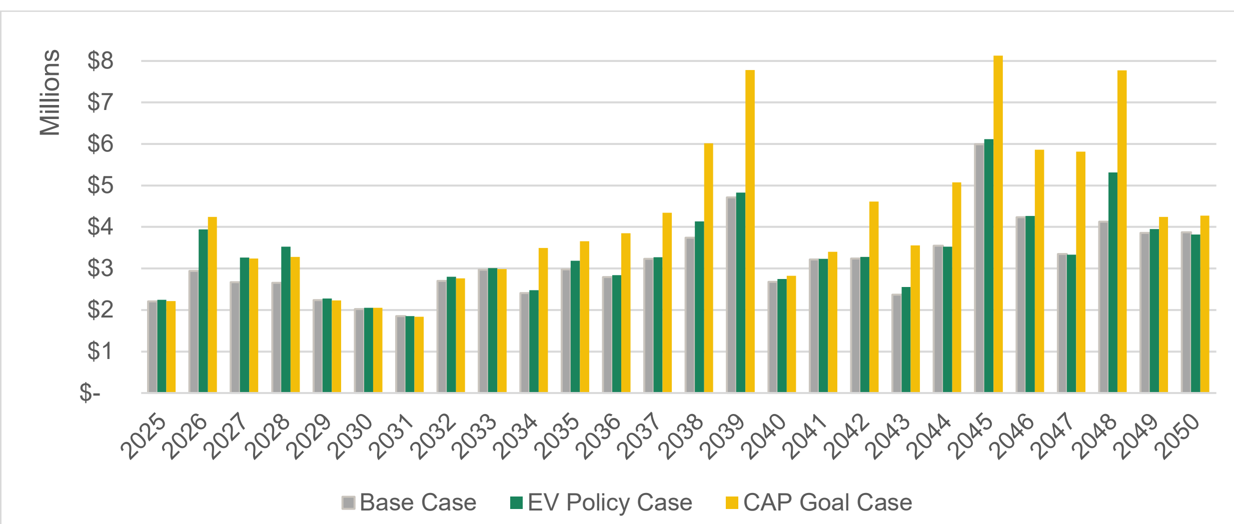
Figure 6-1: Cost breakdown of ICE-only Scenario and EV Scenarios



Finally, Figure 6-2 shows the year-to-year comparison between the ICE-only, the EV Policy, and the CAP Policy scenarios. The higher costs for the EV scenarios occur during the years that facility modifications are conducted and when a greater number of vehicles are purchased.

The most significant cost increases are expected during high purchase years with added costs due to the installation of new charging infrastructure. The County may be able to offset some of the high costs through shifting some purchases to other years. While this approach reduces “sticker shock,” year that have many EV procurements may be advantageous when applying for large grants.

Figure 6-2: Annual cost comparison 2025-2050



7 Greenhouse Gas Emissions Analysis

One of the chief reasons for transitioning to EVs is to reduce pollution by removing the harmful byproducts of fossil fuel combustion from traditional combustion engines. While EVs eliminate all tailpipe emissions, there may still be upstream carbon emissions associated with the production of energy sources that power EVs. This section assesses the overall impact of the EV transition on harmful emissions.

The approach to model GHG production from the County's fleet considered 7 vehicle categories of 2 light-duty, 2 medium-duty, and 3 heavy-duty vehicles. This approach utilizes averages from each category to approximate what the County could expect to see. As shown in the equation below, the average annual miles per vehicle category was divided by the average vehicle modeled efficiency to provide total annual kWh per vehicle. Carbon intensity based on Los Alamos Department of Public Utilities (DPU) grid was applied to calculate the total converted metric tons[16] of CO_2e produced by each vehicle. Based on the Transition Schedule outlined in Section 4.0, the count of each vehicle category and technology distribution (EV vs Internal Combustion Engine (ICE)) provided an annual metric ton of CO_2e emitted by the County's fleet.

$$\frac{annual\ miles}{vehicle} \div \frac{miles}{kWh} = \frac{kWh}{vehicle}\, x\, \frac{gCO_2e}{kWh} = \frac{gCO_2e}{vehicle}\, x\ vehicle\ count\ x\, \frac{1}{10^6} = annual\ ton\ CO_2e$$

The annual electricity supply mix for Los Alamos County was established using the DPU FY2025 Q1-Q4 energy supply reports.[17] Reported MWh from each resource were summed to determine total consumption and the proportional share of carbon-emitting (Econ Purchases, Laramie River Station) and non-emitting resources (Mercuria, WAPA, Abiquiu, and EL Vado).

The carbon intensity for the Econ Purchases category was assigned using the U.S EPA eGRID 2022 emission factor for the WECC Southwest (AZNM) subregion.[18] The reported rate of 779.4 lb CO_2e/MWh was converted to 0.352 metric tons CO_2e/MWh and applied to all Econ Purchase MWh, as this supply is not tied to a specific single generation source. The carbon intensity for the Laramie River Station was calculated using 2024 emissions and generation data from the U.S. EPA Clean Air Markets Program Data and applied based on the County's annual share of MWh from this facility.[19]

Emission intensity was adjusted to reflect the planned addition of Foxtail Flats solar project in 2027. Based on projected annual solar generation, it was assumed that this energy will displace an equivalent share of

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[16] All GHG calculations are presented in metric tons of CO_2 equivalent (CO_2e), which is calculated using the short-term 20-year global warming potential of CO_2, methane, black carbon, and particulate matter.

[17] Q1 - https://indd.adobe.com/view/59cafca5-7418-49f4-bbad-6c96cff117e8
Q2 - https://indd.adobe.com/view/f6707156-8858-428f-a6c8-0c5108eba31b
Q3 - https://indd.adobe.com/view/139b8d4f-d3b7-407b-b74b-274084d39e41
Q4 - https://indd.adobe.com/view/f621f01d-6a2e-473f-9997-bb34eb01f7f0

[18] https://www.epa.gov/system/files/documents/2024-01/egrid2022_summary_tables.pdf

[19] https://campd.epa.gov/data/custom-data-download

Econ Purchases, resulting in an estimated 50% reduction in carbon-emitting supply from that category. The resulting grid mix yields an adjusted emissions intensity of approximately 227.8 gCO_2e/kWh for scenario modeling. Additionally, to reflect the DPU's stated goal of achieving a fully carbon-neutral electricity supply by 2040, a second scenario using a green-electricity emissions factor of 90 gCO_2/kWh was incorporated to represent long-term decarbonization. Below, the equations used to calculate energy production from carbon-emitting resources and to account for the Foxtail Flats displacement effect are presented.

Econ Purchases and Laramie River Station energy production per year:

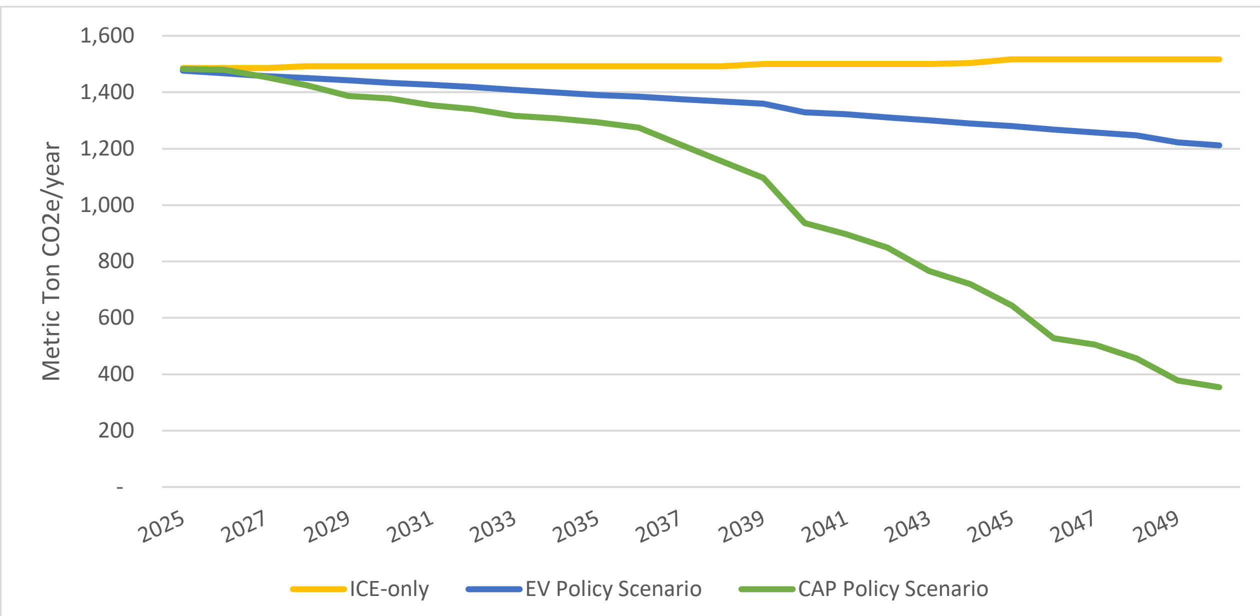
$$(MWhQ1 + MWhQ2 + MWhQ3 + MWhQ4)$$

Foxtail Flats[20] energy production per year:

$$(MWhQ1 + MWhQ2 + MWhQ3 + MWhQ4) \times 0.50$$

Due to the gradual transition to EVs, emissions are reduced as more ICE vehicles are phased out as shown in the figure below.

Figure 7-1: Annual fleet CO_2e emissions (metric tons), 2025 - 2050



[20] https://www.losalamosnm.us/Initiatives/Foxtail-Flats-Solar-Power-and-Battery-Storage

Based on the ZEVDecide modeling methodology, the County's current fleet is estimated to emit an average of 1,499 metric tons of CO_2e in a year, inclusive of upstream emissions.[21]

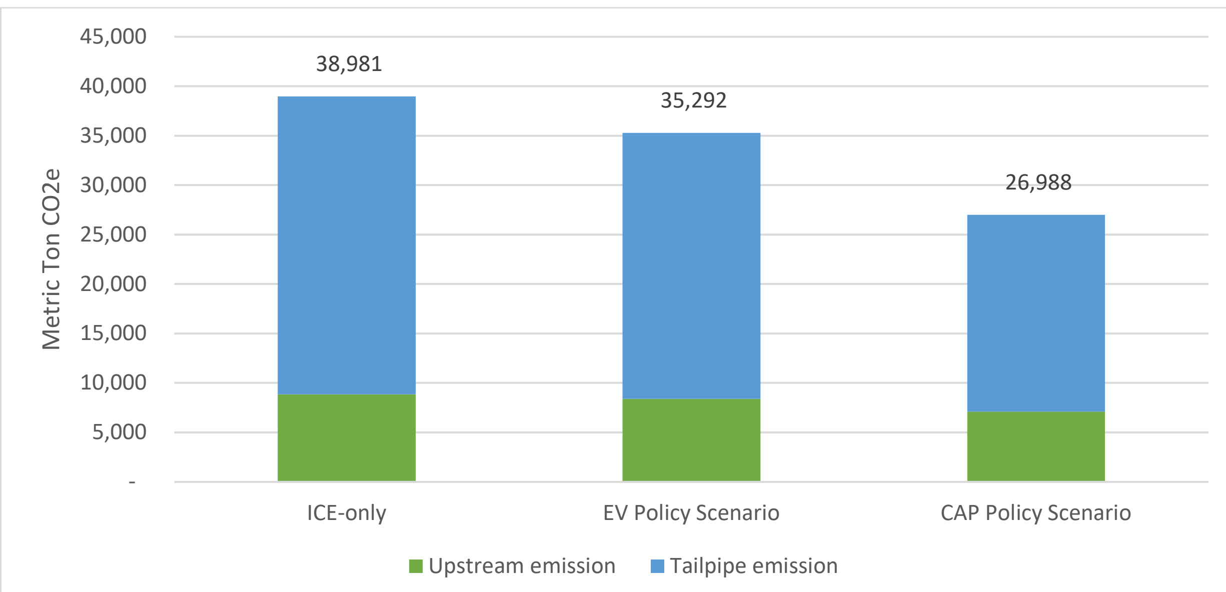
Through the analysis period (2025-2050), it was found that the future EV fleet will emit an approximate average of 1,357 metric tons of CO_2e annually, while the CAP Policy fleet emits 1,038 metric tons of CO_2e annually.

Table 7-1: Total average annual CO_2e emissions (metric tons)

Average Annual Emission (metric ton CO_2e)	ICE-only	EV Policy	CAP Policy
Upstream Emission	340	323	273
Tailpipe Emission	1,159	1,035	765
Total	1,499	1,357	1,038

As shown in the figure below, transitioning to EVs will reduce the County's cumulative emissions from fleet operations by 3,689 metric tons of CO_2e for the policy fleet scenario, and by 11,993 metric tons of CO_2e for the CAP Policy fleet scenario. Of that total amount, 3,237 metric tons for the EV Policy and 10,243 metric tons for the CAP Policy will be tailpipe emissions, directly improving the air quality in the communities served by the Los Alamos County.

Figure 7-2: Cumulative CO_2e emissions (metric tons) 2025-2050



[21] Upstream emissions are GHG emissions related to the production of the fuel used to power vehicles, such as emissions from the production of electricity used to power vehicles (https://www.epa.gov/greenvehicles/light-duty-vehicle-emissions)

Stantec used the annual emissions that will be displaced by the EV fleet, along with the EPA GHG equivalent calculator[22], to visualize equivalent benefits. As presented, implementing an EV fleet, whether policy or CAP Policy will eliminate emissions equivalent to removing 415,101 – 1, 349, 499 gallons of gasoline per year, recycling 1,304 – 4,238 tons of waste per year, reducing the need to plant 60,998 – 198,305 seedlings to capture carbon, or eliminating the energy use of 495 – 1,611 households in a year.

Figure 7-3: Equivalent GHG benefits of implementing an EV fleet (EV Policy)

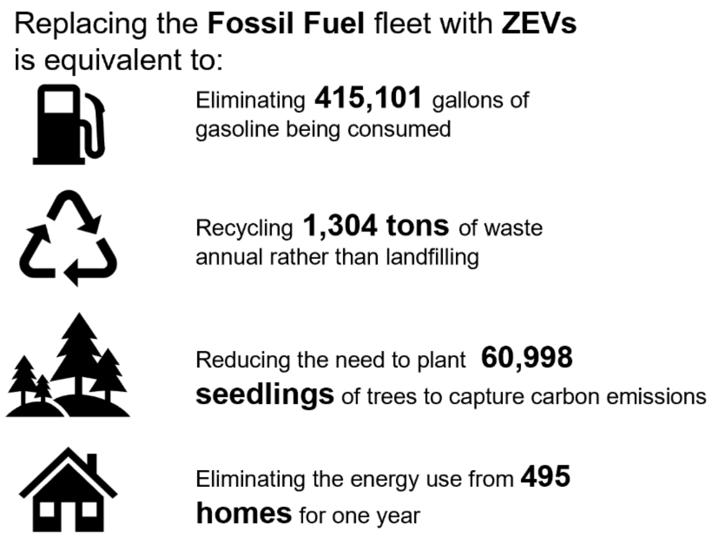
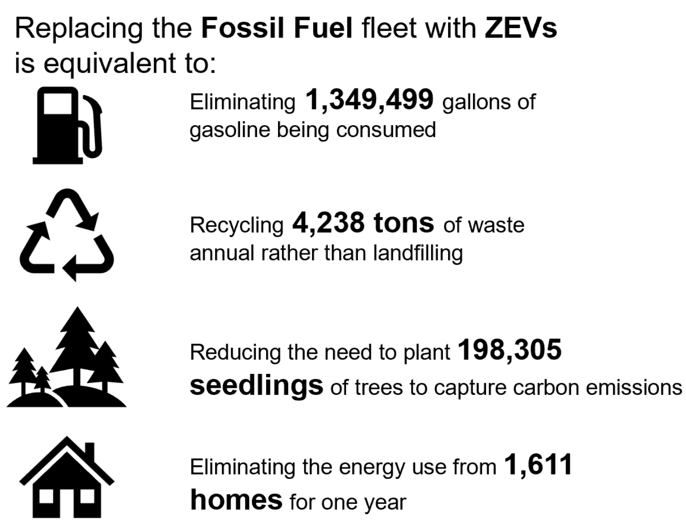


Figure 7-4: Equivalent GHG benefits of implementing an EV fleet (CAP Policy)



[22] https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

Appendix A Summary of the Atomic City Transit ZE Transition Plan

ACT developed a Zero-Emission Fleet Transition Plan to fulfill the requirements of the Federal Transit Administration's Low or No Emission Grant Program (49 U.S.C. 5339(c)(3)(D)). The plan outlines ACT's strategy to transition to a 100% battery electric vehicle (BEV) fleet by 2045 and supports ACT's FY2025/2026 Low-No funding application. The plan is organized around six elements required by the FTA, summarized in the subsequent sections.

A.1 Fleet Assessment

ACT conducted vehicle performance modeling using operational data to evaluate zero-emission vehicle (ZEV) technologies. While hydrogen fuel cell vehicles demonstrated strong performance, BEVs were selected due to regional fuel supply limitations, infrastructure costs, and vehicle availability.

The transition plan includes operational adjustments such as increasing the fixed-route fleet by one vehicle and installing on-route charging infrastructure. Projected vehicle capital costs through 2045 total approximately $35.1 million, based on ACT's procurement history and industry benchmarks. ACT's fleet composition and estimated annual vehicle procurement costs are shown in Figure 7-4 and Figure 7-5 respectively.

Figure 7-5: Fleet composition (fixed route and demand response)

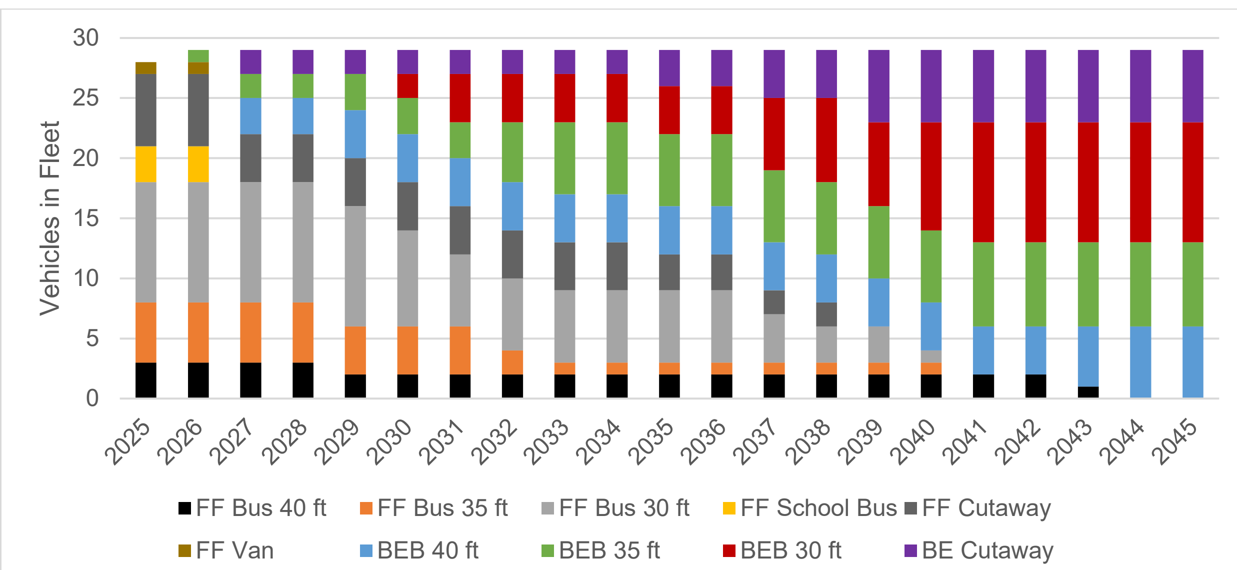
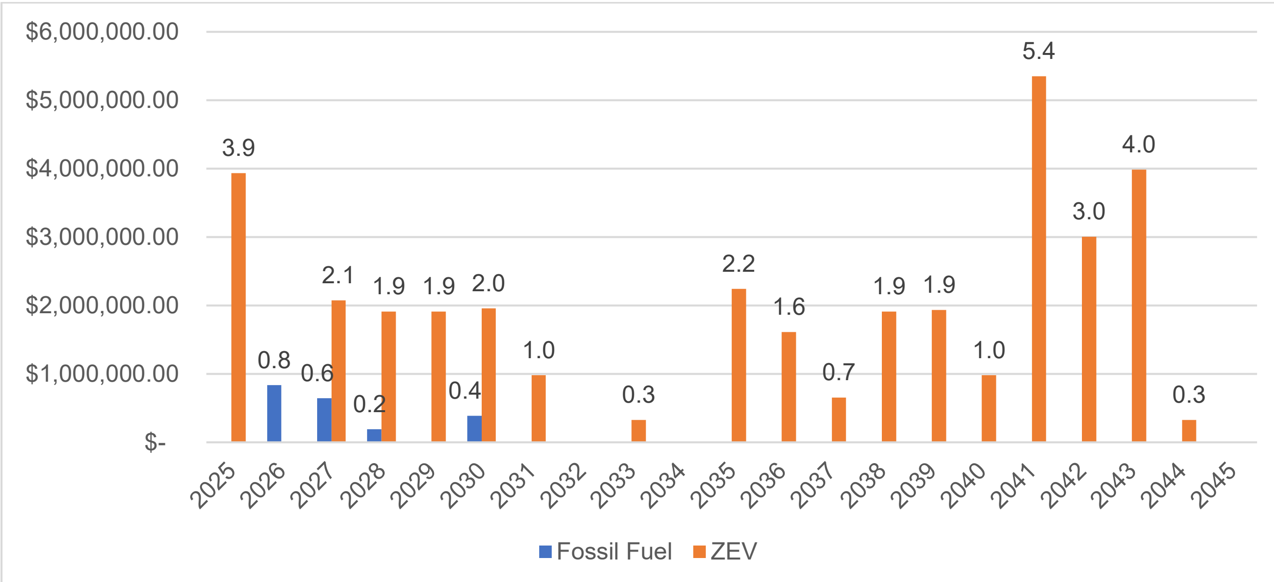


Figure 7-6: Annual vehicle procurement cost



A.2 Funding Needs Assessment

ACT anticipates a total cost of $40.9 million for full fleet transition, including:

- $35.1 million for vehicle procurement
- $5.5 million for infrastructure and facility upgrades

While traditional formula funding may support portions of the transition, ACT expects to pursue additional funding sources to address the gap. The agency has previously received Low-No and state match funding and continues to explore federal, state, and local opportunities.

A.3 Policy Assessment

ACT's transition aligns with federal climate and equity goals, including the Bipartisan Infrastructure Law and Executive Order 14008. At the state level, the plan supports New Mexico's goal of reducing greenhouse gas emissions by 45% from 2005 levels by 2030 and achieving net-zero emissions by 2050. ACT's efforts also align with Los Alamos County's sustainability goals, including a 50% emissions reduction by 2030 and net-zero by 2045.

Relevant state and local policies include:

- New Mexico EV Program and Infrastructure Deployment Plan
- Clean Transportation Fuel Standard
- State fleet ZEV acquisition mandates

- Los Alamos Climate Action Plan and Strategic Leadership Plan
- Regional Electric Vehicle (REV) West collaboration

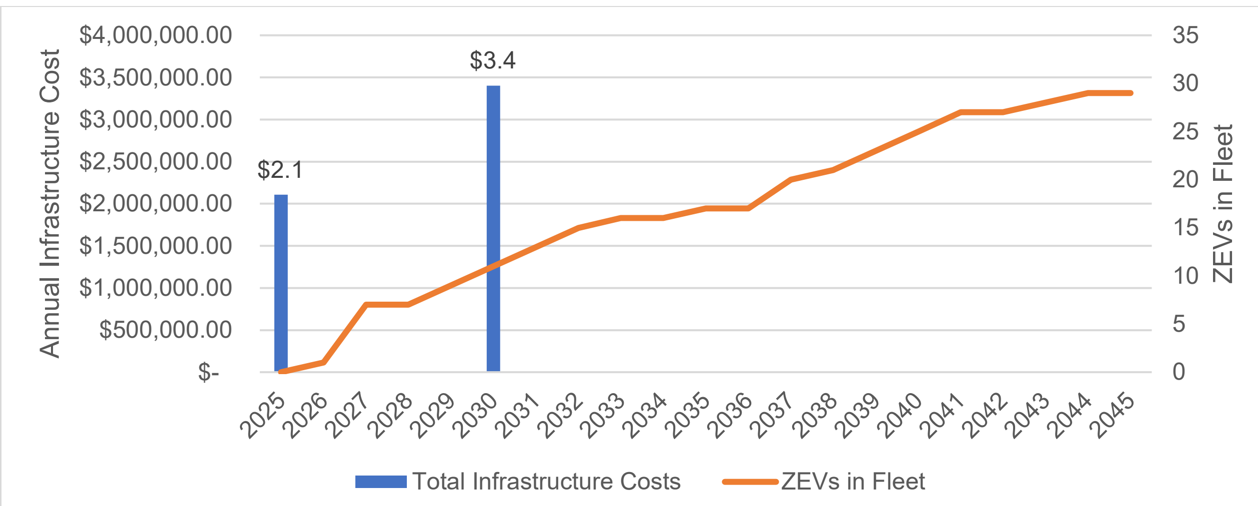
A.4 Facilities Assessment

ACT currently operates out of a shared facility equipped for diesel and gasoline vehicles. Infrastructure upgrades are planned to support 29 BEVs, including:

- Depot charging: 10 fast chargers (150 kW), 20 dispensers, and 6 Level 2 chargers
- On-route charging: 3 DC fast chargers (450 kW) with pantographs

Estimated infrastructure costs total $5.5 million, covering planning, power upgrades, equipment installation, and design engineering costs for the depot as well as on-route charging locations (Figure 7-6).

Figure 7-7: Depot and on-route charging infrastructure costs



A.5 Partnership Assessment

ACT is coordinating closely with the Los Alamos Department of Public Utilities (DPU) to plan grid-side and facility-side electrical upgrades. DPU has confirmed available capacity and will provide a letter of support. ACT also collaborated with the New Mexico Department of Transportation (NMDOT), which funded the fleet assessment and provided strategic guidance throughout the planning process.

A.6 Workforce Analysis

ACT has identified significant workforce development needs to support the transition. Key strategies include:

- OEM-led training for operators, maintenance staff, and first responders

- Apprenticeship programs and train-the-trainer models
- Use of specialized diagnostic tools and safety equipment
- Partnerships with local colleges and regional transit agencies
- Participation in national training programs and professional associations

ACT is requesting $292,840 in Low-No funding to support workforce development, including training, equipment, and PPE. Workforce development activities are aligned with the fleet transition timeline, with ongoing training planned through 2045.

A.7 Summary and Recommendations

The fleet performance modeling confirms that a full transition to BEVs is feasible and beneficial for ACT. The plan recommends periodic updates every 4–5 years to reflect evolving priorities, technology developments, and funding opportunities. While battery electric vehicles are the recommended technology, ACT will continue monitoring regional hydrogen developments and vehicle availability for future consideration.

Appendix B Existing Conditions & Market Scan

Appendix C County Facility Proposed Charging Siting

Stantec is a global leader in sustainable engineering, architecture, and environmental consulting. The diverse perspectives of our partners and interested parties drive us to think beyond what's previously been done on critical issues like climate change, digital transformation, and future-proofing our cities and infrastructure. We innovate at the intersection of community, creativity, and client relationships to advance communities everywhere, so that together we can redefine what's possible.

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DRAFT

DRAFT Los Alamos County Community-Wide EV Charging Plan

Stantec Consulting Ltd.
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Project/File: 1720001020

Revision Record

Revision	Description	Author	Date	Quality Check	Date	Independent Review	Date
1	Draft for LAC	Josh Schacht	11/3/2025	Analy Castillo	11/5/2025	Greg Wallingford	11/5/2025
2	Final Report	Josh Schacht	11/17/2025	Analy Castillo	11/17/2025	Greg Wallingford	11/17/2025
3	-	-	-	-	-	-	-

Disclaimer

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Prepared By:	Reviewed By:	Approved By:
Signature	Signature	Signature
Printed Name	Printed Name	Printed Name

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Executive Summary

This plan provides a roadmap for Los Alamos County to enable community-wide EV adoption and build a reliable, equitable, and financially sustainable public charging network. It aligns with Los Alamos Climate Action Plan goal to achieve carbon neutrality by 2050 and supports the New Mexico Clean Car Rule. The analysis combines community engagement (public meeting, survey of 516 respondents), a contextual scan of state and local policies, and a comprehensive approach using Stantec's proprietary tool ZEVDecide to conduct spatial modeling to forecast charging demand, identify optimal charging sites, and assess grid and implementation needs.

Findings using ZEVDecide indicate that most charging will occur at home, but publicly accessible infrastructure is essential for residents without dedicated parking, visitors and corridor travel. The analysis identified priory for sites in downtown Los Alamos and White Rock, and the NM-502 corridor, with strong community preferences for reliability, availability, ease of use, and affordable pricing. Close coordination with the Department of Public Utilities will be essential to align charging deployment with grid capacity and managed charging strategies.

The implementation strategy is designed to expand EV charging in phases that match demand and community priorities while integrating equity and ADA accessibility considerations. Near-term investments and initiatives from the County already include DC fast charging at Mesa Public Library and Level 2 charging at the Municipal building. Subsequent phases should focus on destination-based Level 2 charging at community facilities such as the Ice Rink, Aquatic Center, and Senior Center, with medium-term expansion to recreational areas, and cultural destinations to improve geographic coverage and public visibility. Throughout this rollout, Stantec recommends a public-private charging model similar to fueling stations, while applying user fees at County-owned sites to support ongoing operations and minimize long-term subsidy.

The County should also establish sustainable business and maintenance models, streamline local permitting to reduce project delays, and pursue available state, federal, and utility funding to offset capital costs. Together, the recommendations of this Community-Wide EV Charging Plan position Los Alamos County to expand EV charging infrastructure in a reliable, equitable, and financially sustainable manner while supporting rising EV adoption and advancing long-term climate and mobility goals.

Acronyms / Abbreviations

Acronym / Abb.	Full Name
ADA	Americans with Disabilities Act
AP-O	Airport Protection Overlay
ATSDR	Agency for Toxic Substances and Disease Registry
BESS	Battery Energy Storage System
BEV	Battery Electric Vehicle
CAP	Climate Action Plan
CEET	Center for Emerging Energy Technologies
CFI	Charging and Fueling Infrastructure (Program)
CFR	Code of Federal Regulations
DCFC	Direct Current Fast Charger
DOE	U.S. Department of Energy
DPU	Department of Public Utilities (Los Alamos County)
DTLA	Downtown Los Alamos
EA4	East Area Feeder 4 (utility network)
EMNRD	Energy, Minerals and Natural Resources Department
EPE	El Paso Electric
EV	Electric Vehicle
EVITP	Electric Vehicle Infrastructure Training Program
EVSE	Electric Vehicle Supply Equipment
FCEVs	Fuel Cell Electric Vehicles
FOAs	Funding Opportunity Announcements
GC	General Commercial
GHG	Greenhouse Gas Emissions
GIS	Geographic Information System
GSD	General Services Department (New Mexico)
HB 88	New Mexico House Bill 88, Electric Vehicle Charging Station Zoning Act
IND	Industrial District

Acronym / Abb.	Full Name
INS	Institutional District
kW	Kilowatt
kWh	Kilowatt-hour
L2	Level 2 Charger
LAC	Los Alamos County
LANL	Los Alamos National Laboratory
LED	Light Emitting Diode
MCDA	Multi-Criteria Decision Analysis
MUTCD	Manual on Uniform Traffic Control Devices
NEVI	National Electric Vehicle Infrastructure (Formula Program)
NMDOT	New Mexico Department of Transportation
NM EPSCoR	New Mexico Established Program to Stimulate Competitive Research
NMSA	New Mexico Statutes Annotated
NREL	National Renewable Energy Laboratory
O&M	Operations and Maintenance
PHEV	Plug-in Hybrid Vehicle
PNM	Public Service Company of New Mexico
PV	Photovoltaic
RFP	Request for Proposals
RFI	Request for Information
SFR	Single-Family Residential
TOU	Time-of-Use (electric rate)
UL	Underwriters Laboratories
USDOT	United States Department of Transportation
VMT	Vehicle Miles Traveled
VTO	Vehicle Technologies Office (DOE)
ZEV	Zero-Emission Vehicle

Glossary

Term	Definition
Battery Energy Storage System (BESS)	A system that stores electricity in batteries for use at a later time. BESS helps manage energy demand, provide backup power, and support renewable energy use.
Charging-as-a-Service	A business model where a third party installs and operates EV chargers, and the site host pays a recurring fee.
Charging Etiquette	Guidelines for EV users on how to use public chargers respectfully and efficiently (e.g., not occupying a spot after charging is complete).
Corridor Charging	Fast-charging infrastructure placed along major travel routes to support long-distance EV travel.
Destination Charging	Level 2 charging stations located at places where people spend extended time, such as parks, libraries, or shopping centers.
Environmental Exclusion Zones	Areas unsuitable for infrastructure due to ecological sensitivity, such as wetlands or flood zones.
Environmental Justice Index	A composite measure of social, environmental, health, and climate burdens used to assess equity in infrastructure planning.
EV Adoption Forecast	A projection of how many electric vehicles will be owned or operated in a region over time, often used to plan infrastructure needs.
Electric Vehicle Supply Equipment (EVSE)	The hardware and software that delivers electricity to EVs, including chargers, connectors, and network systems.
Feeder Line	A part of the electrical distribution system that delivers power from substations to end users; relevant for assessing grid capacity.
Make-Ready Infrastructure	Electrical infrastructure upgrades (e.g., conduit, wiring, panels) needed to prepare a site for EV charger installation.
Multi-Criteria Decision Analysis	A decision-making framework that evaluates multiple factors to determine the best outcome, often used in site selection.
Peak Load	The highest amount of electricity demand on the grid during a specific time period, often impacted by EV charging behavior.
Site Suitability Analysis	A spatial analysis method used to determine the most appropriate locations for infrastructure based on demand, environmental constraints, and existing assets.
Time-of-Use (TOU) Pricing	An electricity rate structure where prices vary depending on the time of day, encouraging off-peak usage.
Vehicle-to-Grid	A technology that allows electric vehicles to discharge electricity back into the grid, supporting energy demand management.
ZEVDecide	A proprietary GIS-based modeling tool used to identify optimal locations for zero-emission vehicle infrastructure based on multiple criteria.

1 Introduction

This document presents the results of the Los Alamos County Fleet Conversion Plan and Community-Wide EV Charging Plan. The Community-Wide EV Charging Plan component of this project focuses on strategies to enable EV adoption by the people who live, work, and visit Los Alamos County (the County). This effort aligns with the County's Climate Action Plan goals of achieving carbon neutrality by 2050, with EV adoption serving as one of many strategies to achieve this goal. Supporting EV adoption will require a significant increase in charging infrastructure. While most people will charge at home, publicly accessible charging will play an important role in the EV charging ecosystem. Based on the approach of other counties, it is recommended that much of this infrastructure be privately funded, operated, and maintained, similar to the business model of fueling stations. In some cases, such as the charging stations located at the Los Alamos County Municipal Building, infrastructure will be publicly owned. In these cases, the County will seek a sustainable funding approach that offsets the costs of providing charging with user fees. **The County does not intend to subsidize the cost of building, operating, and maintaining the EV charging infrastructure**.

This document considers several perspectives:

- An introduction providing an overview of the project.
- A summary of what we heard from the Los Alamos community in developing this plan.
- Relevant plans and policies in the County and New Mexico.
- Technical analysis such as future charging demand, site suitability analysis, and the impacts of EVs to the County electricity grid.
- Steps to implement the recommendations in this plan including business models, County roles and responsibilities, covering operating costs with user fees, and potential outside funding opportunities.

1.1 Project Scope

This project is comprised of two related tasks:

- Public and Partner Engagement
    - Engagement Plan: Develop a comprehensive strategy for involving partners and the public in the planning process, ensuring their input and support.
    - Advisory Meetings: Conduct regular meetings with key partners, including the County Council, Environmental Sustainability Board, and Board of Public Utilities.

- Community-Wide EV Charging Plan: Analyzes the policies and infrastructure needed to encourage public adoption of EVs in the County. It will focus on future charging demand, site selection for additional infrastructure, energy/power requirements, and equipment options, that is:
  - Contextual Scan and Assessment: Synthesizes relevant local, state, and federal legislation that will impact the deployment of EV charging infrastructure, including zoning and permitting.
  - Site Selection: Identifies optimal locations for new charging stations based on factors such as demand, suitability, equity, and accessibility.
  - Implementation Plan: Conduct business model assessments and return on investment analyses to inform the deployment timelines.

2 Engagement

2.1 Public Engagement Presentations

As part of this project, the team conducted targeted engagement with three key County bodies: the County Council, the Environmental Sustainability Board, and the Board of Public Utilities. Each group has been engaged twice over the course of the study. The first round of meetings focused on presenting the project goals, sharing early findings, and gathering input on priorities such as charging locations, cost considerations, fleet needs, and long term system impacts. The second round of meetings provided an opportunity to share draft recommendations and refine them based on each group's comments. Feedback from these groups played a significant role in shaping the final recommendations, and their collective input was incorporated throughout the report to ensure it reflects local priorities, technical realities, and long term community goals.

2.2 Public Visioning Session

As part of the planning process, the County hosted a public meeting and virtual engagement session on May 12, 2025 to better understand the community's priorities for EV infrastructure. **Participants shared input both in person and online, offering valuable insights into the challenges and opportunities surrounding EV adoption.**

Charging availability and convenience emerged as one of the strongest themes. Many participants expressed concern about the limited number of fast chargers in Los Alamos and White Rock, particularly noting that existing locations are out of the way from commonly accessed destinations such as grocery stores, dining areas, and shopping centers.

Affordability and accessibility were also major priorities for the community. **Residents urged the County to keep charging costs reasonable and raised concerns about how time-of-use pricing, especially between 5 p.m. and 11 p.m., might affect public charging.**

Participants also highlighted key locations where new charging stations would be most helpful, with grocery stores emerging as a top priority. **Community members consistently emphasized placing chargers in everyday destinations such as libraries, visitor centers, parks, and trailheads to support daily routines and tourism.**

Additional feedback pointed to the importance of resiliency, education, and innovation. **Residents expressed interest in solar roofing, multiple charging providers for redundancy and pricing, and public education on EV charging etiquette.**

The engagement also generated thoughtful questions about how the County will approach this transition. **Participants sought clarity on charger ownership and maintenance responsibilities, cost recovery, and safety measures such as vandalism protection.**

Overall, the public meeting and virtual comments represented a strong community interest in accelerating the transition to EVs while ensuring that the process remains affordable, accessible, and community-oriented. **Residents want a clear timeline and equitable solutions, especially for those without access to home charging.**

2.3 Survey Results

As part of this study, a community survey was conducted to gather input on EV adoption, charging preferences, travel behaviors, and related considerations. The survey received 516 responses, primarily from individuals living or working in the County. The survey covered topics such as demographics, transportation habits, barriers to EV ownership, priorities for a local charging network, and preferred charging locations. The full set of questions and responses is presented in Appendix A.

While these findings provide useful insights into community perspectives, they should be interpreted as indicative rather than definitive. The sample primarily reflects those who chose to respond, many of whom are homeowners, higher-income earners, and frequent drivers, which may shape the results and limit their generalizability to the broader population. Nonetheless, these responses offer valuable guidance for understanding local attitudes toward EVs and charging infrastructure.

2.3.1 Demographics

Survey participants were predominantly County residents (66%), with 31% working within the county and a small share identifying as students (1%). Most respondents lived in single-family homes (83%), while only 13% lived in multi-family units (either owned or rented). This suggests that many participants may have access to private parking, which has implications for their EV charging preferences.

The age profile skewed toward mid-to-older adults, with 35–54-year-olds making up 33% of respondents, followed by 55–64-year-olds (18%) and 65+ residents (22%). Household incomes were generally high: 41% reported earning over $150,000 annually, and an additional 21% earned between $100,000–$149,000. In terms of race and ethnicity, 62% identified as White and 13% as Hispanic, Latino, or Spanish origin, while 32% preferred not to answer. As a reference point, the census reports 70% of Los Alamos County residents are white and 18% are Hispanic. 18% of County residents are over age 65.

These demographics suggest that the survey largely reflects the views of higher income, established homeowners with consistent access to private vehicles and parking. This context may influence their perspectives on EV ownership and charging infrastructure.

2.3.2 Travel Patterns and Transportation Characteristics

The survey results indicate that private vehicle use dominates local travel behavior. Driving alone was reported as the primary mode for 57.7% of respondents, while 20.8% regularly drive with others. Alternative modes such as walking (7% most of the time) and cycling (5.4% most of the time) were far less common. Public transit use remains low, with 47% of respondents reporting they never use it.

Access to personal vehicles is nearly universal, with 99% of respondents reporting regular access to a car. Parking at home is largely private and convenient, with 83% parking in their own garage or driveway, and only 14% using on-street parking. At workplaces, shared off-street parking lots with open parking (50%) were most common, while 43% reported that workplace parking was not applicable to them (likely due to remote work, unemployment, or retirement).

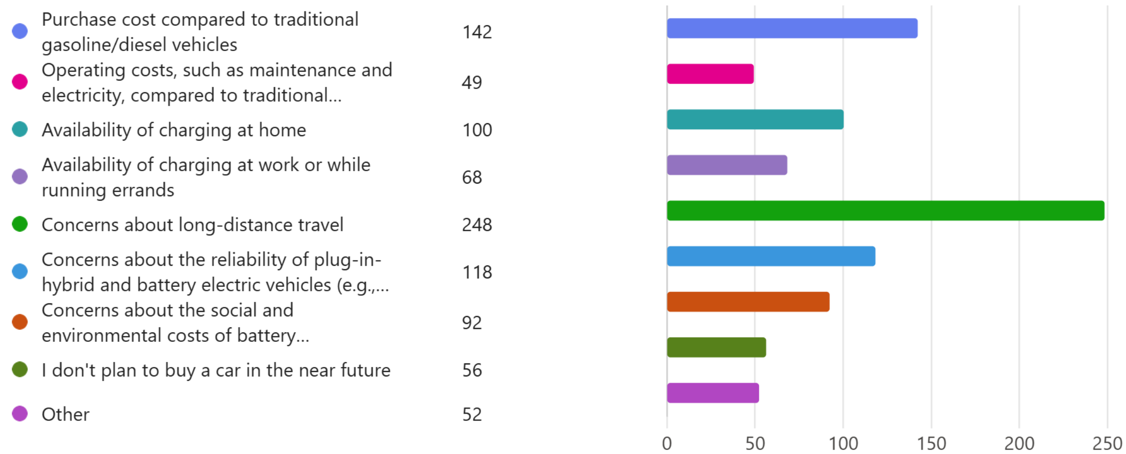
These patterns suggest that home-based charging may be feasible for most survey participants due to high rates of homeownership and private parking access. However, the needs of residents without dedicated parking, such as those living in multi-family housing, may require separate consideration when planning public charging infrastructure.

2.3.3 Barriers to EV Ownership

Although 175 respondents reported already owning a battery electric vehicle (BEV) or plug-in hybrid vehicle (PHEV), others identified key reasons for not adopting one (Figure 2-1). The most frequently cited barriers were concerns about long-distance travel (27%), high purchase costs (15%), and concerns about vehicle reliability, such as battery lifespan and cold-weather performance (13%).

Charging access also emerged as a barrier, with 11% citing lack of home charging options and 7% identifying gaps in workplace or errand-based charging. Additionally, 10% expressed concerns about the environmental and social costs of battery manufacturing.

Figure 2-1: 517 Respondents' Barriers to EV Adoption. “Please select the top 3 considerations that have prevented you from buying/leasing one”



These findings may indicate that range anxiety, upfront affordability, and charging availability remain major considerations for non-adopters, alongside broader concerns about battery technology and environmental impact. Findings helped to inform the recommendations in this report.

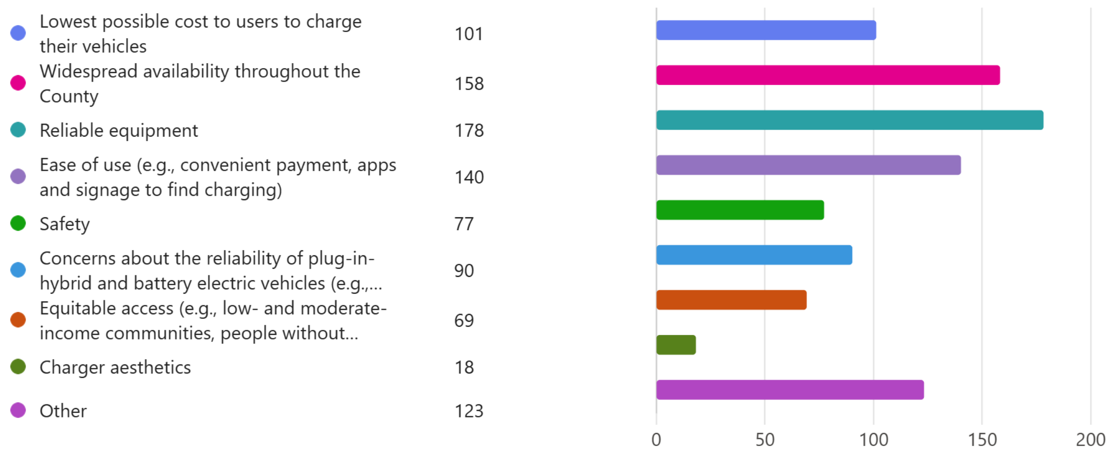
2.3.4 Priorities for Charging Network

When asked to rank priorities for building a countywide charging network (Figure 2-2), respondents most frequently selected:

- Reliable equipment (19%)
- Widespread availability throughout the county (17%)
- Ease of use, including convenient payment and wayfinding (15%)
- Low charging costs for users (11%)

Other considerations included safety (8%), equitable access (7%) (e.g., serving low-income communities or people without dedicated parking), and charger aesthetics (2%).

Figure 2-2: 517 Respondents' Priorities for EV Charging in Los Alamos. “Please select your top 3 priorities in building a charging network for Los Alamos County.”



These priorities suggest that residents may value a network that is dependable, affordable, and broadly distributed, with attention to equity in charger placement.

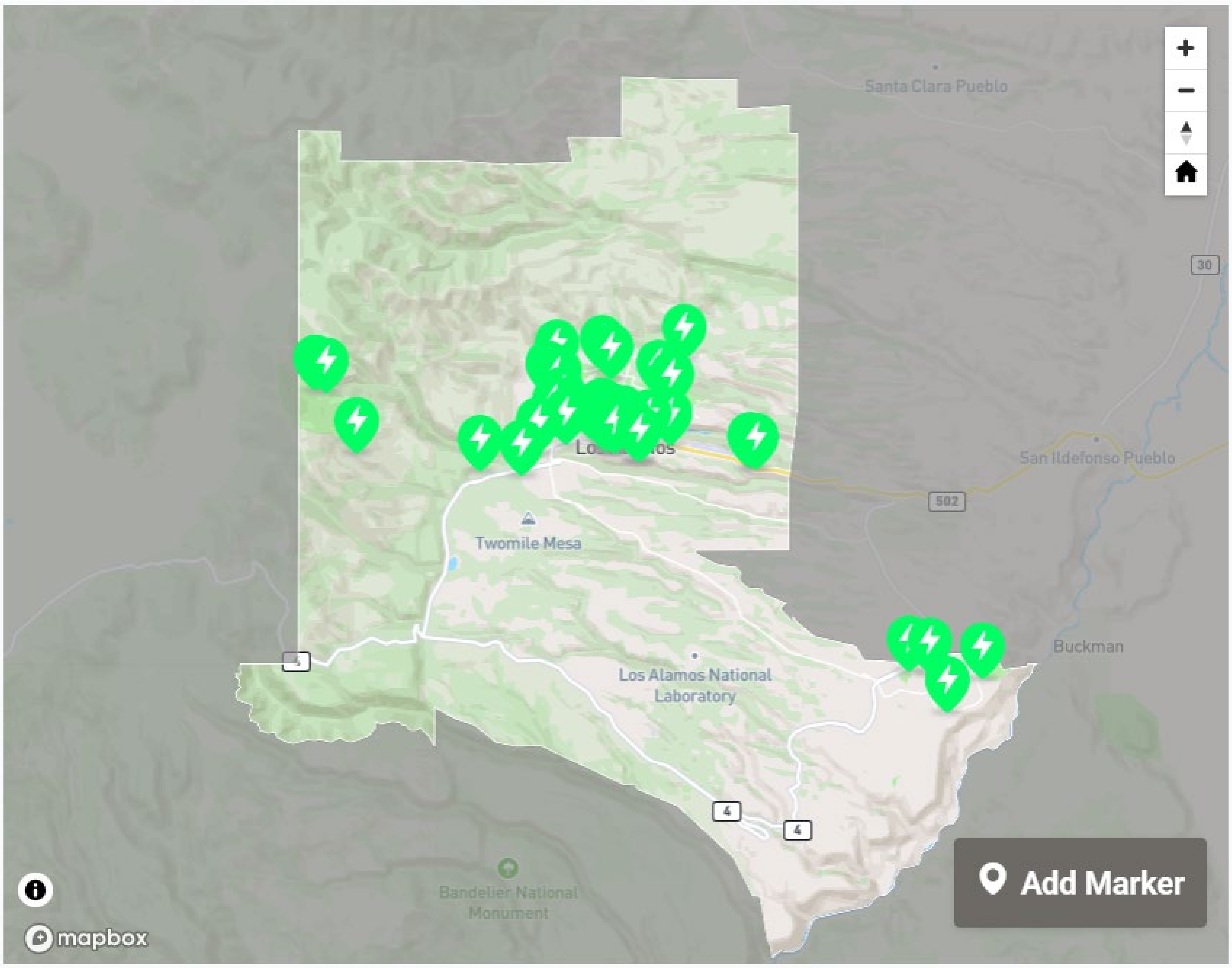
2.3.5 Mapping Inputs

When asked about preferred charger locations in the written response, Smith’s Grocery Store (14%), the libraries (9%), and White Rock (5%) were among the most commonly mentioned sites, alongside other community hubs like parks and central gathering areas This may point to a preference for chargers located at familiar, high-traffic community destinations. Some respondents chose to markup a map provided through the survey, and the results are pictured in Figure 2-3. 48 contributions were made, with many concentrated along Trinity Drive and Central Avenue. Full results are available in Appendix A.

Comments on open-ended question about charging station locations:

- Downtown areas and commercial hubs: Frequent mentions of locations like Smith's, Los Alamos National Lab (LANL), schools, parks.
- Skepticism of public investment: Some comments opposed county-funded charging infrastructure, preferring market-driven solutions.
- Home charging: Some emphasized home charging as sufficient or more efficient than public stations.

Figure 2-3: Interactive Map Results for Preferred Charging Locations



2.3.6 Charging Preferences

Home charging was viewed as the most useful option, with 55.6% rating charging at a private garage, driveway, or owner parking space as “very helpful”. Workplace charging 32.8% and fast-charging stations along highways 49.7% were also seen as highly valuable. The selectable options for each charging type were ”Very helpful”, “Somewhat helpful”, “Not very helpful”, and ”Not helpful at all”.

Destination charging at shopping, dining, and recreational sites received moderate support (~28% “very helpful”), while charging in shared residential parking was rated as “unhelpful” by more than half of respondents (56.5%). These responses may reflect the high proportion of single-family homeowners in the sample, who already benefit from private parking.

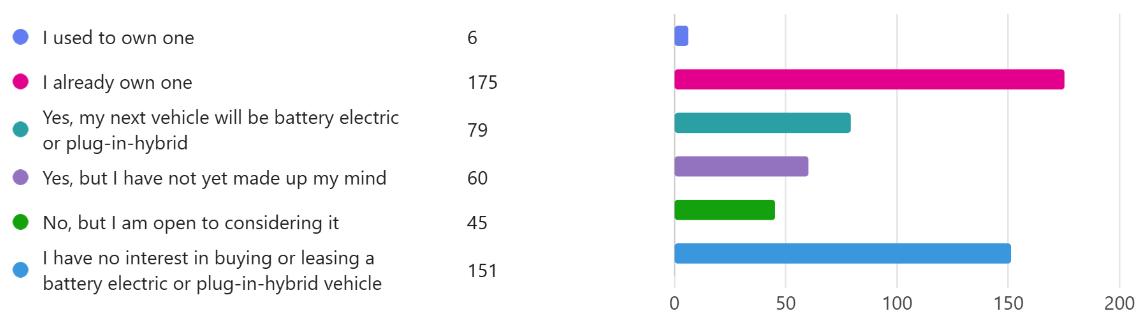
2.3.7 Propensity for EV Ownership

Survey responses provide useful insight into current vehicle ownership and residents' willingness to adopt electric vehicles in the future.

Most respondents reported owning gasoline- or diesel-powered vehicles (406 responses), though hybrid vehicles (79), plug-in hybrids (34), and battery electric vehicles (152) are also represented. This indicates that while Internal Combustion Engine (ICE) vehicles remain dominant among respondents, a sizeable portion of the sample has already adopted electric or partially electrified options.

When asked about future purchases, responses reflected a broad range of attitudes toward EV adoption (Figure 2-4). Some respondents reported already owning a plug-in hybrid or fully electric vehicle, while others indicated that their next vehicle would likely be electrified or that they were open to considering one in the future. A significant portion of respondents, however, expressed no current interest in purchasing or leasing an EV.

Figure 2-4: 516 Respondents' Current EV Ownership and Interest in Future Adoption. "Have you considered buying or leasing a battery electric or plug-in-hybrid vehicle?"



While these results cannot be generalized to the entire County population, they do suggest that within this sample, there is a notable level of familiarity with EVs and varying degrees of openness to future adoption. At the same time, responses elsewhere in the survey point to persistent concerns, such as cost, charging access, and range, that may influence decision-making for those who are undecided or hesitant.

2.3.8 Other considerations

Community feedback also pointed to several additional steps that could support the electric vehicle (EV) transition. Many respondents emphasized the importance of financial incentives, such as tax credits, rebates, and other forms of financial assistance to lower the cost of EV ownership. Vehicle availability was another recurring theme, with participants expressing a desire for more options,—particularly larger plug-in hybrids and SUVs that better meet family or utility needs. In addition, some respondents mentioned the need for public education and electrical infrastructure improvements to help make EV adoption more practical and better understood.

In more general comments, community members expressed a range of perspectives on government involvement in EV programs. Several respondents voiced frustration or opposition to what they viewed as government overreach or unnecessary investment in EVs, while others offered supportive and encouraging messages, expressing appreciation for local and state efforts to advance clean transportation.

Open-ended responses provided additional context to these themes. Cost-related measures, such as incentives for vehicle purchases or home charging installation, were the most frequently suggested actions (12%), followed by home solar incentives (2%). Some respondents expressed skepticism about public investment in EV infrastructure, raising concerns about the use of taxpayer dollars for these programs. Others highlighted the importance of education and outreach to help residents better understand EV ownership and charging options.

Overall, these insights suggest that while many respondents are already engaged with or open to EV adoption, expanding charging options, reducing upfront costs through incentives, and improving community awareness could be key to supporting broader adoption. The results also point to a need for balancing investments in EV infrastructure with public concerns about cost and equity.

2.4 Public Comments on Draft Plan

The last part of the public engagement effort for this project includes the publication of this Community-Wide EV Charging Plan Draft in early December 2025, following one last in-person community engagement meeting. The draft will be made available and the public will be able to provide feedback on the plan. This section of the report will capture feedback from that session and review period.

3 Contextual Scan and Assessment

3.1 Planning Context Review

The County is well-positioned to support the transition to EVs through a combination of existing statewide legislation, local planning efforts, and national guidance. The following section summarizes relevant plans and policy frameworks that influence EV adoption and emissions reduction in the County.

3.1.1 Statewide Plans with Relevance to EV Adoption and Emissions Reduction

Several New Mexico state-level initiatives are shaping EV policy and infrastructure planning:

- Executive Order 2019-003[1]: Sets a target of 45% GHG emissions reduction by 2030 compared to 2005 levels, providing overarching climate direction.
- Clean Car Rule (2023)[2]: Requires that, starting in 2026, 43% of all new light-duty vehicles and 15% of all new heavy-duty vehicles shipped to dealerships must be ZEVs, with these targets increasing over time.
- Clean Car and Charging Tax Credit (2024)[3]: Offers up to $3,000 in tax credits for the purchase or lease of EVs, PHEVs, and fuel cell vehicles, along with incentives for EV charging equipment. Expires in 2025.
- New Mexico Priority Climate Action Plan (2024)[4]: Includes EV-relevant measures such as clean freight corridors, truck incentives, and public electrification.
- New Mexico 2045 Long-Range Transportation Plan[5]: Supports the transition of the state fleet to EVs and includes strategies for improving system resiliency.
- New Mexico National Electric Vehicle Infrastructure (NEVI) Plan (2022): Outlines nine goals for statewide EV infrastructure deployment, including resiliency, user experience, equitable access, and workforce development. The plan recommends contractor Electric Vehicle Infrastructure Training Program (EVITP) certification and includes implementation considerations that the County can integrate into local planning efforts.

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[1] https://www.governor.state.nm.us/wp-content/uploads/2019/01/EO_2019-003.pdf
[2] https://www.env.nm.gov/climate-change-bureau/transportation/
[3] https://www.emnrd.nm.gov/ecmd/clean-car-charging-unit-tax-credit/
[4] https://www.env.nm.gov/climateaction/wp-content/uploads/sites/39/2024/03/New-Mexico-Priority-Climate-Action-Plan-2024-03-01.pdf
[5] https://www.dot.nm.gov/planning-research-multimodal-and-safety/planning-division/nmdots-long-range-statewide-transportation-plan/

- 2024 Updates to New Mexico Commercial and Residential Energy Conservation Codes: Mandates that new commercial facilities (including apartment and retail centers) provide EV-ready parking spaces. New homes must also be constructed with adequate electrical capacity to support future EV charging.

Collectively, these initiatives establish a strong policy framework that is expected to accelerate EV adoption in New Mexico and provide clear direction for the County as it plans for local charging infrastructure and electrification efforts.

3.1.2 Local Plans with Relevance to EV Adoption and Emissions Reduction

The County has incorporated EV strategies into several of its key planning documents:

- Los Alamos County Climate Action Plan (2024)[6]: Identifies transportation as the largest source of emissions and includes "Strategy T1: Expand EV infrastructure and Adoption," which supports public education, fleet conversions, and mapping infrastructure needs in collaboration with local institutions.
- Los Alamos County Fleet Conversion Plan: Stantec is supporting the County by developing an overview and assessment to help guide their transition to zero-emission fleet technologies.
- Los Alamos County Department of Public Utility Integrated Resource Plan (2022)[7]: Proposes EV penetration scenarios for light-, medium-, and heavy-duty vehicles as part of broader decarbonization efforts.
- Strategic Leadership Plan (2025)[8]: Emphasizes net-zero GHG targets and integration of sustainability into operations.
- Los Alamos Downtown Master Plan (2021): Recommends incentives in parking standards to encourage EV station installation and improve visibility through wayfinding.
- Tourism Strategic Plan (2016)[9]: Supports multimodal options, including EVs, to reduce reliance on single-occupancy vehicles.

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[6] https://www.losalamosnm.us/files/sharedassets/public/v/2/departments/county-manager/documents/losalamoscap_20241104-reduced.pdf
[7] https://www.losalamosnm.us/files/sharedassets/public/v/1/departments/utilities/documents/integrated-resource-plan-irp-2022-final-report.pdf
[8] https://www.losalamosnm.us/files/sharedassets/public/v/3/government/council/documents/2025-strategic-leadership-plan.pdf
[9] https://www.losalamosnm.us/files/sharedassets/public/v/4/departments/economic-development/documents/lactourismstrategicplan.pdf

- Northern Pueblos Regional Transportation Plan (2023): Includes a “Mobility & Accessibility” goal aimed at minimizing transportation’s climate impact. Relevant strategies include:
    - Connecting economic development with EV network expansion
    - Encouraging regional education on EV/alternative fuels
    - Tracking county- and regional-level fleet data
    - Supporting public and private EV fleet transitions

Together these plans demonstrate the County’s commitment to integrating EV adoption into broader sustainability, transportation, and economic development strategies, creating a foundation for coordinated local and regional implementation.

3.1.3 Local Planning Efforts in New Mexico

To help ground this plan in real-world examples, the project team reviewed peer jurisdictions within New Mexico that are actively advancing EV policy and infrastructure deployment. These communities provide relevant, scalable models for Los Alamos County given their similar regulatory context, climate conditions, and reliance on state-level programs such as the New Mexico Clean Car Rule and the NEVI program.

Peer benchmarking serves two purposes in this assessment. First, to identify approaches that have proven effective within the same legislative and utility environment. The second purpose is to highlight policy and implementation practices that the County could adapt to its own needs. The examples below are focused on Albuquerque and Santa Fe because both cities are among the state’s most advanced in EV planning, have publicly available program documentation, and represent urban and mid-sized community contexts respectively.

- **City of Albuquerque**
    - Implemented a *Green Vehicle Permit* program offering two hours of free parking for qualifying low-emission vehicles.
    - Launched the *Affordable Mobility Platform*, a discounted EV carshare pilot to expand access to clean transportation.
    - Adopted a policy mandating ZEV purchases for new municipal fleet acquisitions, with limited exceptions.
- **City of Santa Fe**
    - Established a long-range sustainability plan that aims to ensure all areas of the city are within five miles of an EV charging station, promoting equitable geographic access to charging infrastructure.

Together, these examples demonstrate how municipalities are combining incentives, accessibility targets, and public-sector leadership to accelerate EV adoption. For Los Alamos County, these lessons underscore the value of aligning local actions—such as fleet conversion policies, parking incentives, or regional coordination—with broader state and federal frameworks. Incorporating similar approaches can help the County enhance public engagement, streamline procurement, and strengthen its position for future funding opportunities.

3.2 Permitting, Code, and Zoning Assessment

The County and the State of New Mexico have enacted a comprehensive regulatory framework to support the deployment of EV charging infrastructure. The following sections summarize current code provisions, permitting processes, and infrastructure requirements.

3.2.1 Zoning

New Mexico's Electric Vehicle Charging Station Zoning Act (HB 88), effective July 1, 2025, classifies EV charging stations as permitted uses in all zoning districts, eliminating the need for use variances. The Act mandates that all local zoning authorities, including the County, implement expedited administrative processes for EVSE permitting reviews, limited solely to code compliance.

Locally, the LAC Code of Ordinances (2025) further encourages EV charger installation by allowing a single charging station to be credited as meeting the requirement for two parking spaces in downtown Los Alamos, White Rock, and all mixed-use or non-residential zones.

3.2.1.1 Minimum Parking Requirements for EV Charging

New Mexico's 2024 Commercial and Residential Energy Conservation Codes specify minimum Electric Vehicle Supply Equipment-installed and EV-capable requirements for new development. The table below summarizes these requirements.

Table 3-1: Required EV Power Transfer Infrastructure[10]

Occupancy	EVSE Spaces	*EV Capable Spaces
Group A – Assembly	5%	10%
Group B – Business	5%	5%
Group E – Educational	5%	5%
Group F – Factory/Industrial	2%	5%
Group H – High-Hazard	1%	0%
Group I – Institutional	5%	10%
Group M – Mercantile	5%	10%
Group R-1 – Transient Residential	5%	15%

[10] https://www.law.cornell.edu/regulations/new-mexico/N-M-Admin-Code-SS-14.7.9.12

Group R-2 – Permanent Residential	5%	15%
Group R-3 and R-4 – Homes (sing/two-family residences) and Care Facilities	2%	5%
Group S exclusive of Parking Garages – Storage	1%	0%
Group S-2 Parking Garages – Storage	5%	10%

These codes are based on the International Energy Conservation Code and aim to futureproof new construction. Additionally, accessible EV charging stations may count as two standard parking spaces, per HB 88.[11]

3.2.2 Site Layout and Design Requirements

The site layout requirements and design requirements for EV charging infrastructure in the County vary depending on the funding source and project type.

Locally and State-Funded Installations

Projects that do not utilize federal funding are subject to state and local requirements, including:

- New Mexico's 2024 Commercial and Residential Energy Conservation Codes, which set minimum EVSE-installed and EV-capable parking requirements for new developments based on occupancy type.
- Los Alamos County Code of Ordinances, which provides incentives such as allowing one EV charging station to count toward two required parking spaces in certain zoning districts.
- ADA accessibility requirements, as well as emerging U.S. Access Board recommendations for accessible EV charging stations (see Appendix B).

These requirements ensure baseline compliance with building, electrical, and accessibility codes but do not mandate the broader operational and technical standards established under federal programs.

Federally Funded Installations (NEVI and Federal-Aid Highway Projects)[12]

Projects funded under the NEVI Formula Program or with Title 23, U.S.C. funds for publicly accessible EV chargers must comply with the Federal Highway Administration's Final Rule (23 CFR Part 680[13]). This rule was established under the Bipartisan Infrastructure Law to create a convenient, reliable, and interoperable national EV charging network and sets uniform standards for federally funded chargers.

For site layout and design, the rule requires:

[11] HB0088: www.nmlegis.gov/Sessions/25%20Regular/bills/house/HB0088.HTML
[12] https://www.govinfo.gov/content/pkg/FR-2023-02-28/pdf/2023-03500.pdf
[13] eCFR :: 23 CFR Part 680 -- National Electric Vehicle Infrastructure Standards and Requirements

- Standardized Charger Configurations: Stations must meet minimum port counts, connector types, and power levels to ensure consistency across the national network.
- Accessibility and Placement: Sites must comply with ADA accessibility requirements, including accessible routes, space dimensions, and clearances, ensuring that chargers are usable by individuals with disabilities.
- Traffic Control and Signage: All on-premises and roadway signage must follow the Manual on Uniform Traffic Control Devices (MUTCD) and related Title 23 regulations to provide consistent wayfinding and pricing transparency.
- Network Connectivity and Data: Chargers must be networked to allow for remote monitoring, diagnostics, and real-time data sharing on location, pricing, and charger availability through public mapping applications.
- Technician Qualifications: Installation and maintenance must be performed by qualified technicians with appropriate training and certifications, supporting safe and high-quality deployment.

These requirements ensure that federally funded chargers are reliably sited, consistently designed, and interoperable with the broader national charging network. Even for projects that are not federally funded, adopting these NEVI-aligned standards can improve interoperability, user experience, and readiness for future funding opportunities. At the time of this report, NEVI funds are still available.

3.2.3 Accessibility Considerations

Accessibility standards for EV charging infrastructure are still evolving, with federal guidelines continuing to be updated as EV adoption becomes more widespread. Current recommendations from the U.S. Access Board[14] provide a foundation for ensuring accessible design, though regulatory clarity is expected to improve over time.

Throughout this planning process, the project team met with County staff to clarify how ADA requirements should apply differently to County fleet charging and public-facing charging. Fleet-only charging areas, which are used exclusively by County operators and are not accessible to the general public, are not required to meet the same accessibility standards as public chargers. However, County staff emphasized that internal policies still call for reasonable accommodation and barrier-free access wherever it is practical to provide it. All public-facing charging sites, by contrast, must follow the applicable ADA standards, including the Access Board's EV charging guidance and the PROWAG draft standards for access routes, maneuvering space, and charger operability.

Los Alamos County has also adopted an internal ADA policy that reinforces these expectations and guides implementation across all facilities. Referencing the County's policy alongside federal guidelines provides a

[14] www.access-board.gov/guidance.html#guidance-on-the-americans-with-disabilities-act-ada-accessibility-standards

consistent framework to ensure that any new charger installation, whether public or fleet, supports accessibility, safety, and compliance as the regulatory landscape continues to evolve.

Given the evolving nature of these requirements, it is recommended that legal counsel be consulted to assess any potential compliance risks associated with ADA regulations and the placement of EV Charging infrastructure.

Furthermore, the NM State NEVI Plan provides useful details about EV charging site installation options to minimize risks from extreme weather and other events (Table 3-2). The County should develop maintenance protocols tailored to each of these events.

Table 3-2: Risk and Resiliency Strategies for EV Chargers (from NMDOT 2022)[15]

Risk/Event	Example Strategies
High Winds and Dust storms	Consider wind directions and shelter opportunities when sitting. Require appropriate equipment standards (i.e., IP rating system of IP66 or better).
Flooding, Flash Flooding	Avoid known flood areas, avoid locations where connecting road washouts are common and review site stormwater management practices.
Excessive Heat	Consider equipment standards and shading or shelter in design.
Wildfire	Plan for redundant power and communications technology, especially in areas of higher risk.
Snowstorm	Identify responsibilities and response priorities for operations and maintenance in times of winter weather events.
Rockfall	Avoid locations close to potential rockfalls, seek protected areas during siting.
Power Outages (often a secondary event resulting from the risks above)	Strategically build power redundancies across the charging network. Consider locations with frequent weather events or power lost.

3.2.4 Permitting Requirements to Install Chargers

The Electric Vehicle Charging Station Zoning Act (the Act), effective July 1, 2025, establishes statewide standards for permitting EV charging stations in New Mexico.[16] The Act ensures that EV charging infrastructure is treated as a permitted use and accessory use in all county and municipal zoning districts, eliminating the need for a variance.

The Act also clarifies that parking spaces equipped with EV chargers count toward minimum parking requirements, with accessible EV charging spaces counting as two standard spaces. These provisions are

[15] TIRS 100322 Item 1 DOT NM EV Infrastructure Deployment Plan 220713.pdf
[16] https://www.nmlegis.gov/Sessions/25%20Regular/bills/house/HB0088.HTML

designed to remove procedural barriers, promote uniform permitting, and accelerate the deployment of charging infrastructure across jurisdictions in New Mexico.

3.3 County Structure and Workforce Considerations

3.3.1 Organizational Structures within the County

The County's organizational permitting structure involves multiple departments, each managing specific responsibilities. While this ensures comprehensive coverage, it also leads to siloed workflows, which can complicate permitting and project coordination.

Key Departments and Their Responsibilities

- **Community and Economic Development Department** oversees the zoning, site planning, land-use planning, and building permit review process. This department serves as a primary point for development-related applications. In addition to local reviews, EV charging projects typically require a state-issued electrical permit, which introduces an additional step in the approval process. Coordinating early with both the County and the appropriate state permitting authority can help applicants navigate these parallel requirements and reduce delays during design and installation.
- **Department of Public Utilities (DPU)** handles grid interconnection, rate-setting, electricity provision, and maintenance oversight.
- **Public Works - Engineering & Capital Projects** handles capital improvements, roadway design, and facility upgrades, including parking and site layout modifications.
- **Sustainability Division** coordinates the County's climate action initiatives, tracking goals for energy efficiency, emissions reduction, and community-wide sustainability programs.
- **Fire Department (Fire Marshal's Office)** enforces fire and life-safety codes, reviewing plans for compliance with emergency access and safety requirements.
- **County Council and the Board of Public Utilities** provide governance and policy oversight, approving budgets, projects, and strategic priorities across departments
- **The Environmental Sustainability Board (ESB)** serves as an advisory board to County Council on various initiatives and help gather public inputs on environmental topics.

While this structure provides clarity of roles, it also creates fragmentation when projects span multiple departments. For instance, infrastructure projects may require input from Community and Economic Development, DPU, Public Works, and Fire, which may leave applicants to navigate separate processes and points of contact. To overcome this challenge, there is an active internal EV working group overcoming these silos that includes staff members from DPU, Fleet, Engineering, and Procurement.

3.3.2 Workforce

Developing and sustaining the County's EV charging infrastructure will require a skilled and adaptable workforce to support system design, installation, operations, and maintenance. A coordinated, cross-sector approach involving local government, educational institutions, utilities, and private industry will be essential to building the talent pipeline needed for long-term success.

At the programmatic level, prioritizing workforce development initiatives can help reduce barriers to education and employment, particularly for individuals from economically disadvantaged backgrounds. Integrating workforce training components into procurement and contracting processes will allow the County to align local investment in EV infrastructure with broader economic development and equity goals.

The State of New Mexico has begun to lay the foundation for a robust EV workforce through a series of targeted initiatives:

- New Mexico Established Program to Stimulate Competitive Research (NM EPSCoR): A multi-year coalition funded by the National Science Foundation, NM EPSCoR supports the development of a future-ready STEM workforce. It brings together research universities, national laboratories, utilities such as the Public Service Company of New Mexico (PNM), and other stakeholders to build state-level capacity for innovation and training in clean energy technologies.
- New Mexico MICROGrid Center: A component of NM EPSCoR, this interdisciplinary initiative focuses on next-generation electric power systems, including workforce training related to microgrids and EV charging infrastructure. The program integrates applied research and technical education to prepare workers for emerging roles in energy resilience and power distribution.
- Center for Emerging Energy Technologies (CEET): Located at the University of New Mexico, CEET contributes to statewide efforts to modernize the electrical grid and integrate renewable energy technologies. CEET's mission includes training practitioners capable of supporting EV infrastructure as part of the broader transition to clean energy.

By leveraging these programs and continuing to collaborate with state and regional partners, the County can help ensure a well-prepared workforce is in place to support its EV goals – while also creating opportunities for local job growth and economic resilience.

3.4 National and Global Trends

The adoption of EVs is driven by a range of national and community-level trends that reflect the interplay between technological innovation, infrastructure development, and public policy. These systemic factors shape the pace and scale of EV integration into transportation networks.

One of the most critical enablers of the electric vehicle transition is battery evolution, which requires sustained investment in research, development, and infrastructure. Advances in battery technology are essential to reducing costs, improving performance, and addressing regulatory challenges around safety, which seek to standardize safety protocols and bolster public trust EVs. While costs have decreased, high vehicle pricing remains a significant barrier because EVs typically carry a higher upfront cost than ICE vehicles. This challenge is compounded by the urgent need for widespread fast-charging networks, which demands coordinated public and private investment to meet the growing demand.

Infrastructure planning plays a central role in the EV transition. Residential charging access hinges on urban planning that addresses the needs of multifamily housing and densely populated areas, while public charging infrastructure must expand strategically to close coverage gaps. Additionally, the management of battery degradation and cold-weather performance challenges requires investment in recycling programs, grid adjustments, and resilient infrastructure design to ensure that EVs function reliably across climates and over the long term.

In addition to these technological and infrastructure challenges, the production of EV batteries raises important ethical and social considerations. The extraction of lithium and other rare elements needed for battery production often carries significant environmental impacts, such as habitat destruction, water contamination, and soil degradation, which can disrupt local ecosystems. Mining operations in some regions have also been linked to human rights concerns, including unsafe working conditions, child labor, and exploitation of local communities. As global demand for these material increases, resource scarcity and geopolitical tensions over access to critical minerals pose risks to the long-term sustainability of battery production. These issues underscore the need for responsible sourcing, recycling initiatives, and continued innovations in alternative battery technologies.

Despite these challenges, the societal benefits of EV adoption are significant. Reduced emissions and improved public health outcomes contribute to cleaner air, healthier communities, and reduced healthcare costs. Noise reduction enhances quality of life, especially in urban environments. Economic growth driven by EV adoption fosters job creation, technological advancement, and regional competitiveness. Meanwhile, infrastructure development, including charging networks and smart charging systems, improves regional mobility, mitigates traffic congestion, and strengthens grid resilience by integrating EVs as energy storage resources. These systemic shifts support a broader commitment to sustainability, equity, and accessibility, ensuring that the benefits of EV adoption are shared across diverse communities.

3.4.1 Future Evolutions in Charging

The growth of EV adoption and the evolution of supporting technologies will mean that the charging infrastructure of 2030 will not meet the needs and expectations of 2050. While these technologies are beyond the scope considered for this project, there are several ongoing industry developments that will impact the future of zero emissions transportation.

3.4.1.1.1 *Inductive Charging*

Inductive charging allows an equipped vehicle to receive power without plugging in by driving over a wireless charging pad. There are three types of inductive charging:

- Static charging in which a vehicle is parked for a long period of time.
- Quasi-dynamic charging, in which a vehicle is stopped or driving slowly over the charger for a few minutes at a time, such as an intersection or transit stop.

- Dynamic charging, in which a vehicle is operating at travel speeds.

Inductive charging is already being used on transit vehicles and may someday emerge as a viable option for both County fleet and personal vehicles. They are two primary benefits of inductive charging:

- The ability to “top off” the battery while driving, reducing trip interruptions to charge.
- Increased flexibility in designing parking facilities, without the need to account for cords and wall mounted equipment.

In the long-term, this provides the ability to reduce battery capacity and cost as cars can travel continuously while charging.

Inductive charging requires special equipment to work and may not be widely available for personal vehicles for some time. The infrastructure investment and power needs for dynamic charging will be extensive, meaning this technology is likely decades away from being readily available. While dynamic charging infrastructure is most likely to be installed in highways, the County may consider how static charging can be used to minimize obstacles in County-owned parking facilities and support the needs of the County fleet as this technology matures.

3.4.1.1.2 *Hydrogen Fueling*

Hydrogen fuel cell electric vehicles (FCEVs) convert hydrogen into electricity to operate the same type of motors that EVs use, with water as the only byproduct and no “tailpipe” emissions. The primary benefits of FCEVs compared to EVs is that they have a similar driving range and refueling time as internal combustion engines. However, there are currently only two passenger FCEVs on the market as of the end of 2023. One of the primary limitations, and the reason for the relatively small market presence, is a lack of infrastructure to refine and distribute hydrogen. Because of the need to install specialized and costly infrastructure to refuel FCEVs, most models on the market are medium- and heavy-duty fleet vehicles such as transit buses.

If personal FCEVs become as common as EVs in the future, the refueling infrastructure will likely follow a similar pattern to gasoline service stations today. Because of the ability to refuel quickly, public infrastructure to support overnight and “opportunity” charging will likely not be required. However, the County may consider what role FCEVs can play in the County fleet for medium- and heavy-duty vehicles.

3.4.1.1.3 *Vehicle-to-Grid*

Widespread adoption of EVs will create future opportunities to support bidirectional charging, also known as vehicle-to-grid. One of the primary challenges in operating the power grid is supporting sudden spikes in demand, which often require powering up the dirtiest generation sources like coal. EVs can help fill this gap by providing power to the grid while vehicles are parked, particularly during the workday and early evening when demand on the grid is the highest. During power outages, EV batteries could also be used to power homes and businesses.

While some EV models support “vehicle-to-load” charging, in which owners can power external devices with their battery, there are not yet any vehicles with true vehicle-to-grid capabilities. There remain several obstacles to widespread implementation of this capability, including the development of standards and charging management technologies and continued collaboration between electric utilities and automakers. As these advancements reach commercial scale, the County can consider how vehicle-to-grid can support its own power needs for buildings while monitoring international and national standards on building codes for bidirectional charging equipment.

4 Public Charging Infrastructure Readiness Plan

This section describes Stantec's methodology and approach to creating a Public Charging Infrastructure Readiness Plan. This plan focuses on future charging demand, site selection for additional infrastructure, energy/power requirements, and equipment options. The first step was to identify optimal locations for new charging stations based on factors such as demand, suitability, equity, and accessibility. The current charging footprint and other existing conditions serve as inputs into the integrated mapping methodology, for which Stantec has a proprietary tool called ZEVDecide.

4.1 Existing Conditions

4.1.1 Current Charging Footprint

At present, the County has a limited network of public EV charging stations. According to PlugShare data, there are five charging station locations across the County, collectively providing 28 chargers.[17]

There are also currently 99 Level 2 chargers and 3 Level 3 chargers at the Los Alamos National Lab (LANL). This analysis and project do not include LANL or the chargers there, because they are private and only available to employees.

The majority of the County's chargers use the J-1772 connector standard, which is compatible with most battery-electric and plug-in hybrid vehicles.

Pricing varies across sites, though all sites are open 24/7. Some chargers are free to use, while others require payment, reflecting differences in ownership, operator policy, and intended user base.

Overall, the existing footprint is relatively sparse and concentrated in a small number of locations, limiting options for residents without home charging access and for visitors seeking convenient charging during their stay. This baseline provides guidance to assess future infrastructure needs and identify optimal expansion sites.

[17] https://www.plugshare.com/directory/us/new-mexico/los-alamos

4.1.2 Demographics Of the Region

The County is a small but highly educated and affluent community, with characteristics that can influence EV adoption patterns.

- Population: 19,490 residents
- Median Age: 41.1 years, indicating a balanced mix of working-age adults and older residents.
- Households: 8,222 households, with a total of 8,634 housing units
- Income and Poverty: Median household income is $143,188, with a poverty rate of 2.9% - significantly lower than state and national averages.
- Education: 68.2% of residents hold a bachelor's degree or higher, indicating a highly educated population.
- Employment: Employment rate is 65.5%, Race and Ethnicity: 17.6% of residents identify as Hispanic or Latino (of any race).
- Health Coverage: Only 3.4% of residents lack health insurance.
- Business and Economy: The County hosts 373 employer establishments.

These demographics suggest strong potential for early EV adoption, given higher household incomes, high educational attainment, and low poverty levels. The relatively high median age, paired with strong employment and health coverage, indicates a stable economic base that could support investment in EV ownership and associated charging infrastructure.

4.1.3 Land Use and Density

Understanding current land use patterns in the County is essential for identifying optimal locations for public EV charging infrastructure. Land use influences both the demand for charging and the type of charging that is most appropriate. For example, residential areas may primarily support home-based charging, while commercial, institutional, and mixed-use areas present opportunities for workplace and destination charging.

The County's land use is a mix of residential neighborhoods, commercial centers, institutional facilities, parks and open space, and industrial areas (Table 4-1). Concentrations of employment, retail, and civic amenities are largely found in Downtown Los Alamos and the White Rock Town Center, while significant portions of the County are dedicated to open space, recreation, and other facilities.

The table below summarizes the existing land use zoning categories for the County, providing a baseline for assessing where future charging infrastructure can be most effectively deployed.

Table 4-1: Los Alamos County Zone/Land Use Districts and Categories

Zone Districts	Categories
Residential Districts	Residential Agricultural (RA)
	Residential Estate (RE)
	Single-family Residential (SFR-1)
	Single-family Residential (SFR-2)

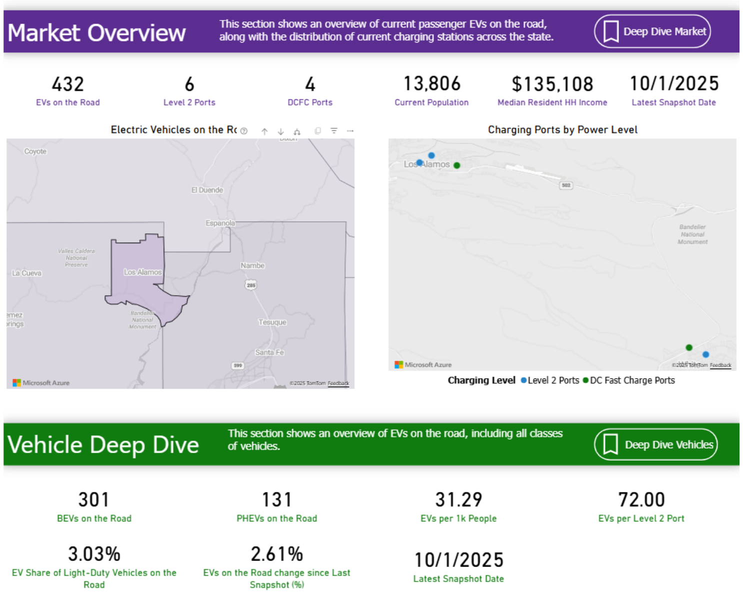
	Single-family Residential (SFR-3)
	Single-family Residential (SFR-4)
	Single-family Residential (SFR-5)
	Single-family Residential (SFR-6)
	Residential Mixed (RM-1)
	Residential Mixed (RM-2)
	Multi-family Residential-Low (MFR-L)
	Multi-family Residential-Medium (MFR-M)
	Multi-family Residential-High (MFR-H)
	Manufactured Home Community (MHC)
Mixed-use Zone Districts	Mixed-use (MU)
	Downtown Los Alamos (DTLA)
	White Rock Town Center (WRTC)
Non-residential Zone Districts	Professional Office (PO)
	General Commercial (GC)
	Industrial (IND)
	Institutional (INS)
Open Space Zone Districts	Open Space - Public Parks (OS-PP)
	Open Space - Recreational Open Space (OS-RO)
	Open Space - Active Open Space (OS-AO)
	Open Space - Passive Open Space (OS-PO)
Overlay Zone Districts	Historic Overlay (H-O)
	Planned Development Overlay (PD-O)
	Airport Protection Overlay (AP-O)

4.1.4 EV Adoption

Using data from Atlas Public Policy, created in partnership with the State of New Mexico and the support of the New Mexico Environment Department, the current state of EV adoption in the County can be closely estimated. The numbers in Figure 4-1 serve as a validation of EV adoption forecasts.

Figure 4-1: Atlas Public Policy - EV Adoption[18]

[18] EValuateNM – Atlas Public Policy



4.1.5 Utility Infrastructure

The Los Alamos County DPU, operating under the jurisdiction and control of the Board of Public Utilities, is a municipally owned, customer service-oriented utility that provides electric, gas, water, and sewer services to County residents and businesses. In addition, DPU supplies wholesale electric and water services to LANL, a major regional employer and energy consumer.

DPU plays a central role in enabling the community's transition to EVs. As the provider of electric distribution services, the utility is responsible for ensuring that grid capacity and infrastructure are sufficient to support growing EV charging loads alongside other electrification initiatives.

An important consideration for EV readiness is the structure of the County's electric distribution system, which consists of a network of feeders delivering electricity to residential, commercial, and institutional customers. These feeders define the physical pathways along which new charging demand will be integrated. A map of feeder lines is provided in Figure 4-2, illustrating the backbone of the distribution network that will support future charging infrastructure deployment.

Figure 4-2: Los Alamos County Feeder Lines Map

While this study references feeders as a supplementary layer of analysis, identifying charging needs based on demand centers, land use type, demographic trends, and other factors remains a critical focus. The feeder map provides additional context to ensure that proposed charging sites can be feasibly supported by existing or planned utility infrastructure.

4.1.6 Transportation Infrastructure

The County's transportation network will play a central role in shaping EV travel patterns and the locations best suited for charging infrastructure. The County is geographically unique, with two primary population centers – the Townsite of Los Alamos and the White Rock community. The region is characterized by diverse topography, and a road system designed around serving both neighborhoods and commercial and industrial facilities.

Road Network

The County's road system includes a mix of local residential streets, collector roads, and arterial corridors that support both commuter and regional traffic. State Routes 4 and 502 serve as the main gateways, connecting Los Alamos to the regional transportation system and the broader New Mexico highway network. These corridors also play a crucial role in long-distance EV travel, where strategically placed Fast Chargers can reduce range anxiety for both residents and visitors. The County also has many parking lots that may serve as practical EV charging locations (See Appendix).

Public Transit and Active Modes

The County is served by Atomic City Transit, a fare-free bus system that provides local routes and connections to White Rock. The County has also invested in trails, sidewalks, and bike lanes that support multimodal travel. These assets may create opportunities for co-located charging infrastructure at transit hubs, park-and-ride lots, and recreational destinations, where dwell times are longer and Level 2 charging is most effective.

4.1.7 Sensitive Natural Resources

The County contains a variety of sensitive natural resources that require careful stewardship to maintain ecological integrity and community value. These include wetlands, riparian areas, forests, canyons and adjacent national park lands, which provide critical habitat, recreational opportunities, and ecosystem services.

Implications for Infrastructure Planning

When planning EV charging infrastructure and related improvements, consideration of sensitive lands is essential to avoid ecological impacts. Chargers should be sited away from wetlands, riparian areas and critical wildlife habitat, with a preference for built environments. Coordination with the County's open space strategies ensures that infrastructure growth aligns with conservation objectives.

4.2 EV Adoption Projection

Adoption of EVs by county residents will drive the charging infrastructure required to adequately serve community needs. While much of this charging will be done at home, publicly accessible charging will serve two important roles:

- Level 2 charging at land uses with long dwell times, such as office and retail, will support people without charging at home and allow others to "top off" their charge during the day.
- Direct Current Fast Charger (DCFC) stations will support long-distance travel and unanticipated battery depletion, functioning like a fueling station.

To plan for this growth, Burns and McDonnell 1898 & Co. developed a 30-year EV adoption forecast using three scenarios:

- **Scenario 1 – High**: Aligns with the County's CAP goal of achieving carbon neutrality by 2050, requiring 100% EV adoption for passenger vehicles, full building electrification, and significant adoption of rooftop solar and battery storage.
- **Scenario 2 – Medium**: Reflects current state and federal policy, incentives, and historic adoption trends, with moderate electrification of vehicles and buildings.
- **Scenario 3 – Low**: Minimal influence from CAP or regulations, following the statewide average adoption rate.

4.2.1 EV Adoption Forecast

The cumulative EV forecast for each scenario is summarized in the table below. Under the high-adoption Scenario 1, over 17,000 EVs are projected by 2055, compared to approximately 14,000 in Scenario 2 and 5,400 in Scenario 3.

Table 4-2: Cumulative EV Forecast by Scenario

Year	Scenario 1 (High)	Scenario 2 (Medium)	Scenario 3 (Low)
2025	497	497	497
2030	2,017	1,487	1,076
2035	5,045	3,105	1,788
2040	8,672	5,483	2,582
2045	12,401	8,471	3,456
2050	15,856	11,533	4,400
2055	17,290	14,049	5,402

The development of an EV forecast serves two purposes:

1. Grid Impact Assessment – Quantifying the overall grid impact (e.g., electric load) of EV charging, both public and at home.

2. Infrastructure Planning – Determining the number and type of Level 2 and DCFC ports required within the County.

The analysis assumed that 80% of EV drivers will charge at home, with varying charging behaviour patterns (e.g., 30% charging immediately after returning home, 40% scheduling overnight charging, and 30% using Level 1 charging).

4.2.2 Recommended Charger Footprint

To estimate the number of public charging stations required to support projected EV adoption in the County, guidance developed by the National Renewable Energy laboratory (NREL) can be applied from its National Plug-in Electric Vehicle Infrastructure Analysis.

NREL's modeling evaluates the number of charging plugs necessary to support both day-to-day local travel and long-distance trips, accounting for variables such as EV concentration, travel patterns, and charging behaviors. Based on these analyses, NREL provides recommended ratios of public charging plugs per 1,000 EVs on the road, differentiated by charger type and community size.

Figure 4-3: Cumulative Residential EV Adoptions

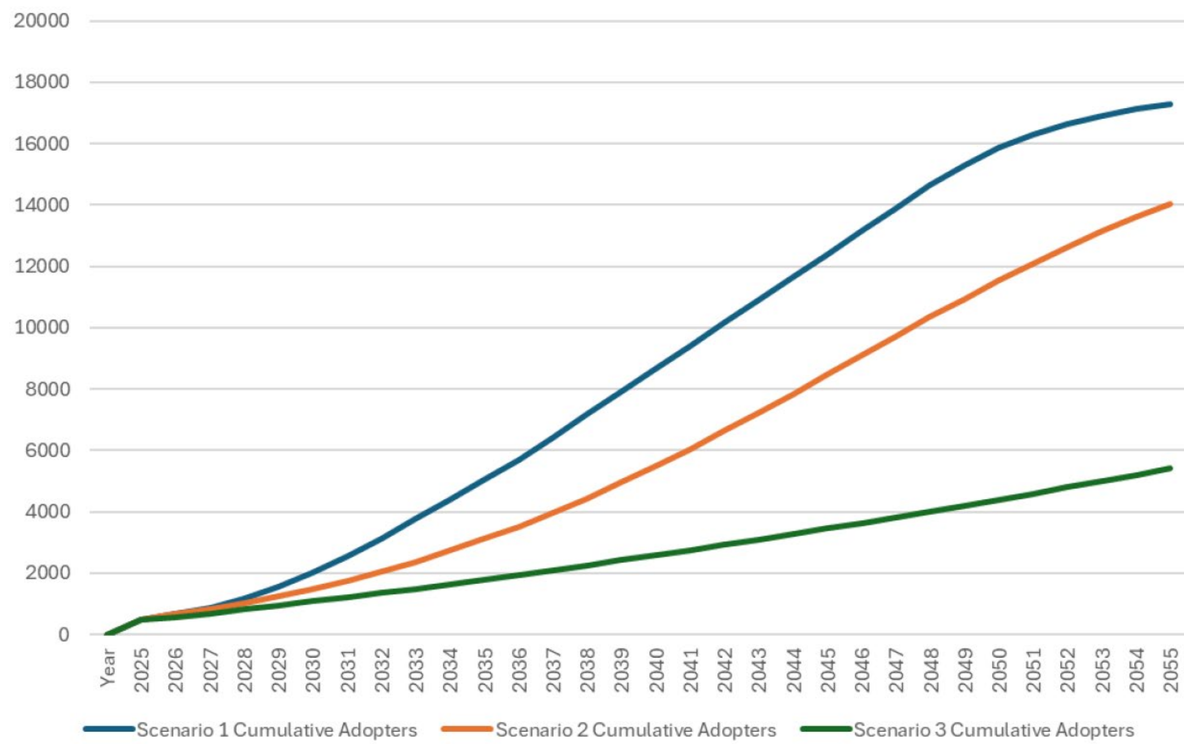


Table 4-3: NREL Recommended Public Charger Plugs per 1,000 EVs

Charger Type	National Average	Town-Level Estimate
Level 2	16.0	23.3
DCFC	1.7	2.2

For this analysis, the town-level estimates are applied to the projected number of EVs under each adoption scenario. Multiplying the scenario forecasts by these ratios provides the estimated number of Level 2 and DCFC plugs required in the County by milestone years (e.g., 2040 and 2055). This is demonstrated in Table 4-4, while Figure 4-3 shows residential EV adoptions by scenario.

Table 4-4: NREL Recommended Public Charger Plugs

Year		Scenario 1 (High)		Scenario 2 (Medium)		Scenario 3 (Low)	
	Charger Type	Level 2	DCFC	Level 2	DCFC	Level 2	DCFC
2025		12	1	12	1	12	1
2030		47	4	35	3	25	2
2035		118	11	72	7	42	4
2040		202	19	128	12	60	6
2045		289	27	197	19	81	8
2050		369	35	269	25	103	10
2055		403	38	327	31	126	12

Key Insights:

- Level 2 charging will make up the majority of public infrastructure needs, supporting both workplace/destination use and residents without home charging access.
- DCFC demand is smaller in absolute numbers but essential for corridor travel, emergency charging, and supporting higher adoption in rural and multifamily areas.
- Even in the low-adoption scenario, the county will require over 120 public chargers by 2055.

Planning Considerations:

- Deployment may be best prioritized in mixed-use areas and travel corridors, balancing access for residents, commuters, and visitors.
- Public charging would best be integrated with existing land uses with long dwell times to improve utilization rates.
- Load management strategies, such as scheduled charging and smart charging systems will be critical to avoid grid strain, particularly in high-adoption scenarios.

4.2.3 Suitability Inputs

4.2.3.1 Land Use

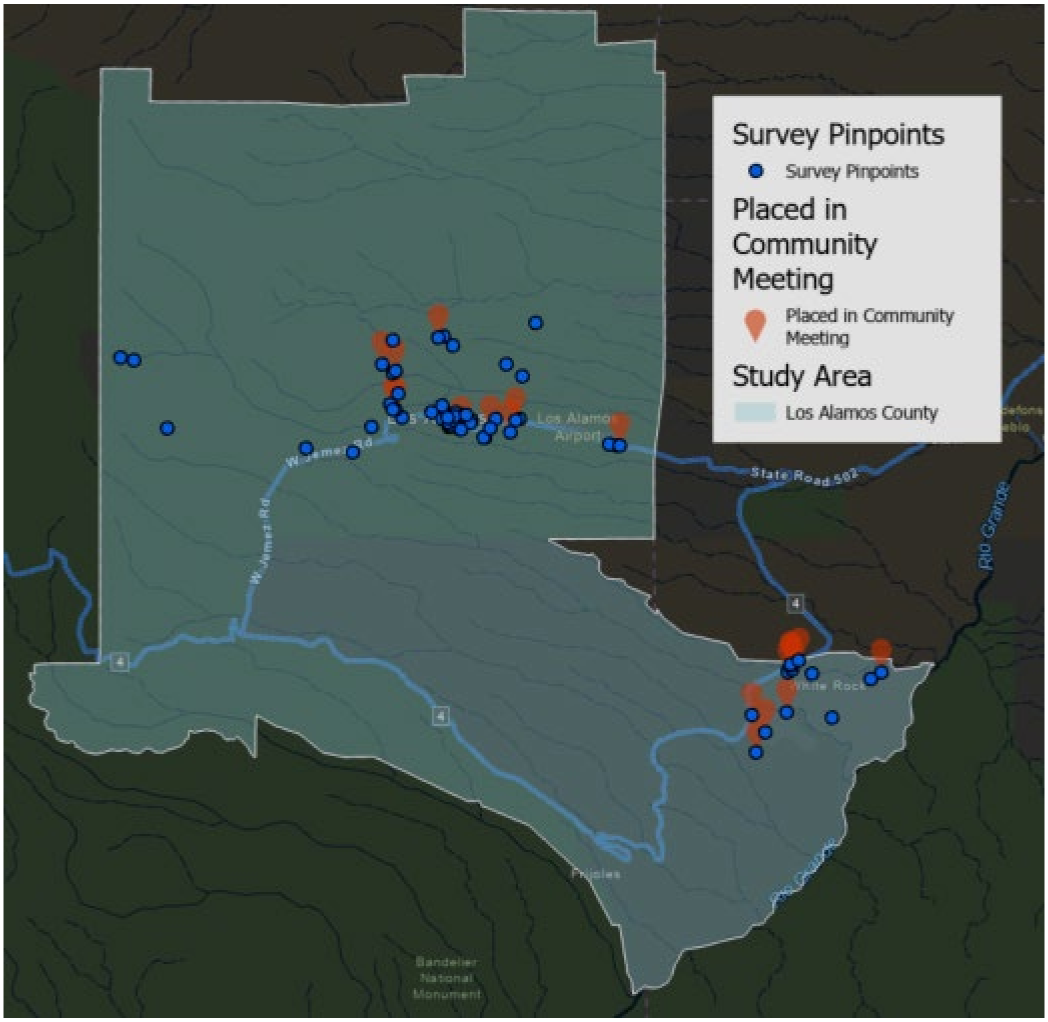
Public land use and parcel data were central to determining where public EV chargers could be installed in the County. The County's GIS layers provided detailed information on ownership, zoning, and land use, allowing the project team to screen parcels based on their development context and feasibility. County-owned and privately-owned parcels were prioritized in the analysis as potential installation sites, whereas federally-owned land could be generally excluded. Zoning classifications helped confirm that chargers would be compatible with surrounding land uses, favoring commercial, mixed-use, and institutional zones where public access and parking activity are highest. Parcel boundaries and area calculations also supported estimating population and activity density, highlighting locations where chargers would serve the greatest number of residents and visitors.

Environmental and transportation layers were then overlaid to refine these results—excluding flood-prone or environmentally sensitive areas and elevating parcels with existing parking lots, utility access, and strong trip activity. Together, these land-use-based analyses produced a shortlist of candidate sites that balance visibility, accessibility, and infrastructure readiness. Samples of these data and related maps are provided in Appendix X.

4.3 *4-4*Public Engagement Outputs

The Los Alamos community provided feedback on where they would prefer to see public charging locations through two mechanisms. The first was at a community meeting where attendees selected points on the map. These selections are visualized in Figure 4-5 as orange markers. The other mechanism was through the online survey. In the map below, these are shown as blue circles. This feedback is taken into consideration and weighted to encourage placement of chargers on these corridors.

Figure 4-5: Community Feedback



4.4 Integrated Mapping Methodology

As transit agencies and municipalities accelerate their transition to zero-emission fleets, strategic infrastructure planning becomes increasingly critical. The deployment of charging stations and support facilities must balance operational efficiency, cost-effectiveness, and long-term sustainability. To support this complex decision-making process, the ZEVDecide tool was developed as a data-driven, scenario-based siting platform that integrates geospatial analysis, fleet characteristics, and operational constraints.

ZEVDecide was employed in Los Alamos to identify optimal locations for ZEV infrastructure by evaluating a range of criteria including route coverage, energy demand, grid capacity, land availability, and equity considerations. The tool leverages a Multi-Criteria Decision Analysis (MCDA) framework, allowing stakeholders to weigh priorities and explore trade-offs across different siting scenarios.

By simulating various deployment strategies and visualizing their impacts, ZEVDecide enables planners to make informed, transparent, and defensible choices about where to invest in infrastructure. This report outlines the methodology used, the inputs considered, and the resulting recommendations for site selection in Los Alamos, demonstrating how ZEVDecide supports data-informed planning for a resilient and equitable zero-emission future.

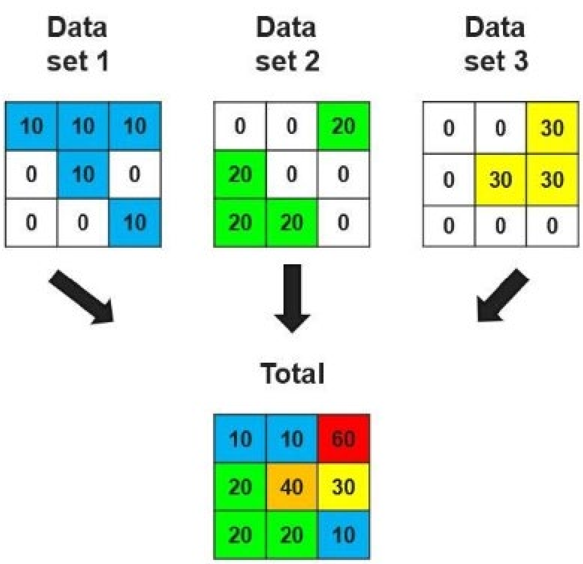
4.4.1 Charger Infrastructure Siting Analysis

At a conceptual level, the selection of an ideal site for EV charging is driven by two factors:

Demand: Chargers should be highly utilized to achieve a return on public or private investment.

Suitability: To the extent possible, chargers should be built at sites with existing supportive electric utility and transportation infrastructure, and away from natural hazards.

Figure 4-6: Site Suitability Model



To consider each of these factors and recommend ideal sites for charging infrastructure, a geographic information system (GIS) tool was employed. The County applied Stantec's ZEVDecide™ modeling tool, which integrates GIS layers describing each of the factors above to optimize site selection for future charging infrastructure. ZEVDecide™ utilizes a land suitability model framework in which each layer is assigned a weight and then combined into a heat map.

4.4.2 Scenario Development

Four scenarios were created with different methodologies for prioritizing sites for future installation of EV Chargers. The table below describes the relative importance of each set of factors in developing siting recommendations. The results of each scenario provide a detailed understanding of how competing factors influence site suitability for different types of charging.

The table below illustrates how land use, ownership, and other GIS layers were weighted to guide charger siting across four distinct deployment scenarios: the home charging need, County-owned charging, publicly available Level 2 charging, and publicly available DCFC. Each scenario reflects different goals and user types, so the same land use or ownership type may be treated positively, negatively, or excluded entirely.

The weight column assigns relative importance to each input, while the color scale provides a quick visual cue. For example, dark red layers are excluded entirely from the scenario, like wetlands or certain land uses. In contrast, dark green layers are included in the scenario, like the privately-owned land layer in the shared L2 charging scenario. Light green rows represent layers that have been positively weighted, whereas light red layers are weighted negatively to reduce suitability. To illustrate this weighting, mixed-use zoning areas score highly under the shared L2 charging scenario because those areas have high commercial and residential density, while the shared DCFC scenario instead prioritizes “general commercial“ parcels.

The weight column assigns some layers a score on the scale of -100 to 100. Layers with a weight of 100 are prioritized over other layers with lower weights. Layers with negative weights are actively removed from consideration. Together, the weightings create four tailored suitability models that reflect the distinct siting logic for each charging type, ensuring that locations are selected not only for technical feasibility but also for how well they serve the intended users and travel patterns in Los Alamos County.

Table 4-5: Scenario Weighting

Home Charging Need		County-Owned Charging		Publicly Accessible/Shared Level 2 Charging		Corridor/Fast Charging	
Layer	Weight	Layer	Weight	Layer	Weight	Layer	Weight
Land Use/Ownership		**Land Use/Ownership**		**Land Use/Ownership**		**Land Use/Ownership**	
Survey Results		Survey Results		Survey Results		Survey Results	
Residential		***Residential***		***Residential***		***Residential***	
High Density Residential (Mixed Use, Multifamily, Manufactured Home Community)		Multi-Family Residential - High		Multi-Family Residential - High	50	Multi-Family Residential - High	
Medium-Density Residential (Single Family)		Multi-Family Residential - Medium		Multi-Family Residential - Medium	25	Multi-Family Residential - Medium	
Low Density Residential (Residential Estate, Residential Agriculture)		Manufactured Home Community		Manufactured Home Community	25	Manufactured Home Community	
Multi-Family Residential - Low		Multi-Family Residential - Low		Multi-Family Residential - Low	25	Multi-Family Residential - Low	
Residential Mixed		Residential Mixed		Residential Mixed	25	Residential Mixed	
Single-Family Residential		Single-Family Residential		Single-Family Residential		Single-Family Residential	
Residential Estate		Residential Estate		Residential Estate		Residential Estate	
Residential Agriculture		Residential Agriculture		Residential Agriculture		Residential Agriculture	
Mixed-Use		***Mixed-Use***		***Mixed-Use***		***Mixed-Use***	
Mixed-Use		Mixed-Use	100	Mixed-Use	100	Mixed-Use	25
Downtown Los Alamos		Downtown Los Alamos	100	Downtown Los Alamos	100	Downtown Los Alamos	25
White Rock Town Center		White Rock Town Center	100	White Rock Town Center	100	White Rock Town Center	25
Non-Residential		***Non-Residential***		***Non-Residential***		***Non-Residential***	

Institutional		Institutional	100	Institutional	100	Institutional	25
Professional Office		Professional Office		Professional Office	75	Professional Office	25
General Commercial		General Commercial		General Commercial	75	General Commercial	100
Industrial		Industrial		Industrial	25	Industrial	25
Open Space		***Open Space***		***Open Space***		***Open Space***	
Open Space - Parks		Open Space - Parks	75	Open Space - Parks		Open Space - Parks	
Open Space - Recreational		Open Space - Recreational	25	Open Space - Recreational		Open Space - Recreational	
Open Space - Active		Open Space - Active	25	Open Space - Active		Open Space - Active	
Ownership		***Ownership***		***Ownership***		***Ownership***	
County-Owned Land		County-Owned Land		County-Owned Land		County-Owned Land	
Other Public		Other Public		Other Public		Other Public	
Private		Private		Private		Private	
Demographics		**Demographics**		**Demographics**		**Demographics**	
Population Density	100	Population Density (Proximity)	50	Population Density (Proximity)	50	Population Density (Proximity)	50
Environmental Justice Index		Environmental Justice Index	50	Environmental Justice Index		Environmental Justice Index	
Infrastructure Layers		**Infrastructure Layers**		**Infrastructure Layers**		**Infrastructure Layers**	
Existing Level II Chargers		Existing Level II Chargers		Existing Level II Chargers	5	Existing Level II Chargers	
Existing DCFC		Existing DCFC		Existing DCFC		Existing DCFC	-50
EV Traffic Volumes		EV Traffic Volumes	25	EV Traffic Volumes	25	EV Traffic Volumes	100
Feeder Capacity		Feeder Capacity	50	Feeder Capacity	50	Feeder Capacity	100
Parking Lots		Parking Lots	25	Parking Lots	25	Parking Lots	50
AFC At-Grade Corridors		AFC At-Grade Corridors		AFC At-Grade Corridors		AFC At-Grade Corridors	

Exclusion/Avoidance Layers	Exclusion/Avoidance Layers	Exclusion/Avoidance Layers	Exclusion/Avoidance Layers
High Flood Risk (includes Bodies of Water)	High Flood Risk (includes Bodies of Water)	High Flood Risk (includes Bodies of Water)	High Flood Risk (includes Bodies of Water)
Wetlands	Wetlands	Wetlands	Wetlands
Open Space - Passive	Open Space - Passive	Open Space - Passive	Open Space - Passive
Exempt Federal	Exempt Federal	Exempt Federal	Exempt Federal

4.5 Home Charging Scenario

The first scenario modeled using the ZEVDecide tool focuses on identifying and forecasting home-based charging infrastructure. This scenario is designed to support residents who may charge zero-emission vehicles at or near their homes, emphasizing accessibility and convenience.

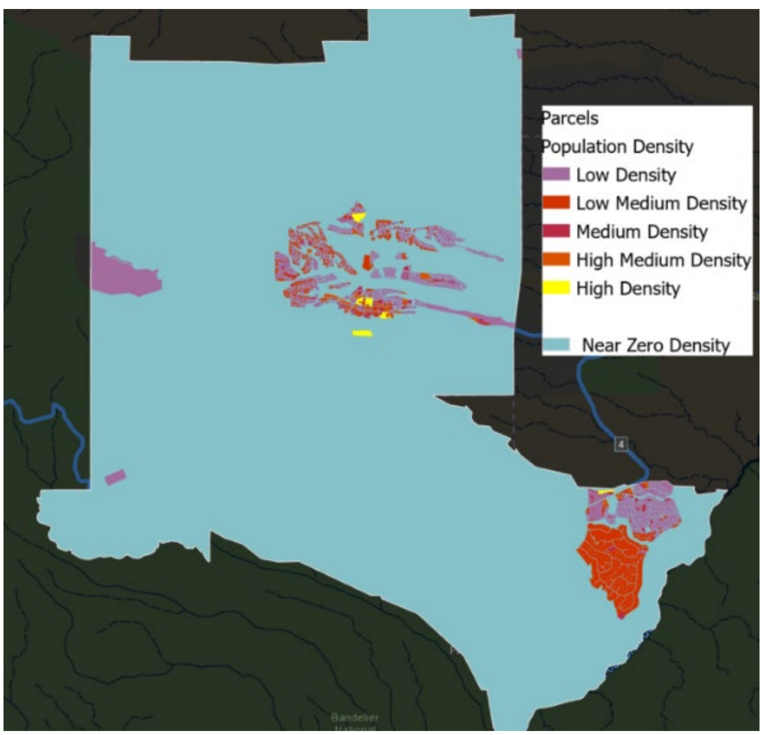
In this use case, population density serves as the primary siting factor, under the assumption that areas with higher concentrations of residents are more likely to benefit from distributed home charging solutions. The tool applies a spatial weighting to population clusters, prioritizing zones where demand for residential charging is expected to be highest.

To refine the analysis and ensure practical feasibility, ZEVDecide also incorporates a series of exclusion layers. These include:

- Wetlands and environmentally sensitive areas, to avoid ecological disruption.
- Publicly-owned parcels where housing does not exist
- Other land use restrictions that may limit installation potential.

By filtering out unsuitable areas and concentrating on population-driven demand, this scenario provides a foundational layer for understanding where home charging investments can be most impactful. It also sets the stage for integrating additional criteria in future iterations, such as grid readiness, equity metrics, or housing type.

Figure 4-7: Home Charging Map



4.5.1 At-Home Charging Impacts on the Electric Grid

The purpose of this section is to assess the anticipated grid impact from residential EV charging as adoption of EVs is forecasted to grow in Los Alamos. Residential charging for light-duty EVs typically uses a combination of Level 1 and Level 2 chargers. Throughout this analysis, residential charging is classified between single-family and multi-family residential buildings, which differ in terms of adoption levels, typical charging infrastructure, and charging behavior.

In general, if a home or building's electrical panel has sufficient capacity to support the load of a new EV charger, then the local distribution infrastructure should also be adequate. However, problems arise when many EV owners are clustered on the same distribution transformer or feeder, leading to cumulative demand that exceeds system capacity, especially during peak hours. Additionally, many older homes lack the panel or service capacity for Level 2 charging, requiring costly upgrades to allow home charging. Secondary distribution transformers and feeders are expected to be vulnerable components of the grid which will be the first to feel the impact of increasing EV adoption. Understanding where EVs are located within the distribution network and planning ahead will be key to predicting grid impacts and making timely infrastructure upgrades that will allow utilities to reliably meet their customers' charging needs.

This analysis forecasts the grid impact from residential EV charging within Los Alamos, which is derived from the anticipated charging needs of residential EV owners. This study considered several factors which define residential charging requirements, including the average number of miles driven daily, typical vehicle efficiency, the type of charger installed, and how often residents plug in their EV and at what time of day.

4.5.2 Types of Residential EV Chargers

There are two types of chargers available for residential EV charging, Level 1 (Figure 4-8) and Level 2 (Figure 4-9). A Level 1 charger connects through a standard wall outlet. This charger is generally provided with the purchase of an EV, so it is a cost-effective way to charge. However, Level 1 chargers often require longer charging times than many users are willing to wait, especially when users need to recharge their battery from a low state of charge. Level 1 chargers require a power output of 1.4 kilowatt (kW), an amperage of up to 12A, and a household voltage level of 120V. [19,20] As an example, it would take approximately 37 hours to charge the average EV with a battery capacity of 80 kilowatt-hour (kWh) from 20 to 80 percent using a Level 1 charger.

[19] Figure 1 from: Level1 EVChargerinstock_1657091453129.png (500×500)
[20] What is a Level 1 charger for electric vehicles? — ChargeLab

Figure 4-8: Level 1 Charger

Figure 4-9: Level 2 Charger

The second, and most common, residential EV charger is a Level 2 charger. Level 2 chargers plug into a 240V outlet, which requires a specific electric installation at most homes[21]. The typical cost for the electrical installation to support Level 2 residential charging ranges from $900 to $2,900 USD, depending on the existing electric installation.[22] Level 2 chargers require a power output of between 6.2 and 19.2kW, and amperage can vary between 25 and 80A depending on the model of charger and the available capacity of a building's panel. The distribution of residential EV charger models varies from neighborhood to neighborhood, with newer built areas being more likely to support residential EV chargers with higher power requirement. The Alternative Fuels Data Center of the US Department of Energy indicates that the most common power output for a residential Level 2 EV charger is 7.2kW.[23] Using the same example as above, charging an 80kWh EV battery from 20 to 80 percent with a Level 2 charger would take approximately 6.5 hours.

In 2024, J.D. Power reported that for residential charging in single-family homes, 84% of EV owners use a level 2 charger, and the remaining 16% use Level 1.[24] Residential EV charging in multi-family dwellings is assumed to use only Level 2 charging technology, due to the lack of accessibility to 120V outlets in typical parking stalls.

[21] Figure 2 from: ChargePoint Home Flex Level 2 EV Charger NACS, NEMA 14-50 Outlet Charge Station CPH50-NEMA14-50-L23-NACS - The Home Depot
[22] The 2030 National Charging Network: Estimating U.S. Light-Duty Demand for Electric Vehicle Charging Infrastructure, Table 5
[23] Alternative Fuels Data Center: Electric Vehicle Charging Stations
[24] 2024 U.S. Electric Vehicle Experience (EVX) Home Charging Study | J.D. Power

Of the residential users that have a Level 2 charger, it is assumed that 70% have a 7.2 kW Level 2 charger, and the remaining 30% have Level 2 chargers with higher power output of 9.6 kW (leveraging a 40A installation). These charging assumptions are summarized in Table 4-6 and are key inputs to the analysis for grid impact from residential EV charging.

Table 4-6: Power Output by Charger Level and Distribution in Single- and Multi-Family Homes

Charger Level	Power Output (kW)	Single-Family Distribution (%)	Multi-Family Distribution (%)
Level 1	1.4	16%	0%
Level 2	7.2	59%	70%
Level 2	9.6	25%	30%

4.5.3 Driving Behavior and Vehicle Efficiency in Los Alamos

The total amount of energy required from the grid for residential EV charging is driven by the average daily driving distance and typical vehicle efficiency in Los Alamos. The type of EV charger determines what the power output will be, while the daily driving distance and vehicle efficiency determine the total amount of power that is drawn from the grid and the subsequent charging duration.

The Bureau of Transportation presented in 2017 that the average residential daily person miles in New Mexico was 35.1 miles per day.[25] The Department of Energy also considers the average vehicle occupancy rate to be 1.5, which results in the average vehicle miles traveled (VMT) in New Mexico to be estimated as 23.4 miles per day in 2017. [26] The Federal Highway Administration also forecasts that the VMT is expected to grow by about 0.5 percent per year, which was used to estimate the average VMT in New Mexico to be 24.3 miles per day in 2025, and 27.6 miles per day by 2050. [27] This figure of 27.6 will be used in the analysis going forward. The Environmental Protection Agency gives the average EV efficiency as 0.39kWh/mile in the United States.[28] This average EV efficiency was used to estimate the upper limit for EV power required per mile driven in Los Alamos. The product of the average daily VMT in New Mexico and the average EV efficiency in the United States gives the total daily power required per EV for residential charging of 10.8 kWh per EV per day in 2050.

4.5.4 Plug-In Behavior in Los Alamos

The type of EV charger determines the additional peak load each vehicle can add to the grid, while average daily mileage and vehicle efficiency indicate how long that peak would typically last. To accurately forecast the impact of growing EV adoption, it was important to study when EVs would be plugged in and to recognize that not all vehicles charge at the same time. The study of plug-in behavior includes when and

[25] New_Mexico Transportation by the Numbers.pdf
[26] FOTW #1333, March 11, 2024: In 2022 the Average Number of Occupants Per Trip for Household Vehicles in the United States Was 1.5 | Department of Energy
[27] 2024 FHWA Forecasts of Vehicle Miles Traveled (VMT) - Policy | Federal Highway Administration
[28] Comparison: Your Car vs. an Electric Vehicle | US EPA

how often EV owners choose to charge their vehicles. Plug-in behavior can be represented by typical charging patterns which were used to develop an aggregate residential EV charging profile, which was used to model the collective residential charging patterns of EV users. This aggregated approach to forecasting grid impact from residential EV charging is useful to evaluate peak demand impact at the utility level that can be used to determine grid capacity and infrastructure investment needs.

There are several published studies on charging behavior for EV owners. Specifically, detailed research was conducted on analysis and predictive modelling of residential EV charging behavior for the city of Omaha, NE[29]. Due to the significant differences in climate and population between New Mexico and Nebraska, it is acknowledged that charging behaviour could vary between the regions. However, useful outcomes of the study are the distribution of plug-in time and the typical time until next charge for residential EV owners. These distributions from the city of Omaha study are key inputs to the Los Alamos grid impact analysis and are presented in

Figure 4-10 and Figure 4-11 respectively. A second study conducted by the National Renewable Energy Laboratory featured a nationwide model that produced similar charging profiles for Nebraska and New Mexico, which further validates that the City of Omaha charging behavior study results can be applied to New Mexico.[30]

Figure 4-10 indicates that the majority of residential EV owners plug in their vehicle between 3 PM and 9 PM. For this analysis, the values for each hour have been used to build the load profile for residential EV charging in Los Alamos. Figure 4-22 indicates that nearly 60% of residential EV owners plug in their vehicle within a day since their last charge, while an additional approximately 25% plug in within 2 days from their last charge.

Figure 4-10: Distribution of Total Residential EV Charging Sessions with a Given Start Time[31]

[29] Insights into Household Electric Vehicle Charging Behavior: Analysis and Predictive Modeling
[30] Highly Resolved Projections of Passenger Electric Vehicle Charging Loads for the Contiguous United States: Results From and Methods Behind Bottom-Up Simulations of County-Specific Household Electric Vehicle Charging Load (Hourly 8760) Profiles Projected Through 2050 for Differentiated Household and Vehicle Types - National Renewable Energy Laboratory
[31] Insights into Household Electric Vehicle Charging Behavior: Analysis and Predictive Modeling

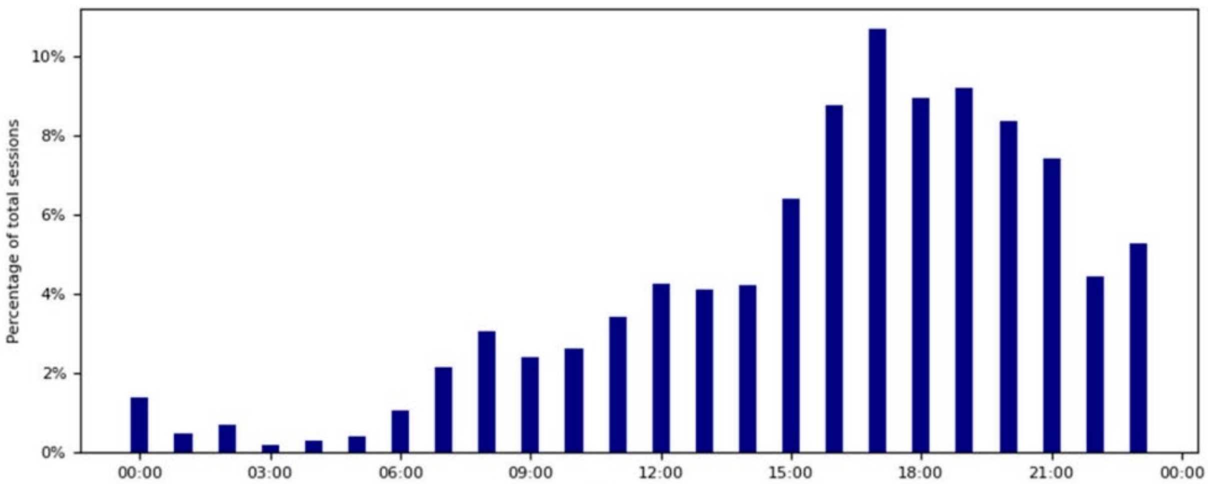
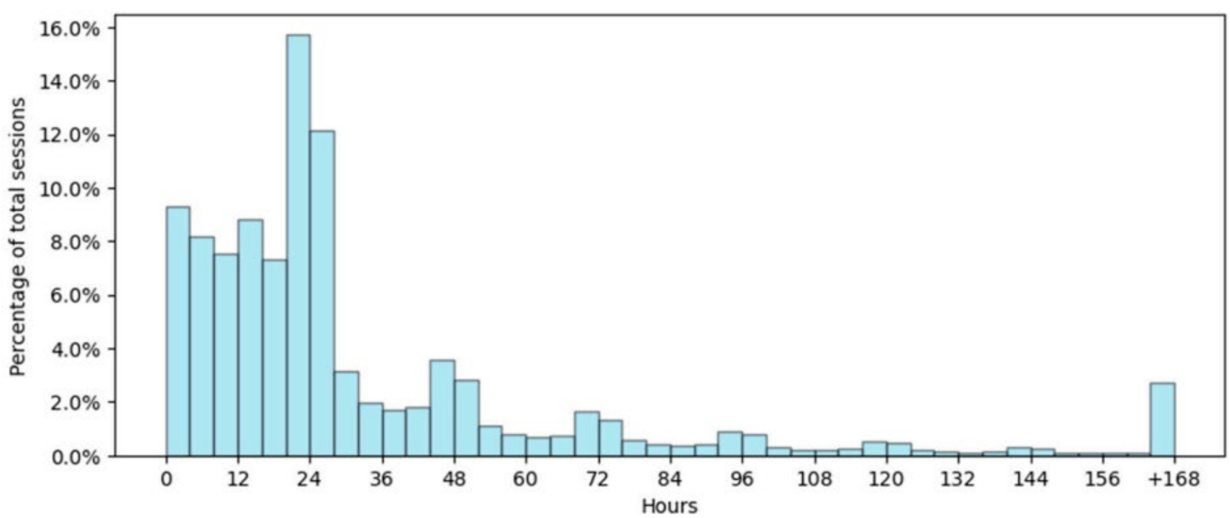


Figure 4-11: Distribution of Time to Next Charge for Residential EV Charging[31]

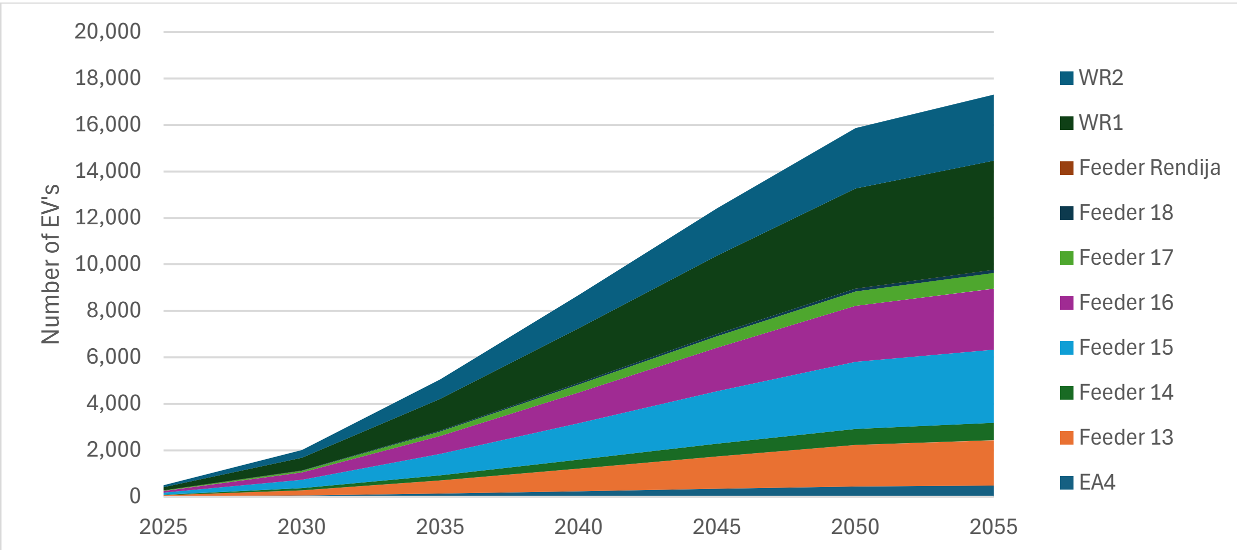


4.5.5 Projected Grid Impact of Residential EV Charging in Los Alamos

The next stage of the grid impact assessment is to determine the peak load impact from residential EV charging at the feeder level. A key assumption for this analysis is that the peak of residential EV charging coincides with the overall peak on a feeder. In residential areas the overall peak load typically occurs between 4 pm and 8 pm, which is also what is expected for residential EV charging.[32]

In Section 4.5, the residential EV adoption for Los Alamos is forecasted for three different adoption scenarios. Figure 4-12 shows the result of this analysis at the feeder level for the high adoption scenario.

Figure 4-12: EV adoption per feeder 2025-2055 in the "High Adoption" scenario



Using the average aggregate peak load profile per EV, the feeder-level grid impacts for each adoption scenario are produced based on the breakdown of residential dwelling types connected on each feeder. Ten feeders have been identified for this study to provide grid impact projections. For six of those feeders, the distribution of single-family dwellings and multi-family dwellings is known. For the four remaining feeders this distribution is not known and the overall distribution of dwelling type for Los Alamos is used as an assumption. The number of residents and distribution across dwelling types is summarized by feeder in the table below.

[32] Distribution feeder-level day-ahead peak load forecasting methods and comparative study

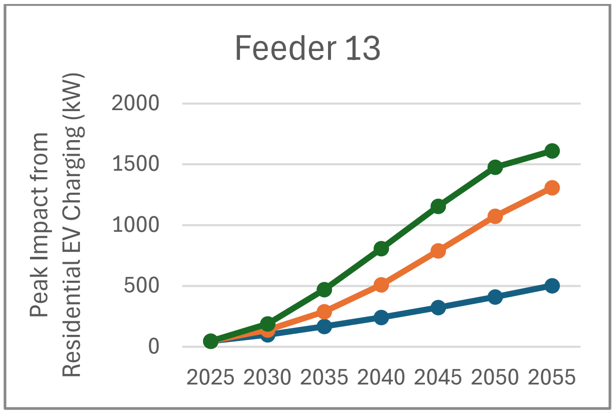
The analysis will also project the community-level transition (overall adoption within privately-owned vehicles) from fossil fuel vehicles to EVs over the coming years. This projection will be driven by the anticipated demand for public EV chargers, offering a clear visual representation of how increased charging infrastructure is expected to accelerate EV adoption within the community (see example figure below). The future demand forecast will also include analysis of the peak load required to serve EV charging based on the following assumptions:

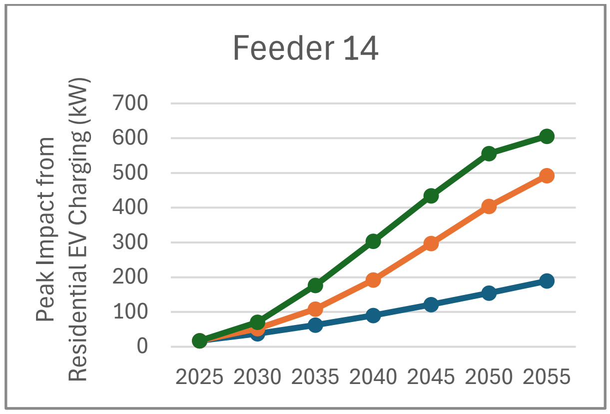
- EV projection is provided at the geographic level for a high, medium, and low adoption scenario. The same geographic aggregation as EV Charging Infrastructure is predicted on by scenarios and associate EV Charging to specific feeders in the grid system will be used. Using the aggregation of EV Charging Infrastructure and typical charging profiles, we will model the peak load demand required to serve EV charging by scenario (high, medium, and low adoption).
- Data is provided that indicate which geographical area is serviced by which feeder.
- Data on the current load of each feeder will be provided.
- A maximum of 20 feeders for the analysis.
- The peak load of EV charging during a specific day will coincide with peak load of the feeder.

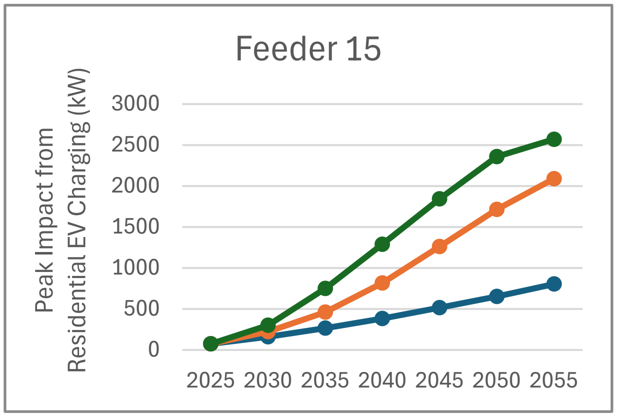
Table 4-7: Number of Residents and Distribution Across Dwelling Types by Feeder

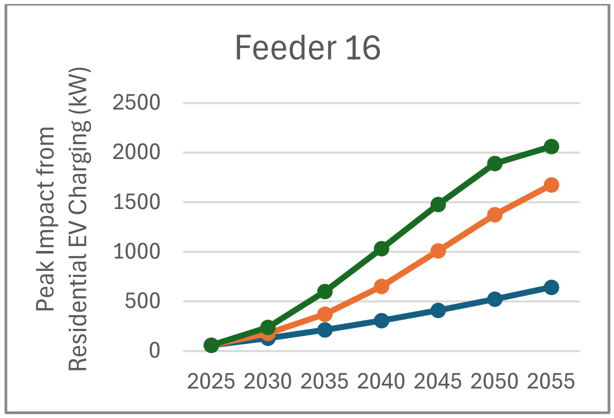
Feeder	# of Residents	Single-Family (%)	Multi-Family (%)
Feeder 13	2521	7.2%	92.8%
Feeder 14	883	57.4%	42.6%
Feeder 15	3980	28.2%	71.8%
Feeder 16	3011	93.4%	6.6%
Feeder 17	628	0.6%	99.4%
Feeder 18	138	0.0%	100.0%
Feeder Rendija	0	N/A	N/A
WR1	4669	46.2%	53.8%
WR2	2829	46.2%	53.8%
EA4	486	46.2%	53.8%

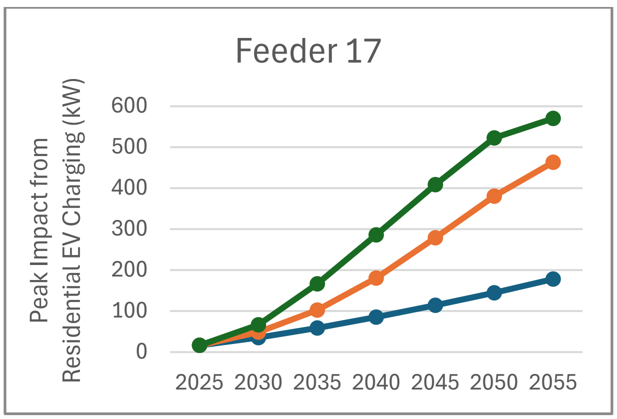
The grid impact from residential EV charging was assessed for each sample feeder for the high, medium, and low EV forecast scenarios. This analysis considered the normalized peak load impact by dwelling type, the distribution of dwellings per feeder, and the adoption of EV's over time per feeder in each scenario. The projected peak grid impact from residential EV charging in Loas Alamos is presented for each feeder in the figure below.

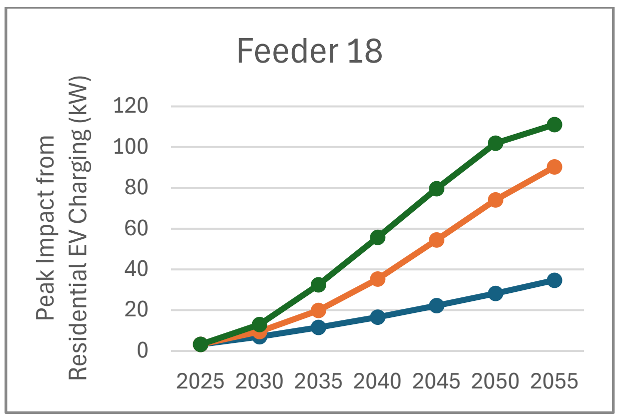

Feeder 13
Peak Impact from Residential EV Charging (kW)
2000
1500
1000
500
0
2025 2030 2035 2040 2045 2050 2055


Feeder 14
Peak Impact from Residential EV Charging (kW)
700
600
500
400
300
200
100
0
2025 2030 2035 2040 2045 2050 2055


Feeder 15
Peak Impact from Residential EV Charging (kW)
3000
2500
2000
1500
1000
500
0
2025 2030 2035 2040 2045 2050 2055


Feeder 16
Peak Impact from Residential EV Charging (kW)
2500
2000
1500
1000
500
0
2025 2030 2035 2040 2045 2050 2055


Feeder 17
Peak Impact from Residential EV Charging (kW)
600
500
400
300
200
100
0
2025 2030 2035 2040 2045 2050 2055


Feeder 18
Peak Impact from Residential EV Charging (kW)
120
100
80
60
40
20
0
2025 2030 2035 2040 2045 2050 2055

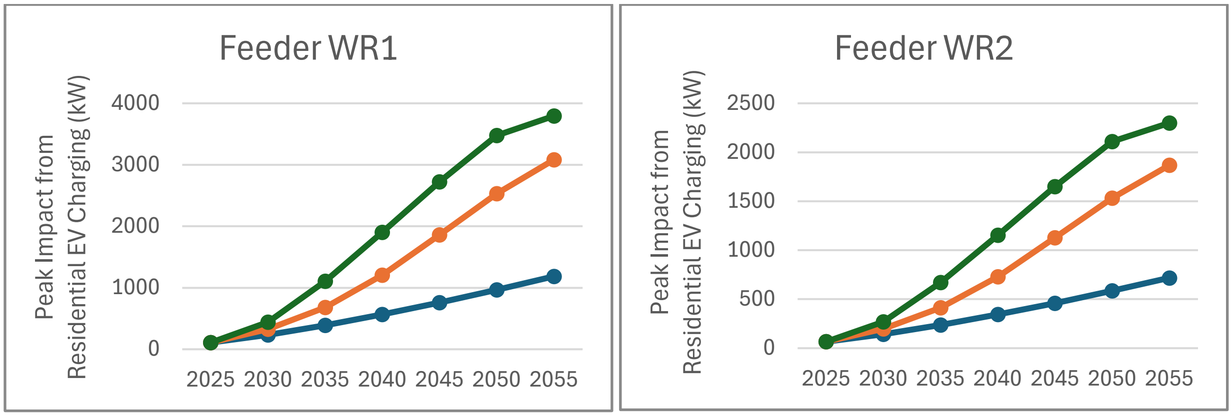


Figure 4-13: Feeder Impacts

The results of this analysis suggest that despite the relatively low impact from residential EV charging per vehicle, as adoption increases there will be significant peak load increase on Los Alamos feeders. Feeders which currently have more capacity available will be better positioned to support this forecasted load increase from electrification. Feeders which are currently peaking near their existing capacity will require upgrades sooner to meet the load requirements.

This analysis is based on current charging behaviors that have been observed in an unmanaged charging scenario. Many utilities are developing new ways to manage residential EV charging load using rate incentives and controlled charging deployments, including smart charging. These managed charging solutions would influence charging behaviors by encouraging EV owners to shift charging off-peak using financial incentive to lower their electricity bills. While some of these load management deployments remain in the theoretical or pilot stages, they provide a promising opportunity to flatten the peak from residential EV charging. Implementation of charge management, such as time-of-use rates and demand charges proposed for Los Alamos, could decrease the forecasted grid impact from residential EV charging.

This analysis produced a baseline grid impact based on charging behaviors, available technology, and impacts from residential EV charging that have been experienced to date. The following sensitivity analysis (in process) will test the underlying assumptions used in these projections and will measure how the outputs are affected. Sensitivity analysis is an important step in forecasting EV adoption as the results can be impacted by a number of variables, including economic indicators, regulatory incentives, and technology developments. Key topics to be explored in the sensitivity analysis include:

- Diversity in charging behavior
- Change in vehicle efficiency over time
- Development of charging technologies

4.5.6 Distribution System Electrification Study for the County

The Distribution System Electrification Study developed by 1898 & Co. for the County evaluated the long-term impacts of transportation electrification on the DPU electric system.[33] The study modeled the same three scenarios of EV adoption alongside building electrification and distributed energy resources to assess potential load growth, peak demand shifts, and infrastructure needs through 2055. The subsections below highlight the most relevant findings and recommendations that have a direct correlation to the at-home charging scenario and overall electrification in the County.

4.5.6.1 Load Growth and Peak Demand

The study projects that EV adoption will be one of the most significant drivers of load growth in the coming decades. Under the most aggressive scenario, which assumes full electrification of vehicles and buildings, the system's peak load could increase by 20.6 MW by 2040 and 43.5 MW by 2055, approximately a 200% increase over current peak demand. Even the most conservative scenarios project an increase of 3.7 MW by 2040 and 13.1 MW by 2055 (a 60% increase). The moderate, policy-aligned scenario anticipates a 7.4 MW increase by 2040 and 27.1 MW by 2055.

The study also found that charging behaviour will heavily influence grid impacts. Approximately 30% of drivers are expected to charge their EVs immediately upon returning home, while 40% are likely to use scheduled charging during off-peak hours, and 30% will rely on slower Level 1 charging, creating extended overnight demand. With 80% of drivers expected to charge at home, unmanaged charging could contribute to new early-morning and evening peaks.

4.5.6.2 Demand Management Opportunities

The study emphasizes that demand-side management programs will be essential to mitigate peak impacts and defer costly infrastructure upgrades. Recommended strategies include:

- Time-of-Use (TOU) rates to shift charging to off-peak periods.
- Direct load control programs for EVs, space heating, and water heating to reduce peak demand during critical periods.
- Managed EV charging programs leveraging smart chargers and historical charging data to optimize charging schedules.

These measures, paired with customer education and incentives, can reduce coincident demand and improve grid efficiency.

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[33] https://losalamos.legistar.com/View.ashx?M=F&ID=14496764&GUID=999F05B0-8798-483C-880C-80D2CD4E7341

4.5.6.3 Grid Modernization

The study further identifies grid modernization strategies to support system reliability and flexibility. Near-term priorities include distribution-scale battery energy storage to manage peaks, mobile BESS resource for emergency support, and deployment of automated circuit breakers and smart switches to maintain reliability as electrification expands.

4.6 County-Owned Charging Scenario

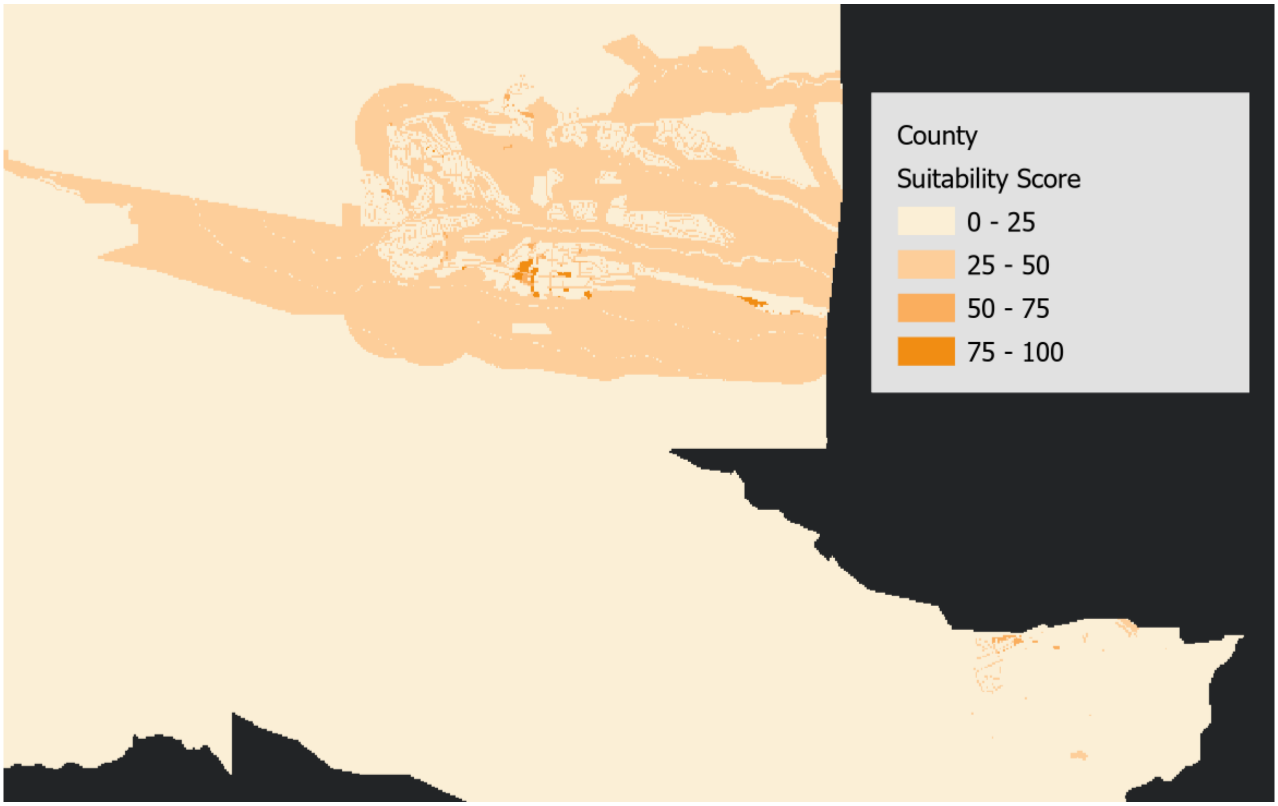
County-owned properties provide the strongest opportunities for implementing new charging infrastructure. As shown in the suitability analysis (Figure 4-16), areas coded in **dark orange** represent the highest potential for siting chargers on County-controlled land. These areas align closely with the County's civic and community cores, where land use density, EV travel patterns, and community activity levels are highest.

Key observations from the analysis include:

- **Central Civic Core (Dark Orange)** – The downtown area surrounding Mesa Public Library, Municipal Building, Justice Center, and Ashley Pond Park emerged as the most suitable zone for County-owned charging. This reflects a combination of high land-use density, major community destinations, and existing County control, which simplifies siting and reduces acquisition barriers.
- **Transportation Corridors (Medium Orange)** – Secondary opportunity areas extend along State Road 502 and major approaches into Los Alamos. While not as centrally active as the civic core, these locations are strategically positioned to support regional EV travel and provide redundancy for local charging capacity.

Outlying County Land (Light Orange) – Much of the County's peripheral land holdings scored lower for near-term charging investment. These areas are characterized by low activity levels, limited demand, or environmental constraints, making them less suitable for initial deployment.

Figure 4-14: County Owned Charging Map



4.7 Privately-Owned, Publicly Accessible Charging Scenario

This assessment identifies optimal locations for privately owned, publicly accessible Level 2 EV charging stations using a weighted multi-layer approach. The suitability map highlights areas in red as most favorable (up to a score of 100), with blue indicating low suitability.

Key Takeaways:

Residential and Mixed-Use Communities Lead Suitability:

- The highest scoring areas are concentrated in multi-family residential zones, manufactured home communities, and mixed-use developments.
- These land use types received strong positive weights: Mixed-Use and Downtown Los Alamos (100), Multi-Family Residential High (50), and Medium/Low/Manufactured (25). These weights reflect their potential for shared charging access and higher EV adoption rates.
- These zones also benefit from population density proximity (weighted at 50), reinforcing their suitability for shared infrastructure.

Downtown Los Alamos and White Rock Town Center:

- These mixed-use hubs stand out as prime candidates for Level 2 charging due to their blend of residential, commercial, and institutional land uses.
- Their centrality and accessibility make them ideal for serving both residents and visitors.

Institutional and Office Zones:

- Areas designated as Institutional (100) and Professional Office (75) also show elevated suitability, offering opportunities for workplace charging and public access during off-hours.

Supporting Conditions:

Exclusion Layers:

- As with other scenarios, unsuitable areas such as wetlands, flood zones, and passive open space are excluded to ensure environmental and operational viability.

Figure 4-15: Shared L2 Charging Suitability Map

4.8 Fast Charging Scenario

This DCFC suitability analysis for the County was generated using the ZEVDecide tool, incorporating a weighted multi-layer approach to identify optimal locations for fast-charging infrastructure. The model integrates land use, ownership, demographics, existing infrastructure, and environmental constraints to produce a spatial suitability score.

Key Highlights:

Main Corridor of NM-502:

- The 502 corridor emerges as a primary zone of high suitability, prominently highlighted in yellow on the map.

- This corridor connects key residential and commercial areas, and benefits from high EV traffic volumes (weighted at 100) and proximity to general commercial zones (also weighted at 100).
- The corridor's accessibility and infrastructure readiness make it a strategic location for DCFC deployment.

Sub-Communities Along NM-501:

- Several sub-communities branching off 501 also show elevated suitability scores.
- These areas are characterized by multi-family residential zones, manufactured home communities, and mixed-use centers, all of which are positively weighted in the model.
- Their inclusion reflects a balance of residential density and land use compatibility, supporting equitable access to charging infrastructure.

Weighted Conditions Driving Suitability:

Land Use and Ownership:

- High suitability is driven by zones designated for multi-family residential, general commercial, and mixed-use development, with weights ranging from 25 to 100.
- County-owned and private lands are considered, while exempt federal lands and wetlands are excluded.

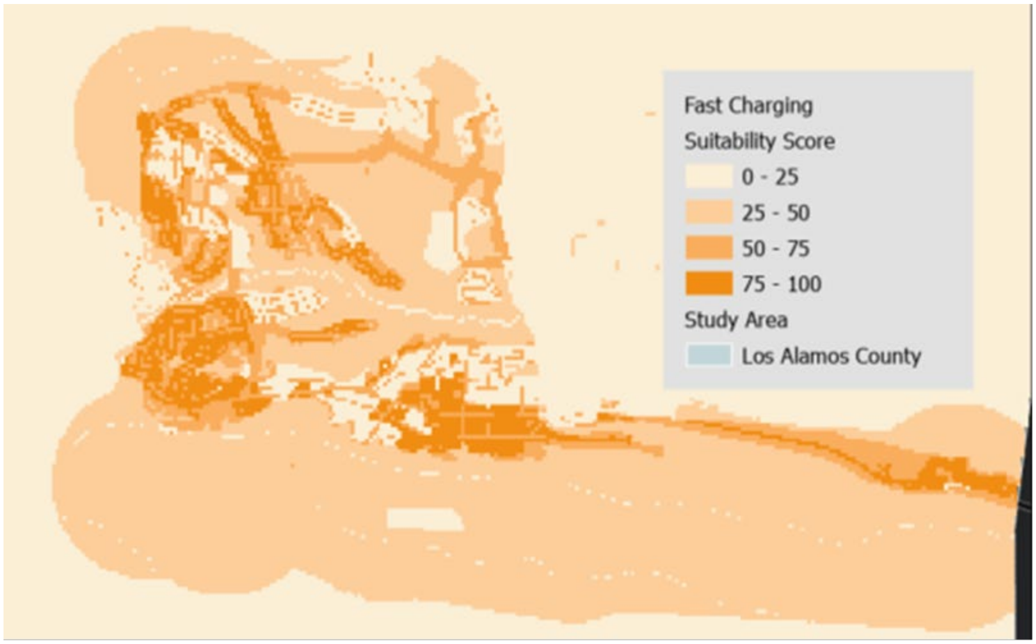
Demographics and Infrastructure:

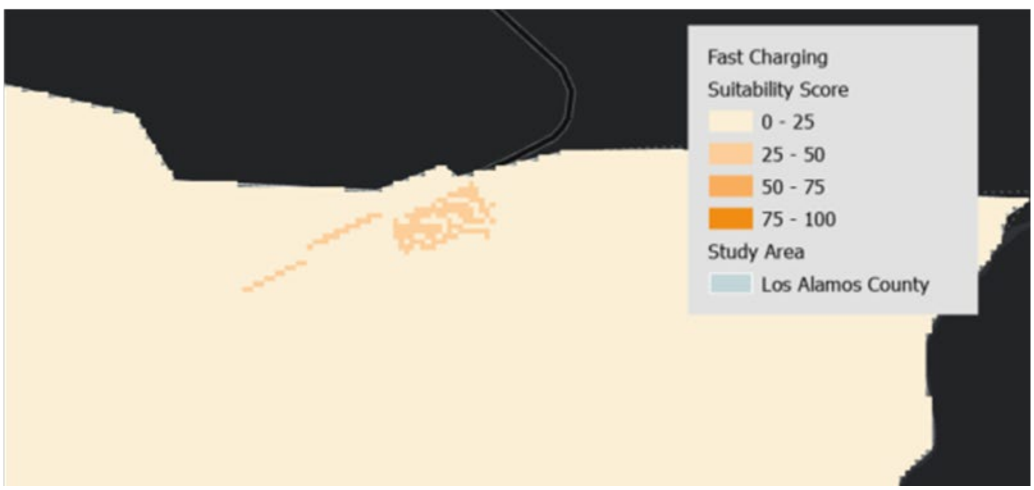
- Population density proximity (weighted at 50) and Environmental Justice Index help prioritize areas with higher residential demand and equity considerations.
- Existing charging infrastructure is negatively weighted (-50) to avoid redundancy.
- Parking lots (50) and feeder capacity support practical deployment feasibility.

Exclusion Layers:

- Areas with high flood risk, wetlands, and passive open space are excluded to ensure long-term viability and environmental compliance.

Figure 4-16: DCFC Suitability Map





5 Implementation Recommendations for County Infrastructure Readiness Plan

Successful deployment of EV charging infrastructure will depend not only on identifying suitable locations but also on clarifying who develops, owns, and operates each site, and how the County can structure partnerships and incentives to ensure long-term sustainability. This section outlines potential business models, draws lessons from peer communities, and recommends an implementation approach that balances County leadership with private-sector participation.

5.1 Common Partnership/Business Models

The deployment of public EV charging infrastructure requires clear decisions around ownership, operations, and risk-sharing responsibilities. Different business models offer varying levels of public and private involvement, ranging from full municipal control to third-party ownership or turnkey solutions.

For the County, the key question is not which model is "best", but rather what role the County wants to play in charging infrastructure delivery. The models outlined in the tables below provide examples of common approaches used in similar communities. The County can adapt or combine these approaches to align with its goals, resources, and risk tolerance.

Table 5-1: Site Host Owner-Operator

Description	The property owner (e.g., County, private business) purchases equipment, installs it, and retains full responsibility for operations and maintenance.
Benefits	Long-term control over service quality; all revenue retained by site host.
Limitations	High upfront capital costs; site host assumes all risks and responsibilities.

Table 5-2: Utility Ownership / Subsidy

Description	The utility provides "make-ready" infrastructure upgrades (e.g., panels, wiring) or, in some cases, owns and operate charging infrastructure.
Benefits	Lower upfront costs; utility shares risks for maintenance and utilization.
Limitations	Less local control over service quality and pricing.

Table 5-3: Third-Party Owner-Operator

Description	The site host contracts with a third party to manage some or all aspects of ownership, operations, and billing. In some cases, rental income may flow back to the site host.
Benefits	Transfers risk and responsibilities to the third party; potential for rental income.
Limitations	Less control over service quality; some or all revenue goes to the third party.

Table 5-4: Infrastructure / Charging-as-a-Service

Description	A third party provides a turnkey solution, covering upfront capital costs and equipment ownership in exchange for a monthly fee from the site host.
Benefits	Low to no capital costs; most risks transferred to the third party; flexible service options.
Limitations	Higher long-term costs; limited control over service quality.

Table 5-5: Town / Contractor Hybrid

Description	A hybrid approach in which the County retains ownership of equipment and sets pricing, while contractors handle installation, operations, and billing.
Benefits	Maintains County control over core policy areas (pricing, permitting, enforcement) while outsourcing technical and operational functions.
Limitations	Requires careful contract management to ensure reliable service.

Each of these models has trade-offs in terms of cost, control, and risk. The County has flexibility to determine its desired level of involvement. It will be important to confirm early in the planning process what role the County wants to play in charging infrastructure ownership and management, and to secure buy-in from leadership on this role. Once that decision is made, the County can adapt these models, or combine aspects of them, to guide procurement and partnership decisions moving forward.

5.2 What Others Are Doing

New Mexico communities are taking a variety of approaches to expanding public EV charging infrastructure. While each jurisdiction operates within its own local context and capacity, several consistent themes have emerged: leveraging state and federal funding, aligning with broader sustainability and mobility goals, prioritizing equity and accessibility, and forming partnerships with utilities and private charging providers. Los Alamos County has historically not qualified for many of these grants under Justice 40 Criteria. The following examples illustrate current implementation models that can inform the County's approach.

5.2.1 Santa Fe County

Santa Fe County is among the state's leaders in expanding public EV infrastructure. The County recently received approximately $3.3 million in federal grant funding to construct a network of 33 fast and Level 2 chargers across 13 sites. These sites were selected with an emphasis on serving multifamily and affordable housing developments, as well as public destinations such as libraries and community centers.

In addition to infrastructure investment, Santa Fe County launched an EV car-share pilot program in partnership with housing providers and private operators. This program introduces shared EVs for residents of public housing and the general public, integrating on-site charging access at the housing complexes. The initiative combines emissions reduction goals with transportation equity, providing lower-income residents affordable access to EVs without requiring private vehicle ownership.

Santa Fe County's approach emphasizes equitable access and integrated planning. The County has focused on installing chargers at multifamily and affordable housing sites, ensuring that residents without access to private parking can still benefit from EV infrastructure. In tandem, it has incorporated mobility services such as EV car-share programs, allowing more residents to experience electric vehicles without the need for ownership. These efforts are supported through the strategic use of federal grants and public-private partnerships, which help reduce local implementation costs. Overall, the County's program is grounded in equity-driven siting and proactive community outreach, ensuring that investments in charging infrastructure serve the broadest possible range of residents.

5.2.2 City of Albuquerque

The City of Albuquerque has pursued a municipal-led strategy focused on public visibility and accessibility. In 2024, the City unveiled 18 new public charging stations with funding from the New Mexico Volkswagen Settlement Fund, effectively doubling the number of publicly available chargers citywide. The stations were installed at libraries, community centers, and parks, complementing the city's Climate Action Plan goals and its Green Vehicle Permit program, which offers free parking for qualifying low-emission vehicles.

Albuquerque's approach demonstrates how cities can act as "anchor hosts," using municipal land to lead deployment, create user awareness, and demonstrate best practices for charger siting, pricing, and maintenance.

Municipal strategies for electric vehicle infrastructure in Albuquerque focus on ownership or facilitation of visible, publicly accessible charging stations, leveraging settlement and state incentive funds to support deployment. These efforts are coordinated with broader climate and clean transportation goals and emphasize public communication and education to ensure awareness and engagement.

5.2.3 City of Santa Fe

The City of Santa Fe has integrated EV infrastructure into multiple planning documents, including its Sustainable Santa Fe Plan and 25-Year Infrastructure Plan. The City aims to ensure that all residents are within five miles of a public EV charging station and has incentivized installation through parking and development standards. Santa Fe's strategy reflects a long-term view of EV readiness, emphasizing policy integration and private-sector participation rather than direct municipal ownership of all charging assets.

Santa Fe's approach to electric vehicle infrastructure is policy-driven and embedded within long-range planning, integrating EV readiness into zoning, parking, and building codes. The strategy emphasizes encouragement of private investment and the development of distributed charging infrastructure, rather than relying solely on direct municipal ownership of all assets.

5.2.4 City of Las Cruces

Las Cruces has adopted a utility-partnership model in coordination with El Paso Electric (EPE) to install both municipal and commercial charging stations. Through EPE's "EV Charging Program," rebates are offered for public and workplace chargers, helping to lower installation costs for site hosts. The City also participates in EPE's Time-of-Day rate pilots, which test dynamic pricing structures for EV charging and help evaluate impacts on grid demand. The Los Alamos County Utility Charter and Anti Donation Clause prohibit the County from these kinds of programs.

Las Cruces emphasizes strong coordination with EPE to support planning and incentives for EV infrastructure. The City leverages rebates to encourage deployment of private and workplace chargers and participates in pilot projects that test rate structures and assess impacts on the electrical grid, highlighting the value of utility partnership in long-term charging network management.

5.2.5 Lessons for the County

Across these jurisdictions, several consistent strategies have proven effective and scalable:

Table 5-6: Jurisdiction Strategies

Strategy	Example	Relevance
Anchor Municipal Installations	Albuquerque, Santa Fe	Use visible public sites to lead by example and establish standards
Targeted Deployment at Multi-Family/Affordable Housing	Santa Fe County	Addresses equity and access gaps for residents without home charging
Corridor Connectivity and Regional Coordination	NMDOT	Supports visitor travel and inter-county access; complements local staples
Public-Private Partnerships	NMDOT, Las Cruces	Reduces capital costs, brings technical expertise to operations

Together, these efforts provide a strong foundation for statewide EV readiness and offer models for the County's own implementation strategy. By combining elements of each—municipal leadership, equity-based siting, corridor connectivity, and public-private partnerships—the County can position itself as a regional leader in accessible, reliable, and sustainable EV charging.

5.3 County Role in Implementation

The stated goal of this plan is to support the increase of charging options in the County. The installation of publicly-available, county-owned chargers plays a significant role in the recommended approach. But another important consideration is how the County can incentivize the installation of privately-owned chargers, both publicly available and privately available. The following sections explore recommendations for both county-owned charger locations and high-impact privately-owned locations.

5.3.1 Recommended County-Owned Charger Implementation

The preliminary siting analysis identified a mix of highly relevant and supporting locations for County-owned chargers. The sites listed in Table 5-7 provide geographic coverage across downtown Los Alamos and White Rock, serve multiple trip purposes, and align with the County's land-use and power-distribution assets. Importantly, the quantities provided here correspond to a low- and medium-scale implementation scenario and the implementation relevance was evaluated based on the results from the suitability analysis as described in section 4.6.

Table 5-7: Recommended Charger Locations

Location	L2 Chargers	L3 Chargers	Anticipated Power[34]	Implementation Relevance	Phasing
Mesa Public Library		4 (In progress)	300 kW	Highly Relevant	Present Day
Municipal Building	12 (In progress)		99 kW	Highly Relevant	Present Day
White Rock Visitor Center	2 (Existing)		16.5 kW	Relevant	Present Day
White Rock Fire Department (Charging with Fleet Vehicles)	4		33 kW	Relevant	Present Day
Justice Center	12	8	699 kW	Highly Relevant	Near-Future & Phase 2
Los Alamos Senior Center	4		33 kW	Highly Relevant	Phase 1
Aquatic Center (Charging with Fleet Vehicles)	8		66 kW	Highly Relevant	Phase 1
Ice Rink (Charging with Fleet Vehicles)	8		66 kW	Relevant	Phase 1
Golf Course	6		49.5 kW	Relevant	Phase 1
Los Alamos Nature Center	2		16.5 kW	Highly Relevant	Phase 2
North Mesa Sports Complex	6		49.5 kW	Relevant	Phase 2

While the actual charger quantity, order of implementation, and location for the charging sites is up to the discretion of the County as well as available funding, the following phased approach is a suggested sequence of implementation that's aligned with the siting analysis results to incentivize and support the adoption of electric vehicles across the County.

If the county were to implement all the proposed chargers, the total power demand would be: 1,428 kW

[34] Level 2 Chargers are assumed to have a 16.5 kW capacity distributed between two plugs. Level 3 Chargers are assumed to have a 75 kW capacity.

Figure 5-1: Proposed County-Owned Charging Locations Map

5.3.1.1 Present Day: Current Installations (In Progress)

The first wave of charging infrastructure in Los Alamos is already underway, with installations at the Mesa Public Library and the Municipal Building. These projects are consistent with the County's long-term EV strategy and the findings of the suitability analysis, which mapped optimal areas for charging based on land use, travel patterns, environmental hazards such as flood zones, and land ownership.

- **Mesa Public Library** – Installation of 4 DCFC ports, partially funded by an NMDOT grant, is underway. The library emerged as a strong site in the suitability maps because of its central location within the downtown civic core, high level of community activity, and County-owned property status, which simplifies implementation. The DCFC ports will provide Los Alamos with a strong fast-charging backbone expected to meet countywide needs for many years.
- **Municipal Building –** Construction is also proceeding on 12 L2 ports at the County's primary government offices. The Municipal Building is a practical location for workplace and visitor charging, and its siting is consistent with the suitability analysis criteria: a high-activity civic facility, free of major environmental constraints, and located on secure, County-controlled land.

Together, these installations will deliver an immediate boost to local charging capacity, help normalize EV adoption in highly visible public locations, and establish a model for how future sites can align with the County's suitability framework.

5.3.1.2 Near-Future: Justice Center L2 Expansion

With these projects in progress, the next priority is the Justice Center, which serves as a key parking facility for both daily civic use and major public events. Its direct proximity to Ashley Pond Park and the many community gathering events held there makes it a natural high-use location where charging infrastructure will be both well-utilized and highly visible.

Proposed infrastructure includes 12 Level 2 ports, well-suited to the longer parking durations associated with event attendance and daily use. These can also be shared with the County fleet charging needs and LAPD vehicles, making this a dual-use investment. Installing chargers here not only supports transportation and sustainability goals but also reinforces charging as a civic amenity, integrated into spaces that contribute directly to community life. Some of these chargers at the Justice Center will be reserved only for Police use. In a later phase, this plan also proposes Level 3 ports at this location. By prioritizing the Justice Center, Los Alamos will build on the strong foundation of current deployments while extending infrastructure into one of the community's busiest and most prominent destinations. This ensures the charging network grows in a way that is both strategic and community-centered.

5.3.1.3 Phase 1: Community-Oriented L2 Deployment (Next Five Years)

Unlike DCFC, which is driven by system capacity needs, Level 2 (L2) charging is primarily about convenience and access. These chargers are most effective when placed at destinations where people already spend an hour or more, allowing vehicles to recharge naturally while drivers go about daily activities. The County's suitability analysis and stakeholder input both emphasized the importance of placing chargers at community amenities and recreational sites, where visibility is high and utilization will be steady but not dependent on long-distance travel demand.

Based on these criteria, three facilities stand out for near-term investment over the next five years:

- **Los Alamos Senior Center – 4 L2 Ports**
  The Senior Center's central location and many popular programs make it a very strong location for shared L2 charging.
- **Aquatic Center – 8 L2 ports**
  As a year-round, high-traffic destination, the Aquatic Center is one of the most practical sites for L2 charging. Swimmers, families, and event participants typically spend long stretches of time at the facility, making charging both convenient and likely to be well-utilized. Hikers and bikers also park here to utilize the nearby trails.
- **Ice Rink – 8 L2 ports**
  The Ice Rink is a seasonal draw but sees concentrated usage during events and practices, when drivers often remain parked for extended periods. A popular hiking/biking trailhead is also located here. Charging here provides a clear amenity for families and visitors, while also reinforcing EV visibility in a recreational setting.
- **Golf Course – 6 L2 ports**
  Golf outings typically last several hours, creating a natural fit for L2 charging. Installing ports here supports both community recreation and tourism, while leveraging the County's existing land ownership to simplify implementation.

Together, these sites create a network of **high-visibility, high-dwell-time charging locations** across the community. Because they host year-round activity and attract a broad range of users, they will provide meaningful charging opportunities without requiring additional DCFC investment. The County should also continue to collaborate with local schools to install chargers in those areas.

By advancing these installations in the next five years, Los Alamos will strengthen public confidence in the charging network, expand geographic coverage, and normalize EV charging as an expected feature of community facilities.

5.3.1.4 Phase 2: Medium-Term Expansion (5–10 Years)

As EV adoption increases and charging demand grows beyond the near-term projects, additional L2 charging should be introduced at schools, recreational facilities, and cultural destinations. These sites are not only important because of the dwell times they support, but also because they expand geographic coverage and equity, ensuring that residents across Los Alamos have access to reliable charging options in the places they frequent most.

The following locations are recommended for implementation in the 5–10 year timeframe:

- **Justice Center - 8 DCFC ports**
  In addition to the L2 chargers deployed in the near-term, DCFC ports are also recommended at the Justice Center. The Justice Center is in close proximity to Ashley Pond Park which is also central to the city. People using the park for events would be able to use the chargers and people traveling to the city for tourism would have a location that was easily accessible. Because the location happened to be at the justice center, the county could access the chargers as well. It is recommended that at least one of these chargers be reserved for police use only.

- **Los Alamos Nature Center – 2 L2 ports**
  The Nature Center is a popular destination for school field trips, local families, and eco-tourism. Even a modest installation here provides both functional benefit and symbolic alignment with the County's sustainability values. Existing L2 chargers here are a draw for tourists and are highly utilized by visitors and residents alike.
- **North Mesa Sports Complex – 6 L2 ports**
  The Sports Complex hosts a wide range of athletic programs and tournaments, often involving multi-hour visits. Chargers here would be highly visible to both local families and visiting teams, positioning EV infrastructure as part of the County's community recreation system.
- **North Mesa Stables – 4 L2 ports**
  The stables are a unique recreational and cultural asset for Los Alamos. While they do not experience daily high traffic, the dwell times are long, and installing a small number of chargers would expand the reach of the network into an otherwise underserved area.

Collectively, these sites extend charging access into **sports, cultural, and nature-based destinations**, making EV infrastructure a familiar feature of daily community life. While not as urgent as the Phase 3 deployments, these medium-term projects will prepare the County for continued growth in EV ownership, ensure equitable distribution of infrastructure, and reinforce charging as a standard amenity across all types of public facilities. Additionally, the County can evaluate joined initiatives with the Los Alamos School District for the implementation of level 2 charging ports at Los Alamos High School and Barranca Mesa Elementary School to further support the charging infrastructure for employees and other members of the community.

5.3.1.5 Phase 3: DCFC Long-Term Strategy (10-15 years)

The County's near-term DCFC needs are already being addressed through the installation of four ports at the Mesa Public Library, which are expected to provide sufficient high-power charging capacity for at least the next 10–15 years. Projections indicate that this investment will serve both local drivers and regional visitors well into the next decade, especially when complemented by the planned buildout of Level 2 charging across community facilities.

Because DCFC stations require higher capital investment, more complex utility coordination, and careful siting to ensure efficient use, additional installations should be reserved for the long term. If monitoring data eventually indicates the need for more DCFC capacity, the County should focus siting on the edges of town rather than in the downtown core. This approach would:

- Support through-travelers and intercity connectivity, providing a logical stopping point for vehicles passing through Los Alamos.
- Reduce pressure on central parking areas like the Library and Justice Center, which are better suited to longer-duration L2 charging.
- Position the County to align with broader state and regional charging corridors, ensuring Los Alamos plays a role in connecting northern New Mexico to the wider EV network.

At present, no additional near-term DCFC investment is recommended. Instead, the County should continue to prioritize L2 deployment in high-use community facilities (Phases 3 and 4) while tracking utilization data from the Library chargers. This data-driven approach will allow Los Alamos to confidently determine when and where the next DCFC station should be installed, ensuring the system grows in line with both local demand and regional travel needs.

5.3.2 Incentivizing Non-County-Owned Charger Deployment

Los Alamos County should continue engaging with multifamily housing providers, private businesses, and school campuses as potential partners in EV charging, but the suitability analysis shows that the County already has enough high-quality public sites to meet near-term needs. Additional private installations can enhance convenience and fill localized gaps, yet the public network alone provides strong geographic coverage. Community feedback also highlighted a strong desire for charging at Smith's, underscoring opportunities for select high-visibility partnerships rather than broad private deployment. To support informed decision-making, the report includes maps projecting future EV utilization so that businesses, schools, and property managers can assess whether onsite charging aligns with their customer base or operational patterns. The County should encourage prospective partners to use these maps to ground any private investment in clear demand and a sustainable business model.

Because the public network is already robust, private installations are not required for the County to achieve its charging goals. Still, if private entities choose to install chargers as an amenity or strategic asset, the County can help ensure that these projects are feasible, cost-effective, and well-sited. Many site hosts face barriers such as uncertainty about electrical capacity, installation costs, and navigating incentives or permitting. Directing partners to the County's suitability and utilization maps can help illustrate where demand is strongest and whether a business case exists.

For those interested in moving forward, the County can connect site hosts to financial and technical resources. The Public Service Company of New Mexico's (PNM) Transportation Electrification programs offer rebates, make-ready infrastructure, and EV-specific rate options; federal tax credits and state-administered incentives can further reduce capital costs. Consolidating information and offering guidance will help private hosts take full advantage of these opportunities.

Clear permitting guidance and early coordination with PNM will streamline installation and minimize delays. Additional support from regional organizations such as Forth Mobility and the Electrification Coalition can provide technical assistance, example program models, and funding awareness. Through this focused combination of mapping tools, incentives, and process clarity, the County can support private partners who choose to participate while maintaining a charging network that remains strong and reliable based primarily on its public infrastructure.

Several locations were identified for optimal privately-owned chargers, based on the suitability analysis and public feedback.

Table 5-8: High Potential Privately-Owned Charging Locations

Location	L2 Chargers	L3 Chargers	Anticipated Power
Smith's Marketplace		2	150 kW
Los Alamos Medical Center	16		132 kW
Los Alamos High School	10		82.5 kW
Barranca Mesa Elementary School	10		82.5 kW
Wingate by Wyndham	5		41.25 kW
Holiday Inn Express	5		41.25 kW
North Mesa Stables	4		33 kW

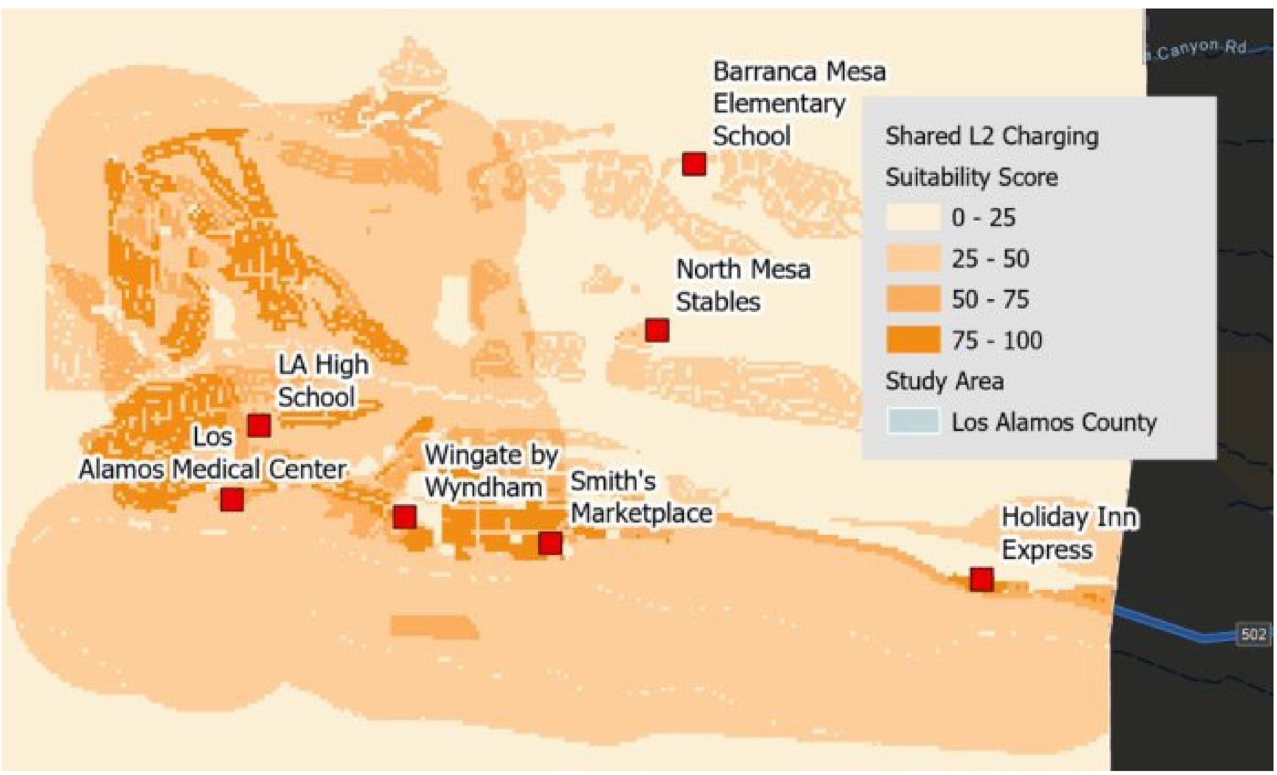


Figure 5-2: Recommended Privately-Owned Charger Locations Map

5.3.3 Projected 2050 Power Requirements

To provide Los Alamos County with a complete picture of future grid needs, this Public Charging Plan incorporates a coordinated approach with the companion Fleet Electrification and Charging Study. While the two studies were developed in parallel, each focuses on a different component of the County's EV landscape. This project included an integrated analysis of projected power demand across both fleet and public charging demand. In Figure X, we can see how total EV load accumulates across each feeder under multiple adoption scenarios. The consolidated view can be used to identify where grid updates may be needed, confirms where capacity is likely sufficient, and supports transparent and proactive planning between the County and the Utility.

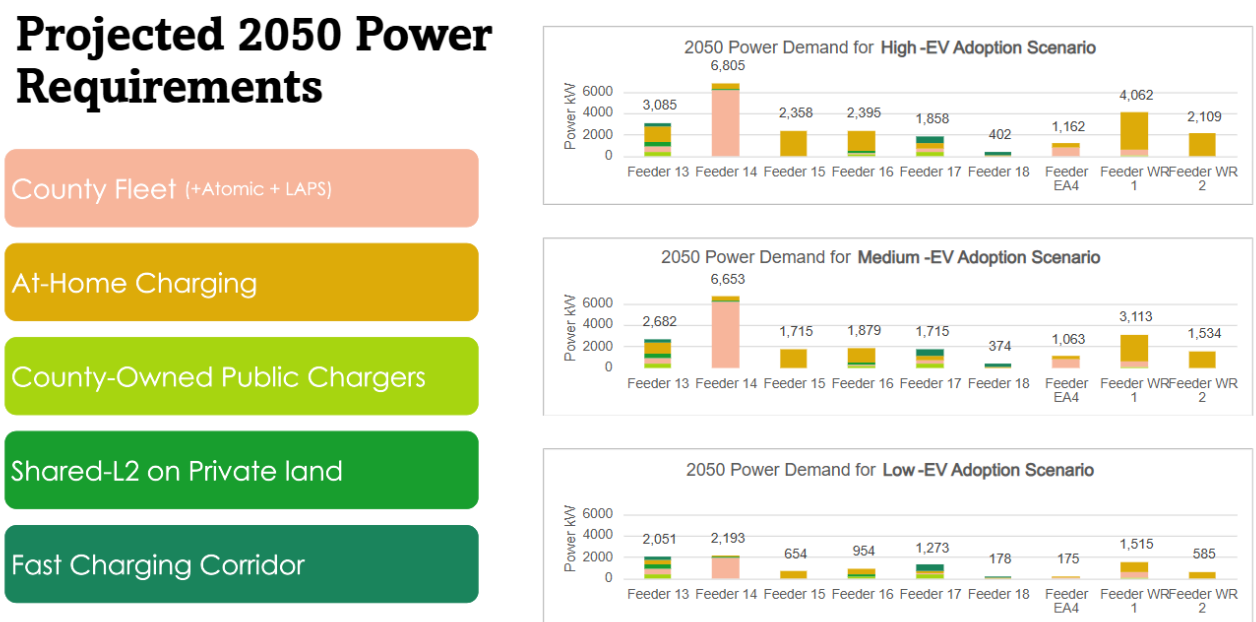


Figure 5-3: Projected 2050 Power Requirements

5.3.4 Procurement Considerations

The growing diversity of EV charging infrastructure equipment – along with the complexity of installation, operations, and maintenance – necessitates a proactive and flexible approach to procurement. To streamline implementation and ensure alignment with long-term electrification goals, the County may consider the following strategies:

- Review and Update Procurement Policies: Ensure that existing procurement policies explicitly support the purchase and installation of EVSE. Updates may be required or reflect evolving technology types, funding requirements or contractor qualifications.
- Develop Standardized RFP and Contract Templates: Creating dedicated templates for EVSE-related procurements can improve consistency, reduce administrative burden, and accelerate

project delivery timelines. These should include performance specifications, warranty provisions, and data-sharing requirements.

- Engage the Private Sector Early: To clarify technical requirements and market capacity, the County can issue Requests for Information (RFI) to gather feedback from prospective vendors and service providers prior to formal procurement. This early engagement helps refine contract terms and identify feasible solutions.
- Pursue Regional Collaboration and Bulk Purchasing: Coordinating with other jurisdictions – such as Santa Fe and Alburquerque, both members of the Climate Mayors – can enable joint procurements, access to group purchasing programs, and shared technical standards. This approach can reduce per-unit costs and ensure regional interoperability.
- Leverage State-Level Procurement Support: according to New Mexico's NEVI Plan, the New Mexico Department of Transportation is collaborating with the State Purchasing Division at the General Services Department (GSD) to streamline EVSE acquisitions. This includes identifying pre-qualified service providers and station owners, enabling municipalities to access vetted options through state-led processes.

By adopting these strategies, the County can reduce project lead times, enhance cost-effectiveness, and ensure alignment with both regional and state-level EV infrastructure deployment goals.

5.4 Financial Considerations

5.4.1 Financial Analysis Tool for County Owned Chargers

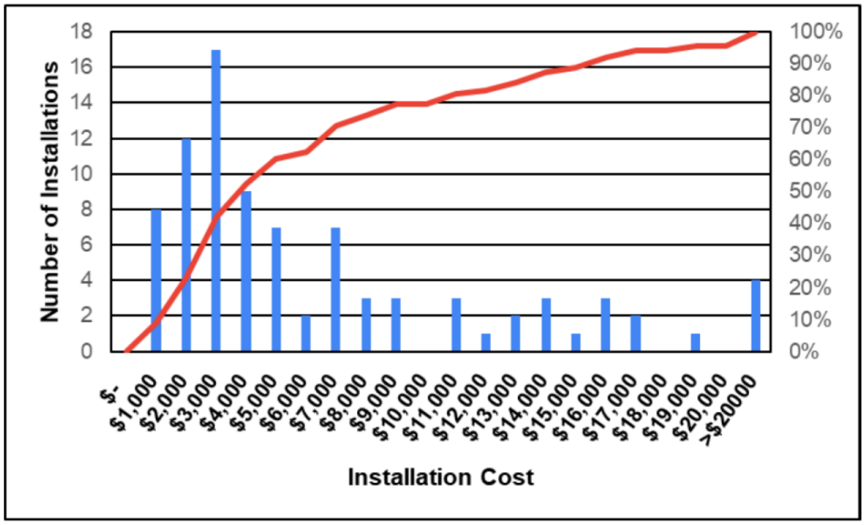
A financial tool was developed for the county to serve as a framework for understanding the financial metrics around deployment and operation of L2 and DCFC stations. This tool is embedded within an Microsoft Excel file and will be provided to the county as a standalone deliverable. The model is specified with generic data inputs (resulting in a model we refer to as the *Generic Model*), as identified through review of the relevant and recent literature. However, these generic data inputs may differ, perhaps substantially, from actual costs and revenues that may be recognized by the county. One key finding from the literature review is that cost estimates to install chargers (inclusive of any electrical infrastructure upgrades) along with site preparation work can vary substantially depending on highly localized and specific contextual factors. Costs to operate chargers also vary locally, but generally to lesser extents.

Importantly, the tool is meant to be user-adjustable such that quantitative input values can be varied by the county as newer and more refined information becomes available to update the Generic Model.

An example of the wide range in input values is evidenced in a figure from Idaho National Lab's 2022 report entitled, *Breakdown of EVSE Installation Costs* (INL 2022) (Figure 5-4). This figure shows a range of costs associated with installation of a single commercial charger between $1,000 and >$200,000 per single charger. Each blue bar shows the number of installations that fell within each cost range, and the red line adds those costs from left to right, showing what share of all installations are accounted for up to each cost.

While approximately 50% of installations surveyed cost $4,000 or less each (installation only, not inclusive of charger purchase), approximately 10% of charger installations was above $15,000 each. According to Idaho National Lab's data, key determinants of cost differences across installations was found to be whether trenching through concrete/pavement was necessary, nature of required upgrades to electrical infrastructure, the physical distance to the connecting power source, magnitude of permitting costs, and duration of installation period.

Figure 5-4: Breakdown of EVSE Installation Costs



5.4.1.1 Tool and Inputs Overview

The financial model tool is included as an Appendix. It is intended as an updateable, maintainable, and user-friendly tool for the County with an intuitive interface. Users are able to modify any of the 15 key inputs, all featured on the tab, '*Assumptions*'. Results are displayed on tabs *UE_1* (L2), *UE_2* (L3 chargers), and *Dashboard.* Results are intended to estimate the representative annual costs and annual revenues as well as their cumulative totals over time for a single charger of each type.

See the tool for a complete overview of the Financial outcomes.

Pre-loaded Scenarios

The current pre-loaded scenarios are meant as representations of costs for L2 and DCFC chargers. As previously noted, inputs can vary dramatically especially for capital costs. Where precise local data were not available, we specified values that aimed for central tendencies in the literature.

Where possible, input data local to Los Alamos County was used including electric utility costs (both per kWh volumetric costs and demand-based per kW costs) from Los Alamos Department of Public Utilities[35]. Similarly, the expected revenue per kWh charged for L2 and DCFC were also both determined from Los Alamos DPU.

Scenarios Inputs

Two tables below describe key inputs for each charging model (L2 and DCFC), their assigned value in the generic model and the relevant source for that value.

Table 5-9: L2 Model Inputs

Variable Type	Variable Name	Value	Source
Basic Assumptions	Number of Chargers per Install	4	1
Basic Assumptions	Charger Capacity (kW)	7.2	1
One Time Costs	Charger Purchase & Install	$6,000	2
One Time Costs	Site Prep	$8,000	2
One Time Costs	Regulatory Fee/Hookup	$150	3
Recurring Costs	Annual Swipe Fees, Network Fees, Data Fees (% of revenue)	0.15	4
Recurring Costs	Annual Warranty Costs ($/Year)	$80	4
Recurring Costs	Annual Maintenance ($/Year)	$30	4
Electricity Costs	Avg Utilization	8%	5,6
Electricity Costs	Volumetric Electricity Rate ($/kWh)	$0.148	7
Electricity Costs	Meter Fee ($/Month)	$25.18	7
Charging Revenue	EV Charging Fee ($/kWh)	$0.23	7

35 https://www.losalamosnm.us/Services/Public-Utilities/Rates-and-Fees

Table 5-10: DCFC Model Inputs

Variable Type	Variable Name	Value	Source
Basic Assumptions	Number of Chargers per Install	2	1
Basic Assumptions	Max Simultaneous Vehicles Charging	1.2	1
Basic Assumptions	Charger Capacity (kW)	150	
One Time Costs	Charger Purchase & Install	$200,000	2
One Time Costs	Site Prep	$80,000	2
One Time Costs	Regulatory Fee/Hookup	$10,000	3
Recurring Costs	Annual Swipe Fees, Network Fees, Data Fees (% of revenue)	0.15	4
Recurring Costs	Annual Warranty Costs ($/Year)	$600	4
Recurring Costs	Annual Maintenance ($/Year)	$80	4
Electricity Costs	Avg Utilization	2.5%	5,6
Electricity Costs	Volumetric Electricity Rate ($/kWh)	$0.148	7
Electricity Costs	Demand Electricity Rate ($kW/mo)	$13	
Electricity Costs	Meter Fee ($/Month)	$25.18	7
Charging Revenue	EV Charging Fee ($/kWh)	$0.58	7

Example of Financial Model Results

Results from the Generic model show that cumulative cash flow is negative at both the 10-year and 15-year project life for this model for both the L2 and DCFC models.

As mentioned, the intent of this Financial Analysis tool is for the County to forecast the capital and operational cost of charger installation with a model that is easy to update for any future charger implementation project with the specific inputs and project-specific characteristics like charging equipment quotes, cost estimates from construction firms, updated energy cost, or new rate structures.

5.4.2 Outside Funding Opportunities

To advance the County's public charging network while minimizing reliance on local funds, the County can pursue a variety of federal, state, and utility-based programs that support both the installation and long-term operation of EV charging infrastructure. While most funding sources focus on capital costs such as equipment procurement, site preparation, and electrical upgrades, sustainable operation and maintenance (O&M) will also require dedicated planning, partnerships, and reinvestment of user fees. The County's external funding strategy should therefore emphasize readiness, cost-sharing, and coordination with state and regional partners to maximize available resources.

At the federal level, the NEVI Formula Program and the Charging and Fueling Infrastructure (CFI) Grant Program remain the primary funding mechanisms for large-scale public charging deployment. Both programs are administered through the Federal Highway Administration and prioritize publicly accessible chargers located along key corridors or at community destinations. NEVI funds flow through the New Mexico Department of Transportation (NMDOT), and the County should align proposed charging sites with the State's approved NEVI Deployment Plan to ensure eligibility. The CFI Program, while highly competitive and intermittently released, can provide up to 80 percent federal cost share for chargers in community hubs, multifamily areas, or visitor destinations.

Additional opportunities exist through the U.S. Department of Energy's Vehicle Technologies Office (VTO), which issues periodic Funding Opportunity Announcements (FOAs) that support grid planning, smart-charging demonstrations, and workforce development. Similarly, the U.S. Department of Agriculture's Rural Energy and Rural Business programs can fund charger installations and make-ready work in rural contexts or for small utilities. These programs are particularly relevant for Los Alamos given its smaller geographic scale and proximity to rural communities, especially when projects integrate solar energy or grid-resilience components.

At the state level, New Mexico's Electric Vehicle Program, administered by NMDOT, provides grants for commercial-grade DC fast-charging stations and related site work. This program currently accepts applications through October 31, 2025, with priority given to projects that are construction-ready and expand access in underserved areas. The New Mexico Environment Department's Volkswagen Mitigation Trust Program offers additional rounds of competitive funding for fleet electrification and associated charging infrastructure, making it a strong option for County fleet or shuttle-related charging projects. The Clean Car and Charging Equipment Tax Credit and the Sustainable Building Tax Credit administered by the Energy, Minerals and Natural Resources Department (EMNRD) can further offset installation costs for both residential and commercial charging equipment.

Local utilities also play a significant role in supporting charging deployment. The PNM offers a suite of Transportation Electrification incentives, including rebates for residential and commercial charger installation, make-ready infrastructure, and special EV rate programs. Early coordination with PNM will be critical to identify available rebates, confirm grid capacity, and explore opportunities to stack local utility incentives with state or federal funding sources.

In developing its external funding strategy, the County should pursue a layered approach that combines grant funding, tax incentives, and private-sector participation to ensure long-term financial sustainability.

Capital-focused grant awards can cover the initial cost of hardware, installation, and site preparation, while ongoing maintenance and network fees can be recovered through user fees, municipal budget allocations, or service-provider agreements. Because most competitive programs require applicants to demonstrate an operational plan and the ability to sustain chargers beyond the grant term, the County should document clear O&M responsibilities, including maintenance contracts, estimated energy costs, and anticipated revenue from charger use.

To maximize competitiveness, projects should be framed around priorities shared by major funders—namely, expanding access in underserved or rural communities, improving corridor connectivity, and supporting equitable, publicly accessible charging. Partnerships with local businesses, institutions, or fleet operators can strengthen applications by demonstrating private cost share and cross-sector collaboration. In parallel, Los Alamos should maintain ongoing coordination with NMDOT to ensure that County priorities are reflected in future updates to the State's NEVI and EV infrastructure deployment plans.

By leveraging this combination of federal, state, and utility funding opportunities, the County can accelerate the expansion of its public EV charging network, reduce local cost burdens, and establish a sustainable foundation for long-term maintenance and operations.

Program	What it funds (eligible uses)	Eligible applicants	Match / share (typical)
NMDOT – New Mexico Electric Vehicle Program	Purchase & installation of commercial-grade DC fast chargers (make-ready / site work for publicly accessible 24/7 DCFC).	State & local governments, counties, municipalities, tribal governments.	Match: None listed in the portal listing (but projects often show local contribution / cost transparency required).
NEVI Formula Program (state-administered)	Build NEVI-compliant corridor DCFC and associated make-ready infrastructure (state selects sites/awards).	State DOTs administer funds; local agencies partner with state.	Federal formula funds to states (state allocation); typically supports up to full NEVI-eligible capital; local matching varies by state guidance.
Charging & Fueling Infrastructure (CFI) — FHWA (Discretionary)	Publicly accessible Level-2 and DCFC, hydrogen/other alternative fueling (community & corridor tracks).	States, local governments, tribes, transit agencies, public/private partnerships.	Federal share up to ~80% (typical); cost share usually required.
U.S. Department of Energy — Vehicle Technologies Office (VTO) NOFOs / VTO funding	R&D, demonstrations and deployments that can include grid-planning for EVs, smart charging pilots, workforce development, and some deployment demos.	Universities, national labs, consortia, local governments in partnerships.	Varies by FOA; project-level (competitive).
USDA — Rural programs (REAP; Rural Business/Rural Economic Development)	EV charging in rural contexts (make-ready, solar+charger combos, loans/grants for rural utilities or small businesses, revolving loan funds).	Rural small businesses, agricultural producers, utilities, rural local governments.	Grants or loans vary (REAP grants historically up to ~25–50% depending on year & rules; some USDA grants may cover up to 55% or higher for certain programs).
New Mexico Volkswagen (VW) Mitigation Trust Program (NMED)	Diesel-to-ZEV replacements and supporting infrastructure in state priority categories (some grants have funded electric buses, shuttles, and related infrastructure).	State/local governments, school districts, transit agencies, fleets (per state guidance).	Varies by round; competitive.
New Mexico tax credits — Clean Car & Charging Unit / Sustainable Building Tax Credit (EMNRD)	State income tax credits for EV purchases and for qualifying EV charging equipment installation (residential & commercial).	Individuals, businesses (subject to program rules).	Tax credits (amounts vary; charging equipment credits exist alongside vehicle credits).
Local utility incentives — PNM Transportation Electrification (rebates & make-ready assistance)	Residential/commercial charger purchase & installation rebates; special EV rates and make-ready assistance.	PNM customers / businesses within utility territory.	Rebates: e.g., residential charger purchase up to $500, installation rebates up to $1,500; income-qualified top-ups also available.

6 Summary Recommendations

6.1 County-Owned Public Charging

The County should invest first in a small number of **high-impact, County-owned sites** that anchor the network and provide immediate value to residents and visitors. Key locations include the Municipal Building, Justice Center, Mesa Public Library, major parks, and select NM 502 corridor sites. These locations offer strong geographic coverage, reliable utilization, and clear visibility to the community.

Summary priorities:

- Install Level 2 chargers at civic and recreational destinations with predictable all-day parking.
- Add at least one DCFC along NM 502 to support regional travel and high-turnover users.
- Use ZEVDecide suitability results to phase deployment and coordinate early with DPU on capacity needs.
- Ensure all installations meet ADA requirements and use consistent equipment standards.

6.2 Privately-Owned Public Charging

The analysis shows that **County-owned sites alone are sufficient** to support EV adoption under all three modeled scenarios. In other words, additional privately owned public chargers are **not required** to meet projected demand or system load needs in the near term.

However, community engagement revealed a strong interest in charging at specific private locations including grocery stores, hotels, and medical facilities, indicating clear opportunities for high-visibility, convenience-focused charging amenities. The County can use the findings of this study, including the adoption scenarios and suitability maps, to **encourage and inform private-sector investment**, giving businesses confidence that EV adoption will continue to grow and that chargers could attract customers or support employees.

Any additional private charging development—while not necessary for EV readiness—would still improve **convenience, flexibility, and distribution** of charging across Los Alamos. Importantly, **the absence of private charging in the short term will not limit EV adoption**, but voluntary participation by businesses and schools can enhance the overall user experience and fill localized gaps.

Summary priorities:

- Share suitability maps and adoption scenarios with interested property owners to help make the business case.
- Highlight strong community desire for chargers at destinations such as Smith's Marketplace, the medical center, hotels, and schools.
- Connect businesses and schools with utility, state, and federal incentives that can reduce installation cost and risk.
- Treat private charging as a community-supported enhancement—valuable, but not essential—to the County's overall readiness.

6.3 Home Charging and Residential Grid Readiness

Since most charging will occur at home, the County and DPU should use the study's **load projections** and **EV adoption scenarios** to prepare the distribution system for long-term growth.

Summary priorities:

- Use feeder-level forecasts to plan targeted upgrades in areas with high adoption potential.
- Promote incentives and permitting guidance for single-family and multifamily charging.
- Encourage managed charging and time-of-use pricing to reduce peak impacts.
- Support multifamily owners with clear resources and suitability insights so renters have reliable access.

Appendix A Survey Questions and Responses

Below is the fact sheet used to advertise the public workshop.

LOS ALAMOS

Los Alamos County Fleet Conversion and Community-Wide Electric Vehicle Charging Plan

Public Workshop

Monday
May 12, 2025

Council Chambers
1000 Central Avenue
Los Alamos, NM

3:30 - 6:30 PM

Presentations scheduled at 4:00 PM and 5:30 PM

Los Alamos County wants your input

Help Shape the Future of EVs in Our Community

We're gathering input from residents, business owners, and employees to plan for a more electric future. Whether you own an EV, drive one for work, or are thinking about converting to EV, your voice matters.

Drop in at any time in person or virtually via Zoom

Click to join on Zoom

Meeting ID: 817 0354 4063
Passcode: 971816

Below is the complete survey instrument as it appeared to respondents.

Los Alamos County Fleet Conversion Plan and Community-Wide EV Charging Plan

LOS ALAMOS

Los Alamos County recently kicked off an electric vehicle readiness study to evaluate where and how to build charging infrastructure to serve community needs. As part of our study, we are conducting outreach to Los Alamos County residents, workers, and visitors to learn more about your priorities for the project. This survey should take no more than 10 minutes to complete and will remain open until 11:59 PM on July 31st, 2025. For additional information about this project, please visit the County website: tinyurl.com/LosAlamosEVPlan.

Transportation Preferences and Car Access

1. How do you get around?

	Most of the time	Sometimes	Rarely	Never
Drive alone	○	○	○	○
Drive with others	○	○	○	○
Motorcycle or moped	○	○	○	○
Public transit	○	○	○	○
Walking	○	○	○	○
Bicycle or scooter	○	○	○	○

2. Do you have regular access to a car?

○ Yes

○ No, but someone in my household/family does

○ No

Thoughts About Buying an Electric or Plug-in Hybrid Vehicle

3. If you own a car, how is it powered? (If you own multiple cars, you may select all the options that apply)

- ☐ Gasoline/diesel
- ☐ Hybrid (e.g., Toyota Prius)
- ☐ Plug-in-hybrid (e.g., Chevrolet Volt)
- ☐ Battery electric (all electric; e.g., Nissan Leaf)
- ☐ Another alternative fuel (compressed natural gas, propane, hydrogen)
- ☐ Not applicable. I don't own a car.

4. Have you considered buying or leasing a battery electric or plug-in-hybrid vehicle?

- ○ I used to own one
- ○ I already own one
- ○ Yes, my next vehicle will be battery electric or plug-in-hybrid
- ○ Yes, but I have not yet made up my mind
- ○ No, but I am open to considering it
- ○ I have no interest in buying or leasing a battery electric or plug-in-hybrid vehicle

5. Please select your top 3 priorities in building a charging network for Los Alamos County.

Please select at most 3 options.

- ☐ Lowest possible cost to users to charge their vehicles
- ☐ Widespread availability throughout the County
- ☐ Reliable equipment
- ☐ Ease of use (e.g., convenient payment, apps and signage to find charging)
- ☐ Safety
- ☐ Concerns about the reliability of plug-in-hybrid and battery electric vehicles (e.g., battery lifespan, cold weather performance, etc.)
- ☐ Equitable access (e.g., low- and moderate-income communities, people without designated parking, healthcare and social service facilities
- ☐ Charger aesthetics
- ☐ Other

6. Where would EV charging stations be most helpful to you?

	Very helpful	Somewhat helpful	Not very helpful	Not helpful at all
At home in a (private) garage, driveway or parking space I own	○	○	○	○
At home in a shared parking space	○	○	○	○
At work or school	○	○	○	○
At shopping, dining, and entertainment destinations	○	○	○	○
Parks and recreation destinations	○	○	○	○
At fast charging stations along highway corridors	○	○	○	○
Somewhere else	○	○	○	○

7. Are there any specific places in Los Alamos County where you'd like to see charging stations? For this question you may use the linked map or provide comments below. https://tinyurl.com/LosAlamosEV

Enter your answer

8. Are there other steps, besides building charging infrastructure, the County could take to help people transition to electric vehicles?

Enter your answer

9. Do you have any other comments you'd like to share?

Enter your answer

Demographic Information

10. Which category(ies) describe you? Check all that apply.

- ☐ I live in Los Alamos County
- ☐ I work in Los Alamos County
- ☐ I am a student in Los Alamos County
- ☐ Prefer not to say

11. Which statement best describes your home?

- ◯ I own a single family home
- ◯ I own a residence in a multi-family building (e.g., duplex, quadplex, condominium)
- ◯ I rent a single family home
- ◯ I rent a residence in a multi-family building (e.g., apartment complex, duplex, condominium)
- ◯ Other

12. Which race best describes you? Select all that apply.

- ☐ American Indian or Alaskan Native
- ☐ Asian
- ☐ Black or African American
- ☐ Native Hawaiian or Other Pacific Islander
- ☐ White
- ☐ Prefer not to say

13. Are you of Hispanic, Latino, or Spanish origin?

- ◯ Yes
- ◯ No

14. How old are you?

- ◯ Under 18
- ◯ 19-25
- ◯ 26-34
- ◯ 35-54
- ◯ 55-64
- ◯ 65+
- ◯ Prefer not to say

15. What is your annual household income?

- ◯ Under $49,999
- ◯ $50,000-$99,999
- ◯ $100,000-$149,000
- ◯ $150,000-$199,999
- ◯ $200,000 and over
- ◯ Prefer not to say

16. If you would like to receive future updates about this project and upcoming opportunities to engage the project team, please provide your email address below.

Enter your answer

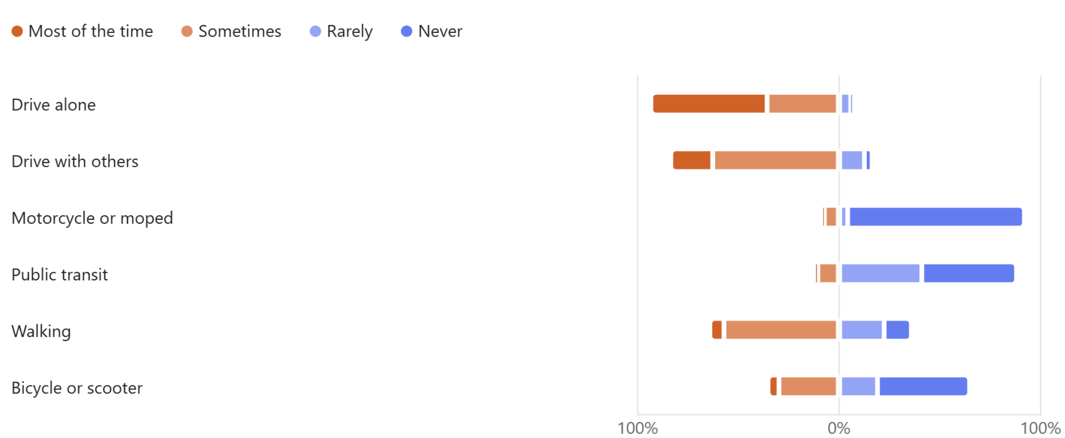
17. How would you rate the clarity and relevance of the questions in this survey on a scale from 1 to 10?

0	1	2	3	4	5	6	7	8	9	10

Poor and confusing — Clear and meaningful

Below is the full set of responses.

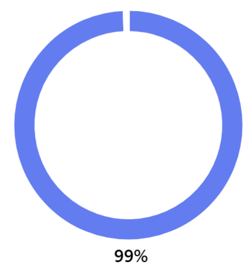
1. How do you get around? More details



2. Do you have regular access to a car?

More details

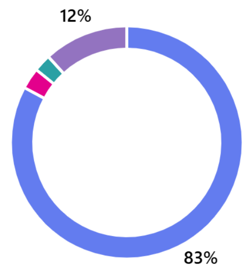
- Yes 513
- No, but someone in my household/family does 1
- No 2



3. Where do you park your car(s) at home? (Check all that apply)

More details

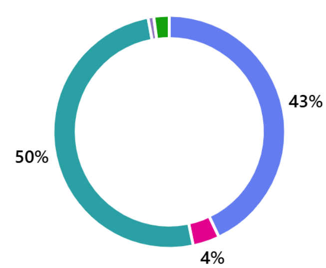
- In my own (private) garage or driveway 477
- In a shared parking lot/garage with a space designated for me 17
- In a shared parking lot/garage with open parking 14
- On the street 68
- Other 0



4. Where do you park your car at work? (Check all that apply)

More details

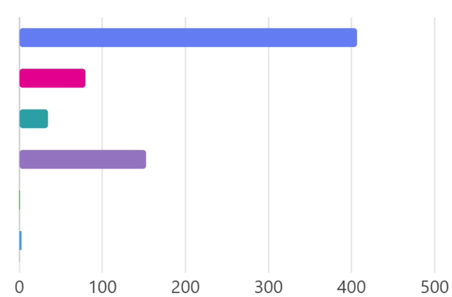
- Not applicable because I do not work, work from home, or do not drive to work 220
- In a shared, off-street parking lot/garage with a space designated for me 19
- In a shared, off-street parking lot/garage with open parking 258
- On the street 4
- Other 11



5. If you own a car, how is it powered? (If you own multiple cars, you may select all the options that apply)

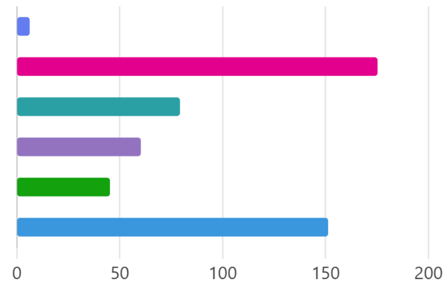
More details

- Gasoline/diesel 406
- Hybrid (e.g., Toyota Prius) 79
- Plug-in-hybrid (e.g., Chevrolet Volt) 34
- Battery electric (all electric; e.g., Nissan Leaf) 152
- Another alternative fuel (compressed natural gas, propane, hydrogen) 0
- Not applicable. I don't own a car. 2



6. Have you considered buying or leasing a battery electric or plug-in-hybrid vehicle? More details

I used to own one	6
I already own one	175
Yes, my next vehicle will be battery electric or plug-in-hybrid	79
Yes, but I have not yet made up my mind	60
No, but I am open to considering it	45
I have no interest in buying or leasing a battery electric or plug-in-hybrid vehicle	151



7. Why did you decide against buying or leasing a battery electric or plug-in-hybrid for your current vehicle? More details

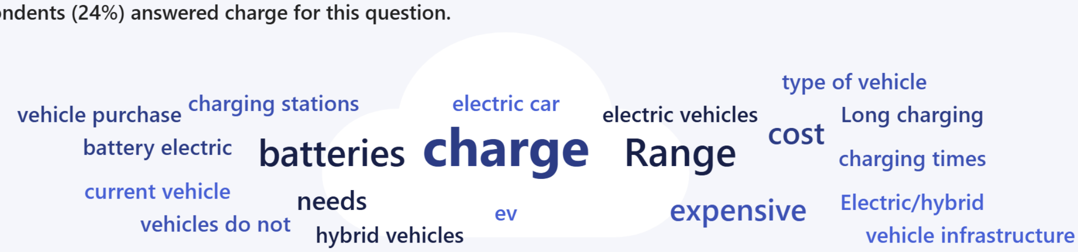
272

Responses

Latest Responses

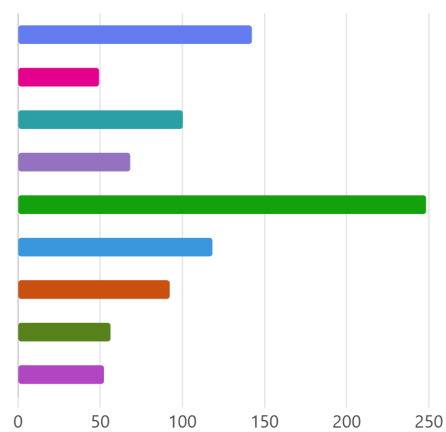
...

64 respondents (24%) answered charge for this question.

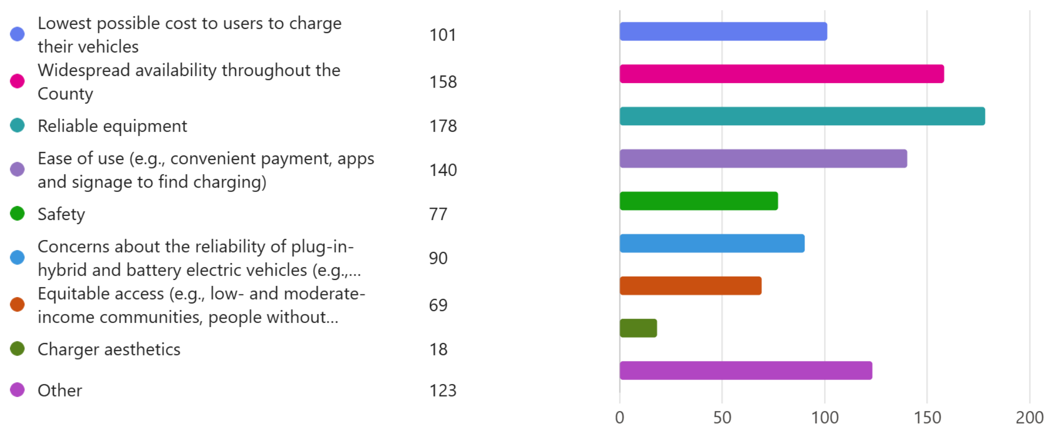


8. Please select the top 3 considerations that have prevented you from buying/leasing one. More details

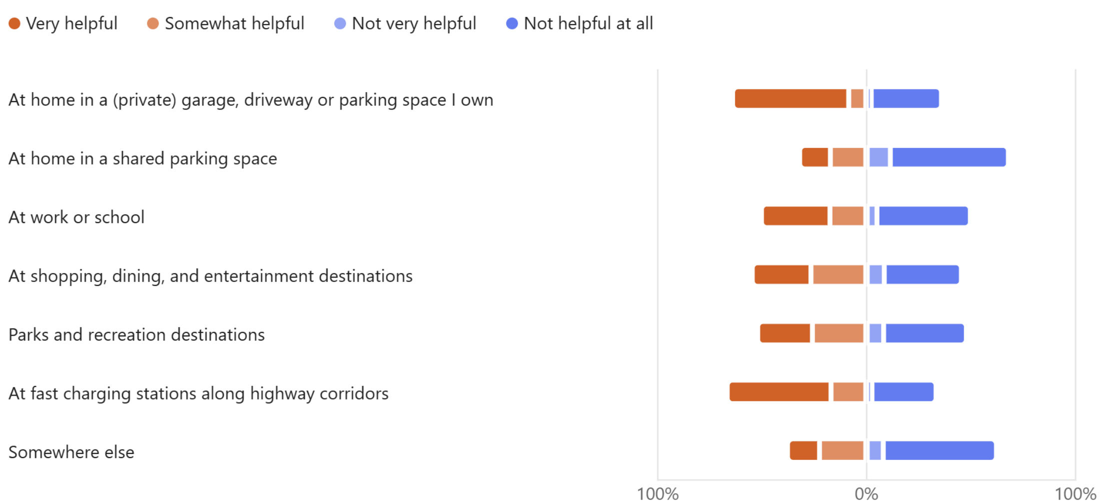
Purchase cost compared to traditional gasoline/diesel vehicles	142
Operating costs, such as maintenance and electricity, compared to traditional...	49
Availability of charging at home	100
Availability of charging at work or while running errands	68
Concerns about long-distance travel	248
Concerns about the reliability of plug-in-hybrid and battery electric vehicles (e.g.,...	118
Concerns about the social and environmental costs of battery...	92
I don't plan to buy a car in the near future	56
Other	52



9. Please select your top 3 priorities in building a charging network for Los Alamos County. More details



10. Where would EV charging stations be most helpful to you? More details



11. Are there any specific places in Los Alamos County where you'd like to see charging stations? For this question you may use the linked map or provide comments below. https://tinyurl.com/LosAlamosEV

More details

210
Responses

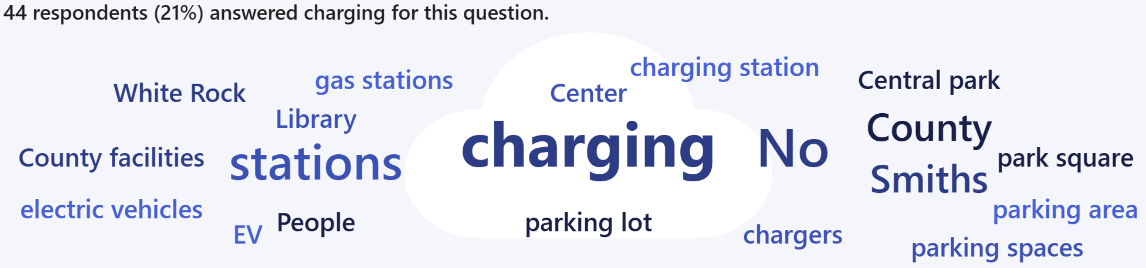
Latest Responses

"Pajarito mountain because it would attract people and is away from other ch..."

"North Mesa Recreation Fields, Golf Course, Downtown Los Alamos, similar lo..."

...

44 respondents (21%) answered charging for this question.



12. Are there other steps, besides building charging infrastructure, the County could take to help people transition to electric vehicles?

More details

222
Responses

Latest Responses

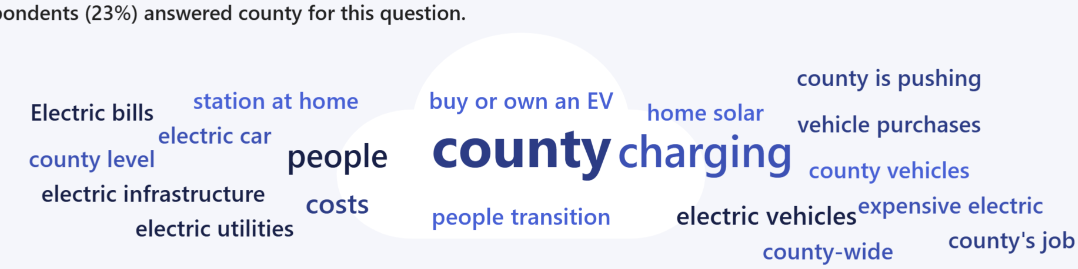
"There is a device called connectDER that allows an EV circuit to be installed ... "

"Accessibility, encourage home solar power, work with electric company to of..."

"The county could provide home chargers (at a cost)"

...

52 respondents (23%) answered county for this question.



13. Do you have any other comments you'd like to share?

More details

155
Responses

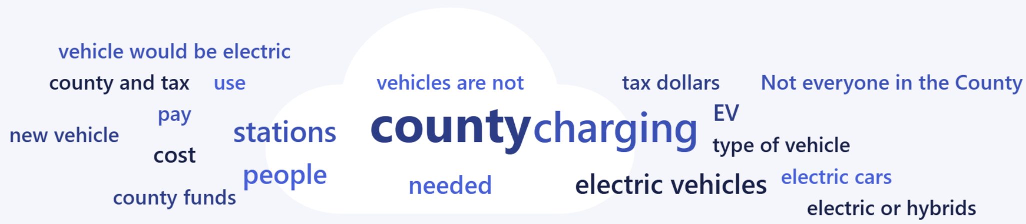
Latest Responses

"As an EV owner I have noticed a large increase in my electric bill and would I... "

"Thank you for the survey. Transitioning off fossil fuel is needed, accessibility ... "

...

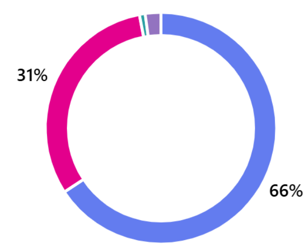
37 respondents (24%) answered county for this question.



14. Which category(ies) describe you? Check all that apply.

More details

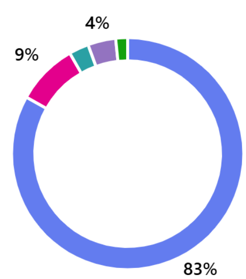
I live in Los Alamos County	330
I work in Los Alamos County	157
I am a student in Los Alamos County	4
Prefer not to say	11



15. Which statement best describes your home?

More details

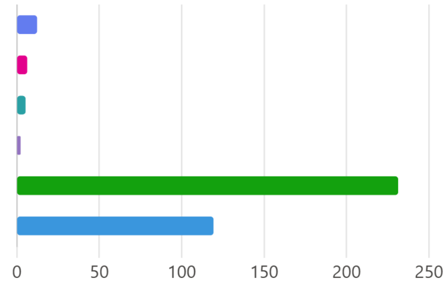
I own a single family home	300
I own a residence in a multi-family building (e.g., duplex, quadplex, condominium)	31
I rent a single family home	10
I rent a residence in a multi-family building (e.g., apartment complex, duplex, condominium)	14
Other	6



16. Which race best describes you? Select all that apply.

More details

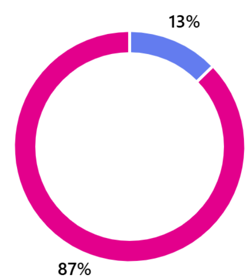
American Indian or Alaskan Native	12
Asian	6
Black or African American	5
Native Hawaiian or Other Pacific Islander	2
White	231
Prefer not to say	119



17. Are you of Hispanic, Latino, or Spanish origin?

More details

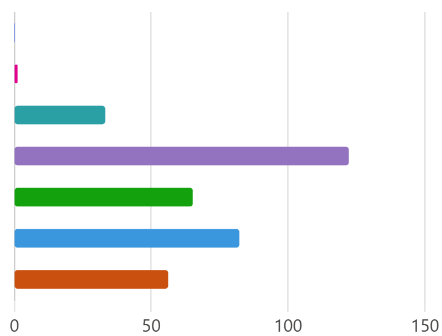
Yes	39
No	266



18. How old are you?

More details

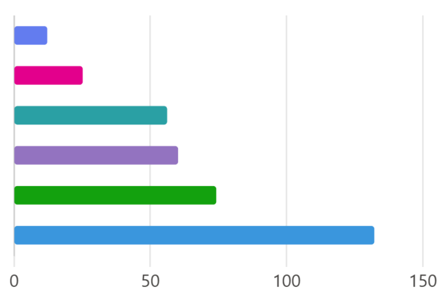
Under 18	0
19-25	1
26-34	33
35-54	122
55-64	65
65+	82
Prefer not to say	56



19. What is your annual household income?

More details

Under $49,999	12
$50,000-$99,999	25
$100,000-$149,000	56
$150,000-$199,999	60
$200,000 and over	74
Prefer not to say	132



20. If you would like to receive future updates about this project and upcoming opportunities to engage the project team, please provide your email address below.

More details

81

Responses

Latest Responses

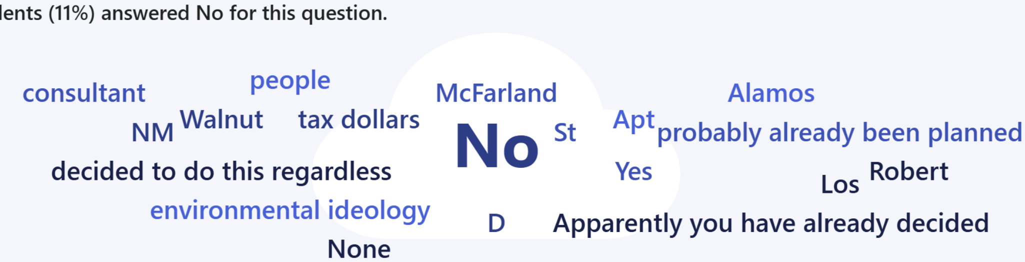
"Netphish@gmail.com"

"wam739@gmail.com"

"Robert McFarland, 3226 Walnut St Apt D, Los Alamos, NM 87544"

...

9 respondents (11%) answered No for this question.



21. How would you rate the clarity and relevance of the questions in this survey on a scale from 1 to 10?

More details

Promoters	118
Passives	121
Detractors	115

Appendix B Charging and Land Use

Building on the requirements and guidance from state and local offices and organizations, mainly using the Transportation and Climate Initiative's report[36], the City of Seattle's requirements[37], NYC Department of Transportation's EV guide[38], and the U.S. Access Board guidelines[39] the consulting team established site requirements to meet the needs and constraints of the County's parking facilities and supply. Through multiple rounds of stakeholder and Town staff workshops, these requirements were refined to the list below to address all aspects of EV charging from charger placement (mounted, free standing, etc.) to futureproofing requirements.

Charging Site Typologies

Ev charging infrastructure in the County falls into three typologies: parking garages, parking lots, and on-street parking.

Each typology has distinct design requirements to support safety, accessibility, and efficient use.

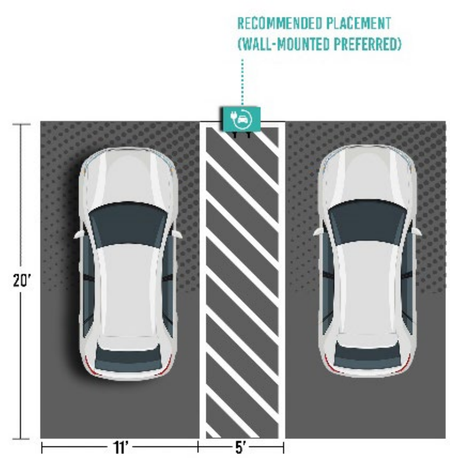
Parking Garage Requirements

- Chargers are installed head-on, centered between two spaces.
- Can be wall-mounted or free-standing depending on garage layout
- Supports head-in or back-in parking depending on vehicle port location
- Standard space: 18 ft x 9 ft (Figure 6-1).
- ADA space: 20 ft x 11 ft, with a 5 ft access isle (Figure 6-2).
- Chargers must not obstruct clear driving paths or pedestrian areas

[36] "Siting and Design Guidelines for Electric Vehicle Supply Equipment," 2012
[37] "Curbside Level 2 Charging: Minimum Requirements for Curbside EV Charger Locations," 2022
[38] "Curb Enthusiasm: Deployment Guide for On-Street Electric Vehicle Charging," 2018
[39] "Design Recommendations for Accessible Electric Vehicle Charging Stations," 2023

Figure 6-1: EV Charger in Garage

Figure 6-2: ADA Compliant EV Charger in Garage



Parking Lot Requirements (Neighborhood Districts)

- Chargers are free-standing, centered between two spaces on a median or barrier.
- Allows both head-in and back-in parking
- Standard space: 18 ft x 9 ft (Figure 6-3)

- ADA space: 20 ft x 11 ft with a 5 ft access aisle (Figure 6-4)
- Designed to facilitate snow clearance and avoid pedestrian obstructions

Figure 6-3: EV Chargers in Parking Lot

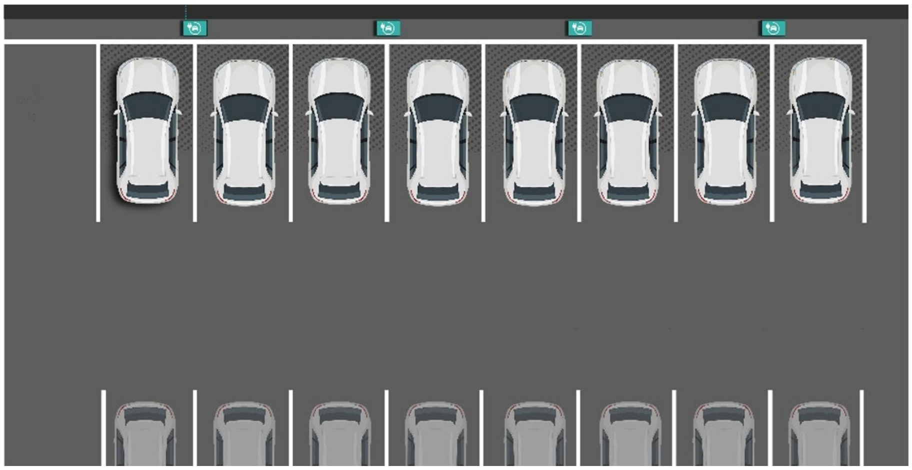
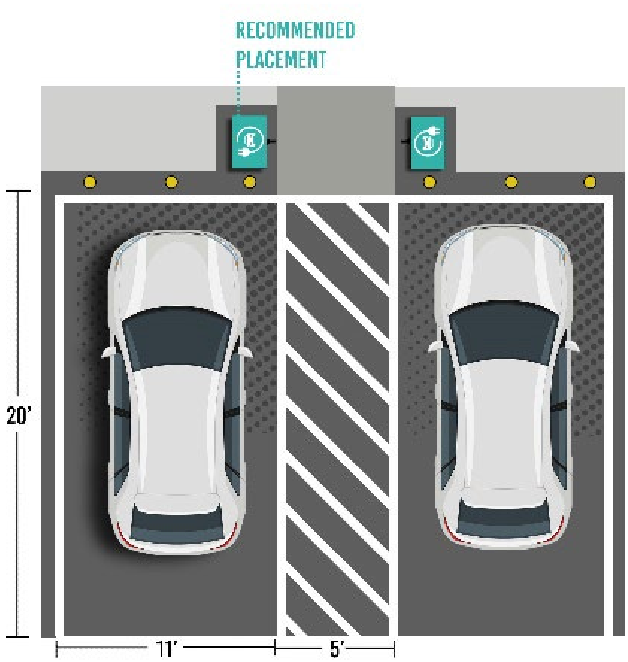


Figure 6-4: ADA Compliant EV Chargers in Parking Lot



On-Street Parking Requirements

- Chargers are centered between two spaces and installed as close as possible to the curb, without obstructing clear zones.

- Concrete-filled steel bollards are recommended for protection
- Parallel parking spaces: Minimum 20 ft x 8 ft
- Angled parking spaces: 20 ft x 9 ft
- ADA-accessible parallel parking requires a 5 ft sidewalk clearance path
- Bollards should be used with back-in angles parking for added safety

Figure 6-5: Single On-Street Charging Station

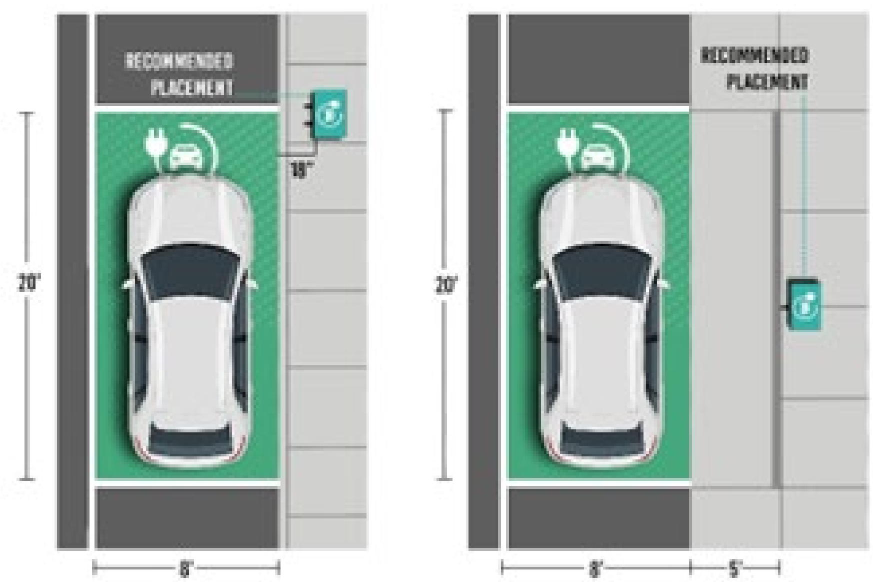


Figure 6-6: Multiple On-Street Charging Stations

Table 3-1 summarizes in more detail the charger design requirements needed for on-street paring locations.

Table 6-1: On-Street EV Charging Design Elements

Street Element	Design Guidance
6’ Sidewalk	Install charger with narrowest side facing curb, 18’’ setback from curb[40]
8’+ Sidewalk	Any orientation is acceptable, 18’’ setback from curb[41]
Cycle lane / track[42]	Maintain 6” offset
Loading Zone	Provide 5-10 ft vertical clearance
Street Trees	Maintain 10’ from trunk or 5’ from tree pit
Driveway	8’ clearance between charger and driveway
Fire hydrant	Maintain 15’ distance
Signane/furniture	Maintain 5’ clearance from all signs or legal street furniture

EV Charging Station Design Elements

A wide range of equipment and layout requirements ensures safe, functional, and accessible charging infrastructure.

Electric Metering

- One meter per site is typical
- Separate sub-metering is used for EVSE systems, not per charger.
- Must meet utility requirements, including wireless communication capability
- Dedicated circuits are required and may need new or expanded panels

Customer Usage Metering

- Smart meters with cellular or network connection for usage tracking, billing, and load management
- Integrated payment systems are recommended

Lighting

- Use of LED lighting is recommended:
    - Overhead lighting
    - Pedestrian-level lighting

[40] This number is different for ADA standards for accessible design. ADA recommends a minimum of 5’ clear path of travel with a preferred of 8’ and a 30’’ clear width.
[41] Ibid.
[42] Note an EV charger cannot typically be installed where the bike facility is between parking and the curb (parking-protected lane).

    - Lighting integrated into charging stations (e.g., backlit touchscreens)

Signage and Wayfinding

- Mark all spaces as “EV Charging Only”
- Provide wayfinding signage from adjacent streets and pavement markings
- Clearly post usage instructions and operating guidelines, including
    - “Electric Vehicle Charging Station”
    - Electric Vehicle Parking While Charging Only”
    - Simple usage instructions for drivers

Charger Equipment

- Chargers should be securely mounted with hot swappable part for maintenance ease
- Rugged hardware (e.g., powder-coated aluminium enclosures, lockable connectors) is recommended.
- Use retractable cable management systems to avoid tripping hazards and snow damage
- Install disconnect switches and protective bollards where needed

Proximity to Entrances and Power

- Preferential placement near entrances is ideal but must be balanced with power access
- Avoid placing charger under overhead power lines or flood-prone areas.
- Select high-visibility locations for safety and awareness

Charging Cable Standards

- Cable length: Maximum 25-ft; 15 ft preferred (except on-street)
- Cables should retract and remain off the ground when not in use
- Maintain 3-5 ft clearance between charger and vehicle
- Avoid more than two ports per pedestal
- Future technologies (e.g., flat cables, bring-your-own-cable, or wireless charging) may change standards in coming years.

Charging Capacity Standards

- Minimum 40-amp, 208/240-volt circuit per EV parking space

- Underground or surface-mounted conduit
- Level 2 and DCFC:
    - Free-standing preferred
    - Wall-mounted acceptable in garages
    - DCFC should connect to an underground vault or transformer

State Standards Compliance

- All chargers must be UL-listed (UL 2202 and UL 2594)
- Must comply with New Mexico Energy Codes and utility specification

Land Use Data Layers

The County GIS portal includes a Land Use layer that provides key information about every square foot of land in the county. This includes the following:

- OWNER: This field includes values like CO (County), LANL (Los Alamos National Lab), NFS (National Forest Service), SCHOOL, ST (State), etc. It is valuable for understanding the likelihood of placing a charger in these areas, and to understand how that land is used.
- ZONE: This field holds the legal zoning code for the selected region. Values include MU (Mixed-Use), F-L (Federal Land), and PD (Planned Development).
- ACCT_TYPE: This field holds values like APARTMENT, COMMERCIAL, DUPLEX, EXEMPT SCHOOL, etc. In combination with OWNER and ZONE, it helps clarify

The GIS portal also includes a parcel layer that provides more granular information on specific parcels, but does not include the large open-space regions. This layer includes fields like:

- ZONE: A different zoning code that includes values like DTLA (Downtown Los Alamos), SFR (Single Family Residential), and INS (Institutional).
- SHAPE_Area: This allows for calculation of square feet and helps in the estimation of density.

The map below (Figure 6-7) shows the land use layer for the entire county. Each color represents a different value in the ZONE field.

Figure 6-7: Land Use Map

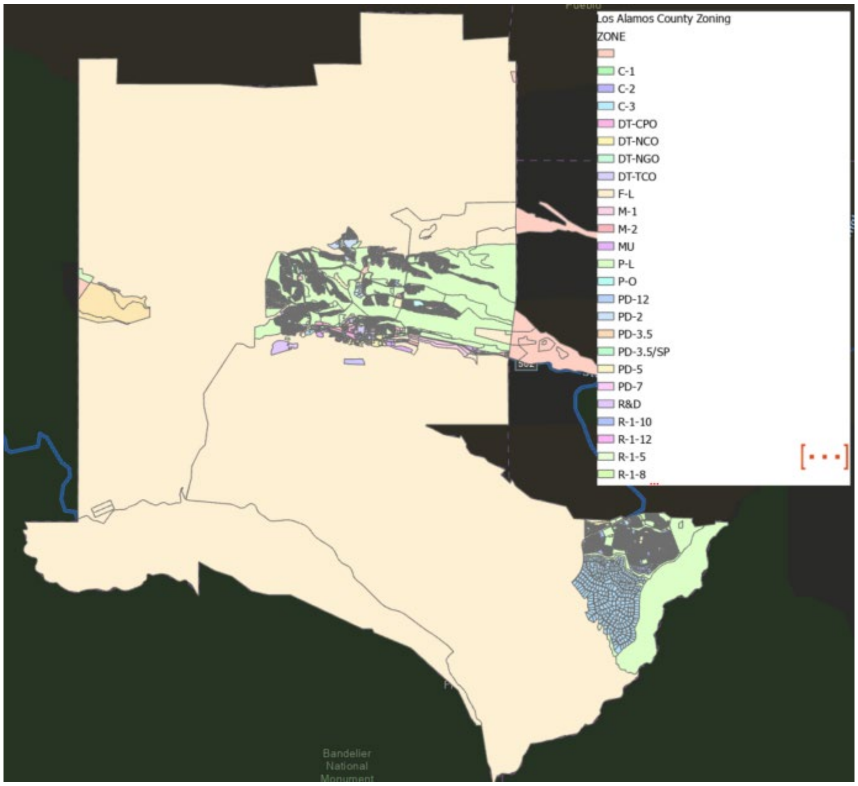


Figure 6-8 shows a zoomed-in view of the same layer in the Los Alamos town center.

Figure 6-8: Los Alamos Town Center Zoning Map

Figure 6-9 shows the Parcel layer. The colors correspond to each parcel's ownership, indicating whether land is publicly or privately owned.

Figure 6-9: Los Alamos Parcel Map

Environmental Exclusions

Using the National Wetlands Inventory data, high flood risk areas can be identified and avoided for charger locations. In the map below, it is clear that areas bordering rivers, streams, and lakes should be excluded from consideration.

Figure 6-10: Los Alamos Wetlands Map

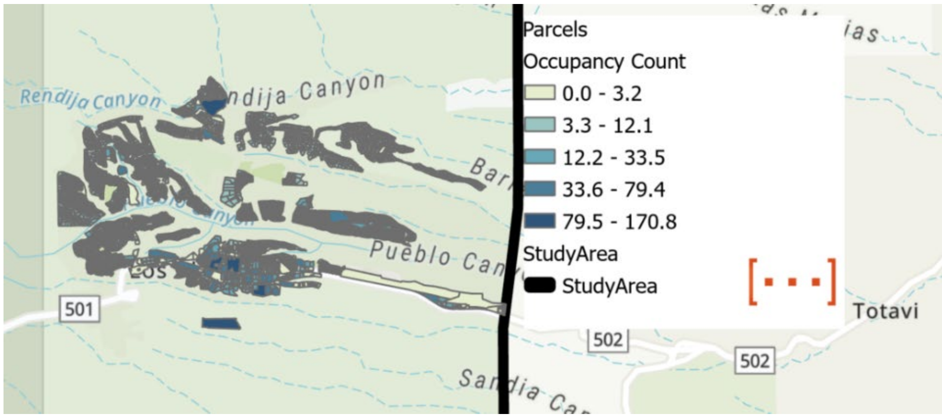
The County GIS layer can also be used to identify existing parking lots. In contrast to the high flood risk areas, these increase the suitability value for a charger location.

Figure 6-11: Los Alamos Existing Parking Lots Map

Population and Density

The population of the County in the 2020 Census was 19,419. All of those people reside in buildings defined in the Parcel layer above. By grouping parcels according to their zoning types, we can build sets of parcels that include all residential properties and separate them from sets of parcels that are mixed-use, recreational, or industrial, among others. Based on the new zoning type groupings, estimated values can be given to each grouping. All Residential parcels are assigned a population density of 6 people per acre, and all Multi-Family parcels are assigned a population density of 11 people per acre. Using this density and the acreage of the parcel, we can estimate the population of each parcel. The map below is colored according to the estimated occupancy counts calculated using this method.

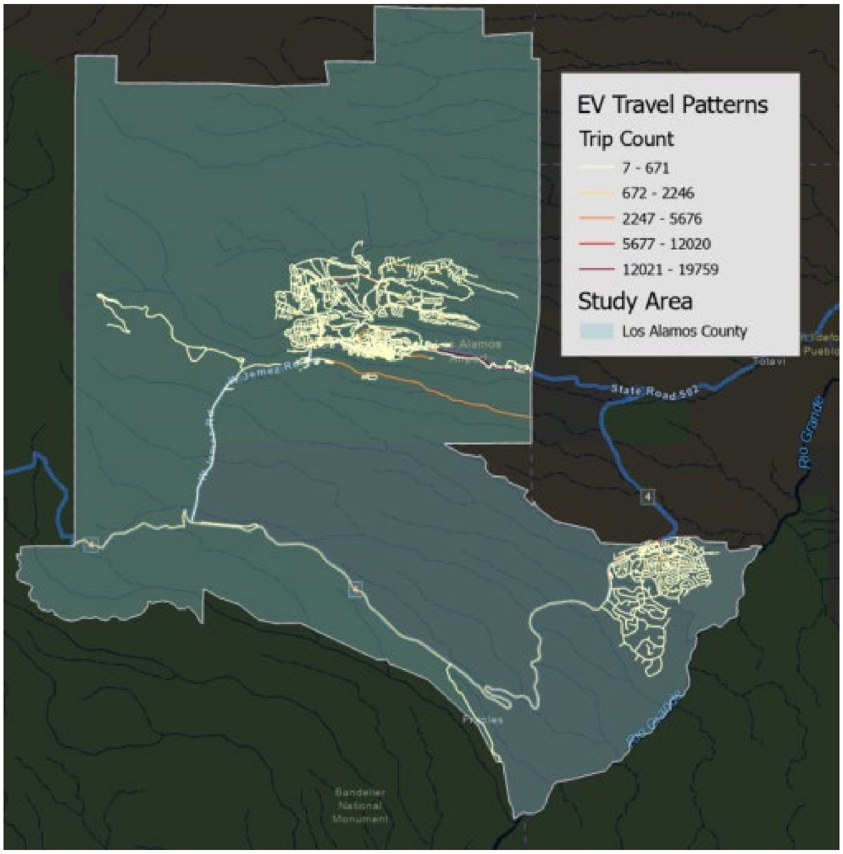
Figure 6-12: Occupancy Map



Travel patterns

Replica is a mobility data platform that models how, when, and where people travel within a region. Using anonymized location data from mobile devices, GPS traces, and other sources, Replica generates synthetic travel behavior that reflects real-world activity patterns while protecting individual privacy. Its datasets capture trip origins, destinations, modes, and purposes, enabling detailed analysis of trips made by electric vehicles. Using Replica data, the model can identify corridors with heavy EV traffic, indicating an increased demand for charging infrastructure.

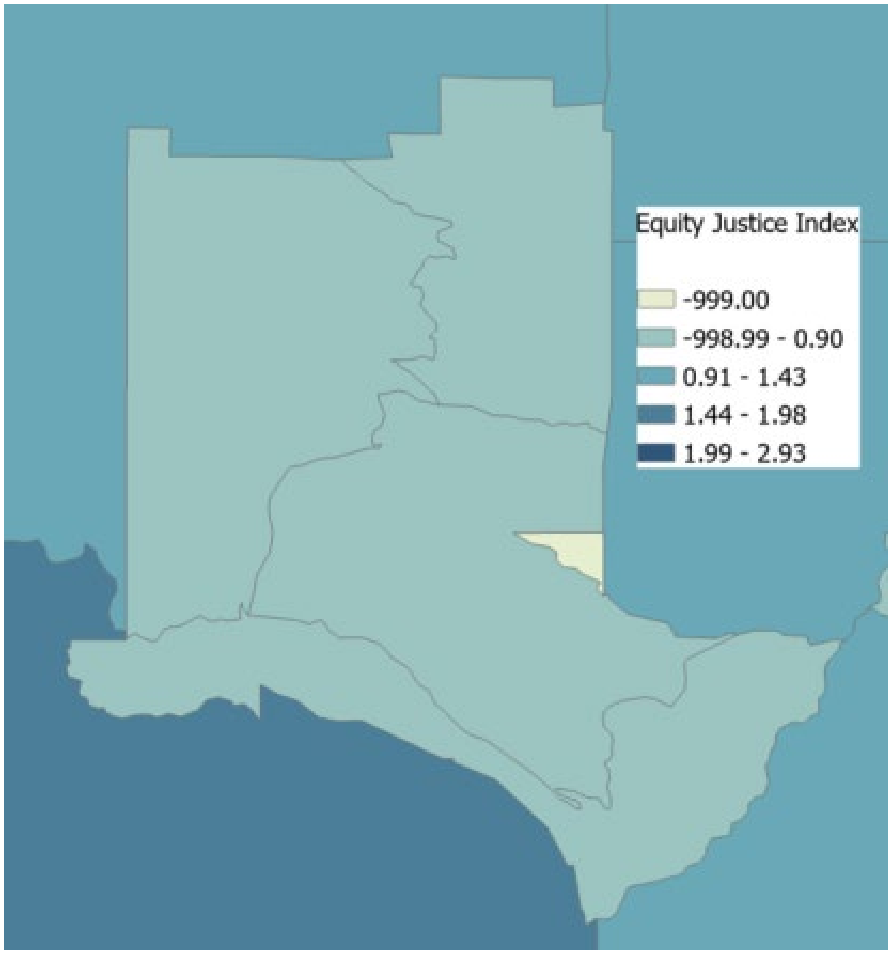
Figure 6-13: EV Travel Patterns



Demographics

The Agency for Toxic Substances and Disease Registry (ATSDR) maintains an Equity Justice Index map that measures each census tract for certain key demographic factors including Social Vulnerability, Environmental Burden, Health Vulnerability, and Climate Burden. Included in this dataset is an aggregated index that encapsulates all available measured equity data. The County has relatively low values across all its census tracts, meaning all areas are similarly well-advantaged compared to other counties. This dataset is crucial for understanding if certain local communities are in greater need of infrastructure support to address environmental risk.

Figure 6-14: Equity Justice Index Map


Equity Justice Index
-999.00
-998.99 - 0.90
0.91 - 1.43
1.44 - 1.98
1.99 - 2.93

Stantec is a global leader in sustainable engineering, architecture, and environmental consulting. The diverse perspectives of our partners and interested parties drive us to think beyond what's previously been done on critical issues like climate change, digital transformation, and future-proofing our cities and infrastructure. We innovate at the intersection of community, creativity, and client relationships to advance communities everywhere, so that together we can redefine what's possible.

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Los Angeles CA 90017-3007
stantec.com

DRAFT

Stantec

Los Alamos County Fleet Conversion Plan and Community-Wide EV Charging Plan

December 2025

Agenda

1. Project Purpose
2. Fleet Conversion Plan
3. Community-Wide EV Charging Plan
4. Summary

Project Purpose

1. Reduce greenhouse gas (GHG) emissions from the County fleet
2. Expand EV charging infrastructure
3. Engage County partners and community members

Climate Action Plan – Key Findings

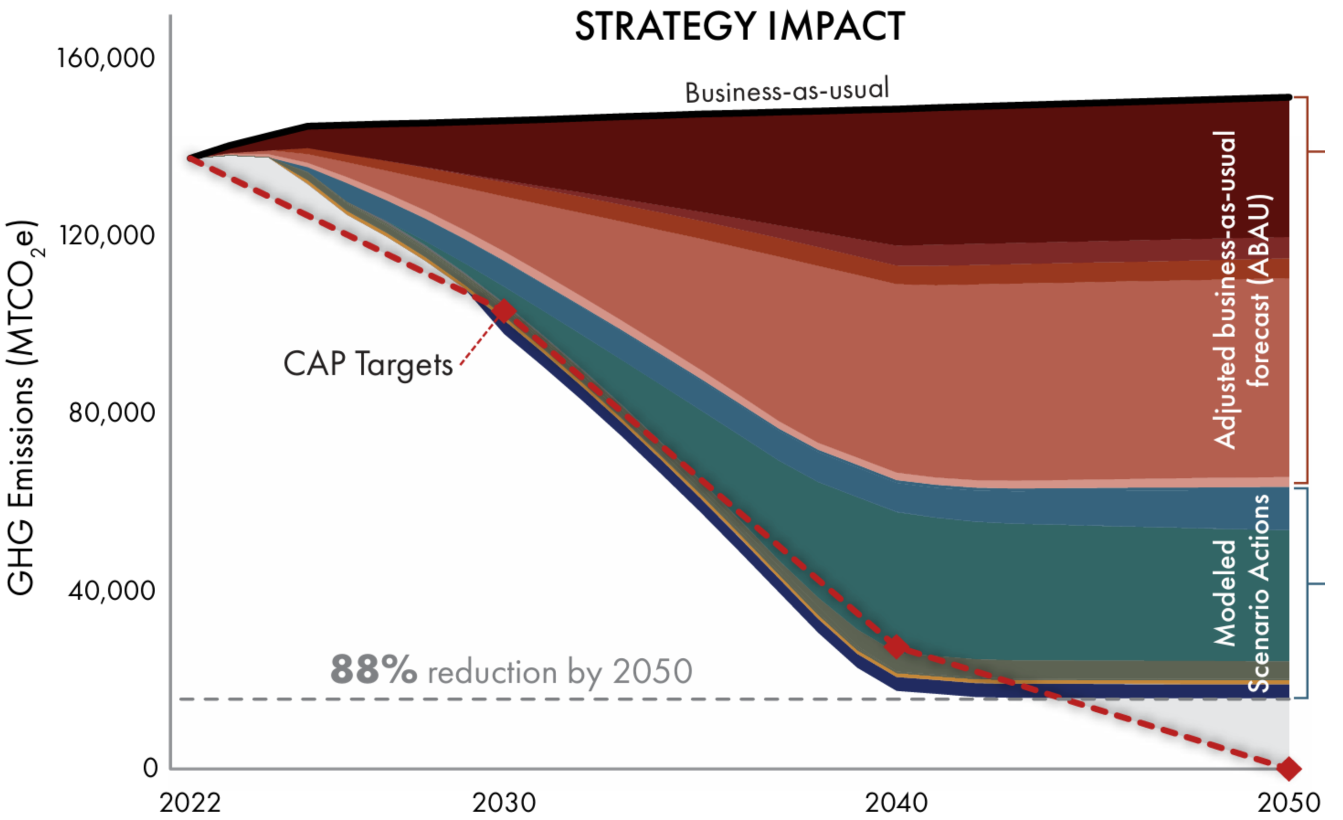
Purpose: Guide GHG reductions and strengthen climate resilience.

Community Priorities: Clean energy, sustainable buildings, sustainable mobility, and resource conservation.

Main Emission Sources: Transportation, natural gas, electricity; County operations ≈ 11%.

Targets: 30% by 2030, 80% by 2040, Carbon neutral by 2050.

Equity Focus: Ensure vulnerable groups benefit most and face fewer burdens.



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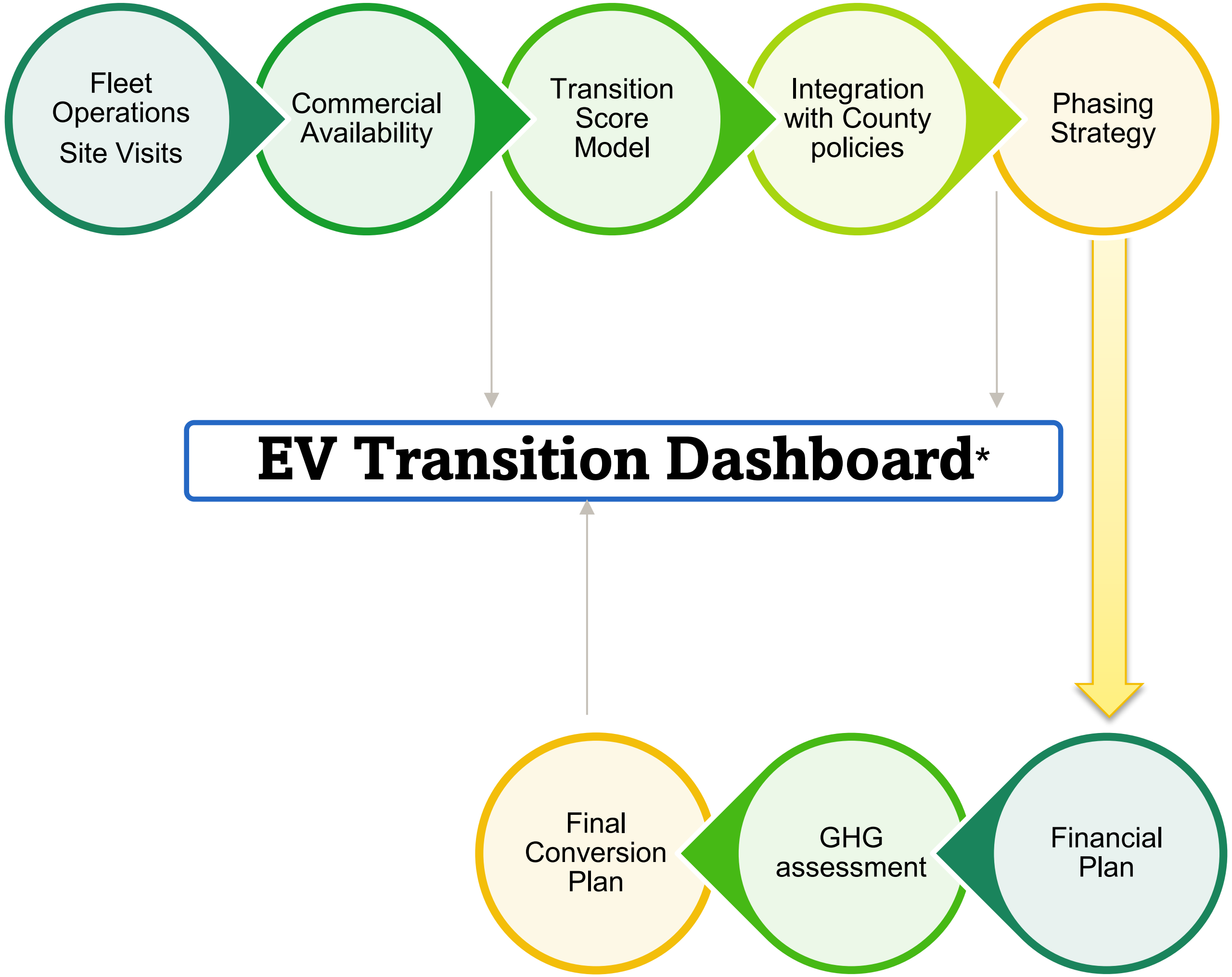
County Fleet Conversion Plan

County Fleet Conversion Plan

- Existing conditions
  - EV transition dashboard
- Vehicle replacement strategy
- Facility infrastructure phasing strategy
  - Dashboard supported
- Greenhouse gas emissions
- Total cost of ownership
- **Task deliverable**: County Fleet Conversion Plan

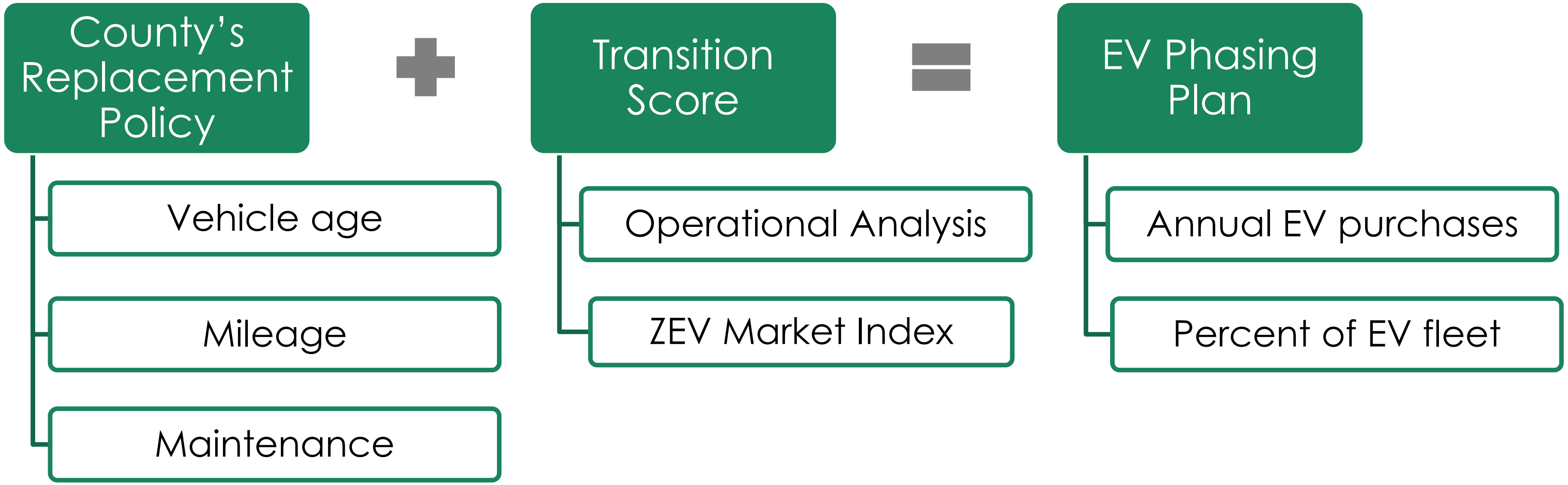


*Interactive PowerBI tool for County use

ATTACHMENT C

Classification Approach

- Data collection focused on understanding the fleet, assessing facilities, and detailed understanding of each vehicle's operational needs
- Stantec's Transition Score Model was carefully integrated with the County's replacement policy to avoid early vehicle retirement or buying vehicles that can't satisfy the user's needs.



ATTACHMENT C

Key Assumptions

Fleet Count: 229 vehicles

Exceptions: 33 specialized vehicles (14%)
e.g., firefighting, bomb response, etc.

Transition Scores Approach: based on vehicles best suited for early electrification.

Two Implementation Strategies:

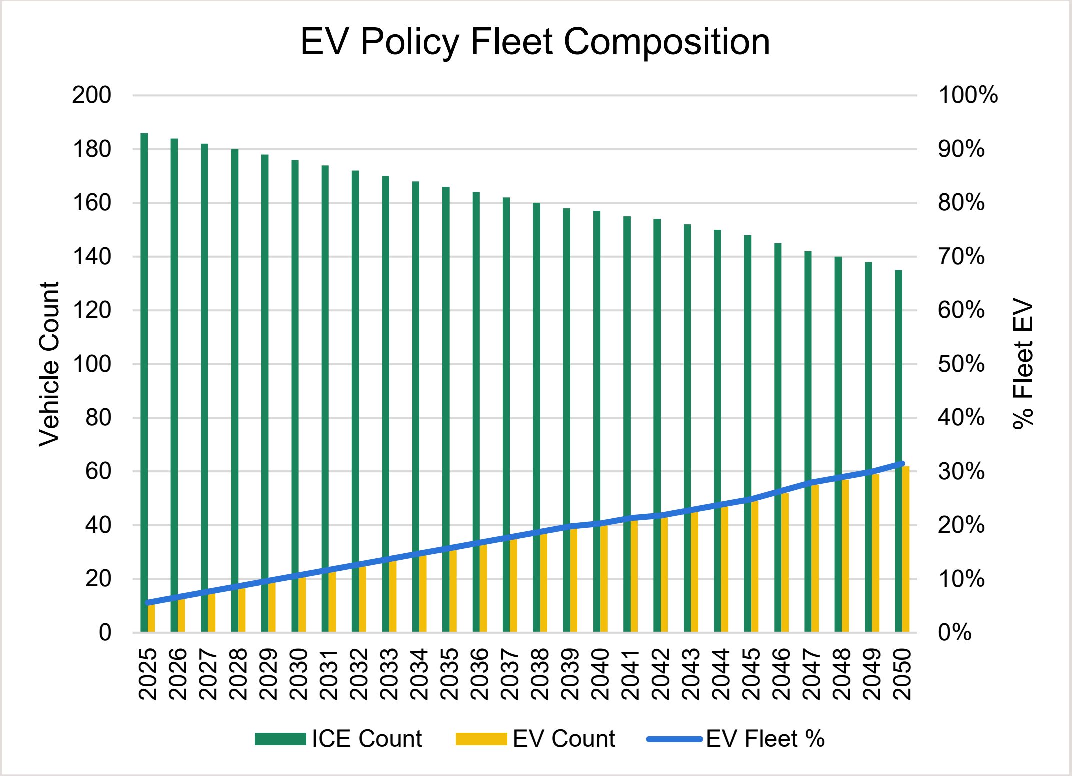
EV Policy

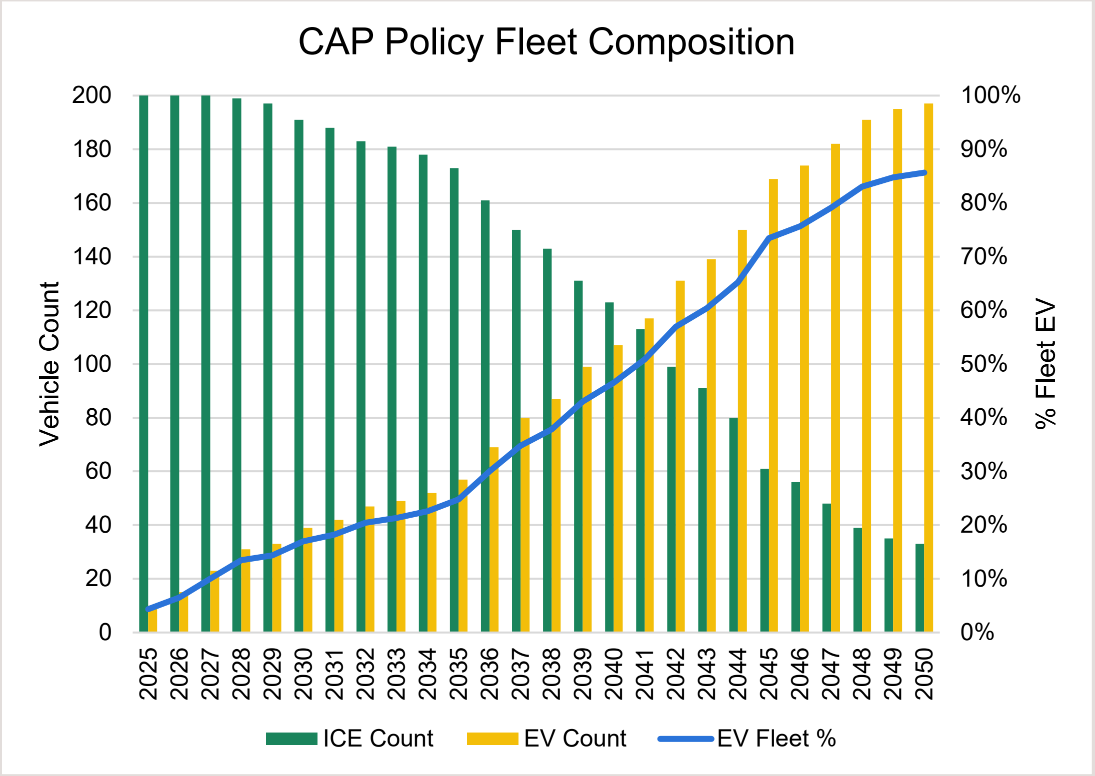
- County's current policy
- Two EV transitions per year
- Max of **31% EV** fleet by **2050**

CAP Policy

- Aligns with the Climate Action Plan (CAP)
- Aims for **carbon neutrality by 2050**
- Max of **86% EV** fleet by 2050 (due to exceptions)

Fleet Composition through 2050

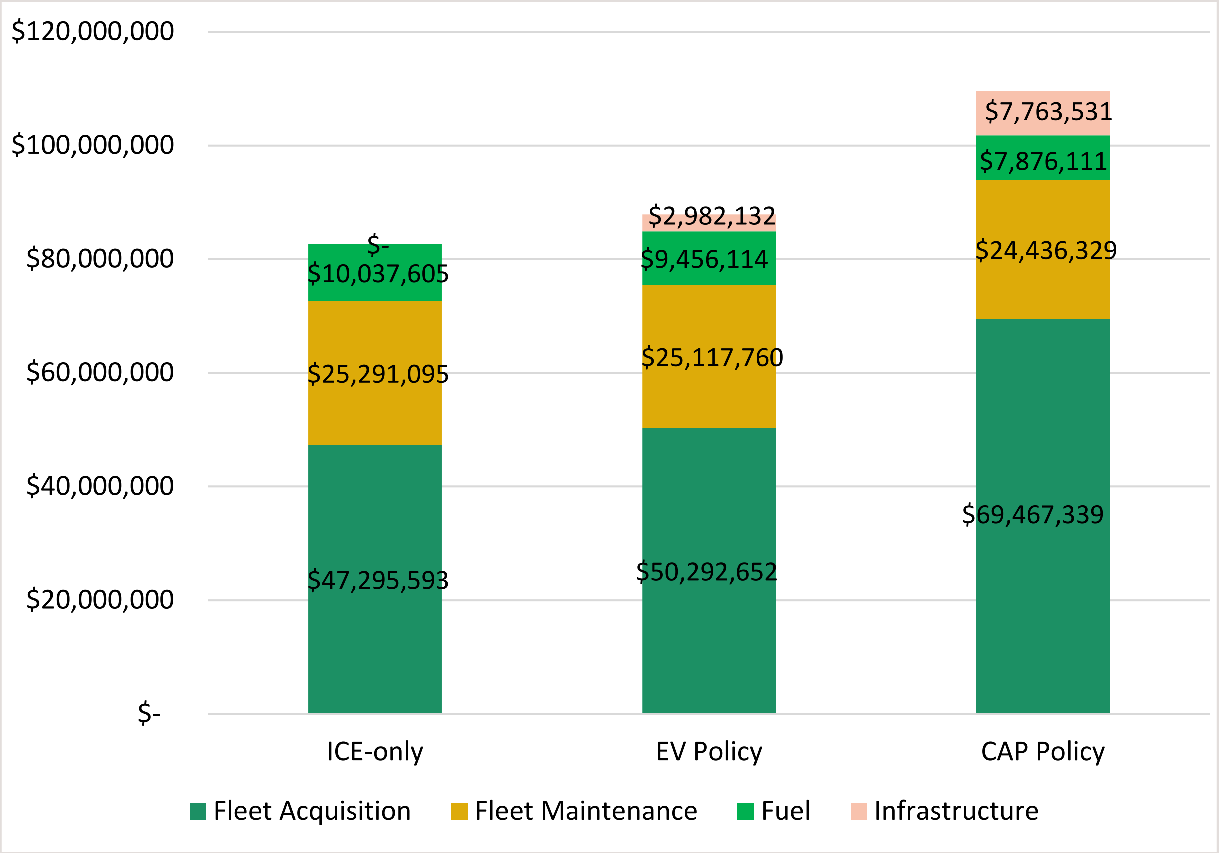




Proposed Charging Equipment Phasing

	CAP Policy Infrastructure Cost	Phase	Proposed Charging Infrastructure Location
2026	$1,252,213	**Phase 1**	PCS1-PCS5
2027	$539,284		LA Senior Center-Eco Station-LA Wastewater Treatment Facility
2028	$564,090		Ice Rink-Fuller Lodge
2030	$24,806		Golf Course
2034	$1,106,849		PCS5
2035	$655,148		PCS1-PCS3-Fire Station #4
2036	$502,243	**Phase 2**	Eco Station-Municipal Building
2037	$96,806		Justice Center
2039	$24,806		Fuller Lodge
2040	$85,565		LA Wastewater Treatment Facility
2041	$49,613		LA Senior Center
2042	$195,936		Eco Station
2043	$1,101,197		PCS1
2045	$281,501	**Phase 3**	LA Wastewater Treatment Facility-PCS3
2047	$1,112,343		PCS5
2049	$171,130		Golf Course-LA Airport

Financial Evaluation



The CAP Policy scenario is about 25% (~$21.7M) higher than the EV Policy.

The Total Cost of Ownership considers:

- Vehicle purchase price
- County's utilization levels (mileage/yr)
- Fuel and kWh cost with trend projection
- Vehicle maintenance cost
- Facility modifications cost
- Charging equipment costs
- Inflation

*Accumulative cost between 2026 and 2050 presented as future dollar value

Greenhouse Gas Emissions

Compared to the ICE only baseline, the EV Policy scenario represents ~9.5% lower cumulative emissions over the transition period (2025 – 2050)

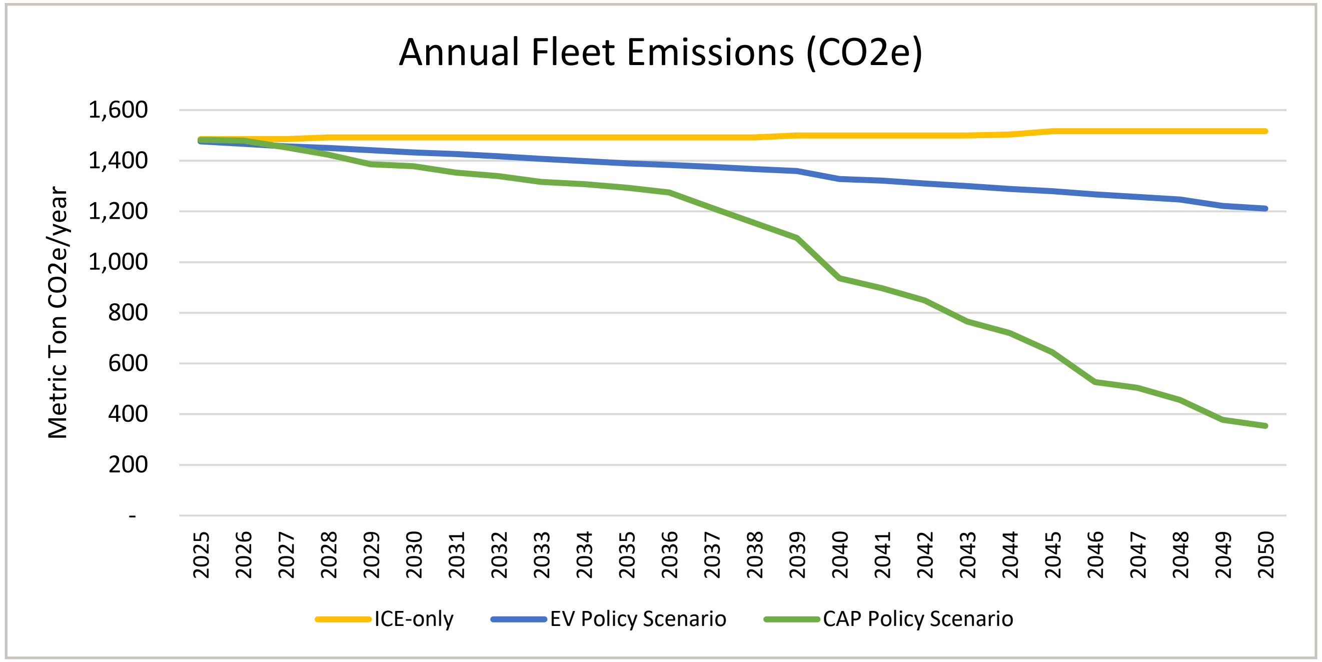
- A total of 3,689 metric tons of CO_2e eliminated
- Past 2050, the county fleet would be eliminating 18% of baseline yearly emissions

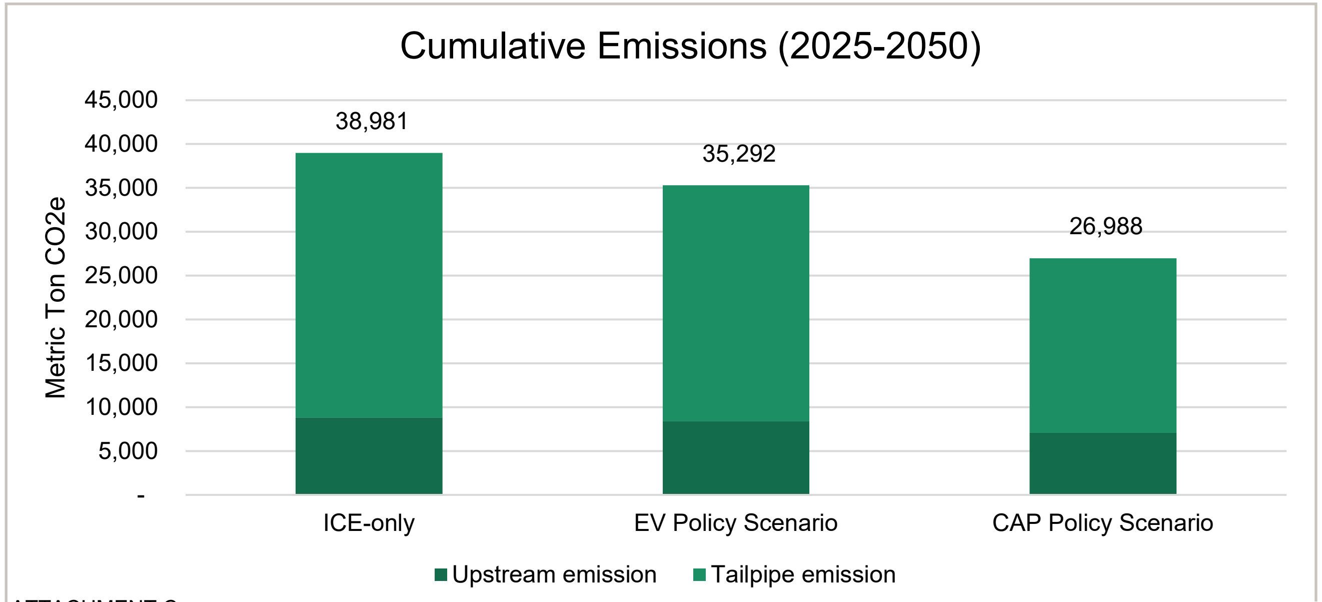
The CAP Policy scenario achieves ~30% lower cumulative emissions over the transition period

- A total of 11,993 metric tons of CO_2e eliminated
- Past 2050, 76% reductions of baseline yearly emissions

Grid Mix:

- Incorporates the anticipated 50% solar contribution to the grid from the Foxtail Flats
- Assumes full carbon-neutral grid mix past 2040





Putting Things on Perspective

The total 11,993 metric tons of CO_2e that the CAP Policy can eliminate between 2025-2050 represents:

Replacing the **Fossil Fuel** fleet with **ZEVs** is equivalent to:

- Eliminating **1,349,499** gallons of gasoline being consumed
- Recycling **4,238 tons** of waste annual rather than landfilling
- Reducing the need to plant **198,305 seedlings** of trees to capture carbon emissions
- Eliminating the energy use from **1,611 homes** for one year

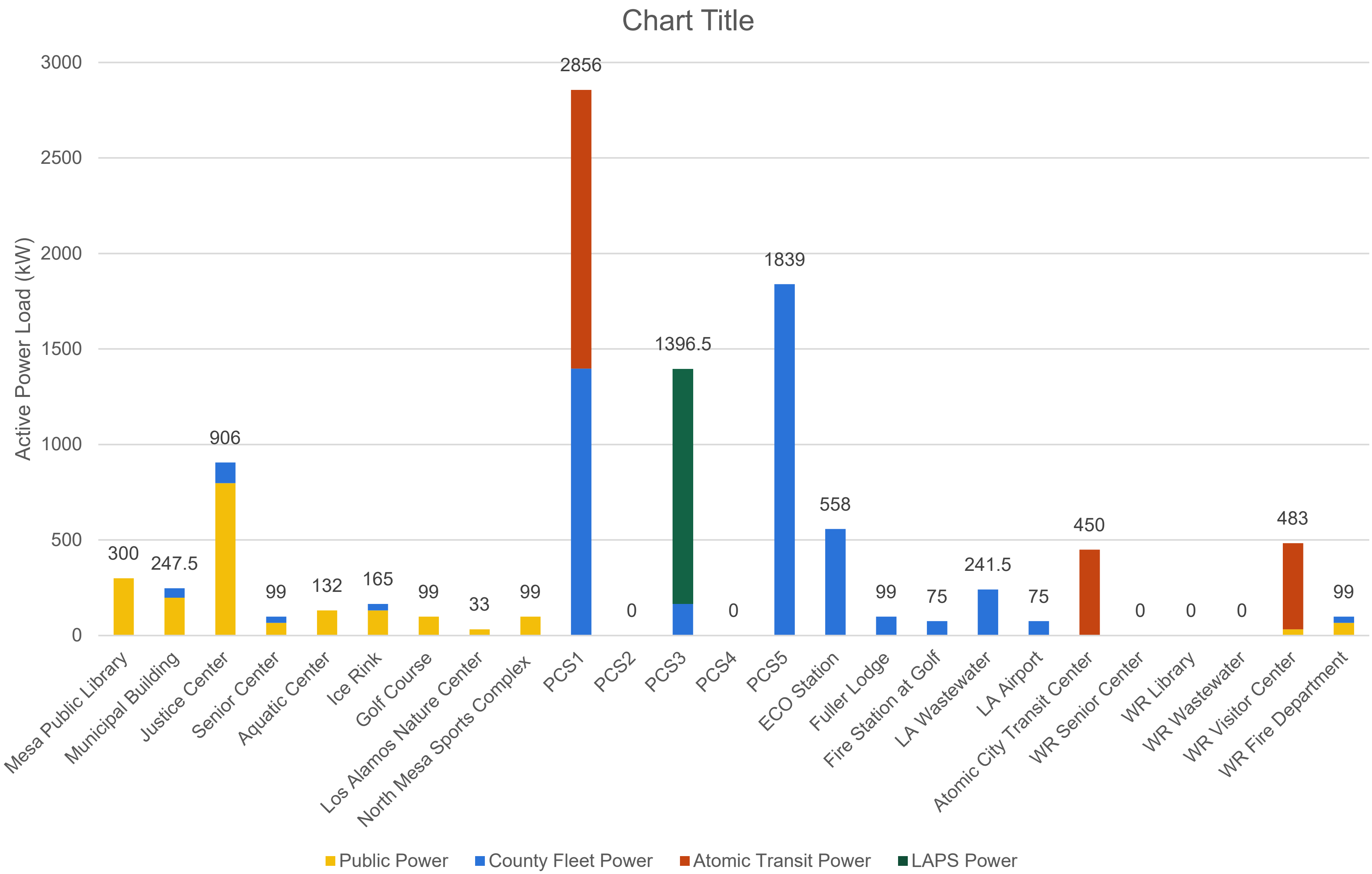
This is equivalent to greenhouse gas emissions avoided by:

4,238 tons of waste recycled instead of landfilled	**605** garbage trucks of waste recycled instead of landfilled
1,019,482 trash bags of waste recycled instead of landfilled	**3.6** wind turbines running for a year

Source: https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator#results

Projected Power Load

- Does not consider existing site capacity
- Projected load is in addition to existing or soon to be installed chargers



*Note: PSC2, Atomic City Transit Center, and White Rock Visitor Center considers load of Atomic Transit. Both the Transit and Visitor Center are anticipated to have on-route charging to support Atomic City Transit routes.

**Note: LAPS doesn't have current plans for their fleet electrification. Stantec projected a potential load based solely on total vehicle count and commercially available battery sizes for school buses and support vehicles.

Supporting Components of the Transition Plan

Workforce Development

Safety Considerations

Funding Opportunities

Takeaways

The Fleet Conversion Plan based on the CAP Policy phasing strategy supports Los Alamos County's Climate Action Plan and explores alignment with 100% carbon neutrality goals by 2050.

The complementary phased charging infrastructure plan, workforce training, and strong funding strategies will be paramount for a successful implementation.

Overall, the CAP Policy positions Los Alamos County to achieve meaningful emissions reductions while supporting each department's operational requirements.

Importantly it will be critical to implement proactive funding-seeking strategies to maintain fiscal responsibility during this plan's implementation.

EV Policy

- 9.5% GHG reduction*
- Max 31% Fleet Conversion

CAP Policy

- 30% GHG reduction*
- 86% Fleet Conversion
- 25% more cost than EV Policy

*Cumulative reduction during transition

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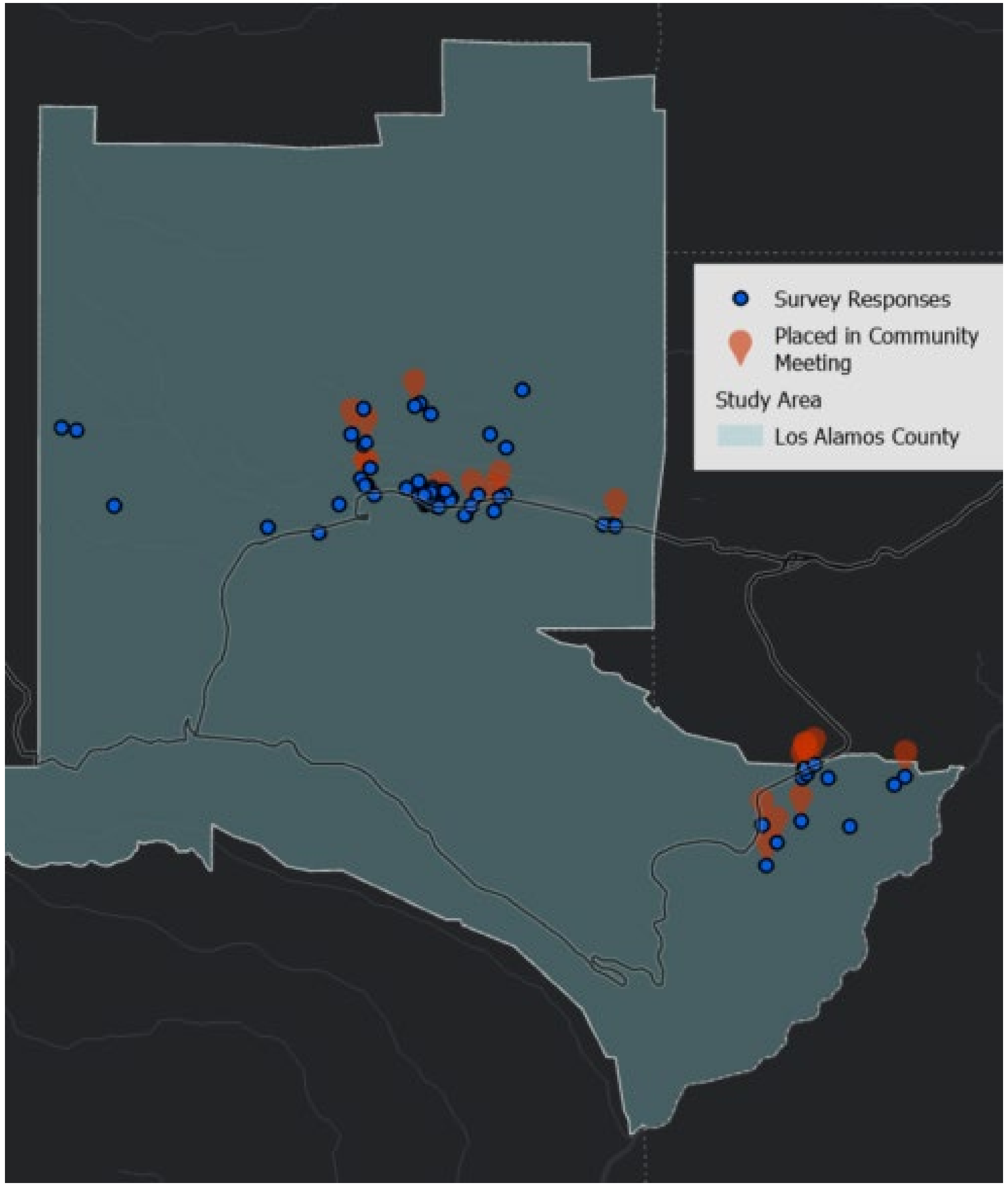
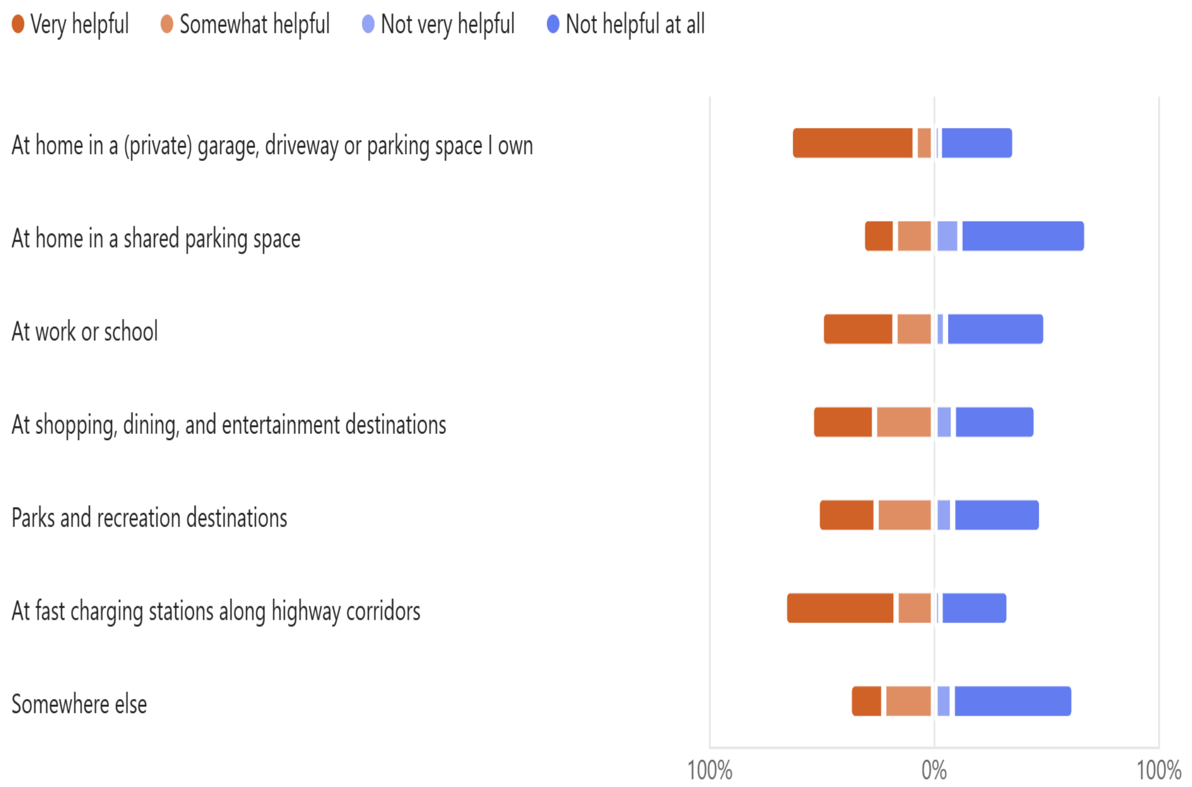
Community-Wide EV Charging Plan

What are we looking for in an ideal charging network?





*Note the total sample size collected was 99 locations (79 survey responses, 20 placed in community meeting).[20]

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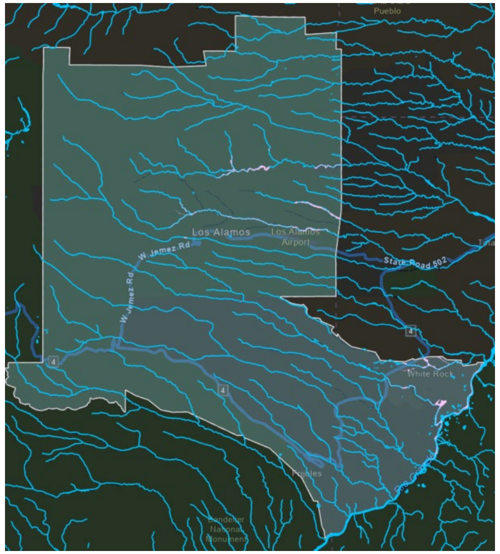
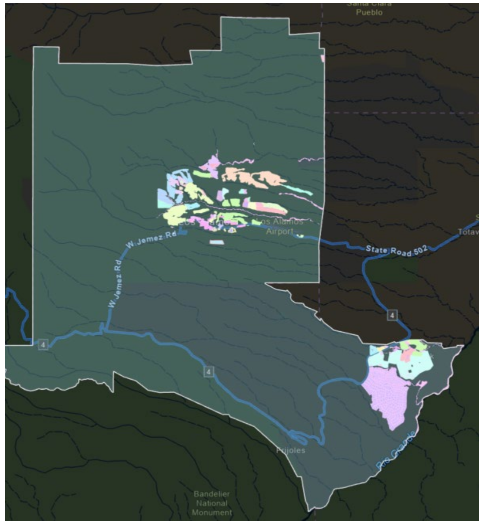
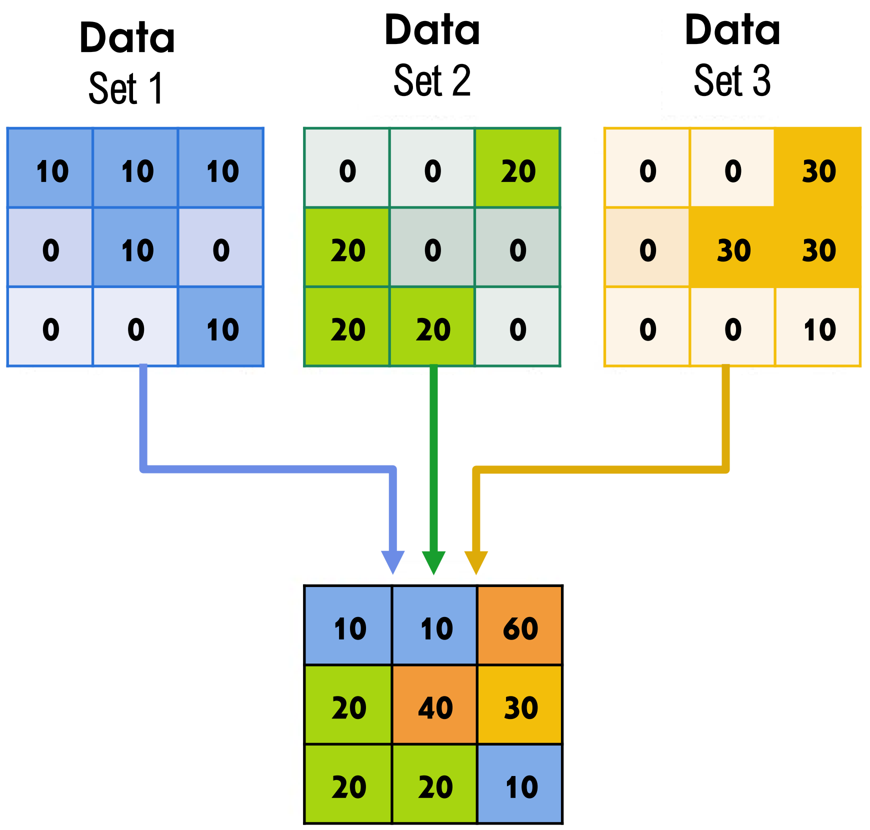
Modeling Site Suitability





Some areas are excluded:

- Areas with high flood risk
- Exempt Federal Land
- Private Residences (for shared chargers)



- We find optimal charging locations by merging all the input data sets

- Different scenarios weigh each data layer differently

Each data set is weighted differently depending on the scenario being evaluated:

- Mixed-Use Zoning
- Single-Family Zoning
- Multi-Family Zoning
- Commercial Zoning
- Topography and Flood Risk
- EV Travel
- Recreational Land
- Parking Lots
- Private Land
- Public Land
- Community Feedback Locations
- Downtown Cores
- Circuit and Feeder Locations

Scenario 1: Home Charging

Scenario 2: County-Owned Charging

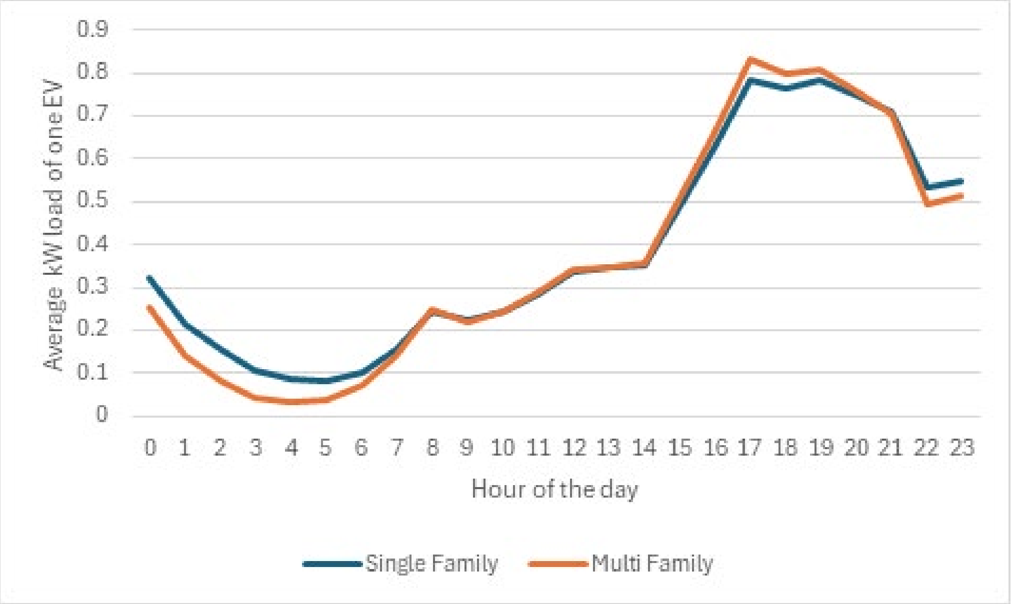
Scenario 3: Shared Level 2 Charging

Scenario 4: Fast Charging

Site Suitability Results

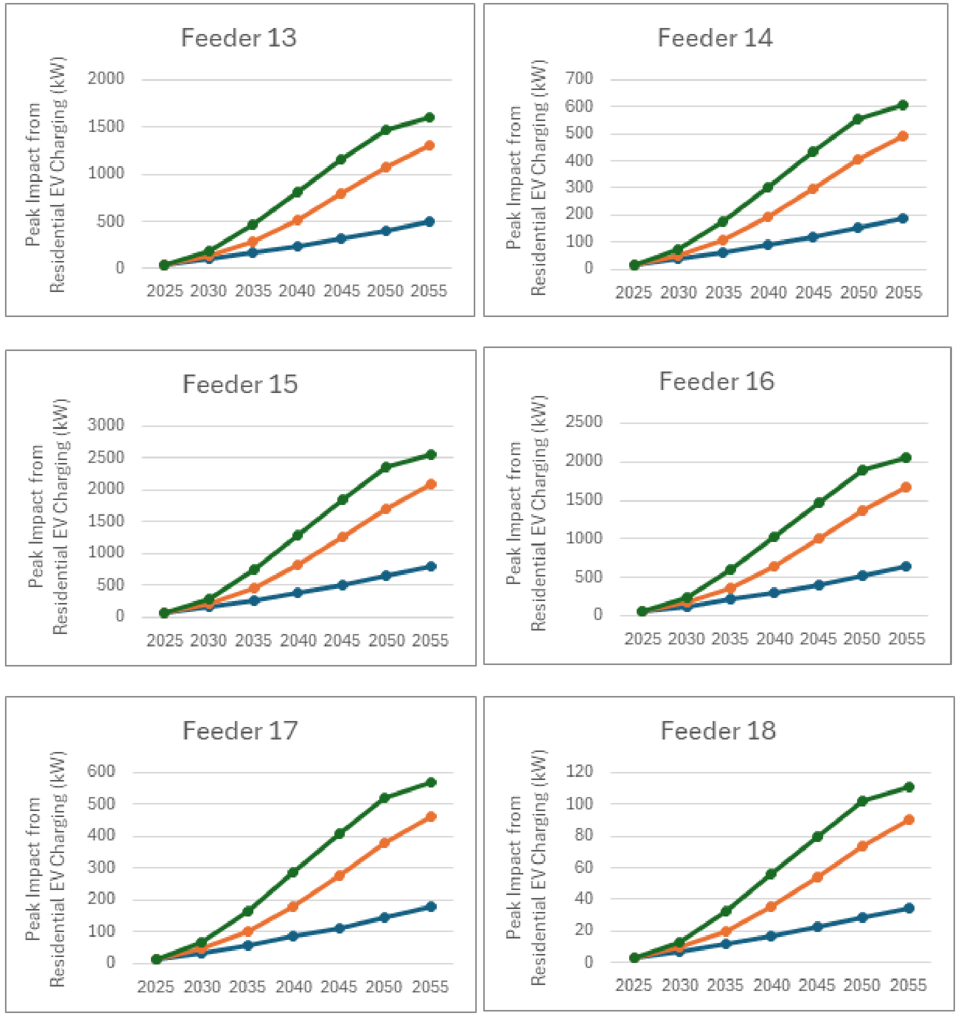
Using Stantec's suitability approach, and in close coordination with the County, the following results are presented for each scenario:

- Specific locations where chargers will be installed
- Forecast County's future power capacity requirements



- At-Home Charging use is forecasted based on population density
- Areas with more people are assumed to have more EVs

Power Load on Los Alamos Feeders over time



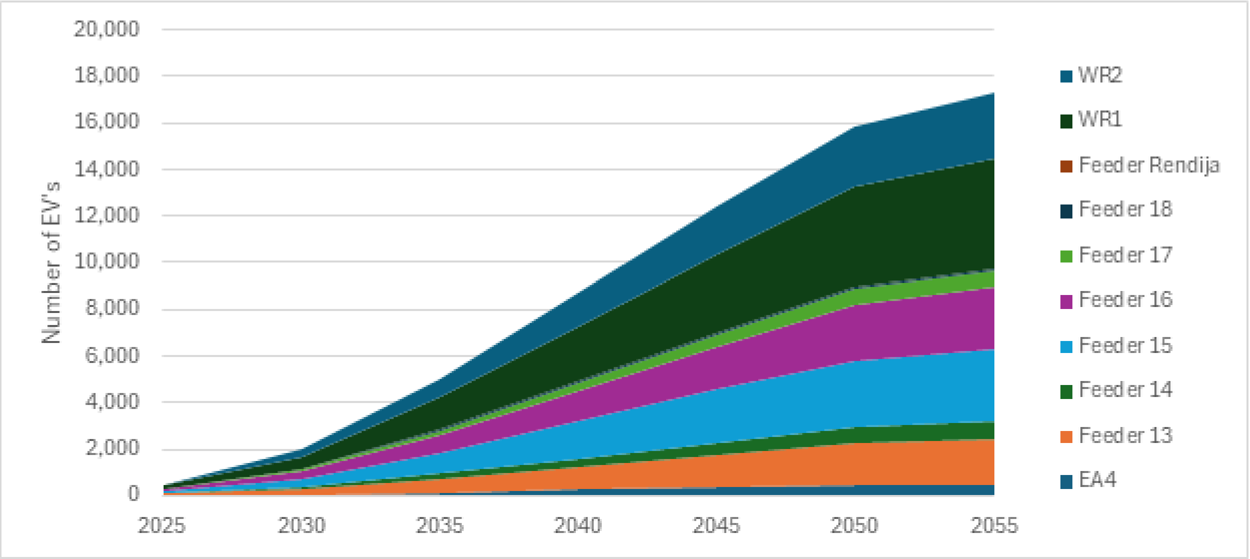
High EV Adoption

Medium EV Adoption

Low EV Adoption

Scenario 1: At-Home Charging

- At-Home charging use is forecasted based on population density
- Areas with more people are assumed to have more EVs



ATTACHMENT C

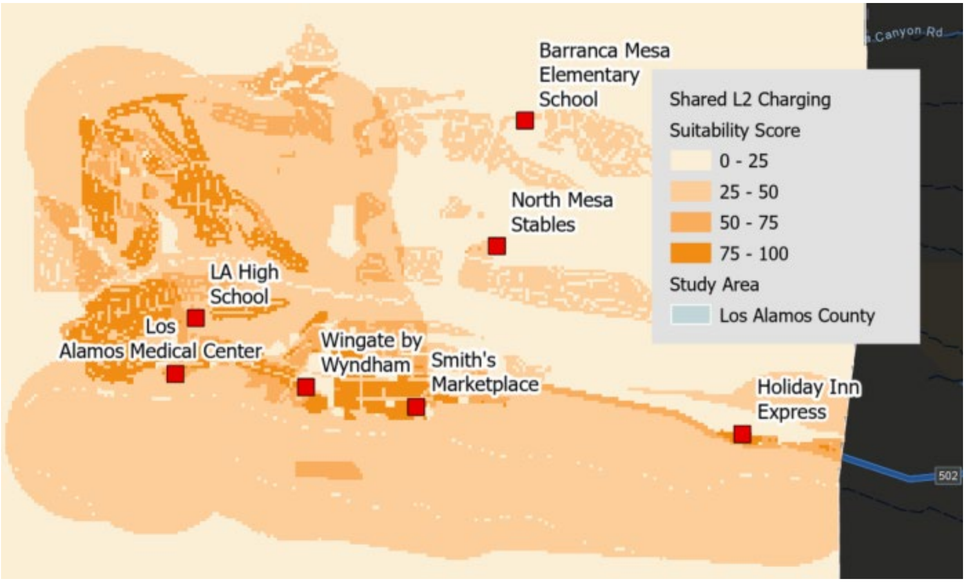
Los Alamos

White Rock

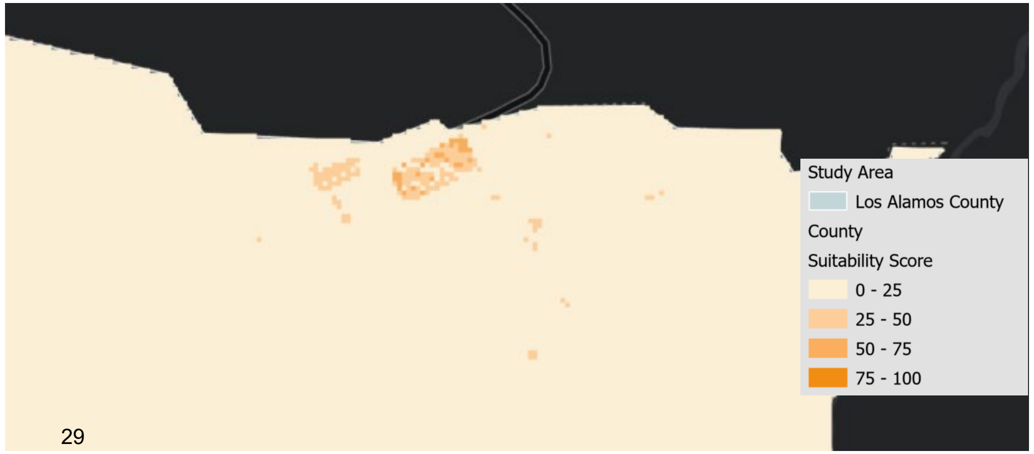
- Only County-owned land is considered
- Informed by public comment, prioritizes downtown cores

Location	L2 Chargers	L3 Chargers	Anticipated Power
Mesa Public Library		4 (In progress)	300 kW
Municipal Building	12 (In progress)		99 kW
White Rock Visitor Center	2 (Existing)		16.5 kW
White Rock Fire Department (Charging with Fleet Vehicles)	4		33 kW
Justice Center	12	8	699 kW
Senior Center	4		33 kW
Aquatic Center (Charging with Fleet Vehicles)	8		66 kW
Ice Rink (Charging with Fleet Vehicles)	8		66 kW
Golf Course	6		49.5 kW
Los Alamos Nature Center	2		16.5 kW
North Mesa Sports Complex	6		49.5 kW

Los Alamos



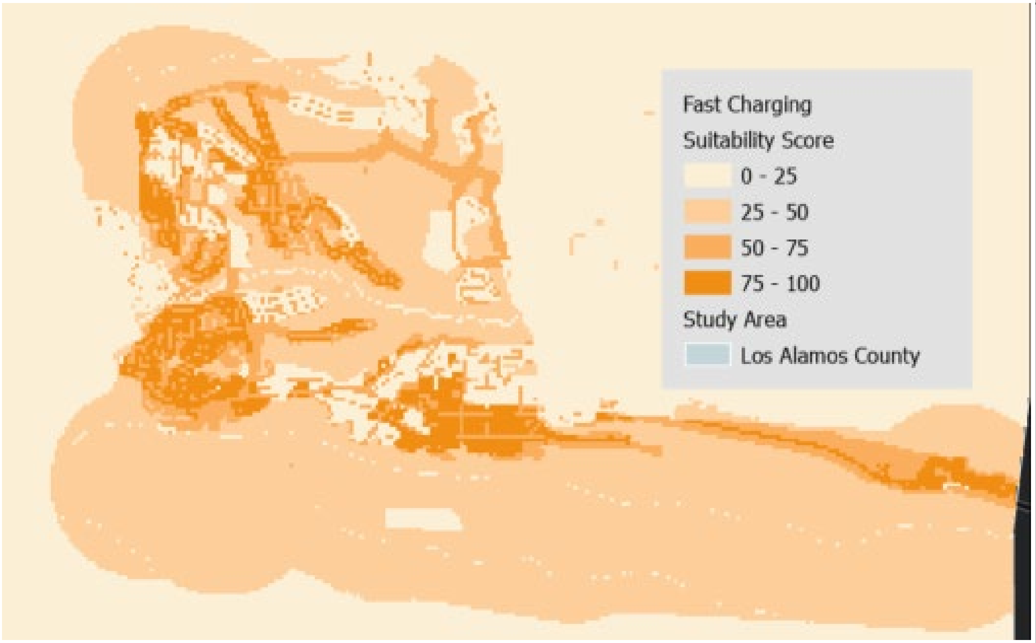
White Rock



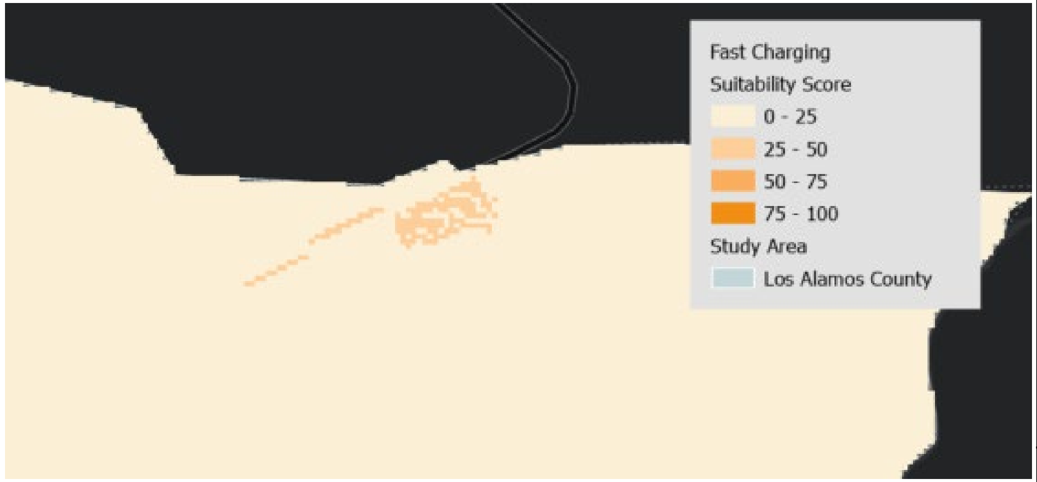
- Only privately-owned land is considered
- Considers all chargers are open to public use

Location	L2 Chargers	L3 Chargers	Anticipated Power
Los Alamos Medical Center	16		132 kW
Los Alamos High School	10		82.5 kW
Barranca Mesa Elementary School	10		82.5 kW
Wingate by Wyndham	5		41.25 kW
Holiday Inn Express	5		41.25 kW
North Mesa Stables	4		33 kW

Los Alamos



White Rock



- Multi-family housing and commercial areas are prioritized
- Both county-owned and privately-owned land is considered
- EV Traffic Volumes and Feeder Capacity are weighted highly
- Highways score highly

Location	L2 Chargers	L3 Chargers	Anticipated Power
Smith's Marketplace		2	150 kW

Projected 2050 Power Requirements

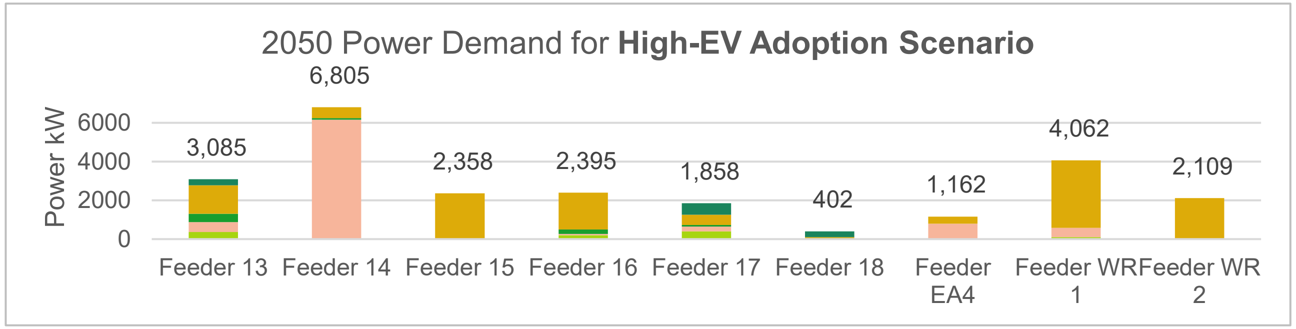
County Fleet (+Atomic + LAPS)

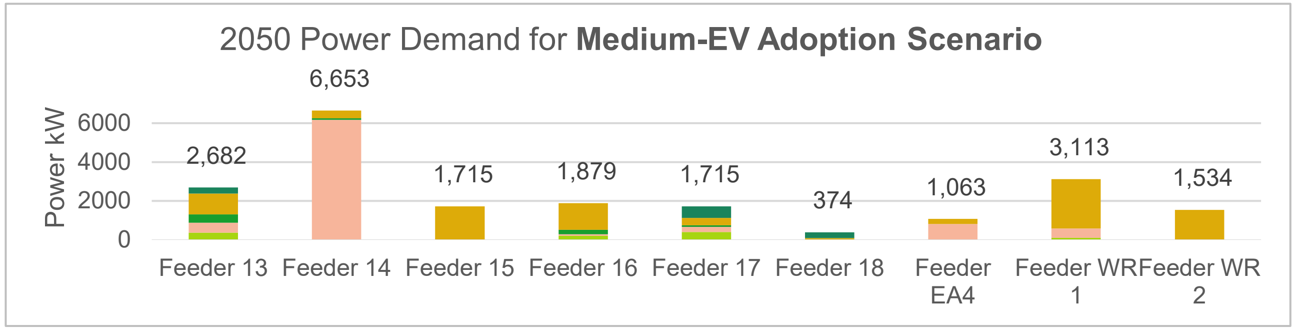
At-Home Charging

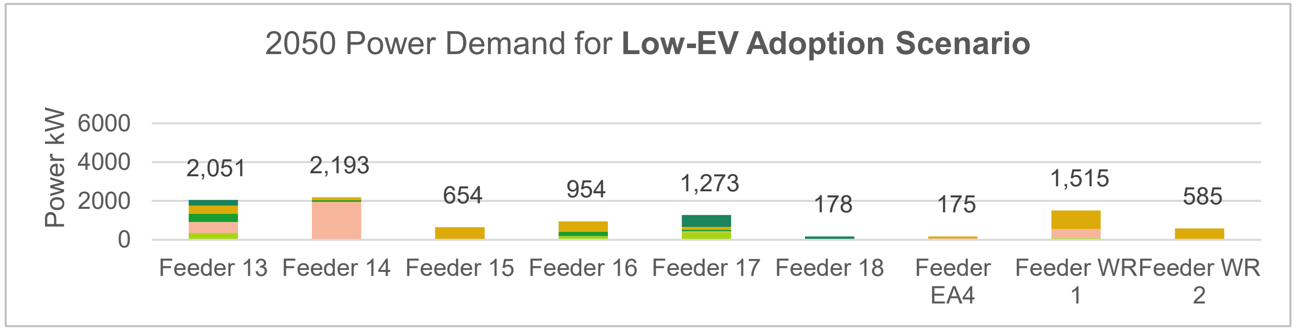
County-Owned Public Chargers

Shared-L2 on Private land

Fast Charging Corridor







Prioritize high-demand County sites

Build a tiered network with Level 2 + DCFC

Ensure equitable & ADA-accessible locations

Coordinate with DPU on grid capacity & managed charging

Streamline permitting and internal coordination

- Engage highly suitable private sites (hotels, retail, schools)
- Use public-private partnerships to expand public charging
- Pursue state, federal and utility funding opportunities
- Apply hybrid ownership/O&M models when beneficial
- Standardize vendor agreements & performance requirements

Expand charging access in multifamily housing

Support shared/community charging where home charging is limited

Educate residents on incentives and charging options

Next Steps

- Community Meeting to Present Draft Plan on December 3
- Open Public Comment Period (December 3rd – December 17)
- Integrate public comments into final plan
- Presentation of Final Plan to County Council, BPU, and ESB

General Questions

We welcome your feedback

County of Los Alamos

Staff Report

December 18, 2025

Agenda No.:

Index (Council Goals):

Presenters: Shannon Blair

Legislative File: **20985-25**

Title

Draft the 2026 Work Plan

Recommended Action

N/A

Body

The ESB will continue drafting the 2026 work plan. The final work plan will be submitted to County Council by January 31, 2026.

Attachments

A - Draft 2026 Environmental Sustainability Board Work Plan

2026 Work Plan for Los Alamos County Boards and Commissions

Board or Commission Name: Environmental Sustainability Board

Date Prepared: 11/17/25 **Date Approved by Council:**

Prepared By: Angelica Gurule

Purpose:
The purpose of the work plan is to provide a detailed outline of tasks, activities, timelines, and resources required by this Board or Commission to achieve its annual goals. The purpose of most boards is to gather public input, to review policy recommendations by staff when requested, and to make policy recommendations to the County Council.

Process Timeline:
November: County Council Strategic Planning
December: Boards and Commissions review and develop work plans (sole item on December agenda)
January: Finalize and submit work plans for Council review.
Due Date: January 31

Time Frame: This work plan will be accomplished in the following time frame:
January 1, 2026, through December 31, 2026

Members: List members, term start and end dates, and term number.

Member	Start/End Dates	Term (1st or 2nd)
Joseph Chandler	August 1, 2025 - July 31, 2027	2nd
Shannon Blair	August 1, 2025 – July 31, 2027	2nd
Sue Barns	August 1, 2024 - July 31, 2026	1st
Vacant		
Erik Loechell	August 1, 2025 – July 31, 2027	1st
David Hampton	August 1, 2025 – July 31, 2027	1st
Vacant		

Chairperson: Shannon Blair **Department Director:** Linda Matteson

Work plan developed in collaboration with Department Director? (Y/N)

Staff Liaison: Angelica Gurule **Administrative Support:** Jackie Salazar

Council Liaison: Ryn Herrmann

Work plan reviewed by Council Liaison? (Y/N)

1.0 Previous Calendar Year Work Plan Highlights

1.1 List the top five activities for the previous calendar year.

1.1.1	Supported and participated in the PEEC and County Earth Day Festivals
1.1.2	Collaborated with DPU on electrification and energy efficiency outreach and participated in the DPU/PEEC Water Festival
1.1.3	Supported and participated in the annual Clean Up Los Alamos Day
1.1.4	Supported and participated in High School Eco Club Summit
1.1.5	Hosted many booths and outreach activities at Farmers Markets, festivals and other County events to bring awareness to the Climate Action Plan and other sustainability issues.

1.2 List the top five accomplishments for the previous calendar year.

1.2.1	Supported the implementation of the Climate Action Plan and the 2050 carbon neutral goal and other sustainability issues through outreach/education activities, receiving reports and reviewing progress on goals, and providing information to Sustainability Manager, County Council and other Boards and entities.
1.2.2	Served on the Steering Committee and contributed to the selection of the Climate Action Marketing and Engagement Services provider. Initiated collaboration with the chosen firm.
1.2.3	Served on the Steering Committee and contributed to the development of the Fleet Conversion Plan and Community-Wide EV Charging Plans. The ESB also routinely received updates on the plans, and supported outreach, survey and community visioning meetings.
1.2.4	Evaluated single use plastic bags to include factors such as ability to recycle and other alternatives and cost to County to recycle and engagement to include local businesses and other interested parties. Presented findings to ESB and Council.

1.2.5	(I would prefer that this section read as follows): Reviewed, discussed and provided input on other County issues as they pertain to sustainability, including: Artificial Turf Study, Bicycle Working Group Study, LAC Energy Management proposal and Net Zero Airport program, Water and Energy Conservation Plan updates and Green Business Certification program.

1.3 List the lessons learned for the previous calendar year.

1.3.1	When designing surveys, make sure the questions are unbiased and that the results are statistically significant for reliable and data driven insights. In particular, engage the community as broadly and effectively as possible, to help ensure that results are representative of all demographic groups.
1.3.2	To fully understand the financial impacts, account for the true costs, not just the embedded carbon costs. Factor in how these costs affect residents and businesses directly.
1.3.3	Strive to connect with marginalized groups and individuals outside the sustainability field to ensure everyone's perspectives are considered, not just those who already support environmental initiatives.
1.3.4	Leverage Sustainability Manager Quarterly updates to council more consistently for council lead initiatives. This will help ensure the board stays on track with expectations and provides the opportunity to ask questions as they come up.
1.3.5	

2.0 Calendar Year 2026 Work Plan

2.1 List any special projects or assignments given to this Board/Commission by Council or the Department Director.

2.1.1	Support the Food Composting Program and Food Waste Prevention Education
2.1.2	Support Climate Action Plan Implementation for year two and ongoing recommendations including encouraging energy efficiency and electrification retrofits; promoting EV adoption; adopting green building standards; developing a commute trip reduction program (County facilities and operations); expanding community partnerships; conducting a vulnerability assessment; engaging in public climate education campaigns; supporting the local food system; conducting recycling and composting outreach and education; promoting green stormwater infrastructure and low-impact development; developing an EV infrastructure plan; expanding mixed-use, transit-oriented development policies. (I don't know if all of these belong here, or in section 2.2, below)

2.1.3 Receive updates and provide input on climate action education and outreach program from marketing contractor and County staff. Support activities of this program as requested.

2.1.4 Support the development of the Fleet Conversion Study and Community-Wide EV Charging Infrastructure Plan. Specific tasks include hosting public meetings to gather public input, select a member to serve on the steering committee, and educate the community on the development of the plans. Collaborate with Transportation and Board of Public Utilities as applicable. Which of these will continue in 2026?

2.1.5 At Council's discretion, continue to evaluate single use plastic bags to include factors such as ability to recycle and other alternatives and cost to County to recycle and engagement to include local businesses and other interested parties.

2.2 List other projects and/or activities being proposed by this Board/Commission, in priority order.

2.2.1

2.2.2 Support the solicitation of a qualified contractor to provide energy audit services of 50-100 homes. Specific tasks include Contributing to the development of the scope of work, select a board member to serve on the evaluation committee and steering committee, and educate the community on these services. Collaborate with Board of Public Utilities as applicable.

2.2.3 Request and receive updates on County environmental sustainability initiatives as appropriate, such as Integrated Pest Mgmt. plan, bio-solid composting, recycling, yard trimmings, Artificial Turf, Open Space Management, 2026 Comprehensive Plan update, Bee City, etc.

2.2.4 Provide relevant CAP overview and highlight actions that are relevant to the Boards, such as BPU, Transportation, Parks and Recreation, Planning and Zoning, and Health Council.

Revisit the 2025 ESB Work Plan on a quarterly basis. Should this be just once per year in summer?

2.2.5 DELETE

2.3 List the guiding documents or plans used by this Board/Commission.

2.3.1	Climate Action Plan Council Strategic Leadership Plan Water and Energy Conservation Plan

3.0 Identify interfaces with County departments and/or other Boards/Commissions that are necessary to achieve this work plan.

3.1	Collaborate with local businesses and organizations such as Chamber of Commerce, PEEC, LAPS, UNM-LA, LANL, and DOT
3.2	Partner with DPU to promote energy efficiency, water conservation and monitor the existing biosolid composting operation.
3.3	Provide liaisons to BPU, PRB, Transportation Board and other Boards as appropriate.
3.4	Collaborate with Environmental Services Division to provide education and outreach on waste Prevention and management, and participation in municipal food composting program.
3.5	

4.0 List any special events this Board/Commission plans to participate in that will support this work plan.

4.1	Participate in annual Clean Up Los Alamos Day

4.2	Participate in PEEC Earth Day Festival and host an Earth Day celebration for County employees
4.3	Participate in PEEC and DPU Water Festival
4.4	Participate in community events such as Science Festival, Summer Concert Series and Farmer's Market.
4.5	Engage with climate action marketing and engagement team to support community events and activities as proposed. Host public outreach events, talks, hybrid seminars, panel discussions, etc., to educate on CAP initiatives and other ESB priority topics.

5.0 List active Working Groups within this Board/Commission, if any, along with the purpose and member names of each one.

5.1	Los Alamos Sustainability Alliance - Ongoing - Up to 3 ESB members, currently Sue Barns and Angelica Gurule - The purpose is to support sustainability initiatives with the County and other community organizations, such as PEEC, Bee City, Seed Library, Department of Public Utilities and Environmental Services Division.
5.2	~~Education and Outreach Working Group (A)~~ Climate Action Marketing and Engagement steering committee – The purpose is to provide climate action outreach and education to the community in support of CAP goals. Susan Barns and Angelica Gurule.
5.3	~~Education and Outreach Working Group (B)~~ Fleet Conversion and Community-Wide EV Charging Plans steering committee - The purpose is to plan for electrification of the County vehicle fleet, as well as EV charging infrastructure for community members. Susan Barns and Angelica Gurule.
5.4	Plastic Bag Working Group The purpose is to evaluate single use plastic bags to include factors such as ability to recycle and other alternatives and cost to County to recycle and engagement to include local businesses and other interested parties. Shannon Blair, Joseph Chandler and Eric Loechell.
5.5	

Attachment A

Place an X in the column on the right if the Council priority is related to the work of the Board or Commission:

Quality Governance Quality governance is participatory, consensus-oriented, transparent, accountable, effective, efficient, and responsive to the present and future needs of stakeholders.	
Communication and Engagement	
Inform, educate, and solicit feedback from the community and boards and commissions on County projects, policies, and priorities to promote a culture of open communication and collaboration and foster exceptional customer service.	X
Intergovernmental, Tribal, and Regional Relations	
Collaborate and problem-solve with the County's major employers; community partner organizations; neighboring Pueblos; and regional, state, and national governmental entities.	
Fiscal Stewardship	
Maintain fiscal sustainability, transparency, and compliance with applicable budgetary and financial regulatory standards.	X
Operational Excellence Operational excellence involves having structures, processes, standards, and oversight in place to ensure that effective services are efficiently delivered within available resources and that services continuously improve.	
Effective, Efficient, and Reliable Services	
Deliver customer-focused, accessible, reliable, and sustainable services to the community through sound financial management, collaborative decision-making, and efficient implementation.	X
Infrastructure Asset Management	
Evaluate the County's assets and infrastructure and prioritize funding to first maintain and protect those investments and second to inform new investments.	X
Employee Recruitment and Retention	
Attract and employ diverse and highly qualified staff; retain staff through development opportunities, compensation, and benefits; and promote staff to address increasingly complex challenges.	X
Economic Vitality Economic vitality encompasses the ability of the community to diversify, develop, grow, and sustain the many elements necessary for a local economy to flourish.	
Housing	
Increase the capacity for new housing development and the amount and variety of housing types to meet the needs of a changing and growing population, particularly middle- and lower-income households.	
Local Business	
Encourage the retention of existing businesses, facilitate the startup of new businesses, and assist in opportunities for growth.	X
Downtown Revitalization	
Revitalize the downtown areas of Los Alamos and White Rock by facilitating development opportunities in accordance with the downtown master plans.	
Tourism and Special Events	
Sponsor special events, support major employer and community events, and promote tourism by enhancing amenities, utilizing facilities and contract services, and encouraging overnight stays.	X
Community Broadband	
Provide community broadband as a basic essential service that will enable reliable high-speed internet services throughout the County at competitive pricing.	

Quality of Life Quality of life is a reflection of general well-being and the degree to which community members are healthy, comfortable, welcomed, included, and able to enjoy the activities of daily living.	
Health, Wellbeing, and Social Services	
Improve access to behavioral, mental, and physical health and social services and amenities to address identified issues and promote wellbeing in the region.	X
Diversity, Equity, and Inclusivity	
Promote diversity, equity, and inclusivity through community awareness training, targeted events, and expanded opportunities for diverse interests.	X
Mobility	
Improve and expand access to, and all-ability accommodations for, alternative modes of travel including public transit, cycling, and walking amenities and services.	X
Educational, Historical, and Cultural Amenities	
Promote educational and cultural opportunities, in coordination with community partners, and provide for the preservation and restoration of historic buildings and the protection of archaeological sites.	X
Open Space, Parks, and Recreation	
Manage County open space and maintain and improve parks and recreation facilities, trails, and amenities as defined by adopted plans and approved projects.	X
Public Safety	
Ensure overall community safety through proactive and sustained implementation of police, fire hazard mitigation, and emergency response plans.	
Environmental Stewardship Environmental stewardship is the responsible use and protection of the natural environment through active participation in conservation efforts and sustainable practices in coordination with community and organizational partners.	
Natural Resource Protection	
Take actions to protect the wildlife and wildland interface, safeguard water, and mitigate tree loss in the community.	X
Greenhouse Gas Reduction	
Establish targets for achieving net-zero greenhouse gas emissions and integrate sustainability and resiliency practices into County policies and operations.	X
Carbon-Neutral Energy Supply	
Achieve carbon neutrality in electrical supply by 2040 through diversified carbon-free electric sourcing and phase out natural gas supply by 2070 through energy-efficient, all-electric buildings.	X
Water Conservation	
Reduce potable water use and increase non-potable water use and water harvesting for irrigation where suitable.	X
Waste Management	
Manage waste responsibly by diversion of solid waste from landfills through recycling, re-use, composting, and waste reduction programs and zero-waste education campaigns; and pursue efficient long-term solutions for disposal of solid waste.	X

Los Alamos, NM 87544
www.losalamosnm.us

Agenda No.:

Index (Council Goals):

Presenters: Angelica Gurule

Legislative File: **20987-25**

Title

Sustainability Manager Updates

Body

The ESB receives routine updates from the Sustainability Manager.

The December Sustainability Newsletter focused on energy efficiency and holiday cardboard waste solutions, with subscribers increasing from 117 to 120.

1. Electric Vehicle Charging Infrastructure
    a. The County is constructing six Level 2 - EV Chargers at Municipal Building to serve the County fleet and the community.
        i. The ChargePoint amendment was approved by Board of Public Utilities on April 2 and County Council on April 8.
        ii. The County Council approved the construction task order on July 8, 2025. Construction will begin by August 2025.
        iii. The kickoff meeting with R&M construction was held on Thursday, August 14. R&M will provide a project schedule based on equipment lead times and obtaining permits.
        iv. September 5 - R&M received permits from NM CID. We are awaiting the project schedule. The contractor is investigating lead times for the vault box that is needed for the project.
        v. October 13 - Construction began and is estimated to be complete December 31st.
        vi. November - The construction crew poured concrete curb and gutter, ADA parking spaces, and installed bollards.
        vii. December - The chargers have been installed, and parking spaces were repainted from blue to green. The site has been energized and the chargers will be commissioned.
    b. Los Alamos County received NMDOT DC Fast Charging Grant funding. The project will construct two DC Fast Chargers at Mesa Public Library, with each port providing a minimum of 150 kW.
        i. September 30 - Council approved grant agreement and passed a Resolution.

ii. November/December - Public Works employees completed the ADA design. Utilities engineers are working on electrical design.

2. Fleet Conversion and Community-Wide EV Charging Plan
    a. The County had the kick-off meeting for the Fleet Conversion and Community-wide EV Charging Plan.
    b. County Council received an overview on March 25th and BPU on April 2nd.
    c. Stantec met with Public Works and Community Services Department on May 12 to understand vehicle utilization.
    d. Community Visioning Meeting was held May 12 in Council Chambers and virtually.
    e. The survey opened on May 28, 2025, and closed on July 31, 2025.
    f. Stantec conducted site visits on July 10th and 11th on County property to understand feasibility, identifying potential EV charging locations and reviewing electric capacity.
    g. Staff reviewed modeling for Fleet Conversion. An update on the study was presented to ESB, BPU, and County Council.
    h. Stantec presented the draft report to ESB, BPU and County Council in December and the community meeting was held on December 3rd from 6-8pm in Council Chambers and virtually. The public comment period on the draft report began December 3rd and remained open through December 17th.

3. Education and Outreach
    a. Finalizing scope of work to provide climate action marketing and engagement services for the community. The Request for Proposals was advertised on April 29th, and a preproposal meeting was held on May 7th.
    b. The County received 11 proposals; the evaluation committee is in the process of reviewing proposals.
    c. County Council approved the agreement with Modern Entrepreneur Firebrand Creative on October 7.
    d. Firebrand and the County Steering Committee held a kickoff meeting.
    e. Firebrand developed a draft work plan and will began developing messaging that will be tested in local focus groups. Our goals are to host focus groups that are representative of the community demographics.
4. Municipal food composting program is on hold; the County is currently working through logistics.
5. I want to give a special thank you to PEEC Nature Center, Chamisa and Barranca Elementary School students and teachers, Eco Club Members and Los Alamos County employees and community members for contributing to this year's holiday tree. All ornaments were crafted with recyclable materials.

Attachments

A - Residential Sustainability Report -November 2025

Sustainability Manager Updates

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A - Residential Sustainability Report -November 2025

Residential Sustainability Report

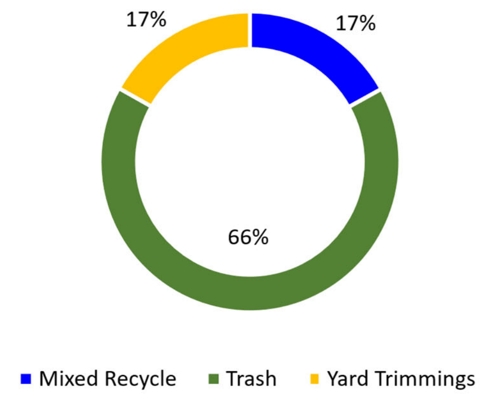
Service Period: November 2025

November Diversion Rate: 34%

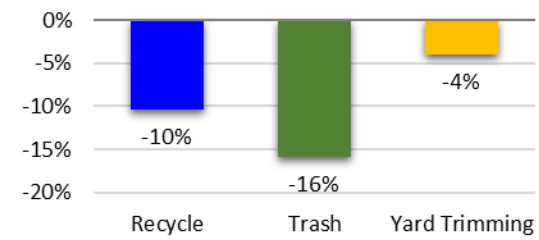
LOS ALAMOS

The *diversion rate* is the percent of recyclable and compostable material diverted from the landfill.

Monthly Collection Report

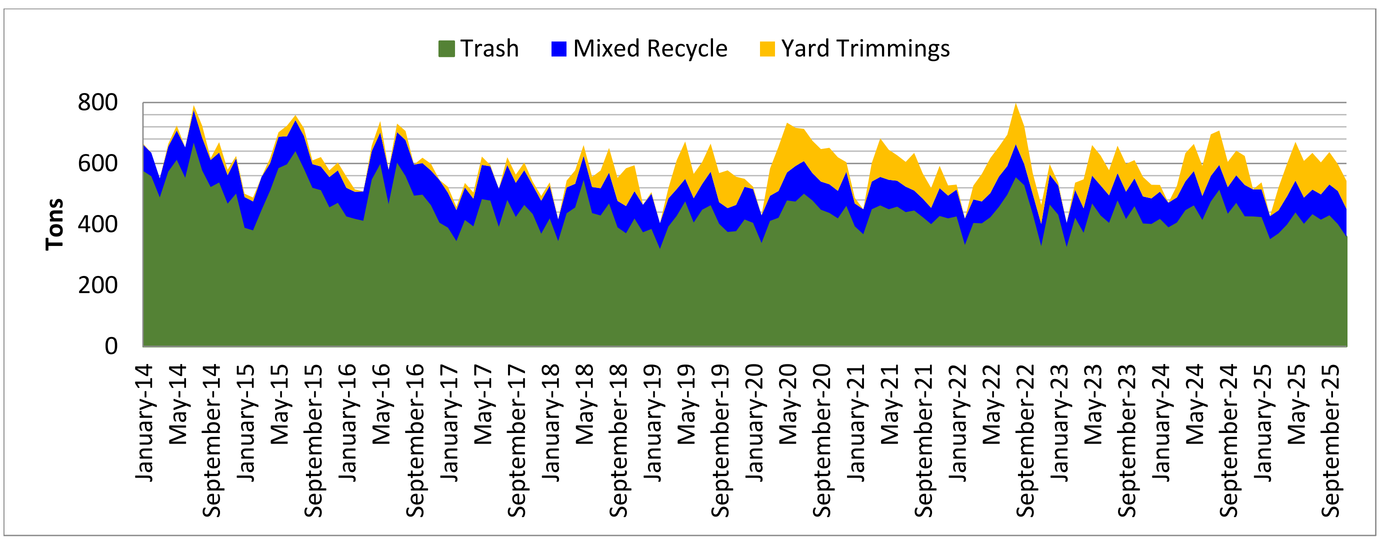


% Change Previous Year

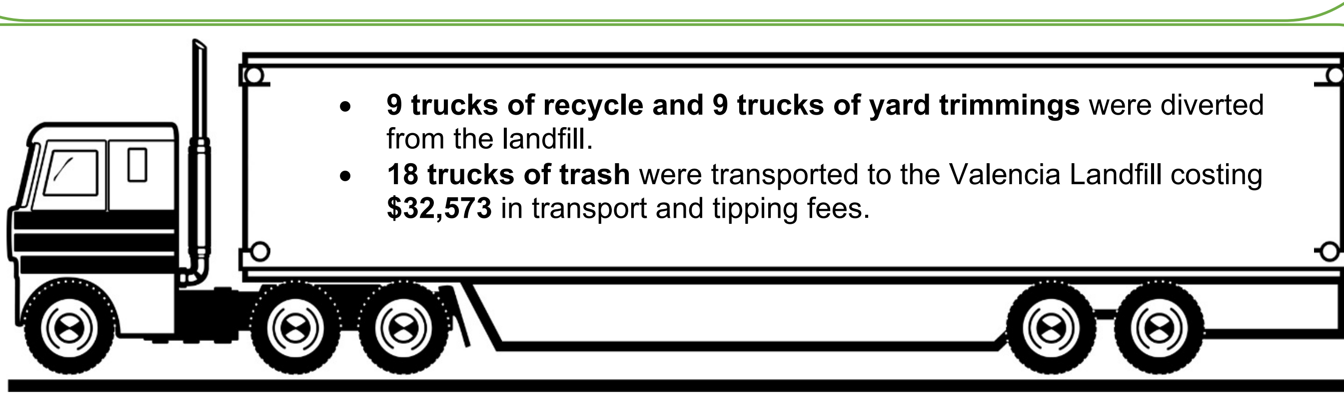


Yard Trimming	95.13	91.35
Recycle	102.51	91.88
Trash	426.66	359.06

In November by recycling and composting Los Alamos County reduced GHG emissions by ~494 tons*



In 2025 by recycling and composting Los Alamos County reduced GHG emissions by ~5,283 tons*



- **9 trucks of recycle and 9 trucks of yard trimmings** were diverted from the landfill.
- **18 trucks of trash** were transported to the Valencia Landfill costing **$32,573** in transport and tipping fees.

For more information contact Environmental Services Division at 505.662.8163 or email solidwaste@lacnm.us

**GHG emissions calculated using https://www.stopwaste.co/calculator*