



County of Los Alamos

1000 Central Avenue
Los Alamos, NM 87544

Agenda - Final Board of Public Utilities

*Cornell Wright, Chair; Stephen McLin, Vice-chair;
Eric Stromberg, Steve Tobin and Carrie Walker
Members Philo Shelton, Ex Officio Member
Steven Lynne, Ex Officio Member
James Robinson, Council Liaison*

Wednesday, November 17, 2021

5:30 PM

Zoom Webinar:
<https://us06web.zoom.us/j/84866239575>

REGULAR SESSION

Members of the public wishing to attend may participate and provide public comment via Zoom by visiting the link or calling one of the phone lines listed below:

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PUBLIC COMMENTS:

Please submit written comments to the Board at bpu@lacnm.us. Oral comments are accepted during the two periods identified on the agenda and after initial board discussion on a business item, prior to accepting a main motion on an item. These should be limited to four minutes per person. Requests to make comments exceeding four minutes should be submitted to the Board in writing prior to the meeting. Individuals representing or making a combined statement for a large group may be allowed additional time at the discretion of the Board. Those making comments are encouraged to submit them in writing either during or after the meeting to be included in the minutes as attachments. Otherwise, oral comments will be summarized in the minutes.

1. CALL TO ORDER

2. PUBLIC COMMENT

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

3. APPROVAL OF AGENDA

4. BOARD BUSINESS

4.A. Chair's Report

4.B. Board Member Reports

4.C. Utilities Manager's Report**4.D. County Manager's Report****4.E. Council Liaison's Report****4.F. Environmental Sustainability Board Liaison's Report****4.G. General Board Business**

4.G.1. [15001-21](#) UAMPS/NuScale Presentation by Dr. Jose Reyes

Pages 5 -7

Presenters: Steve Cummins

4.G.2. [15002-21](#) Los Alamos Resiliency Energy and Sustainability (LARES) Interim Report

Pages 8 -179

Presenters: Philo Shelton

4.G.3. [14796-21](#) Begin 2021 Board of Public Utilities Annual Self-evaluation -and- Revise
Appendix M (Annual Self-Evaluation Template) of the BPU Procedural Rules.

Pages 180 - 188

Presenters: Cornell Wright

4.H. Approval of Board Expenses

There are no board expenses.

4.I. Preview of Upcoming Agenda Items

[14745-21](#) Tickler File for the Next Three Months

Pages 189 - 192

Presenters: Board of Public Utilities

5. PUBLIC HEARING(S)

These are no public hearings scheduled.

6. CONSENT AGENDA

The following items are presented for Board approval under a single motion unless any item is withdrawn by a member for further Board consideration in the "Business" section of the agenda.

~CONSENT MOTION~

I move that the Board of Public Utilities approve the items on the Consent Agenda as presented and that the motions in the staff reports be included in the minutes for the record.

OR

I move that the Board of Public Utilities approve the items on the Consent Agenda as amended and that the motions contained in the staff reports, be included in the minutes for the record.

6.A. [14741-21](#)
Pages 193 - 202

Approval of Board of Public Utilities Meeting Minutes

Presenters: Board of Public Utilities

6.B. [AGR0794-21](#)
Pages 203 - 245

Approval of General Services Agreement No. AGR 21-57 with IC System in the amount of fourteen and one-half percent (14.5%) of any recovered amount on all referral accounts for the Purpose of Accounts Receivable Collection Services.

Presenters: Heather Garcia

7. BUSINESS

7.A. [15085-21](#)
Pages 246 - 250

Recommendation to Council for Approval and Adoption of Incorporated County of Los Alamos Code Ordinance No XX-XXX, An Ordinance Amending Chapter 40, Article II, Division 2, Section 40-63 to Extend the Option of Redirecting Department of Public Utilities Profit Transfers by Council Action to the Joint Utility System Fund for Purposes Designated by the Council.

Presenters: Steve Cummins

7.B. [15027-21](#)
Pages 251 - 306

Presentation of the 2021 Electric Reliability Plan

Presenters: Steve Cummins

7.C. [15055-21](#)
Pages 307 - 308

Discussion on San Juan Replacement Energy Plan for the Current ECA Term (led by Jordan Garcia, Power System Supervisor)

Presenters: Steve Cummins

8. STATUS REPORTS

8.A. [14749-21](#)
Pages 309 - 323

Monthly Status Reports

Presenters: Philo Shelton

- 8.B. [14751-21](#) Department of Public Utilities Quarterly Report - FY22/Q1
Page 324 (compiled by Julie Williams-Hill, Public Relations Manager)

Presenters: Philo Shelton

9. **PUBLIC COMMENT**

This section of the agenda is reserved for comments from the public on any items.

10. **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 Human Resources at 505- 662-8040 as soon as possible prior to the meeting. Public documents, including the agenda and minutes can be provided in various accessible formats. Please contact the Department of Public Utilities at 505-662-8132 if a summary or other type of accessible format is needed.

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County of Los Alamos

Staff Report

November 17, 2021

Los Alamos, NM 87544
www.losalamosnm.us

Agenda No.:

Index (Council Goals): DPU FY2021 - 1.0 Provide Safe and Reliable Utility Services; DPU FY2021 - 3.0 Be a Customer Service Oriented Organization that is Communicative, Efficient, and Transparent; DPU FY2021 - 6.0 Develop and Strengthen Partnerships with Stakeholders

Presenters:

Legislative File: 15001-21

Title

UAMPS/NuScale Presentation by Dr. Jose Reyes

Recommended Action Motion

No action required. This is a presentation with time for board member questions and receive answer from the UAMPS/CFPP/NuScale team.

Body

Dr. Jose Reyes will make a brief presentation regarding the small modular reactor up-rate and reactor fuel and then be available for questions. The attached letter provides a summary of the selection and development process of the nuclear fuel assembly used in the NuScale Power Module reactor as well as a summary of the NRC review process. Also, Mason Baker with UAMPS and Shawn Hughes, project director for the Carbon Free Power Project (CFPP) will be present to answer questions by the BPU.

Attachments

A - Letter from NuScale dated 10/26/21

A copy of Dr. Reyes' presentation was not available prior to publication of the meeting packet. A copy will be distributed to the board on November 17th or as soon as it is available.



October 26, 2021

Ms. Jackie Coombs
CFPP Member Communication
155 North 400 West,
Suite 480
Salt Lake City, UT 84103

RE: Question(s) received by Los Alamos County Utilities Board at July 7, 2021 Meeting

Dear Ms. Coombs,

Please find below a letter for your review regarding questions the Los Alamos County Utility Board received on July 7, 2021. We would like to transmit this letter to the Los Alamos County Utility board during the week of November 1st after incorporating any suggestions or feedback you may have regarding the content. Please feel free to email me or call me at your convenience.

During the referenced meeting, the board was asked to provide additional qualification background associated with the use of NuFuel HTP2™, the nuclear fuel assembly used in the NuScale Power Module reactor. This letter provides a high level summary of the NuFuel HTP2™ selection and development process as well as a summary of the NRC review process and links to the NRC staff Safety Evaluation Report with regard to the acceptable use of NuFuel HTP2™ in the NuScale small modular reactor (SMR).

Prior to NuScale's submittal of its Design Certification Application to the U.S. Nuclear Regulatory Commission (NRC), NuScale selected Framatome Fuels North America (f/k/a AREVA) as the fabricator of NuFuel HTP2™. NuFuel HTP2™ was specified and developed by NuScale, in collaboration with Framatome, to leverage Framatome HTP™ fuel design and operational experience. The NuScale fuel assembly is premised on the Framatome HTP™ fuel design. Framatome has been manufacturing nuclear fuel for 52 years. Over 20,000 Framatome 17x17, HTP™ assemblies have been deployed in 52 reactors supporting power generation in 11 countries. NuScale's NuFuel HTP2™ fuel assembly design uses industry standard ceramic UO2 nuclear fuel pellets contained in Framatome's proprietary M5® cladding. More than five million M5® clad fuel rods have been used in 84 reactors around the globe.

All components of the NuFuel HTP2™ assembly have significant and relevant operating experience that demonstrates their suitability for use in the NuScale SMR. Several prototypic NuFuel HTP2™ fuel assemblies were manufactured by Framatome and underwent their standard suite of mechanical and hydraulic testing to support the NuScale Design Certification Application. NuScale has no plans to offer any fuel design other than NuFuel HTP2™.



NRC NUREG-0800¹, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition”², is the regulatory guidance the NRC staff utilized to review the NuScale design basis presented in its Design Certification application. NUREG-800, chapter 4.2, Fuel System Design, revision 3, specifies the criteria the NRC staff used to review the application of NuFuel HTP2™ in the NuScale SMR including the review of relevant operating experience and direct experimental and testing results.

The NRC staff Safety Evaluation Report (SER)² for NUREG-800 Chapter 43 NuFuel HTP2™ concludes that NuFuel HTP2™ is acceptable for use in a NuScale SMR. In particular, Section 4.2.4.3.2 Testing, Inspection and Surveillance Plans, of the SER, states the following:

The staff compared the NuScale fuel assembly components with the AREVA operational fleet database and notes that significant experience has been developed for the same components. The staff further notes that the NuScale plant operational parameters important to fuel behavior are not significantly different from those in the AREVA operating fleet; therefore, the staff finds that the AREVA operating experience applies to NuScale fuel assemblies.

Chapter 4 of the Safety Evaluation Report provides a wealth of information should you have more questions on the use of NuFuel HTP2™ in a NuScale SMR.

¹ Link to NUREG-800 is as follows: <https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0800/cover/index.html>

² Link to NRC Safety Evaluation Report for Chapter 4.2 is as follows:
<https://www.nrc.gov/docs/ML2020/ML20205L411.pdf>

Best Regards,

Andy Lingenfelter

Manager, Nuclear Fuel Engineering

Office: 541-452-7920

Cell: 541-243-3166

alingenfelter@nuscalepower.com

CC: Larry Linik, Allyson Callaway, Dr. Robert Gamble, Dr. Jose Reyes, Carrie Fosaaen, Mike Miller, and Ryan Dean



County of Los Alamos

Staff Report

November 17, 2021

Los Alamos, NM 87544
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Index (Council Goals): DPU FY2020 - 1.0 Provide Safe and Reliable Utility Services; DPU FY2021 - 3.0 Be a Customer Service Oriented Organization that is Communicative, Efficient, and Transparent; DPU FY2021 - 5.0 Achieve Environmental Sustainability; DPU FY2021 - 6.0 Develop and Strengthen Partnerships with Stakeholders

Presenters:

Legislative File: 15002-21

Title

Los Alamos Resiliency, Energy and Sustainability Interim Report

Recommended Action Motion

Provide feedback to LARES before their final document is delivered to County Council.

Body

On January 26, 2021, Los Alamos County Council approved the formation of the Los Alamos Resiliency Energy & Sustainability Task Force (LARES). The purpose of the LARES Task Force is to serve as an advisory body to the County Council for the purpose of recommending ways for the County as a whole, including government, businesses, and residents, to achieve net zero greenhouse gas emissions and advance other sustainable practices in the face of climate change.

Per the Charter, "The Task Force will build a comprehensive resiliency, energy, and sustainability "white paper" or strategic plan. This plan will present specific, measurable, achievable, and timely recommendations for how Los Alamos can achieve or exceed the goals set forward by our governor in the New Mexico Climate Change Executive Order 2019 which complies with the 2015 Paris Agreement.

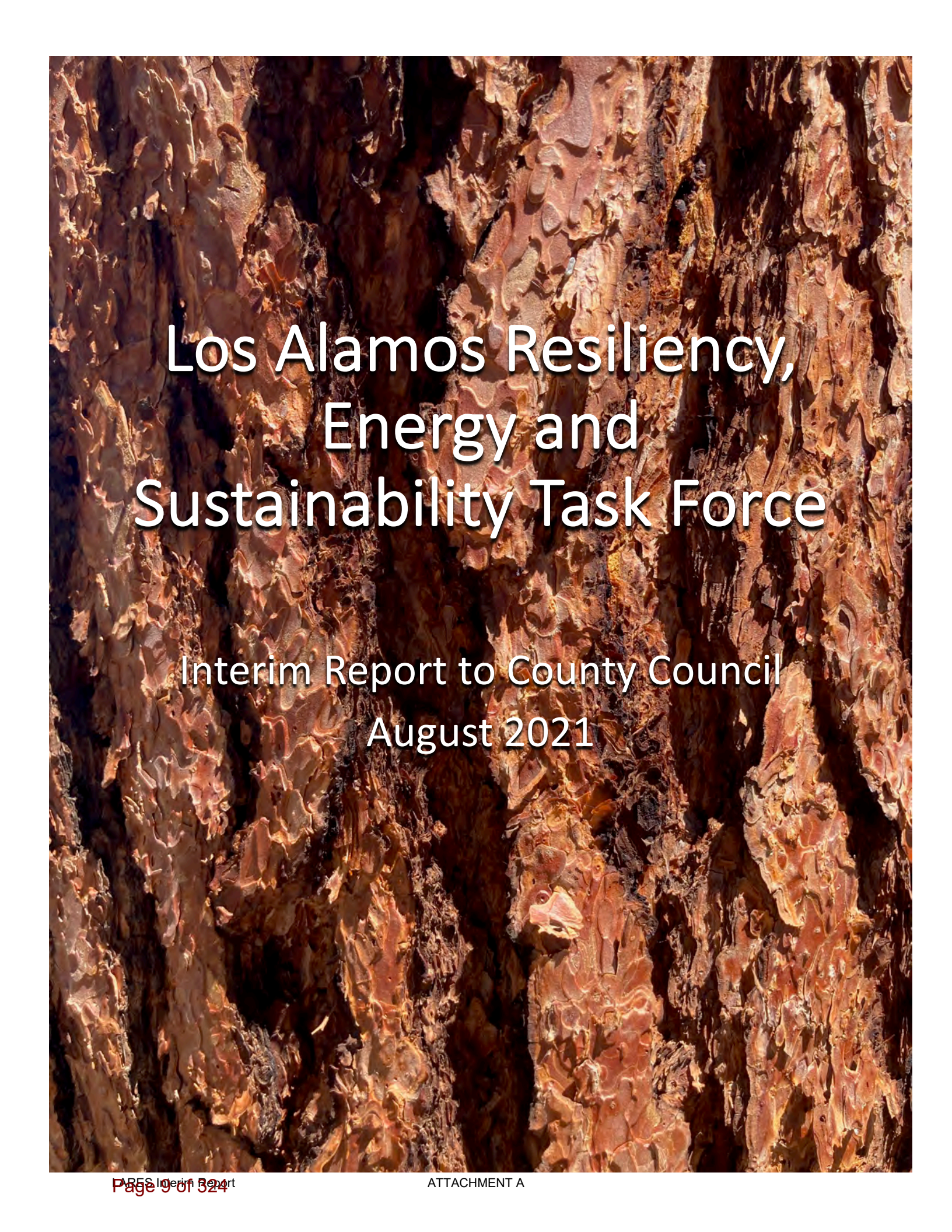
The Los Alamos Resiliency Energy & Sustainability Task Force approved the interim report on August 6, 2021. The interim report contains six sections of recommendations: General Recommendations, and recommendations in the areas of Community Planning & Zoning, Electricity Supply and Demand, Natural Gas Reduction, Transportation & Mobility, and Waste, Consumption & Natural Resources, all aiming to reduce our carbon footprint and mitigate climate change. The General Recommendations are presented in order of priority and action: Recommendations 2-5 will depend on recommendations zero (0) and one (1) being put into place.

The Task Force seeks to gain Board of Public Utilities feedback on the interim report as they continue to research and develop recommendations to reduce greenhouse gas emissions. The final report will be delivered to County Council by February 1, 2022.

Attachments

A - LARES Interim Report

B - LARES Interim Report Presentation



Los Alamos Resiliency, Energy and Sustainability Task Force

Interim Report to County Council
August 2021

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I. Personnel

Los Alamos County Councilors

Randall Ryti, Chair

James Robinson, Vice-Chair

Denise Derkacs

David Izraelevitz

David Reagor

Sarah Scott

Sean Williams

Task Force Members

Katie Leonard, Chair

Robert Gibson, Vice Chair

Sue Barns

Elizabeth Daly

Chick Keller

Roy Michelotti

Heidi Rogers

Steve Tobin

Community Subcommittee Members

Lia Brodnax (Natural Gas Reduction/Community Planning & Zoning)

Skip Dunn (Community Planning & Zoning/Natural Gas Reduction)

Ben Hill (Natural Gas Reduction/Community Planning & Zoning)

Jack Kennison (Waste, Consumption & Natural Resources)

Daniel Leonard (Electricity Supply & Demand)

Dina Pesenson (Waste, Consumption & Natural Resources)

Oral Saulters (Waste, Consumption & Natural Resources)

Greg White (Natural Gas Reduction/Community Planning & Zoning)

Los Alamos County Staff

Angelica Gurule, Environmental Services Manager

Anne Laurent, Director of Public Works

Amy Danforth, LAC Senior Office Specialist

II. Los Alamos Resiliency, Energy and Sustainability (RES) Task Force Charter

I. Purpose

The Los Alamos Resiliency, Energy and Sustainability Task Force (“Task Force”) was initiated through an action of the County Council on December 15, 2020, when the Council formally accepted the Citizen Petition requesting action. The Task Force will serve as an advisory body to the County Council for the purpose of recommending ways for the County as a whole, including government, businesses, and residents, to achieve net zero greenhouse gas emissions and advance other sustainable practices in the face of climate change. This will be a working committee; members will be responsible for collaborating with each other and Los Alamos County stakeholders.

II. Scope of Work

The Task Force will build a comprehensive resiliency, energy, and sustainability “white paper” or strategic plan. This plan will present specific, measurable, achievable, and timely recommendations for how Los Alamos can achieve or exceed the goals set forward by our governor in the New Mexico Climate change Executive Order 2019 which complies with the 2015 Paris Agreement. We expect this comprehensive plan to include Los Alamos community recommendations while incorporating the goals and work that is being undertaken in other cities in New Mexico that are seriously tackling these issues. The subjects addressed by the report will include, but is not limited to, the following:

- Consolidate current global, federal, state, and local greenhouse gas (GHG) goals, mandates, and recommendations.
- Review, validate, and expand as necessary existing data and analyses of GHG emissions associated with primary fuels (coal, natural gas, and petroleum).
- Study and recommend County government policy and other steps to phase out use of natural gas consistent with Department of Public Utilities conservation goals.
- Study and recommend practices to reduce energy use.
- Study and recommend practices for other sectors (e.g., building design and planning) as time permits and information is available.
- Study and quantify economic impacts of the adoption of recommended practices and policies in terms of initial investment and costs over time.
- Make recommendation to apply to all of the above to the County as a whole.

The Task Force will present an interim report of their findings and recommendations by August 1, 2021, with final recommendations, including public commentary and input, by February 1, 2022.

III. Task Force Representation

The Task Force will be composed of volunteers and is open to all County residents and County staff who are interested in producing a comprehensive “white paper” for the County. The ideal representation will include at-large community members and current or former representatives or liaisons from the following boards: Environmental Sustainability Board, the Board of Public Utilities, the Planning and Zoning Commission, and the Transportation Board. One member of the County Council and the Los Alamos County Manager or designee will serve as liaisons to the Task Force. The total number of members shall not exceed nine (9) persons. Task Force members will be individually appointed by the County Council after having submitted letters of interest.

IV. Charter and Member Term

The term of this Charter shall be for shall be for THREE HUNDRED AND NINETY (390) days from the date this Charter is adopted, and the term of each member shall run until the term of the Charter expires. If during the term of the Charter a member resigns or is otherwise unable to serve, Council shall appoint a new member to fill that member’s remaining term.

V. Quorum

A quorum of the Task Force is defined as a simple majority of the appointed Task Force members. Task Force actions can be taken and considered valid only if a quorum has been established at the meeting. Information can be shared during a meeting even if a quorum is not established.

VI. Resources

The County will provide a staff project manager responsible for coordinating the Task Force in its exploration and development of implementation actions including meeting logistics and other needs. Other County staff will be available based upon identified needs or specific topics of discussion but all staff members will be non-voting members of the Task Force.

VII. Meetings

Meeting dates and frequency will be established by the Task Force and County staff. A Chair and Vice Chair shall also be appointed at the first meeting. Action minutes shall be made and kept for each meeting of the Task Force. The public shall be given notice of any meeting of the Task Force at least 72 hours in advance of any meeting through coordination with the County’s Public Information Officer. All meetings may be attended by the public, who will be permitted and encouraged to comment.

VIII. Subcommittees

The Task Force may form subcommittees as needed. These may include content experts and interested parties. Subcommittee reports will be available to the public and presented to the full Task Force. All recommendations to the County Council should be that of the full Task Force, as indicated by a majority vote of Task Force members. The subcommittees may include persons not otherwise identified as a member of the Task Force. However, subcommittee membership does not convey an ability to vote on any recommendations. Subcommittee formation may be for the purpose of research, education, and outreach.



View of the Sangre de Christos from North Mesa

III. Glossary of Terms

ACT – Atomic City Transit
BACT – Best Available Control Technology
CB – Consumption-Based
CAP – Climate Action Plan
CO₂ e – Carbon Dioxide Equivalent
CSCNM – Coalition of Sustainable Communities New Mexico
EV – Electric Vehicle
GHG – Greenhouse Gas(es)
HFC – Hydrofluorocarbon
LAC – Los Alamos County
LAHP – Los Alamos Housing Partnership
LANL – Los Alamos National Laboratory
LAPS – Los Alamos Public Schools
LARES – Los Alamos Resiliency, Energy and Sustainability (Task Force)
LRWSP – (Los Alamos County) Long-Range Water Supply Plan
NG – Natural Gas
RFP – Request for Proposal
RTD – Regional Transit District
SOV – Single-Occupant Vehicle
T-Board – Transportation Board
WCNR – Waste, Consumption & Natural Resources Subcommittee

IV. Time Frames

Immediate (3 months-1 year)
Short-Term (1-2 years)
Medium-Term (3-5 years)
Long-Term (6-10 years)
Ongoing (10+ years)



Lovely Los Alamos

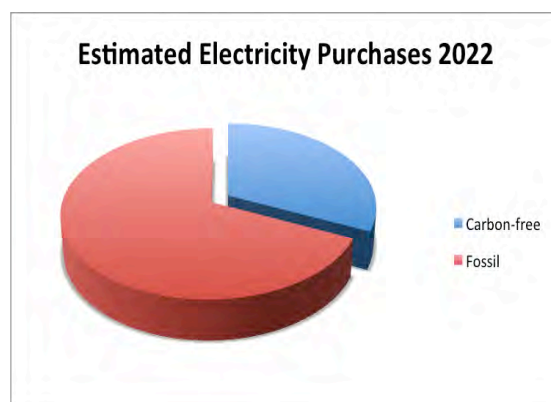
V. Executive Summary

Climate change represents an existential threat to our community, with impacts becoming evident at an accelerating rate: hotter temperatures in the summer, reduced precipitation year-round, and animals seeking food are more present in our town.

This Interim Report contains six sections of recommendations: General Recommendations, and recommendations in the areas of Community Planning & Zoning, Electricity Supply and Demand, Natural Gas Reduction, Transportation & Mobility, and Waste, Consumption & Natural Resources, all aiming to reduce our carbon footprint and mitigate climate change.

Los Alamos County has already taken some action to address climate change in several ways: Atomic City Transit helps residents get around without driving their own cars, we have increased our renewable energy sources, the Eco Station helps us recycle materials and mulch yard waste, and LAC has started to invest in electric vehicles for its fleet. We applaud these efforts. It is time, however, to go further: to create our own Climate Change Action Plan and to follow it. In order to create this plan, we will need to perform a baseline GHG study from which we will set reduction targets and timelines. Success in meeting these reduction goals will depend on support from County Council, LAC staff, local businesses, schools, and residents.

The Board of Public Utilities (BPU) made the original commitment to become a net zero electricity provider in 2013. Since that time, the Department of Public Utilities (DPU) and BPU have made measurable progress in decreasing Los Alamos County's (LAC) carbon footprint by entering into the Power Purchase Agreement (PPA) with Uniper, which goes into effect in 2022. This is important progress. The accompanying figure shows the distance LAC still has to go. The Carbon-Free Power Plan (CFPP), will only increase the carbon-free portion of electricity generation by a maximum of ~10% once fully operational.



To effectively implement a GHG reduction plan, the County must address the building sector. The vehicle for this change is through the county building codes which affect new buildings, both residential and commercial, and retrofit projects that require permits. The County should consider incorporating a local overlay code addressing steps to reduce GHG emissions and other sustainability issues. Given the County is essentially built out in terms of housing, an incentive program is needed to voluntarily initiate GHG reduction changes. The County should consider developing an interest-bearing loan program for retrofits for those whose incomes exceed the low-income threshold served by the Los Alamos Housing Authority. Increased insulation and replacement windows should be targeted first to reduce energy usage and assist in the transition

to cleaner electric energy sources. All of our recommendations have been implemented in other jurisdictions.

Virtually the entire Los Alamos community is heated by combustion of natural gas (NG). Residential space heating is the majority of that demand. Both NG itself, when it escapes, and the carbon dioxide it produces, when burned, are GHG that cause climate change. The Board of Public Utilities has adopted a strategic goal to phase out NG use in Los Alamos by 2070. No single “silver bullet” will replace NG, though technology, economics, and regulatory factors will evolve to ease this difficult task. Technically and economically viable approaches to new construction and existing homes already exist. NG-fired furnaces and water boilers can be replaced by modern air-sourced electric heat pumps, which also provide cooling (air conditioning). Water heating, cooking, and NG pilot lights can also be replaced by more efficient electrical means. Peak electrical demand may exceed present electric supply system capacity. Distributed (“rooftop”) solar photovoltaic generation and storage may be necessary.

GHG emissions caused by transportation make up roughly 30% of overall emissions, and single-occupant vehicles are a major contributor. Encouraging and incentivizing the use of local and regional public transportation and carpooling, as well as commuting on bicycles, are important ways to reduce GHG release. Encouraging the purchase of electric vehicles (EV) for County, businesses, and residents is another key way to reduce transportation-based GHG emissions: we must also supply adequate EV charging stations around town to support this transition from gas-powered vehicles to EVs. Eventually all gas-powered equipment (lawn/garden, golf carts, etc.) will need to be powered by carbon-free sources. In addition, installing shaded parking and implementing a “no idling” policy will reduce unnecessary emissions from vehicles.

In order to comprehensively address Los Alamos County’s GHG emissions, as well as plan for resiliency and sustainability in the face of climate change, it is necessary to consider broadly the activities and resources of the community. We must not overlook the areas of waste management; consumption of goods, food and services; refrigerants and other fluorinated gases; water and wastewater; and management of natural spaces, soil, land use, deforestation/reforestation, and carbon sinks. *Numerous studies of cities around the US have shown that these sources of emissions are often 50% or more of a community’s GHG footprint.* In addition, addressing these areas not only provides opportunities for GHG reductions, but also enhancement of climate change resiliency and sustainability, economic benefits, and improvements to health, equity, environment and quality of life.

Community education and outreach will be critical to educate LAC employees and residents about reducing their carbon footprints and to encourage them to make GHG-reducing lifestyle choices.

VI. General Recommendations

The General Recommendations are presented in order of priority and action: Recommendations 2-5 will depend on Recommendations "Zero" and 1 being put into place.

Recommendation "Zero:" Establish "Net Zero" GHG emissions as a long-term goal for County government and the community (exclusive of LANL) as a whole.

Recommendation 1: Perform a baseline GHG emissions study from which to set reduction targets and other goals and against which to measure progress. Consider hiring a consulting firm to gather baseline data, to create accountability metrics, and to generate strategy recommendations to ensure we have a transparent accountability system for measuring progress. This should be conducted within one year of this Task Force's submission of final recommendations.

Recommendation 2: Create a Climate Change Action Plan which includes baseline data, GHG reduction targets, and climate mitigation strategies, to be updated every 5 years or as needed.

Recommendation 3: Produce an annual Climate Change Action Report to be presented to County Council and shared with the community. Publicity and outreach to residents so they are aware of its contents will be important, much like the Annual Water Quality Report. A condensed version (1-2 page) of the report should be made available to all residents.

Recommendation 4: Create an on-going citizen body tasked to advise Council on reducing GHG emissions. This could be, e.g., a continuation of the current RES Task Force in some form, a new standing advisory board, or a broadening of the charter of the existing Environmental Sustainability Board, ensuring all aspects of County operations and community education support the mission.

Recommendation 5: Integrate the goal of net zero GHG emissions, practices to achieve net zero, and other sustainability practices into all County government operations and interactions with the community. Provide information, recommendations, and education to the community. To support this mission, appropriate staffing additions or redirection may be necessary, as is being done by other communities. Point(s) of contact for the community and other LAC boards and departments should be established and clear.

All of these recommendations will require community outreach and education.

VII. Recommendations Overview

Below is a consolidated list of each subcommittee's recommendations. For further detail (background information, data, examples in other communities, figures, etc.), please refer to that subcommittee's section.

Community Planning & Zoning

1. Develop an Overlay Code Superseding the Current Building Code with Energy Improvements and Connections to Help Transition to a Cleaner Electrical Energy Source.
2. Consider a "Design-To" Concept for Changes Rather Than Audits or Certifications for LEED or HERs Compliance.
3. Educate Contractors and Home Owners on the Importance of Selecting Energy Star Appliances. Listen to and Address Their Concerns.
4. The County Should Set an Example with its Purchasing and Contracting by Incorporating an Evaluation of CO₂ Equivalents in its Selection Process.
5. The County Should Advocate to the State, Supporting Greater Flexibility in Code Requirements With Respect to "Replacement" Options. Current Code Requirements for a Replacement Window Cost 50% More than a Standard Double-Pane Window. The 2018 Code Typically Triggers Triple-Pane Windows Rather Than Double-Pane Windows. Items Like This Disincentivize Voluntary Retrofit Replacements to Reduce GHG Emissions.
6. The County Should Include Some Commercial Zoning in Every Section of Town for a Gathering Place, such as Coffee Shop or Store, to Minimize Trips and Encourage Community Gathering.
7. Develop a Loan Program, Repaid Through Utility Payments, for Existing Home Retrofits for the Addition of Insulation and Replacement of Windows and Including Other Recommendations to Reduce GHG Emissions. The Program Should Address All Costs Associated with Retrofits, Including Mold remediation, Asbestos Removal, etc.

Electricity Supply & Demand

1. The County Council and the BPU Should Formalize the Net Zero Carbon Electrical Power Commitment and Adopt a More Ambitious Timeline to Make LAC Net Carbon Zero Electricity by 2035.
2. The DPU and BPU Should Evaluate Options and Develop a Plan Regarding the LANL/LAC Power Generation Relationship and What it Means in Terms of LAC's Achievement of its Net Carbon Zero Goals.
3. DPU/BPU Should Develop an "Intermittency Management Strategy" Including But Not Limited to Demand Management, Energy Storage Resources, Curtailment of Generation, and Time-of-Use metering.
4. LAC Should Pursue Investment in Energy Storage Resources. In Addition, LAC Should Study Centralized Community Storage, Residential Storage, or Both.

5. The County Should Either Purchase Utility-Scale Solar and Wind Resources, or Purchase Those Resources From an Entity that Aggregates Renewable Energy Resources.
6. LAC should Continue to Pursue the Feasibility of Small Modular Reactors or Other Mature Nuclear Technologies.
7. LAC Should Support and Incentivize the Continued Adoption of Residential PV Installation While Establishing a Program to Enable Homeowners to Purchase or Lease Residential Storage Battery Units That are Either Coupled With Their PV Installations or as Stand-Alone Systems.
8. The DPU and BPU Should Support the Expansion of EVs and EV Charging Infrastructure.
9. LAC Should Adopt a Community Education Strategy Around Electrification of Efficient Appliances for Residential Use, i.e. Heat Pumps, Air Conditioning, Water Heaters, Magnetic-Induction Stoves, etc.

Natural Gas Reduction

Except for #8, all recommendations are preliminary. Most represent intent (“should”), not yet refined and finalized into actionable policy recommendations. The term “encourage” as used below could mean education, promotion, or even outright mandate at various points in time.

1. Compact Architectures Should be Encouraged in New Construction.
2. New Construction Should Derive a Significant Portion of its Heating Energy From the Sun.
3. All New Construction Should Have Solar Access.
4. Reduce Average Heat Loading in Residences to 0.30 therms/sq. ft. or Less.
5. Heat Pumps Should be Substituted When NG-Fired Furnaces and Boilers are Replaced.
6. Solar Thermal, Heat Pump, or Point-of-Use Tankless Water Heaters Should be Substituted When Traditional Hot Water Heaters are Replaced.
7. Electric Induction Ranges Should be Substituted When Traditional Cookstoves are Replaced.
8. NG Pilot Lights Should be Discouraged or Banned in New or Replacement Gas Appliances.
9. Institutional Spaces Should be Heated Without Natural Gas (*placeholder pending specific recommendation(s) in final report*).
10. Base-Load Electrical Generating, Transmission, and Distribution Requirements to Meet Overnight Heating Energy Demand Should be Included in Electrical Utility Supply Planning.
11. Distributed (“Rooftop”) Electric Generation and Storage Should be Encouraged.
12. Natural Gas Hookups Should Not be Allowed for New Construction After Some Point in Time.

Transportation & Mobility

1. Increase Public Transportation Ridership
 - a. In Partnership with Regional Transit, Increase and Incentivize Regional Transit Use for Commuters and Visitors from Out of LA County
 - b. Develop an “Alternative Transit” Incentivization Program for Employees of County, Schools, and Community Business (and LANL)
 - c. To Encourage and Improve Local Public Transit Ridership, Address “First and Last Mile” Needs
 - d. Continue to Invest to Increase Bus Frequency and/or Other Kinds of On-Demand Service
 - e. Provide Evening and Weekend Atomic City Transit Service
 - f. Develop a Smartphone Ridesharing App to Help Residents and Commuters Get Around
 - g. Do a County Assessment for Commuter and Other Transportation Needs
2. Improve Bicycle and Walking Infrastructure to Promote Safe and Convenient Carbon-Free Transportation
 - a. Implement the Transportation Board’s Recommendations Outlined in the Bicycle Transportation Plan
 - b. Green Boxed Bike Lanes and Protected Bike Lanes
 - c. Create a Bike-Only Path Between Los Alamos and White Rock (not on the main road)
 - d. Bike Lane and Walking Path on Omega Bridge (or Other Option)
3. Increase publicly accessible electric vehicle charging infrastructure
4. Increase the Number of Electric Vehicles (EV) in LAC, ACT, and LAPS Fleets, Eventually Making 100% EV
5. Implement Shaded Parking and a County-Wide No Idling Policy
6. Launch Municipal Bike Share Program
7. Encourage Private Electric Vehicle Purchase and Charging During Low Peak Hours
8. Increase Number of Crosswalks (Some with Lighting)
9. Convert Municipal Small Engines, Such as Golf Carts and Lawn/Garden Equipment, to be Fossil Fuel-Free
10. Invest in Consistent, Ongoing Community Outreach and Education

Waste, Consumption & Natural Resources

1. Perform consumption-based GHG analysis for LAC
2. Following “Zero Waste” principles, eliminate municipal waste sent to landfill through reduction, re-use, recycling and composting with a goal of 100% diversion by a period of time to be determined
3. Educate community regarding sources of GHG emissions and provide information on reduction of personal carbon footprints

4. Reduce consumption-associated emissions by encouraging and supporting sustainable purchasing, use and disposal of food, goods and services, refrigerant management, and low-carbon construction materials
5. Build a comprehensive water conservation and watershed stewardship plan for the Los Alamos and White Rock communities
6. Manage natural and community landscapes for climate change mitigation, resilience, community, cultural and wildlife values, and carbon sequestration



Pajarito Ski Hill

VIII. Introduction

Communities all around the world, large and small, are creating action plans to address climate change. The recommendations outlined in this interim report are based on research and data, and include recommendations and policies that other nations, cities, and towns are adopting.

We have taken into account our unique location and population: a high-altitude, mountainous desert location with a fairly stable population (in terms of numbers) composed of highly educated citizens and their families. The major employer for most residents is Los Alamos National Laboratory (LANL or “The Lab”). While we recognize that the County has no jurisdiction over LANL, we cannot completely ignore its presence or its impact on our community.

Our intention in submitting these recommendations is for the County and its employees and residents to do our part to slow climate change and to create an action plan to address how our natural environment will change over the coming decades. We do not wish for any future crisis to ruin lives or our beautiful natural surroundings and the wildlife within them.

As the future unfolds, we will all need to “do our bit” to stem the tide of climate change, as individuals, as families, as employees, and as a community. This will mean changing some of our behaviors and sacrificing some of our luxuries, comforts, and conveniences. These changes will take consistent and dedicated community education and outreach. It will take planning, effort, and people power. Most of these changes will also bring benefits other than GHG reduction: improved health and quality of life, economic boosts, and beautification of the community.

New Mexico Governor Michelle Lujan Grisham acknowledges that climate change is happening and is human-caused, and has set ambitious climate change action goals in Executive Order (EO) 2019-003 (https://www.governor.state.nm.us/wp-content/uploads/2019/01/EO_2019-003.pdf):

- Supporting the Paris Agreement Goals
- Reducing New Mexico GHG emissions by 45% by 2030 (as compared to 2005 levels)
- Creating a New Mexico Climate Change Task Force
- Increasing energy efficiency standards for electric utilities
- Creating a New Mexico Climate Strategy document

President Joe Biden has also called for major change on a short time scale. On April 22, 2021, President Biden set [new target reduction goals](#) at 50-52% (from 2005) by 2030, as well as reaching net zero carbon emissions by 2050. This goal includes reaching 100% carbon pollution-free electricity by 2035. This means everyone, government, industry, residents, consumers, communities large and small, urban and rural, will need to make major changes and cutbacks to their GHG emissions.

Similar communities to ours, such as Park City, UT, have very ambitious climate goals:

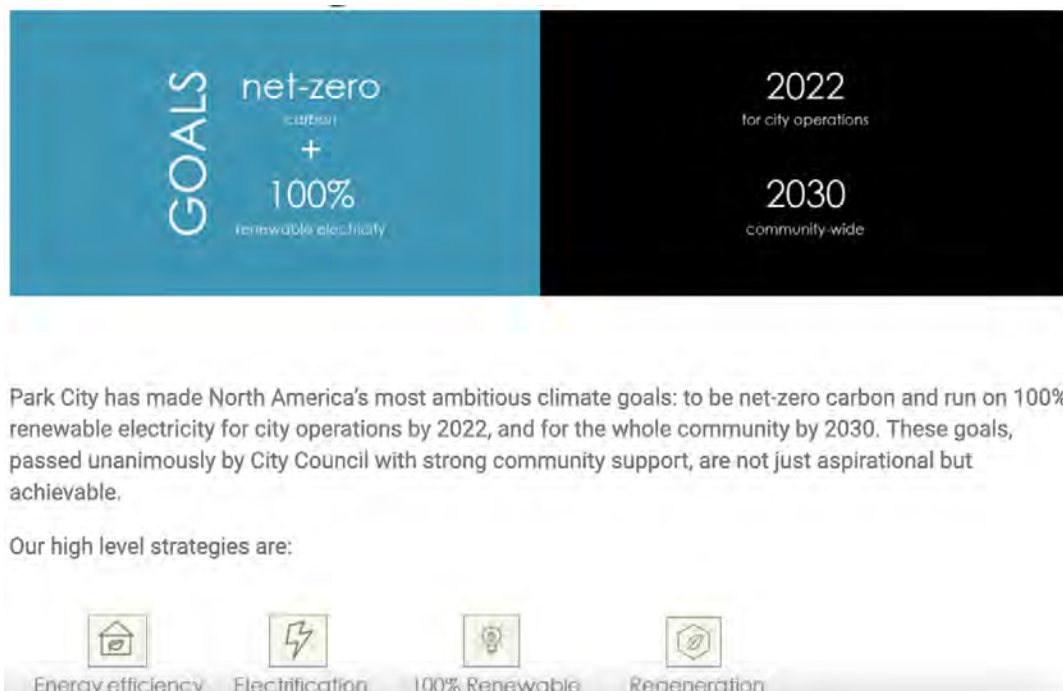


Photo from the Park City, UT, sustainability website:
<https://www.parkcity.org/departments/sustainability>

Telluride, CO, while smaller than Los Alamos, has completed a baseline GHG inventory and will soon be starting the process of setting climate mitigation targets through a Climate Action Plan (CAP):

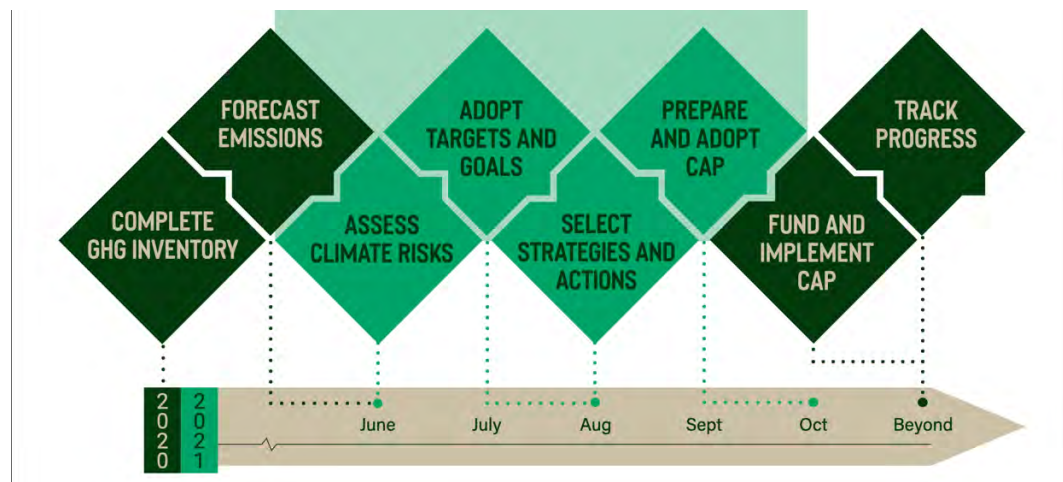


Photo from Telluride's Climate Action Plan Fact Sheet website:
https://mcusercontent.com/45794dd4deb0a48d92b415574/files/db86a259-d6c2-6dcb-7cd6-be4f41ac845e/Town_of_Telluride_CAP_Factsheet_FNL_6.25.pdf

Since its founding, Los Alamos has been an innovator, a leader, and a hub of scientific research. We must continue to lead the way to address climate change and create a sustainable future for generations to come. We, too, must create a climate change action plan. Without a stable and safe future, our children, grandchildren, and their children and grandchildren will not be able to thrive as we have. Making significant progress against climate change will take every stakeholder in our community: the County, the Lab, the Schools, local businesses, and residents. As the saying goes, we need to “think globally, act locally.”

Notes

- The research effort for each subcommittee’s focus areas (as well as General Recommendations) has been undertaken by one or more than one member of each subcommittee or the Task Force, and the recommendations below reflect various stages of completion.
- As this is the Interim Report, all recommendations are subject to further modification, addition or elimination as subcommittee work continues through to the end of the charter in 2022.
- Some of these recommendations may not represent every Task Force member’s view on a particular subject.



View from Deer Trap Mesa

IX. Recommendations: Community Planning & Zoning

Introduction

IRC 2018 and New Mexico Residential Energy Codes are the current building codes adopted in Los Alamos County. These apply to new construction and to renovation modifications requiring a permit, not to unaltered homes. Los Alamos codes requiring a permit are extensive in their applicability, but do not cover interior changes without plumbing or electrical changes.

The County should consider a local overlay code to address the steps needed to reduce GHG emissions and other sustainability issues. Several cities, both large and small, have supplemental codes commonly referred to as “Green Codes” which address issues beyond current requirements. Green Codes for other cities vary from expediting permitting, reducing permit costs, enhancing tree cover, to detailed construction techniques that supersede the code. Some jurisdictions have put their green codes to a public vote before implementation.

Eliminating or reducing the need for energy use is the most effective way to minimize greenhouse gas emissions. Conversion of natural gas consumption to electricity requires careful planning to assure that greenhouse gas emissions are actually reduced. Refer to the Natural Gas Subcommittee for detailed alternatives to consider. Since the building code covers all aspects of building, and landscaping, an overlay code can incorporate other sustainability recommendations discussed in the LARES committee report. However, most of Los Alamos County is already built out so few residences will automatically trigger the code requirements. Incentives to promote change and provide easy pathways to implement significant energy saving measures must be addressed.

Some issues to address include:

- 1) The overlay code should encourage energy efficiency improvements such as replacing windows and attic insulation to existing homes that are not being renovated. The code should also incorporate requirements for the future by requiring preparation for heat pump installation (conversion from natural gas heating) and preparation for solar readiness. Establishing a method to subsidize the costs will be important to assure that least energy efficient residences are converted. To incentivize residential housing changes the County should consider establishing a utility loan fund from its reserves for energy reducing improvements where low interest loans are issued but paid back through the electric bill. This is discussed in more detail below.
- 2) The County should consider using the “design to” concept rather than a third party audited installation. The cost of third-party audits with certifications is not insignificant and can deter installations for energy reduction projects.

- 3) The international residential building code of 2018 does not incorporate energy standards for appliances, as the standards are set by the Federal government. The County should educate housing owners and add a special outreach to the tradespeople who install furnaces, water heaters, and other natural gas consuming equipment regarding the importance of installing energy star appliances. If education does not yield change, then the County should consider narrowing the list of Federally allowed appliances to the more energy efficient ones, such as energy star appliances, for installations throughout Los Alamos County by reviewing if the County business license process can be utilized to incorporate the requirements.
- 4) The County should set an example with its purchasing and contracting. The County has an environmental preference policy, but it requires justification to choose the least emitting option, not justification to choose away from the lowest emitting option.
- 5) The New Mexico codes incorporate little flexibility for replacements in kind and require significantly more expensive options for higher elevation areas, The County should consider advocating to the state for greater flexibility for the County permitting staff. The County cannot ignore a code requirement and code modifications are needed. For example, a same size replacement window in Los Alamos will require triple pane windows, rather than double pane as in done in Albuquerque, which cost 50% more. Replacements in-kind are allowed in other jurisdictions without triggering the new code requirements.
- 6) The County should include some commercial zoning in every section of town.

Background

In general buildings consume 40% of US energy which can be a mix of fossil fuels and other sources. The 1972 energy crisis encouraged energy efficient homes as the building codes responded to current events. The 40% number may not apply specifically to Los Alamos given the LANL transportation but for energy produced and consumed within Los Alamos it is relevant as the age of the building stock is predominantly pre-1972. For reference, the 1970 Uniform Building code, predecessor to the current International Building Code, focuses on structural strength and barely mentions insulation. Most pre-1970 homes have 2 to 3 inches of insulation in the attic. The natural gas committee report supplies additional information.

IRC 2018 and the New Mexico energy code are the current building codes adopted in Los Alamos County. Recent changes to the building code focus on the building envelope. The code has

significantly changed the R value required for insulation (to minimize heat loss) and changed the solar heat gain coefficient required for windows. New homes and retrofits requiring a permit will have far less energy requirements than the typical home in Los Alamos, NM. Buildings not retrofitted remain the issue.

To address improvements beyond the standard building code, several cities and towns have a “Green Code” that applies in addition to the required code. Most of the Green Codes focus on expedited permitting for new construction with energy saving projects or reduced permitting costs. This may not be a sufficient incentive for Los Alamos construction. Portland, OR, has a Green Code that funds new energy conservation projects, but Los Alamos needs proven ideas implemented to reduce greenhouse gases.

- Seattle’s new Green Code eliminates new fossil fuel connections for heating and eliminates new electric resistance heating, essentially requiring electric heat pumps for heating. Seattle new homes must have electrical connections at gas fired appliances in preparation for a switch to electric, and provide connections for solar readiness.
- The Albuquerque Green Code provides expedited permitting review for LEED and HERS building permits.
- The Denver, CO, Green Code was passed with a public vote and provides financing options for energy efficient construction.
- Holland, MI, has a fund to rebate 20% of the energy improvements as well as a fund to borrow \$5000 to \$30,000 at a fixed low interest and pay it back via the electric bill.

Fort Collins, CO, developed an interest-bearing loan program in support of comprehensive projects that include solar, storage, and electrification. Their utilities department started with their utility reserves and reimbursement was paid through electric bills. Although larger in population size (337,000 versus 19,000), their loan program has served an income range from \$30,000 to \$580,000. Fort Collins has a median income of \$108,000 which is similar to Los Alamos’s median income of \$107,000. From 2013 to 2018 their program utilized only utility reserves but then it was expanded as a public private partnership to expand access.

In February 2021 the maximum loan amount was raised to \$50,000 to cover the higher costs associated with more comprehensive projects but to date the average loan amount has been ~\$12,000. Their loan program charges interest, so it is not a donation. In fact, they have made more money than what their reserves were accruing. They charge about 3% and their loan terms range from 3 to 15 years. It is recorded as a loan on the property similar to a mortgage and is handled the same way. It is available to homeowners and renters but the loan is to the property owner. Los Alamos has established a loan program to address safety issues for the low-income homeowners through the Los Alamos Housing Partnership (LAHP). Los Alamos has addressed the

issue that many counties face which is how to increase low-income participation. Los Alamos needs funds to serve residents whose assets exceed the LAHP requirements.

Several states have established funds to cover the pre-weatherization issues such as addressing moisture, structure, and wiring issues that are not covered by federal programs. The many ideas listed above are some that we hope the County will incorporate, and any loan fund should include these.



View from Navajo Road on Barranca Mesa

Recommendation 1: Develop an Overlay Code Superseding the Current Building Code with Energy Improvements and Connections to Help Transition to a Cleaner Electrical Energy Source.

- To start this discussion, the Community Planning & Zoning subcommittee would like to thank Ben Hill, an architect and member of the subcommittee, for this work. He modeled a typical 1950s residence and changes to current code to reflect the changes in energy loss.
- Chart 1 (p. 26) reflects the difference for a residential dwelling with typical 1956 construction and with energy efficiency improvements added. From the chart, single pane windows are the largest heat loss for the home at 40% of the total heat loss. Conversion to multiple pane windows will make the largest difference in home energy consumption. Current code for windows requires a higher insulating value, commonly known as the R value, which is based on not just climate but also elevation. Los Alamos's R value is different from Albuquerque and costs for windows will be higher than most of the rest of the state.
- To meet the new requirements for Los Alamos some double panes are available but for most manufacturer's triple panes will have to be installed. At this time the industry is adjusting to the new requirements and costs are higher and supplies are limited. Given the high cost of window replacement but the higher energy savings associated with replacement some enticement will be needed to help homeowners pursue this path. Increased efficiency gains would still be significant if 2015 code double pane windows were installed or if the R value for the rest of the state was used but the current code does not have an allowable exemption. Changes made without replacing the windows from a single pane are without value as single pane windows are essentially holes in the wall letting the heat out. Replacing single pane windows should be considered a priority to achieve energy loss goals from housing and reduce CO2e emissions. The extent of single pane windows left in the community is an unknown factor.
- The County could consider collecting this data as part of the assessor information it collects for building information for tax purposes. This can be completed over time, but it will identify homeowners who can provide greater energy savings reductions.
- Less expensive, and the next step after windows are replaced, is adding attic insulation. Chart 1 reflects adding 12 inches of attic insulation. This is effectively R49, the new 2018 code, if blown over the typical 3 inches found in 1950s construction. This is fairly easy and significantly less expensive than windows. It is an attainable goal for houses with attics. This change in the attic alone combined with windows reduces the overall energy demand of a house by 60%. Mobile homes and flat roofs are not suitable for this conversion and other opportunities must be found.

- Adding exterior insulation to walls is the next most effective method but must be carefully engineered to control where the dew point falls in the wall to avoid mold issues. Next in line is crawl space insulation which can be difficult to install, thus more expensive, due to limited access especially in older homes.
- Homeowners who have the most opportunity to reduce energy use, such as those with single pane windows and without additional insulation added in the attic above pre-construction levels, may need assistance to incorporate these changes. Establishing a loan fund to help these homeowners pay for the energy reductions over time, while meeting New Mexico's anti-donation law, should be addressed. The fund should also cover pre-weatherization issues such as asbestos demolition, addressing mold concerns, structural and wiring issues, and other modifications necessary to install energy use modifications that reduce greenhouse gas emissions. Pre-weatherization modification costs have been a factor in not pursuing energy retrofits as the costs can be significant.
- The above changes are all reflected in the current code so new homes and additions requiring retrofits are covered. However, requirements to prepare the buildings for a clean energy future are not. As clean energy becomes more available and natural gas, propane, or fuel oil are phased out, preparing the home for heat pump installation and preparation for solar readiness is not addressed. Adding connections at the time of build so that the conversions can be made conveniently will help everyone transition. One of the differences between natural gas and heat pump installations can be vent sizing to avoid velocity induced noise. Engineering this out at the design stage will ease implementation and be less irritating.
- Timing for the change to heat pumps and solar installations must be carefully managed. Electricity is not as efficient as natural gas for energy use, in fact from an energy consumption point of view it can be 3 to 5 times higher. This is a substantial change for any power grid, and changes can be complex and expensive. Adding the connections now and later moving to installations will have the overall effect of reducing greenhouse gas emissions.
- The Council should be aware that older manufactured homes, aka mobile homes, cannot easily be retrofitted and must be addressed separately. Manufactured housing constructed prior to 1976 codes are much less energy efficient than newer models. There appear to be several of these older mobile homes in Los Alamos County. HUD has identified the following measures for older homes:
 - Install energy-efficient windows and doors
 - Add insulation to the belly
 - Make general repairs (caulking, ducts, etc.)
 - Add insulation to your walls

- Install insulated skirting
 - Install a belly wrap
 - Add insulation to your roof or install a roof cap
- Careful attention must be paid to dewpoint and vapor barrier issues to avoid mold concerns and corrosion issues. Still, these measures achieve only a 30% reduction in fuel gas usage. These modifications are very expensive given the value of the home. The County may need to consider other options to address this subset of homes. New Manufactured housing must meet higher standards established in 2009. Homes are available with energy star ratings and are eligible for a state tax credit but non-energy star models can still be purchased.
 - Quad-plexes will require a unique solution as they fall under the under commercial code and frequently have different owners. New York City is developing for the multi-family buildings a one-stop shopping effort where they have developed for the owners a proposal with detailed plans, cost estimates, and financing information. This may be an option for Los Alamos given the large number of quads.

Recommendation 2: Consider a “Design-To” Concept for Changes Rather Than Audits or Certifications for LEED or HERs Compliance.

- The County should consider a “design to” concept rather than specifying a LEEDS or HERS design. These require third party audits, which is nice for assurance but drives costs up. In Los Alamos we simply need energy savings improvements installed, not third-party assurance. The County should consider waiving permit fees for projects involving only energy saving modifications. For energy savings modifications, a simple list of modifications that would not need a permit review or a permit fee could be maintained and replaced with a notice that the work and a description of the work was being performed. This is a practice maintained for industry by some clean air authorities in the USA. Making the process extremely simple and convenient should be the goal for energy savings projects.

Recommendation 3: Educate Contractors and Home Owners on the Importance of Selecting Energy Star Appliances. Listen to and Address Their Concerns.

- Federal law sets the standard for energy star appliances but non-energy star appliances can still be sold. Implementing in the Green Code a requirement that only “energy star” appliances can be sold or installed within Los Alamos County will reduce energy use and consequently GHG emissions.
- The County should provide education to homeowners and contractors about the importance of using energy star appliances as a start to reducing energy use and address the concerns they raise. Contractors have influence in the selection of installed equipment as they converse with the homeowner about options to install, the costs, and reliability. Outreach is essential.
- If education does not yield significant results the County could consider adding an addendum to their business license process. Los Alamos requires a business license for all companies doing work in the County. As noted on the business license page for the County:
 - "Any person, group, organization, business or entity proposing to engage in business within the County and that is required by the state to pay gross receipts taxes on its business is required to apply for a business registration or business license and pay the applicable fee." (Los Alamos Code of Ordinances, Chapter 12).
- From the code of ordinances Chapter 12, business is defined as:
 - “*Business* means any commercial enterprise, trade, occupation, calling, profession, vocation or activity engaged in, conducted or carried on by any person, his agent or employee, or by the use of automatic machines, except news racks, for the purpose of gain, benefit or advantage, either direct or indirect, on which state gross receipts tax is paid or payable. A charitable organization shall be deemed to be a business if it is required to pay gross receipt taxes on a business conducted in the County.”
 - Given the wording, this will capture not only local stores but “off the Hill” stores that install appliances in Los Alamos County. This will not capture all appliances as some are self-installed but will capture a greater percentage than are being installed now and greenhouse gas emissions will be reduced over time.

Recommendation 4: The County Should Set an Example with its Purchasing and Contracting by Incorporating an Evaluation of CO₂ Equivalents in its Selection Process.

- Los Alamos code Section 31-262 contains the environmental purchasing clause. It is fairly weak compared to codes required by authorities regulating industry. In the Los Alamos 2020 code it is:
 - “An additional preference factor of up to five percent for environmentally preferable purchases may be applied for any competitive procurement. If a preference factor is to be applied, it will be noted in the solicitation”.
- Compare this to industry requirements:
 - “Attach a description of why the proposed air pollution emission control strategy is the best available for the process at the time of application submission. This can take the form of a written explanation or, for larger projects, a top-down best available control technology analysis (BACT).”
- BACT is applied across all of the USA. It is a process that requires justification away from the least polluting purchase, otherwise the least emitting equipment must be purchased and installed. An older rule of thumb was \$2000 per tonne of annual emissions was an expectation set by regulators. This top-down philosophy, rather than bottom-up philosophy, has created change when replacement in kind was being sought but an exact model replacement was not available for purchase. The County should consider adopting the philosophy change, incorporate an evaluation of CO₂e emissions in their purchasing and contracting and increase the level of justified increase in costs from 5%. Awareness drives change.
- This recommendation should be applied to all public entities in the County such as the Los Alamos Public school system, not just the County, as support for a cleaner environment.

Recommendation 5: The County Should Advocate to the State, Supporting Greater Flexibility in Code Requirements With Respect to “Replacement” Options. Current Code Requirements for a Replacement Window Cost 50% More than a Standard Double-Pane Window. The 2018 Code Typically Triggers Triple-Pane Windows Rather Than Double-Pane Windows. Items Like This Disincentivize Voluntary Retrofit Replacements to Reduce GHG Emissions.

- New Mexico has progressive energy codes for remodels and new construction but ignores the effects of these codes on simple “replacements in kind.” Modifications for something as simple as window replacement triggers the new code with significantly higher costs. It discourages more renovations that reduce energy when the costs are 50% higher. The County staff cannot ignore these code requirements but the County can influence the state to allow greater flexibility for what normally would be considered small changes.

Recommendation 6: The County Should Include Some Commercial Zoning in Every Section of Town for a Gathering Place, such as Coffee Shop or Store, to Minimize Trips and Encourage Community Gathering.

- Last but not least, Los Alamos is a small community but transportation from each mesa to town still occurs for almost every need. Encouraging community gathering, walking, biking or reduced driving to a store, while at the same time meeting a need can be achieved.
- Some mesas have easy access to a commercially zoned area where a store, coffee shop, or food truck could be located. Others such as Barranca and North Mesa do not. There are natural gathering areas near schools where communities tend to gather that would be convenient for a small section of commercial zoning. The County is in the process of transferring land and rezoning to residential areas near the middle school but has not included any commercial zoning. Zoning a lot as commercial does not ensure that there will be a project that will materialize, but not zoning any commercial space does ensure that there will never be a store, coffee shop, or other community gathering place. This is directly controlled by the Council with its zoning policies.

Chart 1

Design Temperature and Fuel Type Inputs

<https://www.builditsolar.com/References/Calculators/HeatLoss/HeatLoss.htm>

Title	Typ LA Home circa 1956			
Design outdoor Temperature	Degrees F	9		
Heating Degree Days	Degree F - day	6330		
Natural Gas	0.84		85% Furnace Efficiency	
Electricity				

Area and Rvalue Inputs

	Area (sqft)	Rvalue	UA (BTU/hr-F)	Design Loss (BTU/hr)	Yearly Heat Loss (million BTU/yr)
Ceiling 1	961	11	87.4	5329	13.3
wall 1	850	11	77.3	4714	11.7
Doors	40	2.5	16	976	2.4
Windows	162	0.9	180	10980	27.3
Crawl space wall	526	9	58.4	3565	8.9

Infiltration total volume of the heated space of the house cubic feet

Typical Air Changes Per Hour:

0.33 -- very tight -- minimum for health

0.5 -- tight -- new, careful construction

1.0 -- leaky -- typical existing construction??

	House Volume (cubic ft)	Air Changes p UA (BTU/hr-F)	Design Loss (BTU/hr)	Yearly Heat Loss (million BTU/yr)	
Whole House	4695	1	85	4226	6.5

Int. Heat Gains These are heat gains from warm bodies, lights, appliances, ... This is heat that your furnace does not need to provide.

	Number of Occupants	Internal Gains (BTU/hr)	Design Loss (BTU/hr)	Yearly Heat Loss (million BTU/yr)
	3	1362	-1362	-11.9

Summary

Item	UA (BTU/hr-F)	Design Loss (BTU/hr)	Year Loss (Million BTU/yr)	Fuel Cost (US dollars)	Ten Year Cost 10% infla \$'s	Green-house Gas (lb CO2)
Ceiling Loss	87	5329	13.3	\$131.00	2089	1874
Wall Loss	77	4714	11.7	\$116.00	1848	1657
Window Loss	196	11956	29.8	\$294.00	4688	4204
Crawl space wall	58	3565	8.9	\$88.00	1398	1253
Slab Loss	0	0	0	\$0.00	0	0
Infiltration	138	8441	208	\$208.00	3310	2968
Totals	556	34005	271.7	\$837.00	13333	11956

	Area (sqft)	Cost	Total
Attic Insulation	961	\$1.75	\$1,681.75
2" Insul & Stucco	850	\$7.00	\$5,950.00
Doors	2	\$1,200.00	\$2,400.00
Windows	11	\$1,000.00	\$11,000.00
3" Insul & Stucco	526	\$7.50	\$3,945.00
5.625kW Solar PV	5,625	\$3.25	\$18,281.25
Solar Tax Credit	26%	10%	-\$6,581.25
Heat Pumps	1	\$8,000.00	\$8,000.00
Upgrade elec service			\$3,500.00
			\$48,176.75
Alt Tax Credits			
Upgrade elec service			\$3,500.00
Battery Storage			\$3,500.00
5.625kW Solar PV	5,625	\$3.25	\$18,281.25
Solar Tax Credit	26%	10%	-\$9,101.25
			TTL \$16,180.00

Revisions

Ceiling add 12" blown in insulation Heating with electricity @ .12/KWH
Walls add 2" exterior insulation & stucco less infiltration due to new windows.
Upgrade windows & Doors
Crawl space-Add 3" exterior insulation and Stucco

Area and Rvalue Inputs

	Area (sqft)	Rvalue	UA (BTU/hr-F)	Design Loss (BTU/hr)	Yearly Heat Loss (million BTU/yr)	Difference
Ceiling 1	961	49	19.6	1196	3	22.56%
wall 1	850	22	38.6	2357	5.9	50.43%
Doors	40	5	8	488	1.2	50.00%
Windows	162	3.4	47.6	2906	7.2	26.37%
Crawl space wall	526	24	21.9	1337	3.3	37.08%

Infiltration total volume of the heated space of the house cubic feet

Typical Air Changes Per Hour:

0.33 -- very tight -- minimum for health

0.5 -- tight -- new, careful construction

1.0 -- leaky -- typical existing construction??

	House Volume (cubic ft)	Air Changes p UA (BTU/hr-F)	Design Loss (BTU/hr)	Yearly Heat Loss (million BTU/yr)	
Whole House	4695	0.5	42	2578	6.4

Int. Heat Gains These are heat gains from warm bodies, lights, appliances, ... This is heat that your furnace does not need to provide.

	Number of Occupants	Internal Gains (BTU/hr)	Design Loss (BTU/hr)	Yearly Heat Loss (million BTU/yr)
	3	1362	-1362	-11.9

Summary

Item	UA (BTU/hr-F)	Design Loss (BTU/hr)	Year Loss (Million BTU/yr)	Fuel Cost (US dollars)	Ten Year Cost 10% infla \$'s	Green-house Gas (lb CO2)
Ceiling Loss	20	1196	3	\$52.00	835	654
Wall Loss	39	2357	5.9	\$103.00	1644	1288
Window Loss	56	3394	8.5	\$149.00	2368	1856
Crawl space wall	22	1337	3.3	\$59.00	933	731
Slab Loss	0	0	0	\$0.00	0	0
Infiltration	42	2578	6.4	\$113.00	1798	1409
Totals	179	10862	27.1	\$476.00	7578	5938

Assumes 200% heat pump efficiency
3.8KW for heating and 3.8KW for other = electrical 20 PV panels

US rate of 1.5 lbs CO2 per KWH
3,959 KWH / 329KWH month for heating
if electricity is wind or solar

Other tax credits may be available for certain upgrades:

<http://www.emnrd.state.nm.us/ECMD/CleanEnergyTaxIncentives/cleanenergytaxincentives.html>

https://www.nm-prc.org/wp-content/uploads/2021/06/New-Mexico-TRM-2018_ErrataFINAL_04102019.pdf

https://www.energystar.gov/about/federal_tax_credits

X. General Recommendations: Electricity Supply & Demand

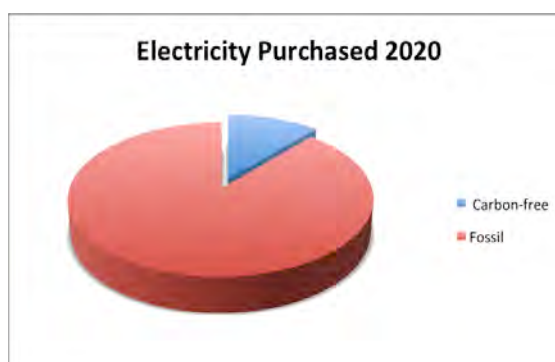
Note of Thanks

We wish to thank the members of the County Council and the employees of the DPU for delivering essential services to our community. This is done so seamlessly that citizens often do not notice or acknowledge all of the work you do. So, at the very beginning, a BIG THANKS!!! Please find in the following pages our *preliminary* recommendations.

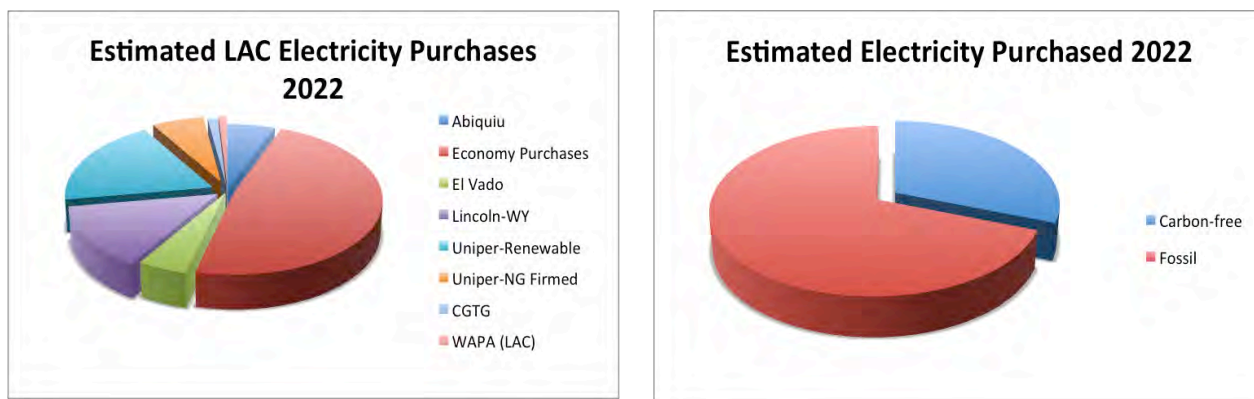
We would love to sit down with subject matter experts at the DPU in the near term to receive your feedback. We realize that in our effort to formulate our thoughts we likely missed the full picture and/or historical context - please do not take offense. This is a draft and we look forward to improving this document with your help in the coming months. Again, thank you.

Introduction

Currently, Los Alamos County (LAC) owns several power generation assets representing a total of 73.9 MW of generation capacity. Of those resources, four are sources of carbon-free electricity, hydroelectric power from Western Area Power Administration (WAPA), El Vado and Abiquiu dams, and the 1 MW PV installation on the Los Alamos Eco Station. Using only the headline electricity production shows ~38% of our electricity is from renewable sources. However, when examining the actual electricity purchase in 2020, the combined contribution from these assets decreases the carbon-free portion of LAC's usage substantially to only 11.5%. The two largest sources of electricity are the San Juan Generating Station (SJGS) and short-term contracts purchased from the free energy market (42% and 30%, respectively).



This picture will change significantly when the power purchase agreement (PPA) with Uniper comes into effect in 2022, and the Department of Utilities (DPU) no longer purchases power from SJGS. The proportion of carbon-free electricity assets will increase to ~81% of owned assets, and the estimated carbon-free electricity purchases will increase from 11.5% to 32%. This is a tremendous step and the LAC DPU and BPU should be commended for taking it. We look forward to continued progress.



The major motivation for transitioning to carbon-free energy within the County is the imminent threat of climate change. Climate change models of the Southwest United States predict a higher likelihood of droughts and high temperature events. Lower precipitation will directly impact Los Alamos County's ability to generate hydro-electric electricity. The predictions are for Los Alamos to experience 100 degree plus heat waves within the next 20 years and higher after that. Given these predictions, we don't look forward to the partial desertification of the County—loss of Ponderosa Pines and encroachment of pinon-juniper trees.

It is in this context that we make these recommendations. We face a new era where concerns about cost must be minimized in favor of innovative and effective action. This may mean changing charters and codes, but is the only way to avoid the worst of the warming. In this spirit we recommend a variety of actions that may at first sound somewhat radical, but in the current situation are not radical but necessary.

Recommendation 1: The County Council and the BPU Should Formalize the Net Zero Carbon Electrical Power Commitment and Adopt a More Ambitious Timeline to Make LAC Net Carbon Zero Electricity by 2035.

Background

- The current pledge to be a net carbon zero electricity provider by 2040 constitutes a goal of the BPU for the DPU. This goal was voted on and adopted by the BPU in late 2013, and then reaffirmed in 2014 and 2016. Since its adoption, LAC formed the Future Energy Resources Committee to provide recommendations as to the paths to achieve the 2040 goal. LAC, in cooperation with LANL, developed the 2015 Renewable Energy Photovoltaic Feasibility Study which identified five potential sites for solar installations that when combined could be the source of ~60 MW. LAC also hired Pace Global to produce the 2017 Integrated Resource Plan, assessing paths to achieve the 2040 goal.
- As noted earlier, the Uniper contract is a big step forward, the most significant since the net carbon neutron goal was adopted about 9 years ago. We strongly suggest building upon this. An administrative means of doing so is to have the County Council to formalize this net-zero carbon commitment with a timeline and benchmarks for its implementation. In addition, to be in line with current federal guidance on the issue, the carbon neutrality timeline for electricity generation should be accelerated from 2040 to 2035.

Outcome

- LAC DPU is 75% net-zero carbon electricity provider by 2030, and fully net-zero by 2035.

Challenges & Anticipated Barriers

- Reducing the amount of power purchased from the grid.
- Exiting the PPA with the Laramie River power plant in WY.

References/Resources

DOE Los Alamos National Laboratory - PV Feasibility Assessment, NREL 2015.

Future Electrical Energy Resources for Los Alamos County, July 2015.

Integrated Resource Plan Report, Pace Global, June 2017.

Recommendation 2: The DPU and BPU Should Evaluate Options and Develop a Plan Regarding the LANL/LAC Power Generation Relationship and What it Means in Terms of LAC's Achievement of its Net Carbon Zero Goals.

Time Frame: CY2022

Background

- We recognize that the collaboration between LAC and LANL through the Energy Coordination Agreement (ECA) has benefits for LAC as well as challenges. The original ECA was negotiated in 1985 for a term of 30 years, and was renewed in 2016. The current ECA will expire in 2025 and negotiations as to how, or whether this agreement will persist are currently underway. As it stands, LANL is the single largest electricity customer to DPU, accounting for 80-85% of total demand. The effects of two potential outcomes are addressed in this report. They are as follows:
 - The ECA, or equivalent agreement, remains between LANL and LAC
 - LAC and LANL decide to end the ECA

Outcome

- BPU/DPU will not use uncertainty in the ECA as a reason for not purchasing carbon-free energy.

Strategy

1. The ECA, or some equivalent arrangement, remains between LANL and LAC.

- If the ECA remains in effect, then LANL and LAC will pool electricity resources. The combined need for both LANL and LAC are ~100 MW. These have been supplied by the 73 MW of generation capacity that LAC owns along with purchases from the grid. For several years the DPU and BPU have been hesitant to purchase carbon-free resources out of concern for what would happen if the ECA ended; the concern being that LAC would be “stuck” with too many resources. This has resulted in inaction and very high carbon emissions. A fundamental shift in risk tolerance is needed, realizing that assets can be sold to match any major changes in the ECA.

- We recommend BPU/DPU should feel free to purchase utility scale solar and wind projects and or a great amount of PPA such as the Uniper Contract.
- Since we are recommending a greater risk tolerance, it is worth discussing what is at risk. We note that the cost of power from all three options: (a) utility scale solar, (b) utility scale wind and (c) the Uniper Contract are all generally 50% in cost per unit energy than the average cost of wholesale power in LAC. [Uniper contract, Lazard, NREL]. To make this point more explicit, the current market rate for utility scale solar and wind in the Southwest U.S. is ~\$30/MWh. In recent years the average rate paid over a year by LAC has been between \$50/MWh and \$60/MWh. LAC can afford to take the risk of purchasing more of these low-cost resources, particularly in light of recent price spikes. It should not be difficult to sell these resources if needed or sell the energy produced on the open market.
- Since LANL consumes roughly four times as much electricity as LAC, a far larger emissions impact would be made by maintaining the ECA while also pursuing more carbon-free sources of electricity. This would bring both LANL and LAC toward net-zero carbon together.

2. LAC and LANL decide to end the ECA.

- In this circumstance LAC and LANL would need to manage their own electricity demand. LAC would need to provide only ~25 MW to residents at any given time. In this arrangement the hydroelectric assets on the Abiquiu and El Vado dams, which are wholly owned by LAC, would service only LAC. This would greatly increase the amount of zero-carbon energy used by LAC and make the realization of the net-zero carbon electricity goal much closer. In doing so LAC would no longer have any direct influence on LANL's choices regarding its electricity needs. While LAC's goal would come closer, the overall emissions reduction would be much smaller if LANL did not pursue a net-zero carbon path.

Economic Impact

- Cost spikes have become more frequent in recent years. To quote one sentence from the June BPU meeting: "In June of 2021, the most recent heat wave again had market prices at \$1,750/MWh ..." If we owned more solar resources, such market spikes would have much less impact on LAC during the above average energy use period in the middle of the day. The price difference between ~\$30/MWh and \$1,750/MWh is

so large that the low cost solar and wind is likely to be cost effective. The magnitude and duration of these spikes increases the cost benefit of spending less on short term power purchases. Owning more wind and solar resources, even if LAC decides to not use them, will render LAC less susceptible to large cost spikes.

Benefits Other than CO₂ Reduction

- Reduced vulnerability to price spikes in the free market.
- Purchasing zero-carbon emitting resources would be a concrete step toward meeting the BPU's net carbon zero goal.

Challenges & Anticipated Barriers

- If more risk is going to be taken, that risk needs to be researched and a mitigation strategy created.

Recommendation 3: DPU/BPU Should Develop an "Intermittency Management Strategy" Including But Not Limited to Demand Management, Energy Storage Resources, Curtailment of Generation, and Time-of-Use Metering.

Time Frame: ASAP

Strategy

- For environmental and economic reasons, the electric grid is changing rapidly. As stated in many places within this report, the need to manage the intermittency of wind and solar resources is clear. Which are the best approaches/techniques for LAC to apply at this time and which are best implemented later or not at all needs to be studied. In the following list some of the common approaches for managing the intermittency of the grid are listed along with brief explanations:
- **Demand management:** The concept of demand management applies to those energy consuming tasks that are flexible in time. The suggestion is that the County should make it easy for customers who are interested in shifting some of their consumption from high-cost time intervals to low-cost time intervals.
 - Such shifting is particularly appropriate for (a) charging of electric cars, (b) heating of water stored in tanks, and (c) air conditioning in the context of a house being cooled down between 3 and 5 pm in order to significantly lower energy needed to cool the house after 5 pm. This strategy results in much less electricity being purchased during the expensive evening time interval.
 - The fortunate economic reality that aligns (a) cost savings with (b) reducing carbon generation is that utility scale solar and wind (~\$30/MWh) in the Southwest U.S. cost significantly less than the average cost of power for LAC (\$50/MWh to 60 MWh). If we use more of these energy resources without needing to store them, LAC power customers save money and LAC emits less carbon. Evidence supporting this economic reality is available from Lazard, NREL, RFPs bids to EXCEL Energy in Colorado, our recent UNIPER contract, among other sources.
 - **Time-of-use metering** is one aspect of incentivizing demand management. A utility could have a fixed rate structure that varies with the time of day, or rates could be allowed to float with the actual market rate during the day. We anticipate that the consultant hired for this task will educate LAC officials as to the

experience of other communities that have tried various approaches to time-of-use metering.

- The consultant should investigate the feasibility of DPU, or a commercial entity, offering the DPU customers the ability to be part of a “**virtual power plant.**” A virtual power plant is an entity that helps generation match the load by having a third-party control, to some degree, when energy is used by a customer. Virtual power plants are voluntary arrangements by which customers allow the third party to manage some appliances in return for economic benefits.
- The storage capacity of most electric cars sold today is on the order of one or two days of energy usage of a typical American home. The consultant should research the (a) feasibility and (b) cost structure of using these cars as not only a demand response component but possibly a supply of energy.
- Demand management focused on County/school operations:
 - Subject matter experts should be engaged to see (a) if the current waste treatment plants can take advantage of time of use strategies in order to use as much low-cost renewable energy as reasonable, (b) might investment in equipment such as larger tanks be advisable from a demand management perspective. It might be cost effective to operate the plant differently to use more low cost, zero carbon energy in the middle of the day.
- **Curtailment of Generation:** Curtailment involves the conscious decision to not put on the grid energy that is freely available at an electricity generating facility; most commonly this is a technique used with wind and solar resources. Although this strategy is wasteful of energy, it can be useful in assuring that the load matches generation. Some factors related to this strategy:
 - Curtailment, during the percentage of the time when it is necessary, may be more cost effective than purchasing storage or other management techniques.
 - The availability of curtailment as a management strategy allows a utility to purchase more low cost, zero emission wind and solar resources without facing penalties for putting too much power on the grid. Thus, the utility is able to meet more of its energy needs with zero carbon sources.

- Curtailment is an indication to those investing in transmission and storage of market opportunities. Free power will help pay for transmission and storage as it improves the business case for building transmission or buying storage equipment.
- Storage, as outlined in Recommendation 4, is anticipated to be a significant part of any **"Intermittency Management Strategy,"** and as such, it is suggested that the same consultant be used to juxtapose the positive and negative aspects of all the available intermittency management options.
- Because wind and solar resources are intermittent due to weather effects such as where clouds are and where the wind is blowing, it is beneficial to spread generation facilities over as large a geographic area as possible to average out these effects. [MacDonald et al. of NIST-Boulder]

Economic Impact

- The purpose of this task is to make sure that the load is reliably supplied with electricity while cost effectively transitioning to low cost, zero carbon generating resources.

Benefits Other than CO₂ Reduction

- If generation curtailment as a means of managing intermittency is used; it results in the total supply of low-cost power increasing. The existence of more and more generating capacity reduces the likelihood of price spikes. The extremely low cost of unsubsidized utility scale wind and solar make the economic downside of possessing more generation capability than needed less than was historically the case.
- New Mexico is blessed with excellent land for utility scale wind and solar. As we reduce our state's dependence on natural gas, we would be wise to increase our capability to generate wind and solar.

Recommendation 4: LAC Should Pursue Investment in Energy Storage Resources. In Addition, LAC Should Study Centralized Community Storage, Residential Storage, or Both.

Background

- Renewable resources such as wind and solar PV are intermittent and electricity generation does not always align well with user demand. For example, LAC's peak electricity demand is in the evening between the hours of 6:00 and 10:00 PM, yet, the peak production time of local solar PV is between 9:00 AM and 3:00 PM. Optimal use of intermittent resources, without resorting to natural gas fueled turbines or reciprocating engines to fill the gap, is advanced by the incorporation of some means of energy storage. In fact, the recommendation for LAC to invest in solar energy development with storage was a major conclusion of the 2017 Integrated Resource Plan (IRP).
- There are many different technologies at various levels of development and maturity. The different methods can be separated into three overall groups, mechanical energy storage, electrochemical energy storage, and chemical energy storage. The applicability of each of these technologies really depends on their planned use. They differ greatly in the potential quantity of energy that can be stored, duration of discharge, how quickly they can respond, as well as overall footprint and cost.

Mechanical Storage

- **Pumped Storage Hydroelectricity (PSH)** - When electricity is available, water is pumped from a low source to a higher elevation reservoir. Once power is needed the water is allowed to flow back to the lower source, powering a turbine generator. This is also the most mature and has the longest lifetime (~55 y) of all utility-scale energy storage schemes. In addition, PSH is the lowest cost per MWh when properly located. Taking those factors into consideration, if an opportunity arises to invest in a PSH system elsewhere such as adding pumps to an already existing dam, LAC would be well served to pursue a stake in it.
- **Compressed Air Energy Storage (CAES)** - Energy is stored in the form of compressed air while electricity is available. Once needed, the accumulated pressure is released and air is allowed to pass through a turbine generator. In large-scale systems the compressed air is stored in geological formations.

- **Gravitational Storage** - In this method a mass is raised to store gravitational potential energy. Once energy is needed, the mass is lowered while powering a generator. Such a system can be very efficient, but the energy stored is limited by the mass of the object raised and its change in elevation.
- **Flywheel Energy Storage** - Energy is stored by accelerating a rotating mass. Once needed, the rotating mass is used to drive a generator. In this approach, AC can be used directly to spin up the flywheel and be generated during spin down, saving losses during DC to AC conversion. A large number of flywheels can be arranged in an array to increase the amount of energy stored. However, it is generally considered to be a small scale, short duration storage scheme.

Electrochemical Storage

- **Stationary Batteries**- There are several chemistries that are in use (Lead-Acid, NaS, and lithium ion batteries (LIBs)). LIBs are currently the most attractive technology for utility-scale electricity storage when a few hours of storage is the main goal. There are several installations in the 100-200MW scale currently in operation. LIBs are very efficient, respond quickly when needed, and are well suited to supply electricity for multiple hours. The size of the battery scales linearly with the capacity.
- **Redox-flow Batteries**- These batteries differ from traditional batteries in that rather than having the active materials stored within the body of the battery, the energy is stored in two electrolyte solutions that flow through an electrochemical cell to produce the electricity. As a result, it is easier to scale a redox-flow battery system for longer duration storage. There are several different chemistries that are used, with vanadium redox-flow batteries being the most widely known. There are a couple of installations for flow batteries in the 100-200 MW range, in China and Germany, that also have capacities in the 100-800 MWh.

Chemical Storage

- **Hydrogen** - Storing electricity as a chemical fuel, like hydrogen, is a different type of storage from those previously discussed. In such a scheme hydrogen would be produced via electrolysis of water, and the hydrogen generated would be compressed and stored in tanks. When needed the hydrogen could be used to create electricity either by using fuel cells, or gas turbines (100% hydrogen compatible turbines are commercially available).

- While hydrogen for electricity production may have an exciting future there are other functions that may be of more direct use to LAC. Hydrogen is a tradable commodity that can serve more than one function. Stored hydrogen could be used for transportation fuel, chemical synthesis, electricity, or even heat. If LAC were to pursue its own infrastructure for hydrogen, the best application would be as transportation fuel to replace current diesel assets. Fuel Cell buses are already in operation and could be purchased, or existing buses could be retrofitted for fuel cell operation.

Centralized vs. Distributed Energy Storage

- To fully serve LAC, without considering LANL, an energy storage installation could be in the 10-20 MW output range with a usable capacity of 40-80 MWh. There are multiple ways to accomplish this goal depending on the technology used. A centralized storage system describes an installation of sufficient scale to serve the needs of the whole community. This could be built within the County, or it could be sited in close proximity to the generation resource used to power it. The ultimate cost of a centralized system is lower than for a distributed system. However, raising funds, designing, and building such a system may delay its implementation and slow its impact on carbon emissions.
- For that reason, we advocate that LAC study the potential of distributed energy storage where the storage systems could be leased to homeowners and landlords. A large and very resilient system would be like that studied by NREL, a 5 kW battery with 20 kWh of storage. If such a system were installed into 2,000 homes, the DPU would have a distributed equivalent to the centralized storage case described above. Such installations could be integrated into an overall “intermittency management strategy” described in recommendation 3. While the cost would be higher than a centralized system, adoption could be much faster and allow for the maximum of community participation. A very successful pilot program has already been instituted by Green Mountain Power in Vt. Homes that have no suitable photovoltaic site could still contribute to the decarbonization of LAC’s electrical use - see Appendix C for more detail on the Green Mountain Power system.
- There is also a case to study the integration of customer-owned electric vehicles as storage batteries when plugged into the grid. A typical electric vehicle battery stores 60 to 75 kWh of energy, enough to power 12 homes for ~4 hours of average usage. Currently, the use of vehicle batteries as storage batteries to support a home is not

universal among manufacturers. But as vehicle electrification increases the potential of those battery resources cannot be ignored.

Outcome

- LAC should hire consultants to develop a strategy constituting multiple pathways for the development and deployment of energy storage resources. This analysis should include centralized vs. community vs. distributed storage systems.

Impact/Examples in Other Communities

- 2017- Hornsdale Power Reserve (HPR) goes online in Hornsdale, South Australia. 194 MWh at 150MW. HPR Claims to have saved consumers > \$150 million AUD in its first 2 years of operation.
- 2017- Green Mountain Power (GMP) created a voluntary program to install storage batteries in customer homes. Since 2017 GMP has installed ~3,000 systems and claims to have saved ~\$3 million.
- 2020 - Gateway Energy Storage, San Diego, CA. 250 MW.
- 2025 - Conversion of the Intermountain Power Plant in Delta, UT This project will convert the 1,800 MW coal-burning plant to a 840 MW natural gas combined cycle turbine. In addition to natural gas, the turbine will be fueled by 30% electrolysis derived hydrogen that will be stored in salt domes in close proximity to the plant. It will serve the Los Angeles area and should achieve 75% CO₂ reduction. While initially 30% hydrogen will be used, the project plans to increase the hydrogen mix to 100% by 2045.

Economic Impact

- Investment in energy storage as part of a broader “intermittency management strategy” could significantly reduce electricity costs to LAC. A storage system could be used for peak shaving, as well as reduce the need for curtailment of generation. It would improve the DPU’s flexibility in choosing when to purchase energy from the grid.

Benefits Other than CO₂ Reduction

- Increased reliability of electricity delivery to LAC customers by reducing short duration and local power disruption.

References/Resources

DOE Los Alamos National Laboratory - PV Feasibility Assessment, NREL 2015.

Future Electrical Energy Resources for Los Alamos County, July 2015.

Integrated Resource Plan Report, Pace Global, June 2017.

Hornsdale Power Reserve - (<https://hornsdalepowerreserve.com.au/>)

Green Mountain Power - <https://greenmountainpower.com/network-of-powerwall-batteries-delivers-first-in-new-england-benefit-for-customers/>

Recommendation 5: The County Should Either Purchase Utility-Scale Solar and Wind Resources or Purchase Those Resources From an Entity That Aggregates Renewable Energy Resources.

Time Frame: ASAP

Background

- With the decommissioning of the SJGS, the total quantity of energy resources owned either directly or via a PPA by LAC will decrease from ~74 MW to ~53 MW. Unless other resources are obtained, LAC will have to purchase more power on the open market to meet customer demand. This will decrease the flexibility that the DPU has in the timing of power purchases from the grid. This is especially true as customer demand will likely increase due to the adaptations to climate change and increased electrification due to the transition from natural gas.
- Utility-scale wind and solar are among the lowest cost methods of electricity generation with costs around \$30/MWh. When integrated with storage, those costs increase, but remain reasonable. The National Renewable Energy Laboratory's "U.S. Solar Photovoltaic System and Energy Storage Cost Benchmark: Q1 2020" put the cost of utility-scale solar with battery storage at \$57/MWh with the 30% investment in solar tax credit. This cost is slightly less than the current targeted price of the CFPP. Even without the tax credit, the cost of solar with storage would be equivalent to the cost for power from our hydroelectric resources at Abiquiu and El Vado Dams.
- If LAC were to invest in building its own solar resources, the main consideration would be where to put them. The 2015 "DOE Los Alamos National Laboratory - PV Feasibility Assessment" identified five areas on LANL property that could accommodate ~60 MW of solar generation. Building such resources within County-owned property would be difficult due to the general lack of space in LAC. However, if LAC were to expand its window of potential building sites to outside LANL and County-owned land, there is a good chance that sufficient area could be found to build the solar resources LAC would need within our balancing area.
- Absent LAC building resources of its own, there are other entities similar to Uniper that aggregate renewable electricity resources. LAC could purchase a fraction of a large wind and/or solar facility in the same manner that we purchase a fraction of the large San Juan Generating Station.

Outcome

- Increases the amount of carbon-free power owned by LAC.

Economic Impact

- Given that the Uniper contract provides firm power at ~66% of the average power paid by LAC, the economic impact could be to lower the rate paid by LAC customers. Or the DPU/BPU could use the cost savings inherent in the lower generation cost of utility scale wind and solar to pay for the inherent intermittency that comes with these resources by purchasing storage or enabling some of the other approaches to managing the intermittency of wind and solar.

Benefits Other than CO₂ Reduction

- Depending on the terms of the agreement reached, LAC may or may not have to manage the intermittency of the power purchased.
- Purchasing more resources in longer term contracts makes LAC less vulnerable to the price spikes that have become more frequent in the past ~2 years.

References/Resources

DOE Los Alamos National Laboratory - PV Feasibility Assessment, NREL 2015.

Future Electrical Energy Resources for Los Alamos County, July 2015.

Integrated Resource Plan Report, Pace Global, June 2017.

NREL- U.S. Solar Photovoltaic System and Energy Storage Cost Benchmark: Q1 2020, January 2020.

Recommendation 6: LAC Should Continue to Pursue the Feasibility of Small Modular Reactors or Other Mature Nuclear Technologies.

Time Frame: 2030

Background

- The Carbon-Free Power Plan (CFPP) is a proposed small modular reactor (SMR) to be built at the Idaho National Laboratory. As the plans currently stand, the installation will consist of six reactor modules each capable of 77 MW for a total of 462 MW generation capacity. LAC is subscribed for 1.8 MW with the option to increase to 8.6 MW once all modules are operational. The current cost target is \$58/MWh. Expected operation date for the first of its six modules is 2030.

Outcome

- LAC remains subscribed to the CFPP.

Economic Impact

- LAC has budgeted \$1,260,00 for the subscription.

Challenges & Anticipated Barriers

- The original operation date was 2022, however since this plant is the first of its kind this date has been pushed to 2030.

Recommendation 7: LAC Should Support and Incentivize the Continued Adoption of Residential PV Installation While Establishing a Program to Enable Homeowners to Purchase or Lease Residential Storage Battery Units That are Either Coupled With Their PV Installations or as Stand-Alone Systems.



Background

- Currently LAC has approximately 2 MW of rooftop solar. We support the BPU/DPU recent decision to triple the County wide limit on the amount of rooftop solar to 6 MW. We note that rooftop solar has the following benefits to LAC customers:
 - The installation of residential rooftop and commercial solar is 100% financed by the homeowner or business at an approximate cost in the \$20,000 to \$30,000 range for home installations; thus, the LAC rate payer not choosing to install rooftop solar is not funding the construction.
 - Solar generation within LAC reduces the average transmission capacity needed to serve the LAC load. **Money not spent on transmission is money saved by all customers.** Of note, storage located within the County is an important component of realizing this saving in transmission costs.
 - The BPU/DPU are customer serving organizations. Rooftop solar is one concrete manner in which LAC customers can act upon their desire to have zero carbon electricity.
- Residential and Community solar PV can assist County power management given the increase in electricity consumption expected as LAC moves away from petroleum and natural gas. Rooftop solar provides an independent source of infrastructure financing at no upfront cost to LAC utility customers.

- Many of the topics of interest to the LAC-RES Task Force are of interest to multiple groups. One recommendation related to rooftop solar that the electric group would like the Buildings/Code Group to consider is that rooftop solar connection hardware be required for all new construction within LAC.

Outcome

- An important benefit of rooftop solar, particularly when in concert with storage, is the reduced amount of transmission needed to meet the County's needs. Additionally, the current economic structure has the added financial advantage for the County that the infrastructure is 100% funded by the customer deciding to install rooftop solar.

Impact/Examples in Other Communities

- Comparing among small communities is an excellent way to learn what has proven to be feasible. Appendices A and B provide some such examples:
 - **Appendix A** provides examples of residential and community rooftop solar PV projects.
 - **Appendix B** provides an economic example of how Santa Fe Schools saved money by installing rooftop solar.

Recommendation 8: DPU and BPU Support the Expansion of EVS and EV Charging Infrastructure.

Time Frame: As outlined by the transportation section of this task force.

Background

- Electric car charging infrastructure is primarily addressed by the transportation group of this task force. It is included here to emphasize the demand management aspects of electric car infrastructure. In the context of demand management: If we are going to enable our customers to charge when power is at its lowest cost and lowest carbon content, LAC businesses and DPU need a plan for how the infrastructure is to be created. Additionally, as many individuals come to LAC for work during the day, providing charging opportunities is a chance to increase the customer base of the DPU.

Recommendation 9: LAC Should Adopt a Community Education Strategy Around Electrification of Efficient Appliances for Residential Use, i.e., Heat Pumps, Air Conditioning, Water Heaters, Magnetic-Induction Stoves, etc.

Background

- One of the overarching philosophies of reducing carbon emission is to (1) make electric generation free of carbon and (2) replace the direct use of fossil fuels with electricity. This two-step process is simple to understand but implementation is not so straightforward as it is generally easiest to simply replace any appliance you have with an equivalent unit. To avoid duplication with work performed by the natural gas subcommittee of the task force, we will conclude with a high-level list of the main items that are expected to be involved in this transition and which community wide education is needed:
 1. Change gas water heater and ovens to electric water heaters and ovens
 2. Change gas stoves to electric induction stoves
 3. Change gas heating systems to heat pumps
 4. Change internal combustion cars to electric cars
- The first two items on this list are thought to be somewhat straightforward though not trivial. The latter two are significant changes. The utility customers of LAC will likely benefit with educational information in a variety of forms. A home tour along the lines of the homes built by the Japanese vendors along Trinity Drive during that technology demonstration project are expected to be of particular utility.

APPENDICES

APPENDIX A: Usefulness of Residential and Community Rooftop Solar PV

1. Santa Fe's Goals for non-Carbon Energy

- Establish a clean energy landscape with a secure and diversified portfolio that maintains reliable, low-cost, efficient, low water use, and low air and carbon emissions services.
- Reduce community electricity and natural gas consumption by one percent per year (representing a reduction of 6 million kilowatt-hours (kWh) of electricity and 615,000 therms of natural gas annually).
- Identify and increase participation in community renewable energy programs, including on-site solar installations and community solar projects.
- Reduce electric consumption annually with energy efficiency at City facilities.
- Increase use of renewable energy at City facilities.
- Ensure that publicly accessible electric vehicle charging stations are located within 5 miles of any part of Santa Fe.

2. If you want a model of how to build a broad coalition around aggressive climate policy, **take a look at what Oregon's doing.**

The state's Democratic majority failed to pass an economy-wide carbon cap-and-trade bill in 2019 and 2020. Now the legislature is on the verge of passing HB 2021, a more targeted clean power and environmental justice policy, [Jeff reports](#).

The bill would cut carbon emissions from Oregon's electricity system 80 percent by 2030, 90 percent by 2035 and 100 percent by 2040.

- Utilities Portland General Electric and Pacific Power, which will have to execute that directive, support the legislation.
- That's one of many examples nationwide of electric utilities pushing for more aggressive decarbonization timelines.
- The bill bans new natural gas plant construction within the state. Oregon already eliminated in-state coal plants.

The catch: By focusing on the grid, the bill doesn't decarbonize buildings, transportation, industry or land use.

- Those sectors are crucial for comprehensive climate policy.
 - But, having a clear pathway to carbon-free electricity is crucial for later electrifying the rest of the economy
3. Interim Report - Net-Zero America: Potential Pathways, Infrastructure, and Impacts
https://environmenthalfcentury.princeton.edu/sites/g/files/toruqf331/files/2020-12/Princeton_NZA_Interim_Report_15_Dec_2020_FINAL.pdf
 4. New Mexico solar panels | guide to solar incentives, costs and savings in NM!
https://www.solar-estimate.org/residential-solar/solar-panels/new-mexico?aff=4713&cam=45&gclid=Cj0KCQjwp86EBhD7ARIsAFkgakjcsHlygeUHGU6gx46CGwsICUoEIDxy0mOzTWvLPYl2z1EhStfPXzoaAh4DEALw_wcB
 5. What It Really Means to Require Solar Panels on All New Buildings
<https://www.greentechmedia.com/articles/read/what-it-really-means-to-require-solar-panels-on-all-new-buildings>
 6. Green Electricity Can Be Unstable. Big-Battery Backups Are The Solution.
 The changeover from fossil fuels to renewables behooves US governments as well as fossil energy companies to look at what South Australia has learned.
 7. Forbes: <https://apple.news/AP8K1k9A-R5edZqSzKbk2GA>
 8. We reference a recent set of recommendations of the special BPU Conservation Subcommittee 2020 that went to the Utilities Board. These are excellent and should be part of this document's recommendations.
 (<https://losalamos.legistar.com/View.ashx?M=F&ID=8655258&GUID=B92A64E8-ED62-44AE-83AC-C2C3FF3B9D29>)

Appendix B: Santa Fe Schools experience with rooftop solar PV

SFPS is 22% Solar Powered!

2.3 megawatts of SFPS owned solar photovoltaic (PV) generation capacity, as of May 2021:

Kearny Elementary - 143 kW ground mount (June 2020)
Milagro Middle School - 166 kW carports (June 2019)
Nina Otero Community School - 110 kW ground mount (May 2019)
Capital High School - 339 kW ground mount (Aug 2018)
El Camino Real Academy - 68 kW parking canopy (Aug 2018)
Ramirez Thomas Elementary - 104 kW parking canopy (Nov 2016)
Santa Fe High School - 867 kW ground mount; powers 65% of Santa Fe High, Chaparral ECO Campus, and Facility and Maintenance Building (Oct 2016)
Acequia Madre Elementary – 26 kW shade structure (Mar 2015)
Atalaya Elementary – 39 kW shade structure (Nov 2015)
Capital High School – 196 kW ground mount (Oct 2015)
Pinon Elementary – 46 kW shade structure (Sept 2015)
El Camino Real Academy – 75 kW parking canopy (July 2014)
Nina Otero Community School – 63 kW parking canopy (July 2014)
Amy Biehl Community School – 74 kW rooftop (April 2013)
El Dorado Community School – 2.6 kW side of building (2011)
Gonzales Community School – 3.1 kW side of building and pole mount (Jan 2011)
Santa Fe High – 4 kW ground mount (Sept 2010) (removed because of construction in 2019)



SFPS Solar PV Program Facts

More than 6 million pounds of carbon kept from entering the atmosphere every year
More than 1.5 million gallons of water saved annually by generating our own power
An average of \$450,000 in annual savings; supporting the Operational Budget, and paying the Debt Service on Clean Energy Revenue Bonds

Facility Analysis

All SFPS facilities and properties are being assessed for solar PV compatibility.

Funding Sources

General Obligation Bonds - every 4 year election cycle
Clean Energy Revenue Bonds through New Mexico Finance Authority
Legislative Appropriation

APPENDIX C: This Vermont Utility Is Revolutionizing Its Power Grid to Fight Climate Change. Will the Rest of the Country Follow Suit?

This Vermont Utility Is Revolutionizing Its Power Grid to Fight Climate Change. Will the Rest of the Country Follow Suit?

Time Magazine ALEJANDRO DE LA GARZA

It's heartbreaking to see weather events come through, and to see the impacts of climate change happening all over the country," says Green Mountain Power=GMP (Colchester, Vermont) CEO Mari McClure, sitting in a conference room at company headquarters.

Rural Panton, Vt., is home to GMP's newest effort to remake the electric system: a "microgrid" attached to a solar power plant, which can distribute its electricity to parts of the nearby community in case they get cut off from the main energy network due to falling trees or heavy snows, common occurrences in this isolated New England town. GMP engineers spent two years modeling electrical scenarios and testing components to make sure the system would work safely. "I can come up with 10,000 reasons why you wouldn't pursue this," says Josh Castonguay, VP of engineering and innovation at GMP, standing near a 4.9-megawatt storage battery that helps power the grid when the sun isn't shining, and which doubles as a local energy supply for the town in an emergency. "This won't work. That won't work. They're all things that you've just gotta engineer through."

For one thing, power-line circuit breakers—which cut off electricity if, say, a tree knocks down a utility pole—weren't designed to operate with only a single battery pumping power through their lines. GMP's solution is a novel use of a type of transformer known as a grounding bank to increase the voltage of Panton's microgrid high enough to make sure its breakers trip if electrical wires are damaged.

Another of GMP's grid-modernization projects is to lease Tesla Powerwall battery backup systems to homeowners at below-market rates—and then use them, with homeowners' permission, to help cover a community's electricity needs during peak times. Other U.S. utilities have since started similar battery grid programs, many with advice from GMP. With its Powerwall program, GMP can offset some of that peak demand, dumping stored electricity onto the grid from garages and basements around the state, a type of setup known as a "virtual power plant" (VPP).

Battery-making firms and installers like Sonnen and Sunrun have partnered with utilities, participated in utility programs that allowed multiple installers to contribute batteries, or, in Sonnen's case, networked their own U.S. home battery communities. (The U.S. is playing catchup here to some extent; such initiatives have existed outside the country since 2015.)

Meanwhile, GMP has expanded its own VPP initiative, investing about \$30 million to sign up more than 2,000 homes in one of the largest utility-coordinated home battery programs in the country. Many residents also joined out of concern for a warming climate

Energy experts say VPP systems are essential in the near term, in part because they can help prevent overloads like the one that crippled Texas earlier this year.

In the U.K., Kaluza, a spin-off of British energy supplier Ovo, is paying customers to access their electric-car batteries while they're charging in order to help manage electrical peaks (company representatives say the firm will expand to the U.S. in coming months). A similar, decentralized initiative from Ford, which uses batteries on its upcoming electric F-150, may be years away.

Contact Green Mountain Power=GMP (Colchester, Vermont) CEO Mari McClure for information about how they leased storage to residents and made appropriate changes to the electrical system to accommodate their use. They claim to have saved > \$3 million in the first 3 quarters of 2020.



Solar array on North Mesa near Middle School

XI. Recommendations: Natural Gas Reduction

Introduction

Natural gas (NG) is a major contributor to global climate change. Its principal component is methane, CH₄. When methane is burned, it combines with atmospheric oxygen to form carbon dioxide, CO₂, and harmless water vapor. CO₂ remains in the atmosphere for hundreds of years, forming a heat-trapping blanket that helps raise the temperature of the planet, hence the term “greenhouse gas.” Unburned methane is also a greenhouse gas. It can be released during exploration, drilling, extraction, transmission, distribution, or incomplete combustion of NG. Compared to CO₂, it has a much greater global warming potential but lasts “only” decades in the atmosphere. It, too, is a significant contributor to climate change.

In October, 2020, the Board of Public Utilities adopted a strategic goal to “support elimination of natural gas usage by 2070.” The exact date is not important. Starting on “elimination” is.

Background

Almost all buildings in Los Alamos are heated with NG. The Department of Public Utilities (DPU) supplies gas to approximately 7700 meters. In a typical year, the citizens of Los Alamos County, exclusive of the Laboratory, use about 8,600,000 therms (average for 2010-2019).

Roughly sixty homes in the La Senda area of White Rock are heated with commercially-supplied propane, C₃H₈. When burned, C₃H₈ also produces CO₂. Its use also needs to be eliminated using the same approaches as for NG, but the quantity is small enough it is not included in the statistics in this report.

NG use closely follows ambient air temperatures, as expected. It typically peaks at about 1,500,000 therms/mo. in December and January. Minimum usage is around 200,000 therms/mo. in June, July, and August. (Again, these are 2010-2019 averages.) Summer use indicates how much gas is used for purposes other than space heating – water heating, cooking, and pilot lights. Those secondary uses are undoubtedly greater in colder weather when more water heating is necessary and more cooking is done, but they cannot be separated in the data. If 200,000 therms/mo. year-round is assumed, 28% of NG is used for secondary purposes. The real percentage is higher.

At least 75% of NG goes to residential customers. About 4% is used by LA Public Schools. Close to 5% is used by County government. About 16% of use is classified by DPU as “commercial.” Some “commercial” use is actually also residential. A significant part of the “commercial” space in town is occupied by the Laboratory or its subcontractors and should not be attributed to LA citizens. The actual percentage of NG that goes to residences is higher than 75%.

Clearly, residential space heating is by far the single largest use for NG in Los Alamos. Hence, the NG Reduction Subcommittee has so far focused on it, while recognizing that secondary and non-residential uses will need to be addressed more completely, too.

This report outlines one general path to phasing out NG that is technically and economically viable today. Technical, economic, and regulatory environments will evolve. Other paths may open. However it is done, it will take decades. We need to get started with the tools at hand.



Downtown Los Alamos

Recommendation 1: Compact Architectures Should be Encouraged in New Construction.

Time Frame: Ongoing

Background

- Heat energy is lost from buildings through external surfaces – outside walls, roofs, crawl spaces (where applicable), and through windows and doors. The less exterior surface area for each square foot of usable internal area, the more energy-efficient the building can be. In homes, single-family, single-story, detached (ranch style) homes are the least energy-efficient. Multi-story, multi-family units are significantly more efficient.
- The same is true for cooling in hot weather, although much heat comes from direct solar radiation rather than through conduction from outside air.
- Los Alamos housing is already being forced to be more compact by limitations on available land.

Outcome

- External envelope heat conduction per square foot of residential or commercial floor area can be decreased significantly, lowering the need for heating (and cooling) energy.

Case Study

- Heat loss is proportional to surface area, among other factors. Three simple examples demonstrate the advantage of compact architecture.
 - Significantly more heat is typically lost through roofs than walls. A two-story building has half the roof area of a single-story building with the same living area, although it does have more wall area.
 - A rectangular duplex has 75% of the wall area of two detached homes with the same living area.
 - A quad of rectangular units has 62% of the wall area of detached homes for the same living area.

This will be confirmed through analysis of data on existing buildings.

Strategy

- Encourage construction of attached and multi-story buildings for both residential and commercial applications.

Economic Impact

- Since less structure and land are required, compact architectures are less expensive to construct, reducing capital costs per square foot for owners.

Benefits Other than CO₂ Reduction

- Vertical development within downtown could increase foot traffic to local merchants.
- More compact architectures allow the option of higher overall housing density and hence the ability to house more people on LA's limited land area. (This would not be seen as a benefit by many people.)
- Higher housing density in downtown or near any future shopping area(s) may increase walking and reduce motor vehicle trips for some services.

Challenges & Anticipated Barriers

- Compact housing architectures may not be as desirable to the consumer.

There may be fear that "multi-story" will turn into "high-rise," a concept historically unpopular in LA.

Recommendation 2: New Construction Should Derive a Significant Portion of its Heating Energy From the Sun.

Time Frame: Ongoing

This subject will be addressed in the final report.



Natural gas site (and wildlife) on Diamond Drive

Recommendation 3: All New Construction Should Have Solar Access.

Time Frame: Ongoing

Background

- Solar thermal heating and “rooftop” photovoltaic (PV) electric power generation only work if sunlight hits the building. Adjacent buildings and trees can block solar radiation.

Outcome

- All newly constructed buildings should “see” the sun. At least the roof and as much of the rest of the building as possible should experience direct solar radiation most, if not all, of the day, particularly during the colder months. (Roofs and other overhangs may be designed to shield walls from solar radiation during the warm months.)
- Increased demand for electrical usage is possible during warmer days for cooling.

Strategy

- Development plans should require solar access to all occupied buildings.
- Special consideration and further study is warranted for trees with respect to solar access.
- Site plans should encourage building orientation to take maximum use of solar energy for heating and PV electric generation, where possible.

Economic Impact

- Requiring solar access could result in iterations of new construction planning which may cost the customer time and money or result in an unsatisfactory building plan for them.

Challenges & Anticipated Barriers

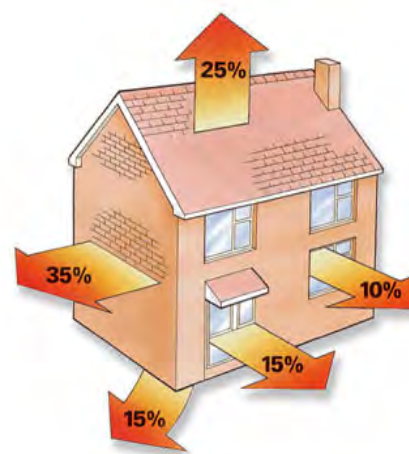
- Solar access creates an additional planning/design/permitting constraint on new construction which may reduce utilization of some of the unusual land parcel shapes available in the community.
- Reduced shade from trees and other buildings increases undesired heating and potential cooling loads in warm weather.

Recommendation 4: Reduce Average Heat Loading in Residences to 0.30 therms/sq. ft. or Less.

Time Frame: Ongoing

Background

- After basic structural style, heat loss can be minimized through insulation and modern window and doors. Some fresh outside air does need to be admitted into any occupied building. It should be in a controllable fashion (e.g., open windows) not just through random leaks. Image below from <https://www.mygreenhomeblog.com/four-key-areas-home-must-maintain/>.
- New Mexico has adopted, with some modifications, the 2018 International Energy Conservation Code (IECC 2018) as the NM Residential Energy Code, which applies to new construction and changes substantial enough to require permits. Where its provisions are not binding, it is still useful as guidance for any property upgrades.
- Simply put, IECC 2018 requires windows in LA to have a U-Factor no more than 0.3, ceiling insulation of at least R-49, and wall insulation of at least R-20. Foundations and crawl spaces also have insulation requirements.
- Windows represent a major heat loss in most home envelopes. Their heat loss is rated in “U-Factor,” or BTU/hr•sq.ft•deg F. Single-pane windows typically have a U-Factor around 1. Double-pane windows can vary from about 0.8 to 0.3 depending on frame and what gas is between the panes. Triple-pane windows may have U-factors as low as 0.15. For rough comparison, the more familiar R-value of a window is the reciprocal of the U-Factor. Even a window with a U-Factor of 0.3 has an R-value of only 3.3, much less than walls should be. How much heat is lost through windows depends both on the U-Factor of the windows and the total window area. Doors can be similarly large heat loss points.
- Owners of existing buildings don’t have the luxury of orienting their buildings or optimizing their structure for the most favorable solar thermal heating. Solar access may be limited. Every structure will be different. They will likely have to rely more, or exclusively, on upgraded insulation and artificial heat.
- Many homes in LA originated as government-built housing in the late 1940s and 1950s. These were generally well built, but energy efficiency was not a consideration. Insulation



was sparse and single-pane windows were standard. Virtually all government housing has been upgraded to varied extent in many different ways. Regardless of upgrades, annual heat loading of government housing averages about 0.48 therms/sq. ft. Significant numbers of those buildings have heat loadings exceeding 0.75 therms/sq. ft., but there are also significant numbers with loadings of 0.35 therms/sq. ft. or less, demonstrating that energy-efficient upgrading is possible.

- Private construction of homes began about 1960. The average home originally built in the 1960s has a heat loading around 0.35 therms/sq. ft. By about 1980, annual heat loading dropped to around 0.30 therms/sq. ft., where it has remained. Some of the newer, higher density housing has heat loadings around 0.25 therms/sq. ft. More and better insulation, double-pane and coated windows, more efficient furnaces and boilers, and transition from forced air to hydronic heat have all contributed to this improvement.
- Overall, annual energy loading of existing LA housing averages 0.42 therms/sq. ft. Clearly, there is opportunity to reduce the need for heat energy, with the highest leverage being in the older government housing. A reasonable overall goal over the next decades would be to reduce that average loading to no more than 0.30 therms/sq. ft. By itself, that would reduce heating energy needs by 29%.

Outcome

- Newly constructed residences would all have heat loadings of no more than 0.25 therms/sq. ft.
- Overall average residential heat loading would be reduced to ≤ 0.30 therms/sq. ft.
- Reduced heat loading, by itself, would reduce heating energy needs by at least 30%.

Case Studies *(to be added in final report)*

Current average home size in LA is slightly more than 2000 sq. ft. That nominal size will be used for all examples except the older (usually smaller) government homes. Other sizes can be estimated by direct scaling based on square footage.

These will include technical approach(es), lifetime costs (initial, operating, and replacement), and typical and peak electrical power requirements.

- 1. New construction, 2000 sq. ft. home*
- 2. Retrofit government home*
- 3. Retrofit 2000 sq. ft. single-story detached ranch style home (common 1960s & 70s construction) with forced-air heat*
- 4. Retrofit newer (1980+) 2000 sq. ft. detached home with hydronic heat*

5. Summary Table

Strategy

Reducing heat loss through building envelopes will require increased insulation and better doors and windows. Building design standards should incorporate them. Inclusion into updates of building codes may be necessary at some point.

- External energy audits of buildings are relatively easy, inexpensive, and non-intrusive. They could help property owners understand where their heat is being lost and how much. They can also easily detect heat leaks due to gaps, failed caulking, etc. Leaks are often relatively easy to fix. The Dept. of Public Utilities once provided this service. It could again at modest staff cost.

Economic Impact

- It is easiest and most economical, of course, to incorporate low-loss insulation, windows, and doors into a building when first constructed. Doing so really adds little to the cost of a new building.
- Depending on the individual existing home, the easiest and most “bang for the buck” improvement is likely from adding insulation in the attic if the home has one. Insulation can be added to walls cost-effectively, too. Window and door upgrades can have the largest effect, but are also the most expensive.
- Costs for remodeling vary wildly and are affected by many factors. However, the base recommendations of the most cost-effective improvements have remained consistent over a long period of time with some exceptions. Blown in attic insulation at roughly \$1.75/sq. ft. for R-38 is one of the most cost-effective improvements and is often easily added in homes with attic space. *Flat-roofed homes will need to be addressed differently.* The majority of residential energy loss is through windows and doors especially if the existing windows are single glazed. Replacement for energy considerations alone is usually cost-effective only for single-glazed windows. Ballpark cost of replacement and installation of windows is \$1,000/window unit. Doors similarly can be thermal underperformers, but are expensive to replace at \$1,200+/door. Adding exterior insulation to existing walls finished with new siding or stucco can improve the walls’ thermal performance by 50% or more at a cost of \$7.50+/ sq. ft.
- While window and door replacement is typically not cost-effective for purely energy use reduction, upgrading during remodeling may add little additional cost while significantly reducing heat loading.

Benefits Other than CO₂ Reduction

- Well-insulated homes tend to have a more uniform interior temperature, which most people find more comfortable. Drafts not related to forced-air systems are essentially eliminated.
- Fire-resistant finishes can be incorporated into the new wall finish to reduce the wildfire threat to the building.

Challenges & Anticipated Barriers

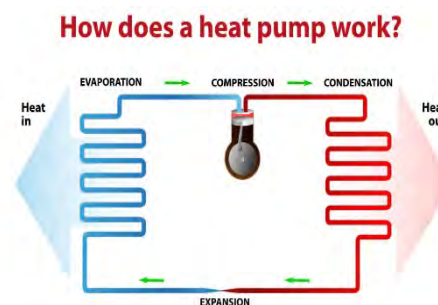
- Cost and inertia are the major impediments to any remodeling.

Recommendation 5: Heat Pumps Should be Substituted When NG-Fired Furnaces and Boilers are Replaced.

Time Frame: Ongoing

Background

- Most new buildings with some solar heat and all existing buildings will require artificial heat. Today's sources are NG-fired furnaces (for air) and boilers (for water). (Despite the name, boilers do not heat water nearly to boiling temperature). A few places may use electric heat. There are no known sources or uses of geothermal heat on the east side of the Jemez mountains.
- Traditional electric resistance heat has a well-deserved reputation as being very expensive. It is. At current nominal rates in Los Alamos (\$0.55/therm for NG and \$0.115/kWh for electricity in March, 2021) electricity costs about six times as much as NG for the same amount of heat energy.
- Heat pumps are a well-established technology that makes far more efficient use of electricity for heating than resistance heating. Heat pumps are not new. Refrigeration in its many forms (e.g., refrigerators, freezers, and refrigerated air conditioners) uses heat pumps. Utilizing phase changes in a working fluid, they essentially extract heat energy from a cold source and “pump” it “uphill” into warmer air or water. Image from <https://thesunriseguide.com/how-a-heat-pump-works/>.
- Heat pumps can be configured to work both directions, to heat or cool the inside of a building. A valve in the heat pump system reverses the direction of heat flow.
- Heat pumps can substitute for a furnace or central air conditioner, heating or cooling air in a forced air system. They can also substitute for a boiler, heating water in a hydronic system, either baseboard or in-floor. Hydronic air conditioning gets more complicated, because some air movement is necessary to prevent condensation. Chilled water pipes near ceilings are one approach, more applicable in institutional buildings. Another is to create some airflow through indoor evaporator coils. The popular “mini-splits” use this technique. Either way, one heat pump can both heat and cool a home.
- In a heat pump, electricity is not turned into heat. It only runs the pump. The colder the source, the more work the pump has to do – and the more electricity is required – to pump heat energy “uphill.” Heat pumps are characterized by a “Coefficient of Performance” (COP). COP is basically the ratio of heat energy transferred to the energy



content of the electricity required to affect that transfer. It might be considered the “gain” of a heat pump relative to straight resistance heating. Resistance heating has a COP of 1.0. A typical heat pump might have a COP of 4 if the source temperature is around 50° F, a COP of 3.5 if the source temperature is 30° F, and a COP of 3 if the source temperature is 5° F.

- The warmer the source, the less work heat pumps have to do and the higher the COP. The source of heat can be the ground, water, or ambient air. 20 ft. or more below the surface, our ground temperature is around 50° F all year round. When heat energy is extracted from soil by a heat pump, the soil temperature drops unless the energy is replaced. Water is a good conductor of heat. Ground-source heat pumps work best in wet soil. A lake or pond is even better. Our volcanic soil is dry and contains a lot of air, a thermal insulator. It is a poor thermal conductor and not suitable as a source for heat pumps. Air-source heat pumps are the practical choice in Los Alamos.
- Heat pumps can be augmented by so-called “reverse cycle chillers.” (“Chiller” is a misnomer, since they can both heat and cool.) In a reverse cycle system, the heat pump actually heats or cools a well-insulated reservoir tank of water, usually built underground. That water then heats or cools the building. The overall system is more efficient, but also more complex and costly to install, than a heat pump by itself.

Outcome

- Eventually, all NG-fired heaters should be replaced by heat pumps.
- NG should no longer be needed for space heating, although the NG supply and distribution system will need to be maintained operational for several decades until conversion is complete.

Economic Impact

- Furnaces and boilers require replacement every several decades. Replacing them with heat pumps would eliminate the single largest use of NG in each home. Details, including physical layout, of replacement installation would vary for each building. Older furnaces and boilers could be retained for back-up as long as NG service remains.
- The initial cost to install a heat pump is substantially higher than the cost to replace an existing NG-fired furnace or boiler, of order 2-3 times as much today. Since a large part of the cost is in the installation itself, not the unit, there will be great variations for different installations.
- NG prices are near historic lows. They are unlikely to drop much lower. Normal market fluctuations are large. The range covers a factor of several, although they are buffered

somewhat for LA retail customers by DPU's long-term contracts. Government actions to discourage use of carbon-based products (e.g., a "carbon tax") may well drive prices higher, also. In March, 2021, the LA residential rate was \$0.55/therm. At that NG rate and the current residential electricity rate of \$0.115/kWh, and assuming an average heat pump COP of 3.5., the commodity cost for electricity to run a heat pump would be about 1.75 times the cost of gas for the same amount of heat. While that factor does not look favorable for conversion from NG to heat pumps, NG prices are likely to be much higher in future decades, making the cost comparison more attractive.

Benefits Other Than CO₂ Reduction

- Heat pumps work both directions, providing cooling (air conditioning) as well as heating. As the climate warms, LA summers are getting hotter for longer. Summer cooling will become increasingly desirable.

Challenges & Anticipated Barriers

- Heat pumps are not a direct or "drop-in" replacement for furnaces or boilers in existing buildings. Replacement will take some time and planning.
- Installation cost will be significant, often more than the cost of the hardware itself. This will compound the usual resistance to change.



Natural gas site on Barranca Mesa

Recommendation 6: Solar Thermal, Heat Pump, or Point-of-Use Tankless Water Heaters Should be Substituted When Traditional Hot Water Heaters are Replaced.

Time Frame: Ongoing

Background

- Domestic hot water is needed for personal hygiene, dish washing, clothes washing, and ancillary uses. It is almost always provided by a “hot water heater” for which the primary energy source may be electric power, NG, or heated water from the hydronic boiler that also supplies space heating. Heat losses from hot water are large. The water heater itself, no matter how well-insulated, is losing heat 24/7. Any time hot water is flowing through pipes to points of use in the house, the pipes (usually uninsulated) are losing heat. If a tap has not been used in a while, hot water must flow all the way from the heater to the tap. What is not used then sits in the pipe and cools down to room temperature, wasting all its heat energy. In winter, much of the wasted heat in hot water systems contributes to heating the house. In warm weather, it adds to the cooling load. Image from <https://cleanenergysummit.org/best-solar-water-heaters/>.
- Alternatives include:
 - Solar “rooftop” heating of water during the day with subsequent storage, similar to – but larger than -- current hot water heater tanks.
 - A “stand-alone” heat pump dedicated to heating hot water.
 - Heating water with the same heat pump system that provides space heating in hydronic systems. The water heater is simply a heat exchanger on another loop in the house heating system. This is already done in some hydronically-heated houses.
 - Use of electrically-heated “tankless” hot water heaters. Located near the tap or other point of use, these provide “on-demand” hot water, avoiding all the standby losses inherent in stored hot water systems. In new construction, traditional hot water piping is no longer needed. Tankless hot water heaters tend to last longer than traditional tank types.



Much more detail will be added to this section in final report.

Recommendation 7: Electric Induction Ranges Should be Substituted When Traditional Electric or NG Ranges are Replaced.

Time Frame: Ongoing

Background

- Electric induction ranges are steadily gaining in popularity. Instead of using electrical (resistance) heating elements or NG flames to heat cookware, they induce an electric current directly in the cookware. Only the cookware and its contents get hot, not the burner. No heat energy is lost in the transfer. They are more energy efficient than either traditional electric or NG ranges.

Economic Impact

- Purchase prices for induction ranges are still higher than traditional electric or natural gas ranges, but are dropping rapidly as they become more common. Ranges tend to be replaced every few decades. The incremental cost of an induction range is small at replacement time.

Benefits Other Than CO₂ Reduction

- Induction ranges heat faster than NG-ranges and much faster than traditional electric ranges. Temperature can be controlled more precisely. When cookware is removed, the smooth surface of the range itself is cool, reducing the risk of burns or fires. There is no gas to leak into the house if an un-lit burner is left on.

Challenges & Anticipated Barriers

- Cookware must have iron in it. Cast iron or stainless steel cookware will both work; aluminum, glass, or ceramic will not. Smooth surfaces facilitate energy transfer. Hence, some households may need new cookware.
- Kitchens with NG ranges may need to be rewired for electric induction stoves.

Recommendation 8: NG Pilot Lights Should be Discouraged or Banned in New or Replacement Gas Appliances.

Time Frame: Short-term

Background

- Pilot lights burn 24/7/365 to provide ignition in some NG furnaces, boilers, water heaters, ranges, and fireplaces. Electric spark ignition has largely replaced pilot lights. It should replace all of them in the next replacement cycle even if the unit itself continues to use NG. Retrofit kits are available for the pilot lights in some existing units.

Outcome

- No new pilot lights should be installed.

Strategy

- As NG appliances are phased out, the need for pilot lights will disappear. There is no reason to wait that long. Installation of appliances with pilot lights should be banned.

Economic Impact

- A single, continuously operating NG pilot light burns typically 400-800 BTU/hr. Using 600 BTU/hr. as a base rate, that is 5.26 M BTU/yr. or 53 therms/yr. At \$0.55/therm, the annual cost is about \$29/yr. Kits to replace NG pilot lights with electric ignition run ~\$200 plus the cost of installation. Replacement may not be cost effective, but there is no significant difference in cost when a new furnace or other appliance is purchased with electric ignition.

Benefits Other Than CO₂ Reduction

- Although usually well protected, pilot lights are an ignition source for flammable items in the kitchen, drapes, etc. This modest hazard would be eliminated.
- If the NG supply is interrupted, utility crews would no longer have to visit every building with gas service to relight pilot lights.

Recommendation 9: Institutional Spaces Should be Heated Without Natural Gas (*placeholder pending specific recommendations in final report*).

Background

- The basic approaches outlined for residential space heating are also applicable to institutions. More compact envelopes reduce heat loss for the same floor area. Some types of institutions (e.g., most retail stores, manufacturing) require little lossy window area. For others (e.g., offices, schools) the bright, open, airy indoors areas enabled by extensive use of glass exterior walls may be a luxury we cannot afford. Good ceiling and wall insulation is as vital to reducing heat loss in institutional buildings as in residential. Heat pumps can replace NG-fired furnaces and boilers. Larger, more complex buildings (e.g., large offices, schools) often have very different heating and cooling needs in different areas. More complex heat pumps, such as Variable Refrigerant Flow (VRF) systems, can move heat from warm parts of a building, such as the south side near windows, to cooler parts, reducing greatly the need to “pump” heat energy out of much colder outside air.
- Most institutional buildings are largely unoccupied at night. They can tolerate reduced nighttime temperatures. Unlike residences, a well-insulated building may need little artificial heat at night. Nighttime temperature set-backs are already common.
- The typically larger roof areas and reduced emphasis on aesthetics in institutional buildings makes rooftop solar PV installations to power heat pumps more attractive than they are for residences.

Quantitative examples will be included in the final report.

- Although institutional structures account for slightly less than 25% of LA’s NG use, there are far fewer of them than there are residences. Changes are less “personal” than those associated with residences. Changes in requirements for new construction and physical modifications to existing buildings may be easier to accept.

Recommendation 10: Base-Load Electrical Generating, Transmission, and Distribution Requirements to Meet Overnight Heating Energy Demand Should be Included in Electrical Utility Supply Planning.

Time Frame: Short-term and Ongoing

Background

- Most homes are likely to need 3-6 ton heat pumps (1 ton = 12,000 BTU/hr. or 0.12 therms /hr.) with the larger size needed only for the largest or most poorly-insulated. Heat pumps typically draw about 1.1 kW / ton. At 230 VAC, that is approx. 5 Amperes (A) / ton. If all of that power is drawn from the DPU service line, some older homes with 100 A service may have to upgrade to the more modern 200 A service. Charging of electric vehicles may also push service upgrades.
- A more fundamental problem is the overall demand on the electric supply and distribution system. Normal electrical use in LA, exclusive of the Lab, is typically 8-20 MW, with occasional peaks in the low 20s. The daily peak is typically in evenings. Lowest demand occurs overnight. Peak County-wide NG use in recent years was 5060 therms/hr. on the single-digits morning of 8 February 2019. Simply replacing all NG-fired furnaces and boilers with heat pumps with a COP of 3 at that air temperature would require approx. 50 MW of electric power. That would substantially exceed generation, transmission, and distribution capacity of our current power supply system.
- The approaches outlined above will significantly reduce that potential increase in demand for electric power just for space heating. *Estimates will be included in the final report.*
- In any case, there will be additional demands placed on the electric power system. These will peak during the coldest temperatures which usually occur at night when other electrical demand is lowest. This will increase the base load on the system. Sources that can support 24/7 base loads, such as the Carbon-Free Power Project, will become even more important than they are presently.

Recommendation 11: Distributed (“Rooftop”) Electric Generation and Storage Should be Encouraged.

Time Frame: Ongoing

Background

- Distributed (“rooftop”) photovoltaic (PV) electricity generation, storage, and heat pumps can be a more flexible heat source than direct solar thermal heating with thermal storage. Even without electrical energy storage, PV and heat pumps provide daytime cooling, which solar energy itself obviously does not.
- As noted in the preceding section, total electric demand is likely to exceed existing utility system capacity. That will require some combination of increased system capacity and increased distributed generation in amounts yet to be determined.

Economic Impact

- The price of solar photovoltaic (PV) cells and battery storage have declined rapidly, as is typical of new, widely adopted technologies. Further decreases can be expected. Although they produce no greenhouse gases at point of use, both have environmental impacts in production and disposal which need to be considered.
- Since installation is such a large part of the cost of PV arrays, system cost varies widely. \$3.00 - \$3.50 / watt is typical. Hence, a typical 5 kW residential PV installation would cost around \$16,000 today. At current electric rates, such an installation will pay for itself in 10-15 years, significantly less than its 20+ year expected lifetime.
- Battery packs (e.g., Tesla “Powerwall”) are available for home installation in sizes that can power heat pumps all night. The issue is cost. Batteries installed in electric automobiles are typically large enough. It is technically practical to make those batteries serve dual use. Operational practicality is likely to depend on individual usage patterns. *In any case, further analysis is necessary to estimate electrical storage requirements and, hence, costs.*
- Substantial subsidies, in the form of tax credits, exist today for solar and other renewable energy installations. These credits were instituted to “jump start” these industries. It is uncertain how long they will last as these approaches become more mainstream.

Recommendation 12: Natural Gas Hookups Should Not be Allowed for New Construction After Some Point in Time.

Time Frame: Medium-Term

Background

- Buildings constructed today will (hopefully) exist for many decades, typically 50-100 years or more. It is much easier to build a new building that does not use NG than to retrofit one after it is built.

Case Study

- A century or so ago, most buildings in the U.S. were heated with wood or coal. Conversion of both new and existing buildings to other heat sources (NG, propane, oil, electricity, or central steam) occurred over only a few decades, largely without government mandate or subsidy. It can be done.
- In Los Alamos, many buildings in the western part of downtown (medical center, high school, Gold St. apartments, shopping center, etc.) were heated with steam from the DOE steam plant on 35th St. In the mid-1980s, DOE decided to close that plant. It gave affected entities notice (which was extended). They all came up with alternate sources of heat and “the plug was pulled” on the DOE steam plant. There was grumbling, of course, but it was done.

Strategy

- Discourage new hookups, starting very soon. Buildings already in design or permitted should not be forced to change course.
- Reliability/risk studies will be necessary to establish confidence that reliability will match or exceed present NG heating systems with electric controls. If reliability is determined to be any less with electric-only heat, outage mitigation plans will need to be in place.
- Set a date, probably a few years away, after which new NG hookups will not be permitted, with few exceptions.

Economic Impact

- Fixed costs to maintain and operate DPU’s NG utility will not drop proportionately to the number of customers. Redistribution of fixed costs over the remaining customers will cause those fixed monthly costs to rise, providing an increasing economic incentive to customers to convert away from NG. This will take several decades; it will not be abrupt. How costs for the last few customers will be managed is a policy decision that does not have to be considered for decades.

- Eventually, the NG utility can be shut down, saving its annual operating cost, currently about \$4M/yr., not including capital investments. That, too, is decades away and cannot be considered until adequate confidence in NG-free heat and back-up plans are established.

Benefits Other Than CO₂ Reduction

- The small, but real, risk of fires from gas leaks is eliminated.
- Gas valve stations can disappear.

Challenges & Anticipated Barriers

- Developers and builders will complain loudly, asserting that costs will skyrocket. They may threaten not to do business in LA. The reality is that this will require them to change what they build ,and change is hard.

Administrative Notes & Caveats

Members of the Natural Gas Reduction Subcommittee are: Lia Brodnax, Elizabeth Daly, Robert Gibson, and Greg White. In May, 2021, the subcommittee was temporarily combined with the Community Planning and Zoning Subcommittee, which also includes Ben Hill and Skip Dunn. This report includes only the NG part of the combined subcommittee's work. All members of the combined subcommittee contributed to it.

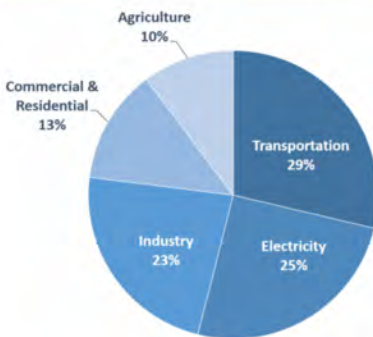
This is a preliminary report to indicate the general direction of the subcommittee's thinking and work. It is incomplete. Almost all numbers are subject to verification and refinement.

The County Assessor's office kindly supplied reports on all taxed properties in the County. This data includes year originally constructed, occupied square footage, basic architectural type, type of heat, and whether or not the space is air-conditioned. DPU supplied NG usage data for all meters in the County for every month in calendar year 2018. That year was chosen as the most representative year in the past decade. 2020 data is available, but it is not clear how COVID-related issues may have affected usage patterns. All information is public and obtained either directly or through Inspection of Public Records Act (IPRA) requests. The two datasets were correlated, to the extent possible, through street addresses.

XII. Recommendations: Transportation & Mobility

Introduction

Total U.S. Greenhouse Gas Emissions
by Economic Sector in 2019



Reducing our GHG emissions from transportation sources will contribute significantly to reducing our overall carbon footprint. The Environmental Protection Agency (EPA) estimates that 29% of our nation's GHG emissions come from transportation (<https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>). Living in a spread out and isolated area like Los Alamos requires driving most places, and our emissions are higher than the nation's average. The LARES Task Force's Waste, Consumption and Natural Resources subcommittee, using data from Christopher M. Jones and Daniel M. Kammen in their paper Spatial Distribution of U.S. Household Carbon Footprints Reveals Suburbanization

Undermines Greenhouse Gas Benefits of Urban Population Density (*Environ. Sci. Technol.*, 2013, [dx.doi.org/10.1021/es4034364](https://doi.org/10.1021/es4034364)) estimates that LA County's emissions from transportation are closer to 37% of the County's total GHG emissions. Reducing single-rider car trips within the County and on/off "the Hill," encouraging public transportation use, widespread adoption of electric vehicle, and biking/walking as a means of commuting and getting around, and in general reducing daily miles traveled are where we as a community will see the biggest reductions in emissions.

Convenience is the major reason we drive as much as we do, and single-occupant vehicles are the largest problem. Changing behaviors and habits to use public transport and/or carpooling takes effort and planning. Convenient travel to and from public transportation stops is equally important as the main trip itself. If riders are unable to access a stop due to poor connection or inaccessibility, transit becomes ineffective. This is commonly known as the "first and last mile" problem.

The more we bike, walk, carpool, and take public transportation, the fewer emissions and pollutants in our air. This will improve our community's health by breathing cleaner air and will also get us moving more. Some areas of the County are better connected to biking and walking/hiking trails than others. The better connected our network and the safer the pathways, the more people have access to healthy alternatives to driving personal vehicles.

Los Alamos County Public Works and Parks and Recreation, the Transportation Board (T-Board), and Atomic City Transit (ACT) have been working on addressing many of these issues, and we wish to acknowledge the work LAC, T-Board and ACT have been doing: increasing bus ridership on ACT, experimenting with alternative bus route pick up/drop off access, electrifying the LAC and LAPS passenger fleet and the ACT bus fleet, installing Electric Vehicle (EV) charging stations at the LAC Municipal building, improving walking/biking trails (specifically the expansion of the

Canyon Rim Trail), and the T-Board's Bicycle Transportation Plan (BTP), which seeks to improve and expand the bicycling network and the safety/access of bicycling as transportation for residents, students, and visitors.

This thorough and detailed plan already proposes many of the recommendations of the LARES Task Force's Transportation Subcommittee. Indeed, this excellent document shares the data collection and community outreach efforts, the completed bicycle infrastructure improvement projects such as "sharrows," side paths, multi-use paths, and "priority streets," as well as future projects such as biking trails and improved infrastructure. After reviewing this document, this subcommittee feels there is little to significantly improve upon what has already been presented in this plan. Minor updates and recommendations which are NOT listed in the BTP document will be submitted in this report under the "Recommendation for Improvement of Bicycle Infrastructure" section.

In the same vein, the **County of Los Alamos Resolution No. 10-32**, A Resolution on the Policy of Designing Public Streets and Rights-of-Way in Los Alamos County, adopted on 9 November, 2010, to better accommodate "transit riders, pedestrians, cyclists, those with disabilities, and enhancing safety and convenience for us all," as well as "pursu[ing] community-wide independence from hydrocarbon energy sources." Our County Council has already recognized that we need to make changes to our community's habits and reduce our reliance on fossil-fuel vehicles. Incentivizing and encouraging carpooling, using the bus (school, ACT, Senior Van), adoption of EVs, walking and bicycling will help us meet this goal.



Just a few of the many biking, hiking and walking trails in Los Alamos

Transportation Subcommittee Scope of Work

The Transportation committee will address topics related to reducing LAC's carbon footprint from fossil-fuel-based and other transportation. Our Scope of Work will include but may not be limited to:

- Review and summarize current transportation-relevant plans, policies, requirements etc. that are applicable within Los Alamos County. Motorized and non-motorized transport policies will be included (walking, biking, other).
- Research ways to create a baseline indicator for current carbon footprint.
- Review, summarize and evaluate transportation-GHG footprint-reducing practices that have been implemented by other communities, and recommend policies that Los Alamos County could implement.
- Propose measures to reduce carbon emissions which are practically and economically feasible for County government, businesses and residents.
- Estimate costs and benefits of proposed GHG reduction approaches, and identify short-, medium- and long-term actions and goals.
- Reach out to neighboring and local communities (including LANL and Bandelier NM) to understand what transportation plans exist, and how they will interface with, or otherwise impact, Los Alamos County, and review and summarize relevant findings.
 - Treat LANL, Bandelier NM, and Pueblos as a GHG bordering communities.



September wildflowers on the Ski Hill



Recommendation 1: Increase Public Transportation Ridership

Strategy: *This strategy is not yet complete.*

- In Partnership with Regional Transit, Increase and Incentivize Regional Transit Use for Commuters and Visitors From Out of LA County (Española, Pojoaque, Santa Fe, Albuquerque)
 - Partner with workers from LAC, LANL, and LAMC on needs, desires, and incentives for commuting to LAC for work
 - Find land parking off “the Hill” to reduce burden on riders to locate parking and encourage bus use

Time Frame: Short-Term and Ongoing

Examples in Other Communities

- In some cities and companies provide lunchtime shuttles increase in frequency to help facilitate commuters’ needs.

*Consideration of Fuel Cell buses- ask Annette Granillo about this

Strategy

- Develop an “Alternative Transit” Incentivization Program for Employees of County, Schools, and Community Business (and LANL)

Time Frame: Short-Term and Ongoing as Needs Change



Get to work another way!

Background

- Approximately 60% of LANL employees live outside of Los Alamos County (<https://apnews.com/article/new-mexico-science-los-alamos-nm-state-wire-4e212834a77d42b0b5727f5d04c1148e>). This means the majority of Laboratory workers are commuting at least 34 miles round-trip each day (Espanola and Pojoaque are both 17 miles from Los Alamos, Santa Fe is 34 miles).
- Incentivization programs from employers are used in many cities across the country and the world, helping commuters choose a “greener” way to get to and from work. These programs have been successful in reducing traffic and emissions. Companies large and small, universities, and even the US Government offer their employees incentives to use public transit, to carpool, to give up their parking pass, or to “get to work another way.” Many businesses organize vanpool and ride sharing for their employees. Mobile platforms and apps for rideshare matching or finding the quickest way around using public transportation and/or carpooling are easy to use, accessible to anyone with a smartphone, and very effective.

Outcome

- More public transit riders means fewer emissions released, not only in Los Alamos County, but neighboring communities. More frequent buses and additional routes mean more convenience and more options for riders.

Case Study

The case study is from a Seattle-area company. While Seattle is a much larger community, like Los Alamos they have commuters from all around their region northwestern Washington, some driving over an hour to arrive at work (like Santa Fe commuters).

The following information is taken/modified from
<https://ops.fhwa.dot.gov/publications/fhwahop18071/ch4.htm>:

In 2016, the Luum company worked with Delta Dental of Washington (DDWA) to implement an incentivized commuter program. Employees had the ability to decide how best to commute to

work on a daily basis and to meet the parking constraints of their new office, through various options (Luum, 2017), including flexible parking rates based on how many times per month they park, bonuses for each day they commuted by any other mode than driving (including telecommuting), free parking for vanpools and split parking charges for carpools to discourage SOC, and subsidized Seattle-region bus/ferry/train rides.

Since starting its MyCommute program, DDWA has achieved the following (Luum, 2017):

- A 60 percent reduction in the drive-alone rate, down to 15 percent post-move.
- A 100 percent participation rate in the MyCommute program.
- Four new vanpools.
- Retention of 100 percent of employees after moving from the old office to the new office.

Impact and Examples in Other Communities

Incentive programs around the country are helping workers get to their jobs in a “greener” way:

- Texas Children’s Hospital in Houston, TX, offers options: a free bus pass, or if you give up your parking pass you get an extra \$50/month.
- Neighborhood Eco-Pass in Boulder, CO, is subsidized by the city with the aim of reducing single occupant vehicle (SOV) trips. This pass, called NECO, offers a greatly reduced rate for an annual pass than single-trip tickets. SOV trips have declined by 7.7 percent since 1990. (National Research Center, Inc., 2016).
- The program “Access MIT” in the greater Boston area encourages employees to use mass transit by giving a free, unlimited access pass to all employees, offers flexible daily parking rates rather than a more expensive long-term pass, and subsidized parking at transit hubs.
- The City of Aurora, CO, offers discounted prices to the light rail and bus. They even designed the light rail to run past the City Building to encourage ridership.
- The City of Eugene, OR, offers free bus passes for all employees.
- US Customs and Border Protection employees a SmarTrip pass onto which the government loads a certain dollar amount each month to be used for transportation to/from work.
- FlexPass at UC Berkeley, CA: Parking is a problem on this campus. Employees and students are incentivized to use an alternative way to get to campus and earn money back on the

parking permit they did not use. Up to \$131 per month in parking rebates were issued to individuals during a 2015 trial. This was done via the FlexPass app.

- Princeton University in Princeton, NJ, offers a subsidized transit pass for commuters using public transportation.
- Acumed in Portland, OR, has annual \$25 TRIMET (light rail and bus) passes and a commuting program with rewards for highest percentage of days biking to work.
- Cities, universities and businesses alike use discounted transportation passes as well as prizes, drawings, cash benefits, and other incentives to encourage employees and residents to use the bus, tram, light rail, and train.

Economic Impact

- **Costs:** Atomic City Transit is already free to residents. However, increasing frequency and number of routes will increase the need for drivers and will increase the fuel needs and maintenance of vehicles as well as upkeep of bus stops (or adding more). Cost of incentives to riders/employees will largely fall to employers.
- **Savings:** LAC will save money with fewer drivers on the road, i.e. less wear-and-tear on the roads and thus less road maintenance and less frequent repaving, painting, and filling of potholes. It may also result in fewer accidents and the repairs needed afterwards. This may also eliminate the need for a parking structure.

Benefits Other than CO₂ Reduction

- Community & Individual Benefits:
 - Public transport is a safer option than driving individually
 - Greater community connection ("bus friends," older and younger residents being more visible in the community)
 - Less car use means less money spent on fuel and repairs, as well as longer vehicle life.
 - More money in the pockets of residents and other commuters may result in more local spending in shops and restaurants
 - Increase of access to downtown

Challenges & Anticipated Barriers

- The Anti-donation Clause of the New Mexico Constitution may prevent some challenges to this recommendation :
<https://ua.unm.edu/anti-donation.html>,
https://www.rodey.com/uploads/FileLinks/cff57958d69146eb9e548fa755102759/rodey_anti_donation_clause_history.pdf

Community Outreach

- Changing habits is hard. The County and other players will need to undertake a major public campaign for increased routes/service and upping ridership. ACT is already working on this, as the Pandemic crushed ridership rates.

References/Resources

Most data and information in this section were found here:

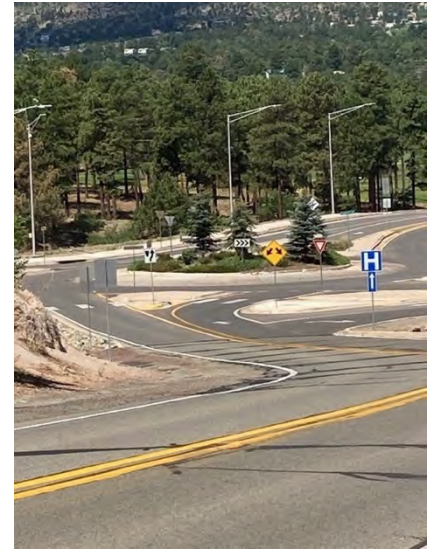
<https://ops.fhwa.dot.gov/publications/fhwahop18071/ch4.htm>

<https://www.cbp.gov/employee-resources/worklife-balance/transportation-benefits/ptip>

<https://bouldercolorado.gov/goboulder/neighborhood-eco-pass>

<https://www.luum.com/>

<http://www.metropia.com/>



Roundabout between North
and Barranca Mesas

Strategy

- To Encourage and Improve Public Transit Ridership, Address “First and Last Mile” Needs

This strategy is not yet complete.

Time Frame: Short-Term (1-2 years) and Ongoing as Transit Changes

Background

- More and more cities and towns are addressing this “first/last” mile challenge of commuters, that is, closing the gap between the first/last mile of their commute via public transportation. Getting from home to a bus stop or from the bus stop to work may be the main reason people do not take the bus: if the stop is more than ¼ mile (<https://humantransit.org/2011/04/basics-walking-distance-to-transit.html>), many people will not see it as convenient enough to “bother” with and will just drive their cars.
- Multi-modal transportation, taking more than one mode of transit to a destination (riding a bike to the bus stop then taking the bus to work, for example), does not seem to come easily to Americans. Many ride their bikes, many ride the bus, but few do both.
- Many communities have closed the “first/last mile” gap through various forms of micro-transit: bike/scooter shares, Lyft/Uber stops, or shuttles that go from a main train/bus line to more residential or rural areas.

Outcome

- Helping commuters access existing public transportation by addressing “first/last mile” needs will increase public transit ridership and encourage multi-modal transportation.

References/Resources

<https://www.apta.com/research-technical-resources/mobility-innovation-hub/first-last-mile-solutions/>



Our wonderful ACT system in action

Strategy

- Continue to Invest to Increase Bus Frequency and/or Other Kinds of On-Demand Service

This strategy is not yet complete.

Time Frame: Immediate and Ongoing

Background

- While this is already a priority for Atomic City Transit, we would be remiss if we did not list this as a recommendation.

Outcome

- The more frequent and convenient the bus service, the more people will consistently use the bus, reducing traffic, air pollution, and GHG emissions.

Economic Impact

- **Costs:**
 - Increased service will require more drivers and more maintenance on buses
 - Community outreach and encouraging ridership

Benefits Other than CO₂ Reduction

- Reduced Traffic
- Reduced air pollution
- More citizen interaction and community connection
- Fewer parking issues

Challenges & Anticipated Barriers

- Getting ridership “back up to normal pre-COVID” is already a challenge facing ACT
- “First/last mile” problem

References/Resources

https://www.pedbikeinfo.org/factsfigures/facts_environment.cfm

Strategy

- Provide Evening and Weekend Atomic City Transit Service

This strategy is not yet complete.

Time Frame: Short-Term and Ongoing

Outcome

- Increased frequency of buses means more convenience to riders, which will increase ridership and reduce GHG emissions from passenger cars (often SOVs).

Tactics

- Weekday evening service could run until 8:00pm
- Saturday service could run from 8am to 8pm
- Sunday service? Maybe just main routes and/or a “Smith’s” direct from each mesa/neighborhood area (call it something else) and LA-WR service
- Consider starting evening and weekend service with Friday night concerts
- Consider Ski Hill service in winter

Economic Impact

- **Costs:**
 - This will require more staff/drivers for extended routes/hours as well as potential
 - Increased maintenance on buses
- **Savings:**
 - Residents will be driving less, which means less wear-and-tear on County roads
 - Cost savings to residents in gasoline and wear-and-tear on personal vehicles

Benefits Other than CO₂ Reduction

- Job Creation
- Less traffic
- Fewer parking issues
- More people eating out and attending evening events in town, which will increase revenue to local businesses and restaurants

Challenges & Anticipated Barriers

- Increasing ridership depends on increasing bus service/frequency, yet increasing bus service/frequency costs more money with no guarantee of increased ridership. Increased ridership will take time and patience on the part of ACT. At a certain point, empty buses circulating are just contributing to GHG emissions, so ACT and other transportation experts will need to carefully plan extended service routes, days and times.
- We recognize that evening and weekend drivers will be harder to find than regular weekday daytime drivers.

Community Outreach

- As addressed just above in “challenges” section, increased ridership and increased bus service go hand-in-hand. A successful increase in residents riding the bus will depend on reliable service, convenient routes, and public outreach. The community must know of increased service and must be encouraged (using multiple means) to start riding the bus. Marketing campaigns, newspaper articles, banners on the overpasses, flyers in mailboxes, sandwich boards, table tents in restaurants, social media, and other strategies must be employed to really “get the word out.”

Strategy

- Develop a Smartphone Ridesharing App to Help Residents and Commuters Get Around

Time Frame: Short-Term and Ongoing

Background

- New and innovative ways to encourage travelers to “get around another way” are greatly helped by smartphone apps. Mobile platforms such as AccessMyCommute, Metrotopia, RubyRide (and many others) help travelers to find alternative modes of transportation and reduce single-occupancy vehicle trips.
- In an isolated community such as ours, “going off the Hill” for shopping or other needs is a necessity. Going to Espanola, Santa Fe, or Albuquerque is something all residents do with some frequency. This is easiest in one’s own car, often resulting in a SOV trip. While most adult residents can come and go on and off the Hill as they please, this is harder for older residents and teenagers who cannot yet drive. This also presents a challenge to short-term residents or foreign visitors or workers who may or may not have a vehicle.
- Providing a ride-sharing platform online and via smartphone app will not only help teens, older citizens, and temporary residents get around, it will encourage others to carpool and “see if someone else is going.” They can plan their trip together, whether one-way or round-trip.
- Airport Travel: This ride-sharing app will also provide opportunity for residents to carpool to and from the Santa Fe and Albuquerque airports.
- Ride sharing will not be limited to the Northern New Mexico area. Indeed, people could look for rides to/from neighboring states and cities (Tucson, El Paso, Las Cruces, Denver, Grand Junction and Salt Lake City), reducing car trips and plane rides. Making ride sharing convenient and accessible is critical for people to start to think of this as a viable means of getting around.
- Ride-sharing takes effort and planning. Creating an app will make this much easier for all residents.

Examples in Other Communities

- Blablacar, a French app available in 22 countries (though not the USA), is a convenient and inexpensive way for residents and tourists to get rides from one place to another. After downloading the app, one simply inputs the date and time one needs (or can offer) a ride, the starting and ending locations, and the price. One author of this report has used this on many occasions with great success. According to the Blablacar website, 1.6 million tons of CO₂ were saved by BlaBlaCar carpoolers in 2018.

- In 2019, Park City, UT, (Municipal) partnered with Canyons Village Management Association, Deer Valley Resort, and Park City Mountain to launch Ride On Park City. This app/internet platform allows employees and partners of these organizations to find a carpool match, real time transit information, e-bikes, and more. Park City estimates that they have already prevented 46.1 tons of CO2 emissions, and taken nearly 15,000 non-single occupancy trips in the region.

Economic Impact

- **Costs:**
 - Initial cost of app development and ongoing maintenance, public awareness/advertising campaign.

Benefits Other than CO₂ Reduction

- Community connection- many people make friends when ride sharing
- Residents without cars will have access to rides
- Residents with cars can make a little money by sharing rides

Challenges & Anticipated Barriers

- The use of this app will be voluntary. Anyone who may be concerned about personal privacy will not have to use this platform.

Community Outreach

- There will need to be community education about the app's existence and how to use it effectively.

References/Resources

<https://ops.fhwa.dot.gov/publications/fhwahop18071/ch4.htm>

<https://www.blablacar.com/>

<https://parkcity.rideamigos.com/#/>



One of the many improvements to ACT: a light-up signal to bus drivers during low-light times of day

Strategy

- Perform a County Assessment for Commuter and Other Transportation Needs

This strategy is not yet complete.

Time Frame: Short-Term

Background/Data

- The 2015 Los Alamos Comprehensive Transit Study shows that commuter ridership from surrounding communities had tripled between 2013 and 2015
- Currently ACT is putting out an RFP for an updated Transit Study, and we look forward to these data

Outcome

- Understand the market for commuting
- Understand current needs of residents and non-residents
- Modify transportation schedules as needed based on these data

Case Study

Comprehensive Transportation Data Collection: Case Study in the Greater Golden Horseshoe, Canada

Sub-strategies

- In partnership with NMDOT and NCRTD, conduct a needs analysis for mass transportation between neighboring communities and Los Alamos

Examples in Other Communities

Example of strategy and questionnaire for UNMet Transit Needs Study

Economic Impact

- **Costs:**
 - Cost of study/hiring consulting firm
 - Cost of potential new buses, fuel and staff
 - Cost of potential parking “off the Hill”
- **Savings:**
 - Less wear-and-tear on the road
 - Fewer accidents/clean up/destruction
 - Less fuel purchased by residents and non-residents

Benefits Other than CO₂ Reduction

- Reduced traffic and congestion during peak hours in Los Alamos and White Rock
- Fewer cars on the road means fewer accidents
- Increase in community connection
- Cleaner air

References/Resources

Rural Health Information Hub

Boulder Transportation Plan

Recommendation 2: Improve Bicycle and Walking Infrastructure to Promote Safe and Convenient Carbon-Free Transportation

It's no secret that bicycles offer a healthy and fun alternative to fossil fuel-based transportation while helping to curb emissions. It is important that bicycle transportation be safe for cyclists and motorized drivers. The safer and easier we make this option, the more people will see it as a realistic way to get around, whether it be the commute to and from work and school or going to friends' homes, accessing local businesses and public spaces, or even just a fun family ride around town.

Background

- As previously stated, the LAC Transportation Board already has an excellent Bicycle Transportation Plan (BTP) in place. This plan was adopted on June 27, 2017. The LARES Task Force heartily endorses the recommendations in this document.
- Normalizing and encouraging bicycle transportation is key to its success.
- Many US cities have ambitious biking and walking goals. Minneapolis, MN has a goal to increase bike trips from 3% to 10% by 2030. In California, San Francisco's goal of converting 80% of all local trips to bicycling, walking or public transit by 2080 by continuing to implement its "Transit-First Policy" as well as engaging with businesses, employers and residents to encourage using active and public transportation (https://www.pedbikeinfo.org/factsfigures/facts_environment.cfm).
- The Los Alamos townsite has a good start to a bike-friendly community by creating bike lanes, bike lane/slow vehicle signage, and sharrows. White Rock is already bike-friendly as it consists nearly entirely of residential streets; the new community of Mirador and a crossing to the rest of White Rock should be considered.



Bike lane and bike/low speed vehicle signage on Diamond Drive near Golf Course, "Sharrow" downtown

Strategy

- Implement the Transportation Board's Recommendations Outlined in the Bicycle Transportation Plan

Time Frame: Short-Term and Ongoing

Background

- The 2017 Bicycle Transportation Plan put out by the LAC Transportation Board is an excellent document with many practical and tangible recommendations. This document outlines plans, costs, and other information needed.

Benefits Other Than CO₂ Reduction

- Equity: While Los Alamos is in general a wealthy community, not all residents are economically secure. Improving the bicycle infrastructure for residents allows for getting around town via bike, bus or walking without having to own a car. This is an advantage for young people and for those who are unable to drive. We should design this with all ages and abilities in mind.
- Improved health through exercise
- Resident's fuel use and vehicle maintenance costs will decrease, longer vehicle life

References/Resources

https://www.losalamosnm.us/UserFiles/Servers/Server_6435726/File/Government/Departments/Public%20Works/Engineering%20and%20Project%20Management%20Division/2017%20Bicycle%20Transportation%20Plan%20Adopted%206-27-17.pdf

Strategy

- Green Boxed Bike Lanes and Protected/Buffered Bike Lanes

Time Frame: Immediate and Ongoing

Background

- Green boxed bike lanes are green-painted rectangles (with a white outline) at intersections and other areas of the bike lane that provide a safe refuge for bicyclists to either cue ahead of cars or to make a two-stage turn. Bike boxes help increase safety for bicyclists by reducing right-hand hooks by cars and by helping bicyclists navigate tricky intersections. These green bike lanes enhance visibility where there is the potential for a

problem and instead create safe, predictable pathways for bicycles so that cars know what to expect (cyclists) and where to expect them.

- Thermoplastic is the most commonly-used material for this purpose in US cities as it lasts far longer than typical street paint.



Photos courtesy of Dottie Knecht, Sunny Summers, Jill Summers (Salem, OR) and Sean Patton (Washington, DC)

- Protected (or Buffered) Bike Lanes with “shy” distances offer extra space and protection of bicyclists from cars, and have been shown to increase ridership and improve the confidence of cyclists in many communities in recent years. For example, the City of Seattle found that ridership increased more than 400% when a painted bike lane was upgraded to a protected bike lane using flexible posts (also known as bollards), similar to those we have coming down off of Barranca Mesa at the roundabout.



Buffered bike lane, photo courtesy of Ryan Kanter (Corvallis, OR)



Bollards at the North/Barranca Mesa roundabout



Protected bike lanes, photos courtesy of Sean Patton (Washington, DC)

- Protected bike lanes in Washington, DC, not only offer safe cycling for riders but they also allow for extra parking for cars.

Outcome

- Higher visibility bike lanes will be safer bike lanes and bike riders as well as more aware drivers. Safer biking will lead to more bike commuters and a decrease in emissions.

Case Study

- The city of Corvallis, Oregon (population 55,000 and home to Oregon State University), identified the top 12 most critical intersections for the first year of implementation. Now that they're in 2nd year, they are expanding to another 12 intersections.
***waiting on data from Josh Capps of City of Corvallis

Tactics

- There are several areas of Los Alamos townsite that would benefit from green boxed bike lanes: downtown on Central and Trinity in several locations, the “new” roundabout at the entrance of town, the entrance to the Canyon Rim Trail and Entrada Drive as one leaves town, turning in and out of Northern Community (Urban Park area) streets from Diamond Drive, the “old” roundabout near Barranca and North Mesas, certain areas of North Mesa and downtown where there are a lot of apartments.
- White Rock is already a very safe bicycling community. The recent addition of the Mirador subdivision across NM4 in White Rock might be a good place to consider highlighting some green bike paths.

Examples in Other Communities

- Green boxed bike lanes are seen in:
 - Major cities such as Seattle, WA; Denver, CO; Portland, OR; Washington, DC; and Sacramento, CA

- Medium-sized cities such as Arlington, VA; Salem, OR; Westminster, CO; and Eugene, OR
- Small cities such as Isle of Palms, SC; Bend, OR; and Durango, CO (to name just a handful!)

Economic Impact

- **Costs:**
 - As of February, 2020, the price for green thermoplastic was roughly \$5.50/Sq. Ft. (Corvallis, Oregon), or \$3 – \$6 Sq. Ft. for raw materials, \$10 – \$14 Sq. Ft installed (NACTO)
 - The estimated cost for bollard installation is \$105 per linear foot, which includes labor (2018 price from LAC)
 - There may be some cost considerations about how to deal with debris or snow in bike lanes
- **Savings:**
 - More bike commuters means fewer vehicles on the road and thus less road maintenance

Benefits Other than CO₂ Reduction

- Safe transportation for those who cannot drive
- Increased biking leads to improved health and fitness
- Pleasure biking
- Family and community connectedness

Challenges, Anticipated Barriers & Other Needs

- Parking, snow plowing, street sweeping may need to be considered.
- Winter maintenance: Salt Lake City prioritized “snow plowing schedule for bikeways” in their “Bicycle and Pedestrian Master Plan.”
 - This city uses small Kubota plows that fit within the protected bike lanes to clear them of snow; LAC’s inventory shows a 3026 Bobcat Skid Steer w/ Plow (Parks & Rec Inventory) which looks as if it can do the job if needed.
- If there will be an increase of bike commuters, there will need to be more bike racks/bike “parking” in town and at work places.

References/Resources

Street maintenance and snow issues: <https://nacto.org/downsized-street-maintenance-vehicles/>
 carfreediet.com
 nacto.org (in general)
https://www.pedbikeinfo.org/factsfigures/facts_environment.cfm

<https://nacto.org/publication/urban-bikeway-design-guide/bikeway-signing-marking/colored-pavement-material-guidance/>

https://www.pedbikeinfo.org/factsfigures/facts_environment.cfm

https://coloradosprings.gov/sites/default/files/fhwa-separatedbikelane_design-guide-small_0.pdf

<https://www.bendoregon.gov/home/showpublisheddocument/47764/637381859539770000>

Strategy

- Create a Bike-Only Path Between Los Alamos and White Rock that is not on the Main Road

This strategy is not yet complete.

Time Frame: Medium-to-Long-Term and Ongoing



The Omega Bridge as seen from Los Alamos Canyon

Strategy

- Bike Lane and Walking Path on Omega Bridge (or Other Option)

Time Frame: Medium-Term (address when Omega Bridge is replaced)

Background

- The Omega Bridge was built in 1951, making it 60 years old and near the end of its useful life. Currently there is maintenance being performed of the bridge, but it will not significantly extend the life of this bridge. Whether there is a new bridge built in its place

(or next to it), this presents an opportunity to provide safe walking and biking paths for commuters.

- While the Omega Bridge is not in the LAC jurisdiction, we are hoping to have LAC and citizen input when the time comes to review its future.

Outcome

- Increased commuting via walking and biking
- Less traffic and congestion
- Less air pollution

Examples in Other Communities

- The League of American Bicyclists has compiled a list of bridges around the country that offer bicycle- and pedestrian-friendly passage, with examples in Minnesota, Washington, California, Oregon, New Jersey, Pennsylvania, Connecticut, New York, and the District of Columbia. This is often a lane separated from passenger vehicles or a second “story,” with the bicycle and foot traffic going over or under the cars. https://bikeleague.org/sites/default/files/selected_interstate_bridges_bicycle_access.pdf

Economic Impact

- **Costs** (not necessarily to LAC):
 - Cost of new bridge (whether with walking/biking paths built next to or underneath passenger vehicle traffic way) or other option
 - Cost of maintaining current bridge for foot and bike traffic only

Benefits Other than CO₂ Reduction

- More commuting by walking and biking
- Improved health and increased active lifestyles of residents
- More cyclists and walkers visible in the community (and to cars) encourage others to also walk/bike to work
- Higher biker visibility also means car traffic is more aware of others commuting by foot or bike, which makes it a safer mode of transport for everyone

Challenges & Anticipated Barriers

- The Omega Bridge is owned and maintained by the Federal Government, which means that the bridge’s future may be out of our hands. Hopefully they will seek input from the community using the bridge as to what happens next.

Community Outreach

- Community members should be able to give input of what they would likely to see in a new, updated commuter bridge.

References/Resources

https://bikeleague.org/sites/default/files/selected_interstate_bridges_bicycle_access.pdf

Other Bike-related ideas:

- Active Travel Corridors- ways to get around that you can't access by car (paths, streets that don't go through for a car but do for a walker or a biker)
- Kids' bike training in elementary PE classes
- More bike parking/bike racks
- Amenities at work to facilitate biking (showers, changing room, lockers, etc.)
- Public-Private partnerships for discounts on biking needs and walking shoes
- Promotion of non-car use through alternative vehicle shows, bike repair clinics, bicycle/gear swaps/sales, etc.
- Encourage and support purchase and maintenance of non-car vehicles

Recommendation 3: Increase Publicly Accessible Electric Vehicle Charging Infrastructure

This recommendation is not yet complete.

Background/Research/Data (Baseline or other)

- As time goes on, more and more electric vehicles will be manufactured. Estimates vary, but GM and other car makers have pledged to phase out gasoline engine vehicles as early as 2025. This means demand for EV charging stations will soar as they become the dominant vehicle driven by consumers. This will mean competition in getting the limited amount of EV Charging parking spots in existence.
- Schools, businesses, the County, and other private enterprises will need to look into installing EV charging stations for employees and customers. Indeed, even residential areas may need charging stations. Yes, residents can charge at their homes, but there may be guests, out-of-towners, and other reasons for installing neighborhood charging stations. Likewise, apartment complexes and other multi-family housing areas will need EV charging infrastructure.
- Other public locations such as sports complexes, hiking trail heads, and the White Rock Y will need EV charging infrastructure.

Outcome

- Increased availability and access to EV charging stations will encourage EV purchase among residents
 - EV Charging Access in Public Locations and Private Parking Lots
 - EV Charging Access in Multi-Family Housing Areas
 - EV Charging in Neighborhoods

Economic Impact

- **Costs:**
 - Initial cost of each charging station as well as infrastructure implementation and labor—this is where most of the cost is.
- **Savings:**
 - County, school, police, and residential vehicles can be fueled/powered by renewable energy and will reduce the cost of gasoline purchased

Benefits Other than CO₂ Reduction

- Convenience

- Encouraging and supporting residents to purchase EVs
- Cleaner air (less pollution)

Questions, Challenges & Anticipated Barriers

- What voltage will these public charging stations supply?
- How long will consumers be permitted to charge?
- Will there be a penalty if they overstay their time?
- What times of day? Does it matter?
- Will this take away parking (street parking, lot spaces, schools, other)?
- Will this be provided by the County or by the landlords/property owners? Both? Schools?

Community Outreach

- There will need to be a lot of outreach to residents about how and when to use EV charging stations.

Recommendation 4: Increase the Number of Electric Vehicles (EV) in LAC, ACT, and LAPS fleets, Eventually Making 100% of Light Duty (Passenger Cars and Trucks) Plug-In Electric

This recommendation is not yet complete.

Time Frame: As Many and As Soon As Possible, Yearly Additions

Background

- Los Alamos County, ACT and PEEC are already investing in EVs for their fleet. ACT has two electric buses on order. Our community is lucky to have these entities taking the lead in the transition to electric vehicles. We need to continue and to step up these efforts, and expand them to the Schools and Police vehicles.

Outcome

- With an all-electric fleet of vehicles, the County, Atomic City Transit, the Public Schools, and the Police will be greatly reducing their GHG emissions.

Strategy

- The County will set targets as to how many vehicles will be replaced each year with an EV. We know there is a schedule of vehicle replacement; it seems reasonable that when a vehicle is scheduled to be replaced, it will be replaced with an EV.
- The County and other major players (schools, police, other) should be required to justify purchasing gas-burning vehicles as opposed to emission-free cars.

Examples in Other Communities

- Dozens of other communities large and small, from Atlanta to Austin to Nashville to Las Vegas, as well as the US Government, are converting their municipal passenger and work trucks to electric vehicles. Car manufacturers are releasing new EVs in both passenger cars and trucks. Ford, for example, has just announced an electric F150 truck at a price point of \$40k. A “regular,” new, gas-burning Ford F150 costs \$30k. https://www.ford.com/trucks/f150/f150-lightning/2022/reservation-information/?dealerPACode=05778&postalCode=INSERTDEALERZI&gclid=CjwKCAjw_o-HBhAsEiwANqYhpyuGNiKwQ7c257eyqLyjd9HTLWXzg341ZiT1yMa3cMdU57x2yNHjhoC6H0QAvD_BwE

Economic Impact

- **Costs:**

- Cost of new vehicles and training of technicians/mechanics to maintain EVs
- **Savings:**
 - Estimates range that EVs cost 50-70% less to operate (<https://electrifyny.org/ev-municipal-toolkit/>)
 - Lower gas/diesel bills as vehicles use less and less fossil fuel over time

Benefits Other than CO₂ Reduction

- Air quality improvement/less pollution
- Lower risk of wildfire (sparks from cars, gasoline exploding in car crashes)
- Lower vehicle noise pollution

Challenges & Anticipated Barriers

- Auto mechanics will need to keep up with the changing technology (battery pack maintenance, coolant changing, suspension changes,). Knowledge of changing oil and old engine function will change to reflect the newer electric engines.

References/Resources

<https://electrifyny.org/ev-municipal-toolkit/>

<https://www.cnbc.com/2021/01/25/biden-plans-to-replace-government-fleet-with-electric-vehicles.html>

https://theicct.org/sites/default/files/publications/Transition_EV_US_Cities_20180724.pdf

Recommendation 5: Implement Shaded Parking and a County-Wide No Idling Policy



<https://cleancities.energy.gov/technical-assistance/idlebox/>

Time Frame: Immediate and Ongoing (permanent), with a few exceptions

Background

- Idling vehicles wastes fuel and creates unnecessary greenhouse gas emissions, and many municipalities and school districts have implemented “no idling” policies. Idling can use between quarter to a half gallon of fuel per hour, depending on type of vehicle/engine size and whether the air conditioner (AC) is in use (<https://www.fueleconomy.gov/feg/driveHabits.jsp>).
- Argonne National Laboratory researchers estimate that restarting a vehicle takes the equivalent of just 10 second’s worth of fuel. (Argonne National Laboratory. 2015. Stop and Restart Effects on Modern Vehicle Starting System Components – Longevity and Economic Factors.) The Environmental Defense Fund has found that idling cars use between 1/5 and 7/10 of a gallon of fuel when idling per hour (<https://www.edf.org/attention-drivers-turn-your-idling-engines>).
- Idling cars on hot days to keep vulnerable animals and humans (usually children and fragile adults/elderly) in rare cases can be permitted. Most adults can tolerate rolling down the windows as they wait in their cars. Idling a car on a cold day to stay warm, again, may be appropriate in rare cases. Most adults can sit in a cool car for a short period of time as they wait. We can also encourage (or incentivize) keeping a blanket or sweatshirt in the car. Most waiting in cars is less than 20 minutes.

- Many areas in Los Alamos where people park and idle their cars do not have adequate shade to keep them cool on hot days; local schools and grocery store parking lots are prime examples of this. Working with schools and businesses to plant trees and create more shade will help reduce idling in parking lots, as will covered parking.
- One source of prolific idling is parents waiting for their children outside of school. If school children took the bus which already goes to/from their homes and fewer parents were making extra trips to pick up their children (and concurrently idling their vehicles), we would make a nice dent in our GHG emissions.
- The County already has a “no idling” policy in place for its fleet, but it is not followed or enforced. County trucks while employees check meters or perform maintenance, or just sitting and chatting. School trucks idle on streets and in parking lots. Training, buy-in from employees, and follow-through from superiors is needed to cut idling and the emissions caused by this unnecessary and wasteful action.
- Idling cars also pose a safety threat. A car left in gear by mistake can accidentally run over a child, a resident, a pet or other animal. Indeed, USPS policy requires drivers to place the vehicle in “park” and to turn off their engines at each home so that no one is accidentally run over by a mail truck. This also prevents idling as mail carriers unload boxes and carry mail to multiple homes, walking to two or three houses before reloading or moving the vehicle.
- Likewise, County vehicles driving from each individual house to the next may not be the most efficient way to check meters. Parking in a central location and walking from home to home not only uses less fuel but it also allows for exercise for the employee. Home owners will appreciate fewer idling cars on their streets and less wasted gas and taxpayer dollars.

Argonne National Laboratories have created an idling calculator to see how much fuel is used in idling vehicles:

Idling Reduction Savings Calculator

For an interactive Excel version of this calculator, please go to http://www.transportation.anl.gov/downloads/idling_worksheet.xls

Calculate Costs for Avoidable Idling

1	How much fuel is used for idling? (If you don't know, see reference table on reverse.) <input type="text"/> gallons/hour	×	Realistically, how many hours each year might you use idling reduction (IR) devices instead of idling? <input type="text"/> hours/year	=	A	<input type="text"/> gallons/year	×	What is the price of fuel? <input type="text"/> \$/gallon	=	Avoidable Idling Fuel Costs \$ <input type="text"/> /year +
2	<input type="text"/> gallons/hour	×	<input type="text"/> hours/year							
3	How much does an oil change cost? \$ <input type="text"/> /oil change	÷	How many miles between oil changes? <input type="text"/> miles/oil change	=	\$	/mile	×	"Miles of idling" <input type="text"/> miles/year	=	Preventive Maintenance Cost¹ \$ <input type="text"/> /year +
4	How much does an engine overhaul or new vehicle cost? \$ <input type="text"/> /overhaul or replacement	÷	How many miles between overhauls or vehicle replacement? <input type="text"/> miles/overhaul or replacement	=	\$	/mile	×	"Miles of idling" <input type="text"/> miles/year	=	Overhaul or Replacement Cost¹ \$ <input type="text"/> /year
5	Add values in right-hand column =								Total Avoidable Idling Costs \$ <input type="text"/> /year	

Calculate Costs for Idling Reduction (IR) – Device and/or Electrified Parking Space (EPS)

6	How much fuel is used by the IR device? <input type="text"/> gallons/hour	×	How many hours each year could you use IR devices instead of idling? ^{**} <input type="text"/> hours/year	=	B	<input type="text"/> gallons/year	×	Price of fuel (same as price listed in line 1) <input type="text"/> \$/gallon	=	Fuel cost for IR device \$ <input type="text"/> /year
7										Operating Cost for On-board IR Device \$ <input type="text"/> /year
8	Cost per hour to plug into EPS \$ <input type="text"/> /hour	×	How many hours each year could you use EPSs instead of idling? ^{**} <input type="text"/> hours/year	=	\$	/year	+	Cost to plug in <input type="text"/> \$/year	+	Total Operating Costs for IR \$ <input type="text"/> /year

Calculate Savings from IR

9	Capital cost of on-board IR device \$ <input type="text"/>	÷	SAVINGS Line 5 – Line 8 <input type="text"/> /year saved	=	Payback Time	<input type="text"/> years
10	A <input type="text"/>	–	B <input type="text"/>	=	<input type="text"/> gallons saved/year	

^{*} Total number of hours from lines 6 and 8 should equal the number of hours in line 1.

¹ TMC Recommended Practice 1108, "Analysis of Costs from Idling and Parasitic Devices for Heavy Duty Trucks" (2003). Technology & Maintenance Council, American Trucking Associations (TMC/ATA).

How Much Fuel Is Used for Idling?

Vehicle Type	Class	Fuel Type	Size Indicator		Idling Fuel Use (gal/h)		Source
			Engine Size (l)	GVWR (lb)	No load	With load	
Passenger Car (Ford Focus)	1	G	2	—	0.16	0.29	ANL 1
Passenger Car (Volkswagen Jetta)	1	D	2	—	0.17	0.39	ANL 1
Passenger Car (Ford Crown Victoria)	1	G	4.6	—	0.39	0.59	ANL 1 & 2
Medium Heavy Truck	6	G	5–7	19,700–26,000	0.84	—	WVU
Delivery Truck	5	D	—	19,500	0.84	1.1 ¹	NREL
Tow Truck	6	D	—	26,000	0.59	1.14 ²	ORNL
Medium Heavy Truck	6–7	D	6–10	23,000–33,000	0.44	—	WVU
Transit Bus	7	D	—	30,000	0.97	—	ORNL
Combination Truck	7	D	—	32,000	0.49	—	ORNL
Bucket Truck	8	D	—	37,000	0.90	1.50 ²	ORNL
Tractor-Semitrailer	8	D	—	80,000	0.64	1.15 ^{3,1}	TMC

D = diesel, G = gasoline, Gal = gallon(s), GVWR = gross vehicle weight rating, h = hour(s), l = liter(s), lb = pound(s), PTO = power take-off.

¹ High idle.

² PTO on.

³ Air conditioning on.

Sources

ANL 1: Stulen, K., and Lohse-Busch, H. "APRF (Advanced Powertrain Research Facility at Argonne National Laboratory) Conventional Vehicles Snapshot Study." Presentation to U.S. DOE, December 2, 2012.

ANL 2: Rask, E.; Keller, G.; Lohse-Busch, H.; et al. (2013). "Final Report: Police Cruiser Fuel Consumption Characterization." Work performed by Argonne National Laboratory for the Illinois Tollway Authority.

NREL: National Renewable Energy Laboratory Project Draft Final Report for the Period August 1, 2012, through March 31, 2014, "Data Collection, Testing and Analysis of Hybrid Electric Trucks and Buses Operating in California Fleets." ARB Agreement Number 11-600, NREL Contract Number FIA-12-1763, April 15, 2014.

ORNL: Lascu, M.B.; Franzese, O.; Capps, G.; et al. (2012). *Medium Truck Duty Cycle Data from Real-World Driving Environments: Project Final Report* (ORNL/TM-2012/240). Work performed by Oak Ridge National Laboratory for the U.S. DOE.

TMC: TMC Recommended Practice 1108, "Analysis of Costs from Idling and Parasitic Devices for Heavy Duty Trucks" (2003). Technology & Maintenance Council, American Trucking Associations (TMC/ATA).

WVU: Khan, A.M.S.; Clark, N.N.; Gautam, M.; et al. (2009). "Idle Emissions from Medium Heavy Duty Diesel and Gasoline Trucks." *Journal of the Air & Waste Management Association* (59:3) 354–359.

Other Idling Reduction Resources

■ IdleBox www.cleancities.energy.gov/idlebox

■ IdleBase <http://cleancities.energy.gov/idlebase>

■ National Idling Reduction Network News energy.gov/eere/vehicles/vehicle-technologies-office-national-idling-reduction-network-news

■ Argonne National Laboratory <http://www.transportation.anl.gov/engines/idling.html>

■ Alternative Fuels Data Center http://www.afdc.energy.gov/conservation/idle_reduction_basics.html

https://www.anl.gov/sites/www/files/2018-02/idling_worksheet.pdf

Note: Electric vehicles will not “idle” in the same way as gas and diesel cars and trucks. This policy may eventually become obsolete as the majority of cars become electric (100 years from now!).

Outcome

- Preventing idling vehicles will lower GHG emissions and improve air quality. The County will save money on fuel use and wear on vehicle engines. Equipping sun shades in all vehicles will help reduce the need for idling to cool the vehicle.

Tactics

- Run a County-wide (including all public schools) “no idling” campaign
- All County, Police, and LAPS vehicles should be equipped with a sun shield for the front windscreen.

- Providing more shade in the form of trees and parking area “covers” will beautify our community (trees), provide carbon capture (trees) and an area where “rooftop solar” could be installed. Imagine the Smith’s parking lot with shaded and County-owned solar on top!

Examples in Other Communities

- Some school districts, such as Corvallis, OR, have student, teacher, and parent volunteers outside of school during major pick-up and drop-off times with signs reminding car drivers not to idle. Some volunteers need to knock on windows and politely remind/ask drivers to turn off their vehicles.

Economic Impact

- **Costs:**
 - Costs of “No Idling” campaign (signs, community outreach material, bumper stickers, etc.)
 - Costs of sun shades for all County, Police and LAPS vehicles
 - Installing shade for parking lots, outside schools, and other public places will be the major expense. These will, however, provide areas for rooftop solar.
 - Potential installation of rooftop solar
- **Savings:**
 - \$70-\$650 per vehicle per year (depending on type of vehicle and price of gasoline) in gas costs
 - \$10 per vehicle per year on engine wear
 - Rooftop solar on shaded parking will help the County reduce energy bills

Benefits Other than CO₂ Reduction

- Shaded parking!
- Shade covers in parking lots could provide a place for “rooftop” solar panels
- Beautification with tree planting
- Carbon capture with tree planting

Challenges & Anticipated Barriers

- Asking private businesses and land owners to provide shaded parking
- Tree planting in areas of concrete and/or asphalt

Community Outreach/Educational Materials

- The US Department of Energy's website has a fabulous “No Idling Toolkit” with a large array of all necessary materials to educate the community: outreach letters, idling savings

calculators, bumper stickers, signs, and many other useful materials and data/information. The legwork on this has basically been “done,” we just need to access the resource and print/distribute materials.

- Community outreach will be through articles in the newspaper, mailers in utility bills (or electronic attachments in e-bills), “No Idling” signage in public locations (streets, schools, parking lots), schools will inform parents and other frequent guests of their no idling policy.

References/Resources

<https://cleancities.energy.gov/technical-assistance/idlebox/>

<https://www.fueleconomy.gov/feg/driveHabits.jsp>

<https://www.edf.org/attention-drivers-turn-your-idling-engines>

Recommendation 6: Launch Municipal Bike Share Program

This recommendation is not yet complete.

Time Frame: Short-to-Medium-Term and Ongoing

Outcome

- Bike share programs around the country are seeing success and are helping to increase the number of people regularly using bikes for transportation. While tourists will also benefit from this fun and convenient way to get around Los Alamos, residents young and old will have access to a bike (regular pedal or electric assist) whenever they need one.

Examples in Other Communities

- Incentives to use bike shares in various other places:
 - One Free ride and reduce rate ride program
 - One free ride per tourist
 - Reduced rate for punch pass/commuters/high schoolers/middle schoolers
 - Raffle for free community passes
 - Weekly, monthly, 3-month (this would be ideal for LANL summer students), yearly passes
 - 1-ride and 1-day passes
- Most towns and cities use bike share programs run by an outside company. Many bike share programs, such as that in Portland, OR, offer multiple pay-per-use options:
 - For a single ride, cost is \$1 to unlock the bike and \$0.20 per minute
 - Riders can pay a per-hour or per-day rate, some areas offer a per-week rate
 - Annual membership for \$99 per year plus \$0.10/min with no unlock fees
 - Many and varied plans/pay per use depending on company



<https://www.biketownpdx.com/>

Economic Impact

- **Costs:**
 - Initial cost of bike share program (bikes, multiple stations, charging if E-bike, public outreach campaign, cost of third party to manage bike share)
 - Ongoing costs of increasing number of bikes/stations around town

Benefits Other than CO₂ Reduction

- Contributes to micro-mobility aimed at commuters, residents, and tourists
- Helps address the “first/last mile” problem of public transportation
- Potential increase to spending at local restaurants during lunch hour
- Tourist attraction
- Increased bike riding = Fun!
- Increased health and wellness of community

Challenges & Anticipated Barriers

- Some communities observed that many people, including school children and economically disadvantaged citizens, were left out of the bike share program because they did not have a smartphone and/or a bank account.
- Many communities we contacted noted that this was best implemented using a third party who maintains the bikes and trouble-shoots. This was too much for city employees to manage. Bike repairs, parking issues, payment problems, etc. all should go through the vendor.
- A few towns had a problem with the bike provider company “going under,” and then the municipality was left with unusable bikes. Two places who had mentioned this are in the process of switching to a new bike share provider.
- Be sure to have clear parking guidelines and enough places for bikes to be parked “legally”
- Questions to Ask:
 - How many bikes?
 - How many locations?
 - How to keep the “load balanced,” i.e. enough bikes at each station?
 - Whom to contact when there is a problem? Have vendor handle problems.
 - collision or injury
 - parking issue
 - bike mechanical problem
 - can’t release or purchase
 - no bikes available at location

- E-bike and/or regular bike?
- Where can/can't people park bikes? Seattle posts bike parking guidelines:
<https://www.seattle.gov/transportation/projects-and-programs/programs/bike-program/bike-share>

References/Resources

<https://www.pedbikeinfo.org/topics/bikeshare.cfm>

<https://www.denvergov.org/Government/Departments/Department-of-Transportation-and-Infrastructure/Programs-Services/Micromobility-Program?BestBetMatch=bike%20program|95c94ae0-247e-4b0c-b511-f9439cc122bd|c4f1b630-3cf4-4ec1-8110-c4784b6aa32e|en-US>

<https://www.seattle.gov/transportation/projects-and-programs/programs/bike-program/bike-share>

<https://www.seattle.gov/transportation/projects-and-programs/programs/bike-program/bike-share>

<https://www.seattle.gov/transportation/projects-and-programs/programs/bike-program/bike-share>

<https://www.biketownpdx.com/>

<https://www.bendoregon.gov/home/showpublisheddocument/47764/637381859539770000>

Recommendation 7: Encourage Private Electric Vehicle Purchase and Charging During Non-Peak Hours

This recommendation is not yet complete.

Time Frame: Short-Term and Ongoing

Background/Data

We need current data on Los Alamos County EV usage. If we follow national norms, should be around 7%. (<https://www.pewresearch.org/fact-tank/2021/06/07/todays-electric-vehicle-market-slow-growth-in-u-s-faster-in-china-europe/>)

Tactic

- Implement more EV charging stations at apartment complexes (see Recommendation 3)
- One excellent EV promotion toolkit from the Sierra Club gives the following examples of policies and other incentives to switch to EVs:
<https://www.sierraclub.org/sites/www.sierraclub.org/files/program/documents/EV%20Policy%20Toolkit.pdf>

1. EXPANDING PERKS AND INCENTIVES

- Vehicle Rebates and Tax Credits
- Sales Tax Exemptions
- HOV Lane Access

2. ELECTRIFYING VEHICLE FLEETS

- Government Fleet Mandates
- Transit Bus Fleet Upgrades
- Using VW Settlement Funds for ZEB Adoption

3. EXPANDING CHARGING ACCESS

- EV-Ready Wiring Codes and Ordinances
- Multi-Unit Dwellings (MUDs)
- Streetlight and Power Pole Charging Access
- Right-of-way Charging
- EV-Utility Investments
- Best practices for installing EVSE

4. EVALUATING VEHICLE REGISTRATION FEES

- Resisting Anti-EV Registration Fees
- States with Waived or Reduced Vehicle Registration Fees for EV Drivers

5. EXPANDING EQUITY AND ACCESS

- Rebates for low-income drivers
- Electric car-sharing programs
- Charging access for underserved communities

6. PROMOTING CONSUMER EDUCATION & PROTECTION

- EV Proclamations & Driver Bill of Rights
- Ride and Drive Events
- Open Access and Interoperability
- Uniform Signage Requirements

- Using VW Settlement Funds to Grow EV Charging Networks

Examples in Other Communities

https://afdc.energy.gov/files/u/publication/guide_ev_projects.pdf

Economic Impact

It seems there may be some money available from the State of NM through the Volkswagen Environmental Mitigation Settlement <https://www.env.nm.gov/air-quality/vw-settlement/>

Benefits Other than CO₂ Reduction

- Improved air quality
- Increased access to EV charging stations for all residents and visitors to LA County

References/Resources

<https://www.sierraclub.org/sites/www.sierraclub.org/files/program/documents/EV%20Policy%20Toolkit.pdf>

https://afdc.energy.gov/files/u/publication/guide_ev_projects.pdf

<https://www.env.nm.gov/air-quality/vw-settlement/>

<https://afdc.energy.gov/laws/all?state=NM>

Recommendation 8: Increase Number of Solar-Powered Flashing Light Crosswalks

This recommendation is not yet complete.

Time Frame: Short-Term and Ongoing

Background

- We already have a push-button crosswalk with flashing lights at the start of the golf course, and it works well.

Outcome

- More people will walk (or use a combination of walking/biking and bussing) to get around town or for pleasure. This is especially helpful for those who do not drive.

Tactics

- Install flashing light crosswalks in the following places:
 - White Rock/Mirador
 - Crosswalk on Diamond near Urban/Mountain
 - North Mesa by middle school, maybe another location
 - Downtown on Trinity Drive by 20th street/Ashley Pond



Flashing Light Crossing on Diamond near Golf Course and crosswalk signal Downtown

Impact in Other Communities

- Carson, CA, intends to add solar-powered lighting and vehicle speed feedback signs near crosswalks to promote traffic calming and encourage active transportation.

- Minneapolis, MN, has a goal to increase pedestrian trips from 16% to 25% by 2030. Strategies include enhancing visibility at pedestrian crossings and increasing street lighting.

References/Resources

https://www.pedbikeinfo.org/factsfigures/facts_environment.cfm

<https://www.bendoregon.gov/home/showpublisheddocument/47764/637381859539770000>

Recommendation 9: Convert Municipal Small Engines, Such as Lawn/Garden Equipment and Golf Carts, to be Fossil Fuel Free

This recommendation is not yet complete.

Recommendation 10: Invest in Consistent, Ongoing Community Outreach and Education to Facilitate Sustainable Transportation Options

This recommendation is not yet complete.

Time Frame: Immediate and Ongoing

References/Resources

<https://www.bendoregon.gov/home/showpublisheddocument/47764/637381859539770000>

Expected Benefits to Community Besides Carbon Reduction

- “Green” Job Creation
- Mobility Improvement for All Citizens
- Increased Health and Fitness

- Short- and Long-Term Cost Savings to County and Residents through less wear-and-tear on vehicles, fuel cost savings, and less road maintenance
- Raise Awareness of the Impact of Climate change
- Role Model for Other Communities
- Closer Community - “bus friends,” more out-and-about citizens (bikes, walking, other)
- Educational Opportunities
- Ecosystem and Water Quality Protection
- Public Health and Air Quality Protection
- Noise Pollution Reduction
- Reduced Fire Risk

Other Considerations

Air Travel

- The Los Alamos Airport does not provide commercial air service and does not contribute in a major way to LA County GHG emissions. However, aviation gasoline, jet fuel, and kerosene (used for the air ambulance) are much “dirtier” burners than regular car gasoline. It is important to provide emergency air service.
- We recognize that the County and County Council have no jurisdiction over resident’s air travel. It can, however, provide platforms to citizens to encourage alternative travel options (online forum for ride-shares for short trips (Santa Fe/Taos/ABQ), information about shuttles and/or carpooling options to the SF and ABQ airports, bus and train information for travel and to get to ABQ airport. For those residents who use Facebook, there could be a page for this service. For those who do not use Facebook there are many other options.
- The County could work with RTD to provide a direct airport shuttle from LA to ABQ airport and back or work to provide one or two more buses to the Santa Fe rail yard for people to take the train to ABQ. Would the County consider an on-demand or planned voyage shuttle service to/from the ABQ and/or SF airports?



Carpooling

- In 2019, Park City (UT) Municipal partnered with Canyons Village Management Association, Deer Valley Resort, and Park City Mountain to launch [Ride On Park City](#). This app/internet platform allows employees and partners of these organizations to find a carpool match, real time transit information, e-bikes, and more. Park City

estimates that they have already prevented 46.1 tons of CO2 emissions, and taken nearly 15,000 non-single occupancy trips in the region.

Aerial Tramway

- An aerial tramway from WR to LA or between North Mesa, Barranca Mesa and Downtown, would be a fun and very expensive mode of public transportation. Lunchtime diners could hop on the tram and go to WR for lunch. Morning and evening commuters between WR and LA would no longer clog State Road 4, Main Hill/ Road and the Truck Route. Visiting tourists and locals alike would be attracted by this beautiful and dramatic ride. This would be fun for all ages! Rough estimates start at \$30M.
- Questions:
 - Could it go over Lab property? Pajarito Road?
 - Would that be less complicated/fewer players than going through Pueblo land?

Hydrogen Fuel Technology for Transportation

- Hydrogen can be used for all kinds of things, primarily as transportation fuel including personal vehicles, buses, and heavy-duty trucks (semis, garbage trucks, etc.). We would need to invest (in tandem with LANL?) in hydrogen production and storage in order for this to be a viable option.

XIII. Recommendations: Waste, Consumption & Natural Resources

Introduction

In 2021 addressing climate change is urgent and complex and this necessitates considering and acting upon many different sources of GHGs and climate effects. Much emphasis has been placed on changing our electricity, heating and fuel sources, which is vital. However, a rapid, appropriate response to the challenge of climate change mitigation requires looking as broadly as possible at many causes and solutions in order to identify the most impactful, feasible and scalable actions. This must be an inclusive process to be most effective, providing opportunities for all who wish to be involved to engage in ways that work for their interests, abilities and means. We must also be prepared to deal with the effects of climate change, which is already impacting our community, our environment and our water supply, and foster a resilient Los Alamos that continues to flourish.



In order to ensure that the RES Task Force comprehensively addresses GHG reduction and climate change mitigation, the WCNR Subcommittee was formed to make recommendations on these focus areas:

- Waste management, recycling and composting
- Consumption of goods, food and services
- Refrigerants and other fluorinated gases
- Water and wastewater
- Natural spaces, soils, land use, forests, and carbon sinks

Our approach has been to:

- Research significant sources of GHG emissions that fall outside the scope of other subcommittees, to enable more comprehensive accounting of Los Alamos' total carbon footprint, as well as opportunities for emissions reductions
- Identify additional areas critical to LAC climate change resiliency and sustainability
- Review approaches taken by other communities as described in their climate action plans
- Identify and understand current activities in the County that address these areas
- Propose measures to reduce emissions and climate change impacts which are practically and economically feasible for County government, businesses and residents
- Estimate costs and benefits of proposed GHG reduction and resiliency approaches, and identify short-, medium-, and long-term actions and goals

The research effort for each focus area has been undertaken by one or two members of WCNR, and the recommendations below reflect various stages of completion. All recommendations are subject to further modification, addition or elimination as subcommittee work continues through 2021.

Background

Specific background information is provided with each recommendation, along with data and references.

An excellent overview of diverse climate change solutions and their relative impacts can be found at Project Drawdown (<https://drawdown.org/>). A discussion of the inclusive approach to GHG and climate change mitigation taken by our subcommittee can be found in Jonathan Foley's article, ["We Need to 'See the Whole Board' to Stop Climate Change"](#)

Additional sources of information, such as climate action plans from other cities, are available on request.

Protocol Followed

See Recommendation 1 for discussion of the need for appropriate GHG inventory for LAC emissions utilizing a consumption-based protocol (TBD).



Recommendation 1: Perform Consumption-Based GHG Analysis for LAC

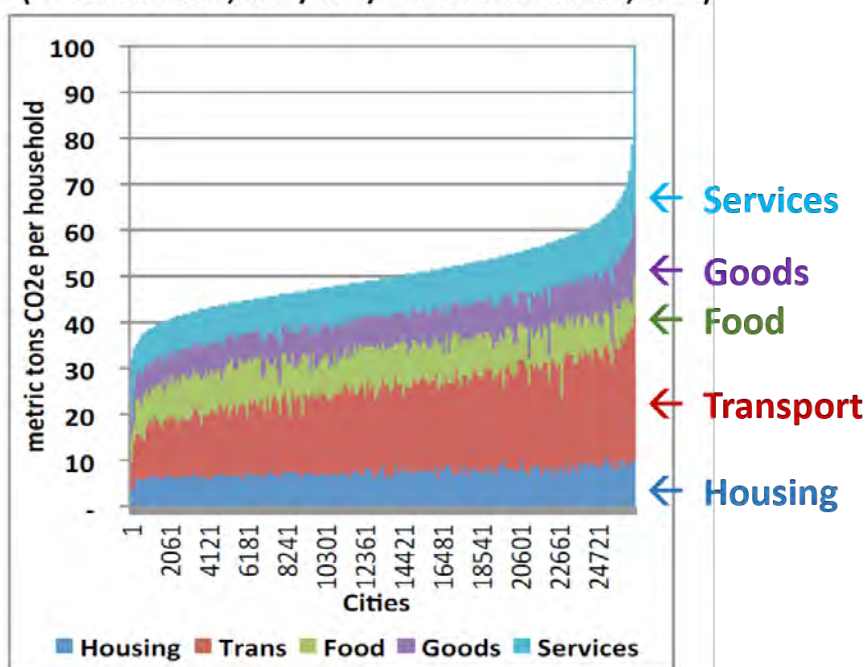
Time Frame: Medium Term; 2022, and ongoing

Background Research & Data

- Existing LAC estimates account for GHG emissions from electricity production, natural gas use, transportation fuel and solid waste (R. Gibson, 2021 report.)
Per capita CO₂ e estimate = 11.9 tonnes/yr
- The total LAC community GHG footprint, which includes the above plus emissions associated with goods, food and services consumed by a community (a “consumption-based” [CB] estimate), is likely to be considerably higher (based on results from GHG inventories of middle-high income communities in N. America and Europe.)
- One CB study, performed for each zip code in the US, calculates LAC per capita GHG emissions to be 24 tonnes/capita/yr (Jones & Kammen, 2014), about **twice the current estimate**.

Carbon footprints by category across 26,697 US cities

(Household data, analysis by Jones and Kammen, 2014)



In addition to emissions from electricity, natural gas and vehicle fuel, households are responsible for the carbon footprint of goods, food and services they purchase. These emissions are substantial and occur in all communities.

Outcome

- More comprehensive understanding of total CO₂ e emissions resulting from the various activities of residents, businesses, County government and schools.
- Identification of most timely, urgent and in some cases, easy activities to target in efforts to reduce GHG emissions.
- Help insure equitable actions for GHG reduction initiatives.
- Provide baseline data for goal setting and ongoing monitoring that aligns with state and national data, and allows for comparison as well as estimated benefits by sectors.
- Impetus and support for individuals and entities to undertake carbon footprint analyses and adjust patterns of consumption of goods, food and services (see Recommendations 3 and 4 below).

Strategies

- Evaluate existing methods used by other communities for suitability and feasibility
- Determine scope of analysis, given LAC goals
- Determine if analysis should be done by LAC Staff and/or external consultant
- Perform analysis
- Provide results to County Council, Boards and staff, and residents, together with strategies that target GHG sources identified in analysis
- Monitor changes to GHG emissions through ongoing and periodic analyses

Impact/Examples in Other Communities

- King County, WA: Performed a CB GHG analysis, and found that 63% of emissions were due to goods, food, services and construction.
- Eugene, OR found that consumption-based emissions were more than 2.5 times greater than previously estimated local emissions.
- Multnomah County, OR: A CB analysis found that 53% of GHG emissions resulted from food, goods and services consumed in the County.
- Lake Oswego, OR: A CB analysis found that 46% of GHG emissions were due to production, transport and disposal of goods, food and services.

- Denver, CO: is in the process of updating its GHG inventory, setting a new baseline using CB estimates.

Economic Impact

- **Anticipated Costs:**
 - LAC Staff time to prepare RFP (if using consultant), hire and work with consultant
 - LAC Staff time to gather relevant data for analysis
 - Possible additional cost to purchase economic data and/or conduct spending surveys of community
 - Fee for analysis by consultant (if used)
 - Funds for education/outreach to community regarding results and GHG mitigation actions
- **Anticipated Economic Benefits:**
 - Provides data to inform selection of most impactful and cost-effective interventions to lower GHG emissions
 - Economic/spending data obtained should also be useful to Economic Development and local businesses.

Benefits Other than CO₂ Reduction

- More honest accounting of GHG sources adds to credibility of Task Force report and recommendations
- Potential for greater equity in actions recommended and taken to lower GHG emissions (Lower-income HHs typically have lower CB emissions, and from different sources, than more affluent HHs.)
- Opportunity to educate community on full environmental impacts of lifestyle
- Allows community and leadership to take a critical look at LAC GHGe and assess anticipated reduction by mitigation strategy (aid in prioritization of strategies)

Challenges & Anticipated Barriers

- Economic/spending data for analysis may need to be gathered.
- Consumption-based measures, based on economic data, can be difficult to use for ongoing monitoring of GHG reductions. Research into alternative methods for tracking changes in consumption-related GHG emissions going forward is warranted.

Community Outreach

- Potential for educational outreach done while collecting data on household/business/municipal government/school spending
- Educational outreach based on analysis outcome, with suggestions for actions to be taken by residents, etc. to reduce GHG emissions

References/Resources

- *CBEI Guidebook*-- by the Stockholm Environment Institute provides advice for local governments seeking to measure and manage their carbon footprint using consumption-based emissions inventories (CBEIs) [CBEI Guidebook - USDN Sustainable Consumption Toolkit](#)
- *PAS 2070: 2013 Specification for the Assessment of Greenhouse Gas Emissions of a City (PAS 2070)* [Specification for the assessment of greenhouse gas emissions of a city – Direct plus supply chain and consumption-based methodologies](#)
- *Under-reporting of greenhouse gas emissions in U.S. cities*. NATURE COMMUNICATIONS | (2021) 12:553 | [Under-reporting of greenhouse gas emissions in US cities](#)
- Christopher M. Jones and Daniel M. Kammen, [Spatial Distribution of U.S. Household Carbon Footprints Reveals Suburbanization Undermines Greenhouse Gas Benefits of Urban Population Density](#). *Environ. Sci. Technol.*, 2013, dx.doi.org/10.1021/es4034364

Waste Management, Recycling and Composting

Recommendation 2: Following “Zero Waste” Principles, Eliminate Municipal Waste Sent to Landfill Through Reduction, Re-use, Recycling and Composting With a Goal of 100% Diversion by a Period of Time to be Determined

Time Frame: Current and Ongoing

Background/Research/Data

- Solid waste in Los Alamos is managed by the Los Alamos County Environmental Services Department (ESD). The ESD provides trash, recycling and yard trimming collection services to all residents and trash and recycling collection for commercial entities in the County. This includes 7,200 households, 333 commercial dumpsters in service and a 7 day per week transfer station operation. In 2019, residential waste collected represented 4,889 tons, commercial waste was 2,890 tons. The diverted waste (recycled, reclaimed, or composted) is approximately 21,194 tons/annually or 56% of all waste generated. In addition, the municipal solid waste, which includes all commercial, residential and transfer stations, is 16,509 tons and is shipped to the Rio Rancho landfill at a cost to the County of approximately \$1,000,000 in 2019, which includes transportation and disposal. The Rio Rancho landfill is predicted to close in the next 5-7 years and the next landfill will be a further distance and may increase the cost of hauling and disposal.
- The Environmental Services Department submits a monthly report on waste diversion and GHG benefits and costs of these activities in their monthly sustainability report [HERE](#). You can also read the 2017 Environmental Sustainability Plan [HERE](#). For the Los Alamos County waste recommendations, the LARES Task Force is recommending a Zero Waste approach, which was adopted by the US Conference of Mayors in 2015. Zero Waste is a philosophical and programmatic strategy to minimize the environmental impact of materials disposal. Ideally, all materials and products would be reduced, or re-used, re-purposed, recycled or composted. This strategy prioritizes care of hazardous materials, so that disposal or recycling of these is done to have a minimal (ideally zero) impact on the natural and human environments.
- Los Alamos County has the opportunity to be a leader in the work of Zero Waste through community commitment to reducing materials that end up in the waste stream, reusing or re-purposing materials, and recycling. This is an innovative, socially connected community of scientists, nature enthusiasts, educators and people dedicated to service and innovation. We are also the healthiest county in the United States. With these attributes, we are well-poised to tackle the complexities and challenges of shifting toward a future that embraces Zero Waste practices. It is estimated that 21,194 tons of material, which include concrete and asphalt, recycle, yard trimmings, batteries, electronics, tires, pallets, metal, cardboard, mixed recycle,

oil and antifreeze, were diverted from the landfill in 2019. Seventeen percent of waste is food waste, of which 491 tons (37%) come from commercial enterprises and 831 tons (63%) come from residential homes.

Outcome

- Decrease (over time to 100%) the amount of municipal solid waste (MSW) that is deposited in a landfill:
 - Increase diversion rate of materials to 90% of waste diverted from landfill by TBD (example from Los Angeles, CA: 90% by 2025, 95% by 2030 and 100% by 2050)
 - Reduce municipal solid waste generation per capita by 15% by TBD, including phase out of single use plastics by TBD
 - Eliminate organic waste going to landfill (by TBD)
 - Increase proportion of waste products and recyclables productively used or repurposed by X % in TBD and X% by TBD
 - Increase commercial and industry participation in County goals by a certain % per year - to get to 100% by TBS

Case Study/Public Education/Educational Materials

[Los Angeles County Sustainability Plan](#)

[EPA website on Zero Waste](#)

[Fort Collins Road to Zero Waste](#)

[Marin County Zero Waste](#)

- **Strategy 1: Integrate concepts of Zero Waste into all aspects of LAC. This includes education, programs and practices as well as supported outreach on Zero Waste goals, strategies and benefits.**
 - Tactic 1: With resource allocation (staffing/consultants) implement policies to support reduction of single use materials and waste produced, and support repurposing and recycling where indicated.
 - Considerations:
 - Responsible waste management systems (trash, compost, recycling)
 - Improve County recycling and compost operations - to increase capacity
 - Hazardous waste reduction best practices
 - Disaster planning to include waste reduction strategies
 - Tactic 2: Implement waste reduction, composting and recycling at all County facilities, programs and household services.

- Considerations:
 - Policies and codes need to be reviewed for opportunities to support Zero Waste goals.
- Tactic 3: Conduct waste education and outreach on Zero Waste and programs, practices and recommendations for individual, commercial and County/public entities to adopt this framework.
 - Considerations:
 - Support/incentivize local commerce innovations
 - Green business awards
 - Promote Zero Waste outreach at events (support needed)
- Tactic 4: Improve recycling practices - through 100% recycling and at the same time, decreasing reliance on single use materials.
 - Considerations:
 - Use apps and programs like Recycle Coach
 - Improve recycling education to include environmental footprint, so people understand the % of materials that are actually transitioned to usable products.
 - Look for ways to reuse materials that are generated in Los Alamos County
 - Support commercial recycling through policies, codes and services that improve recycling practices.
- Tactic 5: Improve refrigerant management policies and recycling
 - Every refrigerator and air conditioner contains chemical refrigerants that absorb and release heat to enable chilling. Hydrofluorocarbons (HFCs), the primary replacement for ozone depleting substances, spare the ozone layer, but have 1,000 to 9,000 times greater capacity to warm the atmosphere than carbon dioxide. In May 2021, the U.S. Environmental Protection Agency (EPA) proposed its first rule under the American Innovation and Manufacturing (AIM) Act of 2020 to phase down the production and consumption of HFCs.
 - Consequently, adopt policies and practices *as outlined in Project Drawdown* to:
 - avoid leaks from refrigerants
 - destroy refrigerants at end of life, both after the adoption of alternatives to HFC refrigerants such as propane, isobutene,

ammonium, etc.

- Consider policy recommendations to reduce GHG emitting refrigerants examples [here](#).
- Tactic 6: Improve household hazardous waste reduction and safe disposal
 - Household hazardous waste (HHW) includes cleaners, solvents, automotive fluids, batteries, garden chemicals, and other materials that pose hazards to solid waste workers and the public. Proper disposal is necessary to prevent injury, illness, or environmental contamination. Although HHW is excluded from Subtitle C of the Resource Conservation and Recovery Act, it is regulated under Subtitle D of this law as a solid waste. In other words, household hazardous waste is regulated on the state and local level.
 - Considerations:
 - Reduce purchases of products that contain hazardous ingredients for viable alternatives. Advance collection programs, events, and opportunities. Utilize information resources from the EPA, NMED, and NM Recycling Coalition.
 - Battery use, recycling and disposal.
 - Pesticide sale, use and safe disposal.
- Tactic 7: Encourage recycling and repurposing of construction materials for construction projects in Los Alamos.
 - Construction material re-purposing, for example the Habitat for Humanity Re-Store.
 - Sustainable Materials Management approaches for C&D materials should be considered. These include best practices for Reducing, Reusing, and Recycling Construction and Demolition Materials: [Best Practices for Reducing, Reusing, and Recycling Construction and Demolition Materials | US EPA](#)
 - Design for Disassembly [Design for Disassembly \(DfD\) - Construction Recycling](#)
 - NM Construction & Demolition Recycling Guide, [C&D Guide 2010](#)
 - Use reclaimed asphalt and concrete in projects in Los Alamos. Sustainable materials management (SMM) is a systemic approach to using and reusing materials more productively over their entire life cycles. Technical guidance, tools, and models such as: EPA SMM Strategic Plan Examples:
 - [EPA Sustainable Materials Management Program Strategic Plan for Fiscal Years 2017 – 2022 | US EPA](#)

- Road Ahead report [Sustainable Materials Management: The Road Ahead](#) Waste Reduction Model (WARM) [Basic Information about the Waste Reduction Model \(WARM\) | US EPA](#) should be explored for applicability. Feasibility of materials and waste exchanges through Reuse Centers, which are markets for buying and selling reusable and recyclable commodities, should be investigated.
- Tactic 8: Increase organic waste diversion
 - Goals: 0% of compostable materials will be sent to landfill
 - Increase composting of yard trimmings to 100%. Currently, 70% of households have yard trimming carts.
 - Implement food waste composting – community compost pick up for food waste, policies for public, County and commercial food waste reduction and composting
 - Examples:
 - Restaurants: compostable to-go containers and utensils or encourage customers to bring their own containers and utensils, having an “ask before giving” disposable utensils policy
 - Households, apartments, schools and businesses will have compost pick up
 - More backyard composting kits with education outreach on wildlife safety
 - Partner with schools, churches, extracurricular activities and nutrition services to reduce food waste through left over challenges
 - Guerilla food app – for fruit trees and Gaia’s Pantry project
- Tactic 9: Reduce reliance on single use items
 - Implement best practices that support reusable materials
 - Integrate water bottle filling stations throughout downtown
 - Conduct a community campaign to bring own cups everywhere
 - Work with grocery and food vendors to reduce impact of “to go”
 - Consider a ban on single use plastics for LA County, this could be banning the sale and use on County land, including public events. It could be more comprehensive - ban on restaurants or even sale of single use plastics. These policies are being enacted globally and LA County could adopt a ban for 5-8 years from now to allow time for the community and local businesses to plan.
- Tactic 10: Support reusing, repurposing and repair

- Exchange center for sharing of reusable household items
 - Create a re-maker space with community to fix and repair and trade
 - Incentivize businesses who bring these services to LA County
- Tactic 11: Incentivize, fund/support “Waste to Energy Solutions”
 - Considerations:
 - LA County could look into the use of anaerobic digestors for methane recovery - refinement and pipe into other processes. Organic wastes can emit fugitive methane gases as they decompose. Methane creates a greenhouse warming effect 34 times stronger than carbon dioxide over a century. One option to control decomposition of organic waste is in tanks called anaerobic digesters. They harness the power of microbes to transform scraps and sludge and produce two main products: biogas, an energy source, and solids called digestate, a nutrient-rich fertilizer.
 - A potential source would be the closed landfill. Overall, landfills can be a top source of methane emissions, releasing 12 percent of the world’s total. Landfill methane can be tapped, captured, and used as a fairly clean energy source for generating electricity or heat, rather than leaking into the air or being dispersed as waste. The climate benefit is twofold: prevent landfill emissions and displace coal, oil, or natural gas that might otherwise be used.

Economic Impact

- By moving to a circular economy on waste, there are increased job and industry opportunities, there is an added impact on County environmental services to manage and transport waste, costs could be traded from diversion to landfill and with a single use plastics ban, less burden to recycle that material - since there will be less of it - and this could go to municipal composting and industrial products recycle/reuse services.

Benefits Other than CO₂ Reduction

- Benefits will be reduced burden on environmental services to manage waste

Challenges & Anticipated Barriers

- Many local cities and counties are addressing these issues, and this will be increasingly becoming the norm for local communities. Planning for zero waste is an incremental process and the County will need to weigh the local community’s desire for convenience against the cost of continuing to create the amount of waste that we are

currently producing. Working with the community to assist with voluntary behavior change is always the best option, and having a commitment to zero waste practices as a County and encouraging our industry and business partners in the community is of utmost importance. Where policies can be implemented to reduce the burden on the individual consumer, these should be implemented.

Community Outreach

- The LA County Zero Waste Team and the ESB have a comprehensive community education and outreach plan, with some educational funding, and novel approaches to community building around this, we can continue to engage, learn and adapt to new ways of consuming as well as our waste production.

References/Resources

[Los Angeles County Sustainability Plan](#)

[EPA website on Zero Waste](#)

[Fort Collins Road to Zero Waste](#)

[Marin County Zero Waste](#)

[MIT Science Policy Review: Institutions and governments can slow climate change by regulating and reducing halocarbon refrigerant use](#)

[Challenges and Recommended Policies for Simultaneous Global Implementation of Low-GWP Refrigerants and High Efficiency in Room Air Conditioners](#)

Sustainable Materials Management, US EPA <https://www.epa.gov/smm>

Project Drawdown Solutions, <https://drawdown.org/solutions>

New Mexico Environment Department, Waste Management <https://www.env.nm.gov/waste/>

New Mexico Recycling Coalition, <https://www.recyclenewmexico.com/>

Protecting Our Climate by Reducing Use of HFCs, <https://www.epa.gov/climate-hfcs-reduction>

How Does Anaerobic Digestion Work? <https://www.epa.gov/agstar/how-does-anaerobic-digestion-work>

US EPA Landfill Methane Outreach Program (LMOP), <https://www.epa.gov/lmop>



Our waste disposal system in action

Consumption of Goods, Food and Services; Refrigerants; Construction Materials

Recommendation 3: Educate community regarding sources of GHG emissions and provide information on reduction of personal carbon footprint

Time Frame: Ongoing

Background

- Community GHG emissions arise from diverse activities of residents, businesses and other entities. Rapid reduction of emissions requires addressing as many of these important sources as possible, by as many people as possible. Many people would like to take action to reduce personal emissions, but general understanding of these sources, and how to reduce them, is often limited. Also, individuals and entities have different desires and capabilities to reduce their carbon footprint and should have choices in how to do so.

Outcome

- Extensive public education campaign results in greater community understanding of important sources of GHG, where they arise in daily life, and the options available to reduce them.
- Resources are readily available for residents and other entities to use to estimate personal GHG emissions and learn ways to address them.
- Material and social incentives are provided to help engage the community in learning about and acting on GHG reduction options.
- Opportunities are provided and supported for **all** residents and entities to participate in climate change actions of their choosing, suited to their interests, means and resources.

Case Study/Public Education

- Annually since 2017, LAC Environmental Services and the Environmental Sustainability Board (ESB) have conducted a community-wide “EcoChallenge.” This fun, interactive program utilizes an on-line platform to engage residents in learning about ways to reduce their environmental impact. Dozens of teams have participated, including many school groups, and hundreds of residents have taken action to learn about



and reduce their carbon footprint, energy, water and fuel use, and other sustainability measures.

Strategy

- Research and evaluate existing carbon footprint calculators and accompanying information on GHG reduction actions
- Develop/aggregate online resources for use by the community to explore GHG footprints and actions to take to mitigate. Publicize widely as a “One-Stop Shop for Reducing your Carbon Footprint” (perhaps as part of larger “Sustainable Living” web resource)
- Develop/Implement “Los Alamos Carbon Free Challenge” and other campaigns to engage the community in reducing GHG emissions. These campaigns will include education, social engagement, and competitions, and target youth, adults, businesses, and local government employees.
- Provide CO₂e information on all utility billing, so customers can see their GHG impacts as well as understand how their energy/NG/water consumption compares with others in the community.

Impact/Examples in Other Communities

- Eugene, OR implemented a “Carbon Free Challenge” which engaged city residents in online and in-person carbon reduction activities and competitions.
- The Oregon Department of Environmental Quality provides a Carbon Footprint Calculator on its website, together with “Take Action” options and pledges for its residents.

Economic Impact

- **Costs:** Funding for educational outreach to community including staff time, advertising, purchase of incentives (\$1-5 per resident)
- **Savings:** To County—from reduced energy and water use, waste disposal, etc. To Residents/Businesses—from energy/water conservation and reduced purchasing

Benefits Other than CO₂ Reduction

- Helping residents learn about their own carbon footprints permits choice in actions to take in reducing emissions, customizable to household/business budget, capabilities and resources.

- Engaging residents in action-oriented GHG reduction campaigns builds community, and educates regarding climate change, sustainability and resiliency.
- Actions taken to reduce carbon footprint often also result in water conservation, waste reduction, and other environmental benefits.

Challenges & Anticipated Barriers

- Educating and engaging a large percentage of the community can be difficult but is achievable with diverse effort sustained over time.

Community Outreach

- See above

References/Resources

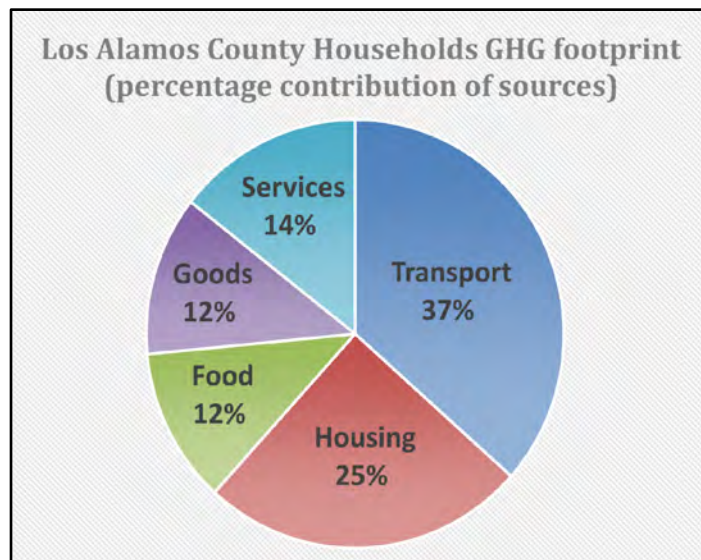
- Several household carbon footprint calculators are available, and most incorporate suggestions on actions to take to lower emissions. These include: *US EPA Household Carbon Footprint Calculator* ([Household Carbon Footprint Calculator | US EPA](#)), and [CoolClimate Calculator](#). App-based calculators, which use personal spending data to calculate emissions, include [Joro](#), [OroEco](#) and [JouleBug](#).
- Several platforms are available for community-wide engagement in GHG reduction initiatives, including [BrightAction](#) and [EcoChallenge](#). These are customizable for a community's needs (see [Eugene \(OR\) Carbon Free Challenge](#)). Other platforms include BeChange and Count Us In.
- Resources for carbon footprint estimation and mitigation for schools, businesses, local government and other entities will be evaluated for use in the County. For youth: [Kids Calculator - Park City](#) For businesses: [Carbon Footprint Calculators for Businesses, Green Places | Erase Your Company Footprint](#) and [CoolClimate Calculator](#)

Recommendation 4: Reduce consumption-associated emissions by encouraging and supporting sustainable purchasing, use and disposal of food, goods and services, refrigerant management, and low-carbon construction materials

Time Frame: Immediate and Ongoing

Background/Research/Data

- GHG emissions resulting from the purchase of food, goods and services consumed in Los Alamos, although they are produced outside of the County, likely make up a substantial portion of carbon emissions for which we are responsible. (Graph based on data from Christopher M. Jones and Daniel M. Kammen, [Spatial Distribution of U.S. Household Carbon Footprints Reveals Suburbanization Undermines Greenhouse Gas Benefits of Urban Population Density](#). *Environ. Sci. Technol.*, 2013, dx.doi.org/10.1021/es4034364.)



- Refrigeration, air travel and construction also have substantial associated GHG emissions.
- Reducing these is critical to achieving net zero emissions, and will also help address other sustainability issues, such as health, community resilience, waste and food insecurity.

Outcome

- Educational outreach to the community will result in better understanding of all sources of GHG emissions, their impacts, and ways to reduce them.
- Residents are empowered and encouraged to shift to lower-carbon diets and waste less food, resulting in improved health and cost savings.
- Increased local reuse and repair of material goods permits residents to reduce purchase of new goods. Residents build community connections and local resilience while saving money and reducing waste to landfill.
- Businesses and residents are encouraged to purchase non-hydrofluorocarbon (HFC) refrigerators, freezers and AC units (as needed), and educated on safe maintenance and disposal of appliances containing HFCs.

- Residents reduce air travel emissions by changing travel habits. Businesses support methods for employees to work without long-distance travel to meetings, etc.
- County departments lead by example in utilizing lower carbon building materials in all CIP and other construction projects.

Case Study/Public Education

- The production and disposal of food accounts for as much as one-third of anthropogenic GHG emissions. Environmental Services data show that residents purchase significantly more food than they use, sending nearly 100 lb. of food per person per year to the landfill as waste. Since 2016, Environmental Services, the ESB and Zero Waste Team have implemented an extensive outreach program (“Save the Food”) to reduce food waste in all sectors of the community (residents, retail, restaurants and schools.) LAC County Council approved funding for this program in 2019, which enabled expansion of efforts. To date, the program has reached dozens of businesses and schools and thousands of residents, providing them with information and tools to prevent food waste and save money.



Strategy

- Reduce the wasting of food and promote a shift towards healthy, lower-carbon (more plant-based) food choices through educational outreach and support to residents, schools, restaurants and businesses. Continue and expand Environmental Services’ “Save the Food” campaign to involve all residents, businesses, schools and other entities. Support Farmers’ Markets, home gardening and community/school gardens, as well as local food rescue groups/food banks. Leverage the buying power of government, schools and community organizations to purchase low-carbon, minimally processed foods. Promote better food choices through nutritional and health counseling programs. Facilitate “gleaning” to channel surplus produce from home gardens to food banks.
- Promote a “circular economy” for material goods, emphasizing reduction of purchases through reuse, repair, sharing and recycling. Promote community “Fix It” clinics, rental businesses, thrift stores, tool lending “libraries”, and sharing groups. Encourage consumption of local services (such as gift cards for services) over purchase of material goods. Reduce use of disposable goods such as service ware, and emphasize purchase of durable, reusable goods.

- Assess current green purchasing policies used in County government and schools. Implement sustainable purchasing policies requiring GHG emissions criteria to be considered in all purchases and contracts. Adopt policies that require justification away from the least polluting purchase, otherwise the least emitting equipment and processes must be purchased. Increase the level of justified costs from the current 5%.
- Educate regarding HFCs, options for purchasing non-HFC appliances, and ways to safely dispose of appliances at end of life. Convene large entities using refrigeration (groceries, schools, LAMC) to ensure proper maintenance/leak prevention and disposal procedures are in use. Facilitate transport of residential refrigeration units to Eco Station for proper extraction and disposal of HFCs at end of life.
- Encourage reduction in air travel through promotion of local/regional travel, and options for businesses to conduct work without travel to meetings etc. Educate regarding how to reduce CO₂ emissions from air travel (take direct flights, fly economy class, choose airlines using biofuels, purchase carbon offsets, etc.) County staff should lead by example.
- Promote shift to lower-carbon construction materials (low-carbon cement, supplementary cementitious materials, warm mix asphalt, etc.) and reduce use of virgin concrete, steel and asphalt through education, increased availability of alternative and recycled materials, and possibly building code adjustment. Promote deconstruction and reclamation of high-value materials, possibly through a “deconstruction ordinance.” Develop and implement GHG reporting criteria in planning all CIP construction projects.

Impact/Examples in Other Communities

- Since 2011 The City of Paris, France, has used its Health Nutrition Program to encourage residents to consume healthy, local, low-carbon foods. Minneapolis, MN schools developed “True Food, No Waste”, a comprehensive food waste reduction plan for all Minneapolis Public Schools.
- Portland, OR’s “Be Resourceful” campaign focuses on connecting residents to information and resources to get things they need through reuse, repair, renting and sharing, as well as “buy smart” strategies (plan purchases, buy low-C goods, buy durable goods, gift services, etc.).
- Eugene, OR, plans to convene community partners who use refrigerants to identify options to reduce leaks from appliances and commercial refrigeration systems.

- The Town of Chapel Hill, NC, provides builders with a list of building materials that are required to be recycled or salvaged when a building is being torn down and requires documentation of material recycling or salvage.

Economic Impact

- **Costs:**
 - Education/outreach will require staff time, and educational and promotional materials.
 - Shifting to higher quality, lower carbon food and goods may have higher up-front costs.
 - Replacement of HFC-containing appliances and AC units (at end of life) to ones containing non-HFC coolants will incur cost.
 - Purchasing and utilization of lower-carbon materials and contracts by County government and schools will require staff time to research, and may be more costly
- **Savings:**
 - Shifting to a lower carbon diet with greater consumption of plant foods can have numerous health benefits and attendant savings. Reducing meat, dairy and fish consumption can result in significant savings. Reducing food waste can save the average family of four \$1600/yr or more. Since food waste makes up 17% of what we send to the landfill, prevention of this waste reduces Environmental Services costs.
 - Purchase of more durable goods, and increasing rental, repair, sharing and reuse of goods, can all save consumers money. Promotion of rental, repair and resale businesses supports local economy.
 - Refrigerant extraction and recycling is currently a cost for Environmental Services. Shifting to non-HFC gases (which can be cheaply vented) will save on disposal costs.
 - Local/regional travel (vs. overseas) can save vacation costs and support local tourism economy. Less business travel can result in significant cost savings.
 - Use of reclaimed/recycled building materials may save on construction costs. EcoStation already collects construction debris, reuse of this would create a local market for that material.

Benefits Other than CO₂ Reduction

- Support of local/regional agriculture and home gardening, waste reduction, health improvement, air/water/land pollution reduction, reduction in agricultural use of land, water and other resources. Increase in donations to food banks, reducing food insecurity

- Promotion of sharing enhances social connection and community. Support of local businesses, services and non-profits involved in circular economy. Reduce waste to landfill. Reduce consumption of water, minerals, fossil fuels, labor, capital, etc. used to produce goods and services. Shift to use of services over purchase of material goods supports local businesses. Increase skills for resourcefulness and self-sufficiency
- Reduction of air travel can support local travel and tourism industries
- Reuse of reclaimed construction materials reduces landfill waste and use of virgin resources

Challenges & Anticipated Barriers

- Since food is wasted at many points during its use, addressing all of these requires several behavior changes that may be inconvenient (meal planning, proper storage) or unwanted (eating leftovers.) Food choices are influenced by many important factors (culture, habit, economics, personal preferences), and shifting these can be difficult. Many high carbon foods (meat, dairy, etc.) and processed foods are heavily subsidized and sometimes less expensive than low-carbon plant foods.
- Purchase of new material goods can be more convenient than fixing existing goods or seeking out used materials. LAC lacks many options for repair or rental of goods. Some residents may feel that new goods are “better” than used. Advertising culture and retail merchants promote excessive consumption.
- Most release of HFCs is thought to occur during use of commercial refrigeration by businesses, over which there is no control or oversight.
- Options for long-distance travel from Los Alamos, other than by air, are limited.
- Availability of low carbon and/or recycled construction materials may be limited. Local contractors may lack knowledge of how to use low-carbon materials.

Community Outreach

- See above

References/Resources

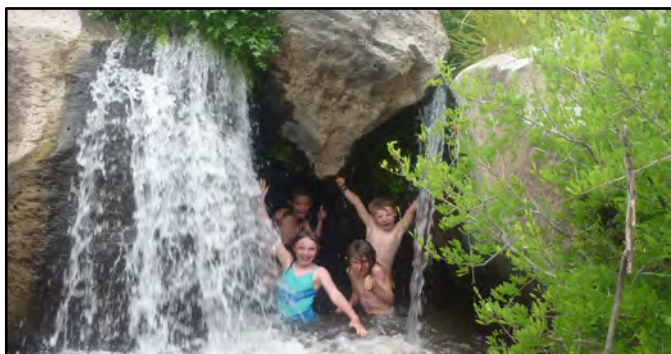
- Project Drawdown (<https://drawdown.org/>) provides data and solutions for over 100 GHG sources. For example, it lists “Reduced Food Waste” and “Plant-Rich Diets” among the top four solutions having the most impact in reducing emissions worldwide.
- The USDN “Sustainable Consumption Toolkit” provides extensive resources to advance sustainable consumption in cities: [USDN Sustainable Consumption Toolkit](#), including a “Smart Shift” guide to help local governments promote sustainable consumption.

- The UN's EAT-Lancet Planetary Health Diet outlines changes to the food system that reduce GHG emissions substantially, while improving human health: [The Planetary Health Diet](#)
- LAC Environmental Services "Food Waste Prevention" webpage ([Food Waste Prevention](#)) contains information on food waste, and how to prevent it. The US EPA's "Sustainable Management of Food" page also has many helpful resources on food waste reduction ([Tools for Preventing and Diverting Wasted Food | US EPA](#)).
- The West Coast Climate Forum's "Climate-Friendly Purchasing Toolkit" provides guidance on specific purchasing strategies to reduce local governments' carbon footprint: [Climate Friendly Purchasing Toolkit](#)
- US EPA information on HFC refrigerants, their impacts, and legislation to phase-down their production in the next 15 yrs: [Protecting Our Climate by Reducing Use of HFCs | US EPA](#) (NMED is also writing rules to mitigate HFC emissions, including entirely phasing out the use of HFCs in New Mexico.)
- Article on GHG emissions from air travel, and how to mitigate: [Flying Is Bad for the Planet. You Can Help Make It Better. \(Published 2017\)](#)
- "Five Key Ways to Reduce GHG Emissions in Building Construction" [5 key ways to reduce GHG emissions in building construction](#)



Food Waste Prevention Toolkit materials distributed by Environmental Services Zero Waste Team to members of the community at outreach events

Water and Wastewater



Recommendation 5: Build a Comprehensive Water Conservation (and Specifically Watershed Stewardship) Plan for the Los Alamos and White Rock Communities in Order to Maintain and Enhance the Quantity and Quality of Water Available to the Los Alamos community, While Reducing Runoff Contamination Through Green Infrastructure Approaches. Ensure Progressive Leadership and Exemplify Best Forward-Looking Practices in Water Efficiency and Water Quality Efforts that Ensure Sufficient Clean Water for Current and Future Natural Landscapes and Generations. (We plan to consult with Philo Shelton and other relevant County department directors on strategies listed below).

Time Frame: Immediate and ongoing

Background

- Reliable, safe water is essential to Los Alamos County's continued tenure on the Pajarito Plateau. Increased warming, drought, and shifts in precipitation timing due to climate change, together with population increase and development, impact water availability and quality, placing increasing pressure on our supply. LANL studies indicate that levels in our aquifer are declining, and predict that water quality will be impacted, with increased pumping costs (Long Range Water Supply Plan for Los Alamos County [LRWSP]).
- While it is likely that our aquifer contains sufficient water to supply the community for many decades to come, reducing demand will help compensate for these changes without impacting availability or expanding production, together with lowering costs and bringing other benefits. In addition, longer periods of excessive heat and drought will also occur in LA County, and building resilience to excessive heat days, long periods of drought as well as increasing severity of monsoon rainfall and subsequent flooding will be key. Our community has successfully embraced water conservation measures in the past and continues to support efforts to conserve.
- Surface waters in Los Alamos are subject to contamination with not only LANL legacy wastes but also toxins from residential, business and municipal use of herbicides, pesticides, and other chemicals. Runoff of these poses a threat to the health of

communities and environment at home and downstream along the Rio Grande. Climate change is predicted to cause increased frequency and severity of flooding and greater runoff due to tree loss and other landscape changes. Los Alamos' LRWSP has stated that, "Stormwater management is a key issue for the County and LANL. Section 502 of the Clean Water Act defines green infrastructure as "...the range of measures that use plant or soil systems, permeable pavement or other permeable surfaces or substrates, stormwater harvest and reuse, or landscaping to store, infiltrate, or evapotranspire stormwater and reduce flows to sewer systems or to surface waters."

- Green infrastructure is a cost-effective, resilient approach to managing wet weather impacts that provides many community benefits. Research and monitoring should be conducted to fill knowledge gaps and enhance planning capabilities.
- Addressing storm water through a comprehensive stormwater runoff program that includes permaculture strategies will give us the opportunity to prevent contamination of our watershed, as well as improve our land and soil quality and create and support the Los Alamos and White Rock microclimates.

Outcome

- Reduced water use, increased water security, savings to County and residents
- Reduced need for location and development of new, deeper water wells and development of (dwindling) San Juan-Chama water resource.
- Reduced maintenance and operational costs of water, sewer and water treatment infrastructure.
- Increase in drought friendly watering options for irrigation of landscapes, gardens, parks and recreational areas, and other non-potable uses.
- Reduced runoff of contaminants into stormwater, local landscapes and canyons, Rio Grande and downstream communities. Health and environmental benefits as contaminants are reduced.
- Improved water monitoring and ability for proactive approach to minimize pollution
- Ability to show if certain actions give measurable results such as any relevant clean up work or any reductions in chemical use
- Public confidence in water safety

Case Study/Public Education/Educational Materials

- DPU has set and successfully achieved a goal of reducing water use by 12%.
- Public education by [PEEC](#) regarding water conservation, Water Festival, rainwater harvesting etc. Similar but higher funded and more focused resource in local area: <https://savewatersantafe.com>
- What is Green Infrastructure? U.S. EPA Resources, Initiatives, Case Studies, <https://www.epa.gov/green-infrastructure/what-green-infrastructure>

Strategies

1. Updates of DPU Energy and Water Conservation Plan should include ongoing analysis of projected climate change impacts, and provide revised goals and policies that mitigate those impacts to water supply and quality.

- LAC Long Range Water Supply Plan provides guidance on how to monitor and integrate climate change information into water supply planning, and should be updated regularly.
- Incorporate findings of the New Mexico 50-Year Water Plan, a new analysis of the projected climate change induced impacts on water resources to 2070.
- Support and enhance DPU goal for FY 2022 to reduce consumption by 12 percent by 2030 using 2020 calendar data as a baseline. As a goal is attained, set new goals for conservation.
- Provide our smart meter data on water usage to organizations working on water conservation and sustainability like <https://newmexicowaterdata.org> and similar initiatives to increase knowledge and solutions.
- Support recommendations of 2020 BPU Conservation Committee for incorporation into revision of Energy and Water Conservation plan, along with previously identified Plan goals.
 - Many possible strategies to reduce water use have been identified by consultants, DPU, BPU and the 2020 Conservation Committee. Use polls and other outreach tools to identify those which are most likely to be embraced by the community, and integrate with water use reduction potential and cost estimates, to prioritize actions. Consult with Coalition of Sustainable Communities NM and plans from other communities for further guidance and lessons learned. Revisit progress on these goals annually, and refine as indicated.
 - Since residential water use (particularly landscaping and water appliances/fixtures) are the biggest contributors to water use, focus on customer education, incentives and rebates to reduce water use.
 - Prioritize and increase funding to education outreach organizations like [PEEC](#).

2. Encourage and support greater use of greywater and rainwater for residential, business and municipal purposes, to reduce use of drinking water.

- Implement gray water policies and build capacity to help community safely use gray water and rainwater for irrigation and other non-potable uses.
- Support water harvesting through education, incentives and code changes (if needed.)
- Reclamation and use of greywater/rainwater should be employed at County facilities and schools, to educate and lead by example. Identify relevant state and federal funding sources needed to build infrastructure (that cannot be built with DPU funding - for example extension of grey water infrastructure to schools and other non-County watered areas).

3. Increase use of reclaimed water to decrease burden on aquifer

- Actively prioritize chasing funding for water conservation and sustainability measures as a county.
 - DPU already has much of the needed infrastructure in place for grey water use and needs outside funding to enable grey water usage at White Rock schools, Pueblo Complex sports fields, Urban Park, High School and UNM-LA practice fields. Actively supporting DPU's efforts by looking at funding sources outside of DPU reach will enable grey water use at those facilities sooner.
- Evaluate all current County water related practices and implement effective water conservation and sustainability changes:
 - Prioritize professional evaluation and optimization of Golf Course turf management and design to reduce water use.
 - Fire hydrant testing targets flow of 1500 gallons per minute for each hydrant, that's 1000s of gallons of potable water per hydrant that is currently being flushed down the drains. There are over 9,000 fire hydrants in Los Alamos County. Possible change is to have hydrant testing water collected during test and used elsewhere.
- Update Los Alamos County Non-Potable Water System Master Plan (2013) to incorporate climate change effects, post-fire changes to landscape and water, and changes to water infrastructure (including WR Water Resource Recovery Facility).
- Identify new opportunities for reclamation and reuse of non-potable water.
- Actively search out state and federal funding to build and support infrastructure to use treated wastewater to supply County and school land and fields, and other residential, business and LANL uses.

4. Use Well-Established Stormwater Capture Methods to Address Open Space Stormwater Runoff. Test and Record Quality of Stormwater Runoff and Aquifer, Checking for a Range of Urban Contaminants Including Plastics, Heavy Metals, Herbicides, Pesticides, etc.

- As part of a comprehensive stormwater runoff program that includes permaculture strategies, create Low Impact Development Controls (LIDs) using established retention, detention and water quality testing. These techniques can help to develop a soil matrix and filter into area, which reduces the rate of flow and allows for deep infiltration to prevent contamination of our watershed, as well as improve our land and soil quality and create and support the Los Alamos and White Rock microclimates.

- Consider partnering with LANL to pay for and implement the EPA best practices for stormwater runoff ([National Menu of Best Management Practices \(BMPs\) for Stormwater | US EPA](#)) to capture as much water on the hill as possible.
- Educate community re. runoff issues, pesticide/herbicide/etc. reduction, don't dump antifreeze down the sewer etc.
- Hire an environmental contractor/consultant for proper stormwater capture, testing and database setup.

Impact/Examples in Other Communities

- Santa Fe, NM [City of Santa Fe Water Conservation and Drought Management Plan 2015: 2020 Addendum](#)
- Albuquerque, NM [CONSERVATION & REBATES-OVERVIEW – Albuquerque Bernalillo County Water Utility Authority](#)
- Farmington, NM <http://www.fmtn.org/306/Stormwater-Management>
- Boulder, CO <https://assets.bouldercounty.org/wp-content/uploads/2018/08/2018-sustainability-plan-chapter-8.pdf>
- Portland, OR <https://www.portlandoregon.gov/bes/64040>

Economic Impact

- Costs:**
 - Funding for consultant (or staff time) to incorporate climate change impacts and mitigation into DPU Conservation Plan; staff time and materials for education/outreach; funding to PEEC for expanded water conservation education; programming for billing system to tell customers about comparative use; reduction in tax and permit revenue (if not increasing tax assessment or charging permit fees for conservation improvements); loss of water service fee revenue; (or just “see Conservation Committee Recs for additional info on economic impact”?)
 - Staff time for water monitoring (or outside contractor); water quality testing;
 - Cost for incentives and/or rebates for fixtures, appliances, and other equipment.
 - Comprehensive Storm water program for Los Alamos and White Rock with LIDs would need to be understood.
- Savings:**
 - Substantial savings possible due to decreased need for new well drilling, development of San Juan-Chama water resource, infrastructure maintenance

and improvement, and wastewater processing. Potential for avoidance of NMED fines for non-compliance with water use and quality regulations.

- Water use savings for residents.

Benefits Other than CO₂ Reduction

- Health of community and environment

Community Outreach

- Education through DPU and [PEEC](#) as well as ESB, PRB.



Water tower on North Mesa

References/Resources

- LAC Long Range Water Plan -- 2018
<https://www.losalamosnm.us/common/pages/DisplayFile.aspx?itemId=14437322>
- DPU Energy and Water Conservation Plan: 2015-2019 [2015-2019 Energy and Water Conservation Plan](#)
- BPU Conservation Committee report-- July 2020
<https://www.losalamosnm.us/common/pages/DisplayFile.aspx?itemId=16924287>
- 2021 Survey of DPU Environmental Goals:
https://www.losalamosnm.us/UserFiles/Servers/Server_6435726/File/Government/Departments/Public%20Utilities/Environment/Goals%20Survey/20210120-Env.Goals-rev.pdf
- Los Alamos County Non-Potable Water System Master Plan:
<https://www.losalamosnm.us/common/pages/DisplayFile.aspx?itemId=7151931>
- FY 2020 DPU Annual Report <https://indd.adobe.com/view/9e860bda-e2d4-45aa-b5b9-6bf8dd3c4e03>
- [New Mexico 50-Year Water Plan](#)
- [Future water resource shifts in the high desert Southwest of Northern New Mexico, USA](#)
- [Erosion 101: Everything You Need to Know About Soil Erosion](#)
- [What You Can Do to Soak Up the Rain | US EPA](#)
- [Basic Information about Water Reuse | US EPA](#)
- <https://www.env.nm.gov/surface-water-quality/stormwater/>
- <https://www.federalregister.gov/documents/2020/01/22/2020-00981/notice-of-availability-of-final-designation-of-certain-stormwater-discharges-in-the-state-of-new>
- https://www3.epa.gov/npdes/pubs/msgp_monitoring_guide.pdf

- National Research Council 2007. *Plans and Practices for Groundwater Protection at the Los Alamos National Laboratory: Final Report*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/11883>.

Natural Spaces, Soils, Land Use, Forests, and Carbon Sinks

Recommendation 6: Manage Natural and Community Landscapes for Climate Change Mitigation, Resilience, Community, Cultural and Wildlife Values, and Carbon Sequestration

Time Frame Current and Ongoing

Background & Data

- Los Alamos County is blessed with abundant natural areas within and beyond its borders, and preservation of that space is a top priority of residents. Climate change has already altered these areas in numerous ways, and will continue to do so as drought, temperature increase, changes in precipitation timing and amount, and other effects progress. Ongoing, proactive management, especially in the areas of fire prevention, forest restoration, and habitat preservation, are critical. In addition, population expansion will place mounting pressure on natural areas through increased development, recreation, and indirect effects such as habitat fragmentation. How we manage these lands through these changes will profoundly affect the quality of life for all who live here.
- Our natural spaces also have the potential to mitigate climate change effects, reduce our greenhouse gas emissions and improve our resilience. The US EPA estimates that land management is associated with 16% of US GHG emissions, while the land based carbon sink is equivalent to 13% of emissions. Carbon sequestration in soil, trees and other vegetation is recognized as a critically important natural process that significantly impacts global GHG levels. With 4000 acres of open space, much of it forested, Los Alamos County contains abundant potential for carbon storage, along with other ecosystem services. Vegetation and soils in urban and other developed areas can play a role, too, both in carbon sequestration and in resilience to climate change effects. Careful management of all our outdoor spaces incorporating best practices for carbon reduction, soil and water retention, habitat preservation, human health and wellbeing, recreation and future resilience should be a key aspect of our planning for climate change.

Outcome

- Revised and updated LAC Open Space Management Plan comprehensively addresses land use practices, and proactively describes actions to be taken to mitigate predicted climate change effects
- Residents, businesses and County employees take stewardship of our lands, and actively participate in enjoying, maintaining and enhancing our natural environment
- Residents, businesses and County are given information, incentives and tools to support best practices for landscape management under climate change
- Improved management of natural and urban areas, informed by predicted climate change effects, reduces wildfire risk, and enhances forests, recreation, open space, neighborhoods and downtown areas
- Increased carbon sequestration within County areas makes attainment of “net zero carbon” goal more feasible

Case Study

[Graduation Canyon restoration project](#)

Strategy

- Update, expand and implement LAC Open Space Management Plan (2015) to include understanding of projected climate change impacts (similar to LAC Long Range Water Supply Plan) and potential for carbon sequestration on County open space lands.
 - Evaluate possible adaptation actions that can help sustain healthy ecosystems and achieve management goals in the face of climate change
 - Prioritize professional evaluation and optimization of Golf Course turf management and design to reduce water use and encourage regeneration of sustainable organic subsoil to maintain lower water needs going forward.
 - Together with experts and stakeholders, revise Plan to mitigate projected environmental changes
 - Regularly review and proactively update Plan and strategies as conditions change and lessons are learned
 - Consider creation of an “Urban Landscape Plan” which addresses management of downtown and residential areas and encourages stewardship of mature trees, fire prevention, climate-wise landscaping, beautification, wildlife protection and other practices that enhance climate resilience and resident well-being
 - Ensure that strategies and actions identified in Plan are implemented in a timely manner
- Continue and expand ongoing practices for wildfire mitigation, habitat restoration, wildlife corridors, landscape preservation, recreation enhancement, etc. including:

- Fuel mitigation on public and private lands, wildfire preparedness, post-fire recovery actions.
- Support of Rio Grande Water Fund efforts to maintain forest health and recovery in the Jemez Mountains
- Canyon restoration projects
- Engagement of youth and community members in conservation projects
- Maintenance and improvement of County trails and other recreation areas
- Review LAC Comprehensive Plan to ensure that it is compatible with identified goals for GHG mitigation and climate change resilience.
 - Concentrate new development within, or adjacent to, existing developed areas. Limit or curtail development within forested areas to prevent habitat fragmentation and tree loss, and to reduce fire risk to homes. Require developers to minimize forest loss and other environmental disturbances. Plan for restoration of landscape disturbance after development.
 - Proactively address land use for any planned transfer of DOE property to County, to ensure that landscape health, fire mitigation and cultural, recreational and environmental assets are preserved
- Work with NMSU Extension, Master Gardeners, ecologists, landscapers and others to inform climate-wise landscaping recommendations for residential and County developed areas .
 - Research and evaluate xeriscaping vs. natural landscaping recommendations for home and municipal landscaping, balancing water use with other goals such as water retention, carbon accumulation in soils and vegetation, tree canopy preservation and habitat restoration
 - Provide education, resources and incentives to homeowners for landscaping and property maintenance
 - Update County landscaping program to include climate-wise practices when maintaining, renovating or installing new municipal landscaping
 - Partner with and educate local landscaping companies to promote sustainable, climate-informed practices
- Estimate carbon sequestration potential for LAC undeveloped areas and landscapes.
 - Research and identify approaches to estimating CO₂ production and sequestration in County natural spaces, including undeveloped open space, parks, and other large spaces
 - Carry out carbon source/sink estimate, using County staff or consultant
 - Use data in revision of Open Space Management Plan and other County efforts that impact natural spaces
 - Use estimate in calculation of progress on net-zero goal

Impact/Examples in Other Communities

- The Nature Conservancy is partnering with the City of **Albuquerque** Parks and Recreation Department, Albuquerque Bernalillo County Water Utility Authority, Tree New Mexico, State Forestry, and Bernalillo County Parks and Open Space Division. They are working to get people involved in planting new trees, caring for aging trees and tracking progress to a cooler, healthier Albuquerque. So far, 6874 trees have been planted, many by volunteers. The Water Authority offers a 25% “Treebate” on water bills for planting selected tree species.
- **Fort Collins, CO:** Ft. Collins’ “Nature in the City” program is developing a connected network of nature for people and wildlife on public and private lands in the City. It prioritizes Easy Access to Nature: Ensure every resident is within a 10-minute walk to nature from their home or workplace; High Quality Natural Spaces: Conserve, create and enhance natural spaces to provide diverse social and ecological opportunities; and Land Stewardship: Shift the landscape aesthetic to more diverse forms that support healthy environments for people and wildlife. This vision will be accomplished through private/public partnerships; restoring existing natural spaces to increase the natural quality of sites for people and wildlife; working on neighborhood-scale enhancement projects; design guidelines to illustrate how nature can be incorporated into the urban environment; education, incentives and resources for landowners, business owners and landscapers; and ongoing partnerships on new and existing City plans, policies and practices.
- **Minneapolis, MN:** The Minneapolis Urban Forest Policy provides guidance to protect, maintain and manage the Minneapolis urban forest. It applies to all departments, developers, and contractors. The city has integrated its forestry policy throughout its ordinances and codes, and won accolades for this work. Research estimates that the city’s trees provide \$24.9 million worth of benefits annually, more than twice the amount of money the city spends maintaining that asset. \$6.8 million of that benefit comes from reduced energy costs for buildings. Through its Urban Forestry Project, the city offers trees to businesses and residences for a reduced price. Meanwhile, the city frequently ranks high on assessments of greenest cities, best places to live, and healthiest cities.

Economic Impact

- **Costs:**
 - Staff (and possibly consultant) time for research and revision of Open Space Management Plan and estimation of carbon sequestration
 - Staff time and materials for tree care, vegetation maintenance, fire mitigation, soil erosion prevention, and other open and urban space management

- Staff time and materials for educational outreach to community, businesses and County staff
- **Savings:**
 - Potential for large savings if wildfire damage is avoided due to mitigation measures
 - Reduction in insurance costs to County, businesses and residents due to decreased wildfire risk
 - Increased tree cover can reduce costs for building cooling
 - Increase in property values due to beautification and other natural amenities
 - Increase in recreational quality brings additional tourism dollars
 - Reduction in health care costs from improved air quality, outdoor recreation increase, and other benefits of improved environment

Benefits Other than CO₂ Reduction

- Improved forest and landscape health, reduced wildfire danger, reduced flooding and run-off of contaminants
- Improved livability of developed areas, due to reduced heat and drought effects, beautification of neighborhood and urban areas, and improved quality of recreation opportunities, with concomitant increase in property values, energy and water conservation, traffic calming, reduced noise, attraction of new residents and LANL hires, and enhanced health and quality of life

Challenges & Anticipated Barriers

- Current (2015) Open Space Management Plan may require extensive revision. The Plan as written has many good “Suggested Actions”, but should be more proactive, based on anticipated climate change effects. Actions identified will need to be implemented, requiring investment of time and funds.
- Residents may be resistant to suggestions regarding fire mitigation actions on private property
- Increased recreation in open space will need to be managed carefully to prevent damaging effects to environment. Some activities may need to be prohibited (ATV use, fire restrictions, etc.)
- Requirements for preservation of tree canopy and other landscape aspects may constrain development location and intensity

Community Outreach/Public Education

- Need for development of education campaign and materials to help residents and businesses consider and implement climate-wise landscaping approaches. These can be

promoted and distributed by Extension Office, Master Gardeners, PEEC, landscapers, County website and offices, and retail businesses.

- Good opportunity to partner with schools to revise landscaping while educating students about the importance of landscape management and other ecological principles

References/Resources

- [Los Alamos County Open Space Management Plan \(2015\)](#)
- [The Carbon-Free City Handbook: Biological Resources](#). Rocky Mountain Institute (2017)
- [Rio Grande Water Fund](#) (The Nature Conservancy of New Mexico)
- [East Jemez Landscape Futures](#) project
- Forest Management for Carbon Sequestration and Climate Adaptation. Todd A. Ontl et al. (2020) [Journal of Forestry, 2020, 86–101 doi:10.1093/jofore/fvz062](#)
- [Forest management under megadrought: Urgent actions needed at finer-scale and higher intensity](#) (2020) *Frontiers in Forests and Global Change*. Jason P. Field, David D. Breshears, John Bradford, Darin J. Law, Xiaohui Feng, and Craig D. Allen (note: Craig Allen is a local expert and potential resource)
- [Vibrant Cities Lab](#) (created by U.S. Forest Service, American Forests, and the National Association of Regional Councils). “[Urban Forestry Toolkit](#).”
- [USDA Forest Service i-Tree Tool](#) for assessing and managing forests and community trees
- McPherson, Gregory, and James Simpson. [Carbon Dioxide Reduction Through Urban Forestry: Guidelines for Professional and Volunteer Tree Planters](#). USDA Forest Service, 1999
- Forest Adaptation Resources: Climate change tools and approaches for land managers and Adaptation Workbook, 2nd edition; Swanston et al. 2016; Ge. Tech. Rep. NRS-GTR-87-2. Newtown Square, PA. U.S. Department of Agriculture, Forest Service, Northern Research Station. 161 p. www.nrs.fs.fed.us/pubs/52760 and the corresponding online interactive tool: adaptationworkbook.org
- USDA-NFS Climate Change Resource Center [Compendium of Adaptation Approaches](#)
- [Minneapolis \(MN\) Urban Forest Policy](#)
- [Fort Collins \(CO\) Nature In The City Strategic Plan](#)

XIV. Other Communities' Sustainability Plans

The following list contains examples of sustainability/climate change action plans from various communities around the country large and small. We know that we are at the beginning of this journey; many of these plans have been in place for over a decade and have been reworked, modified, and updated based on needs and changes. We expect our plan to be a “living” document which will also be modified and updated as needed.

- Albuquerque, NM: <http://www.cabq.gov/sustainability/climate-action-plan>
- Bend, OR: <https://www.bendoregon.gov/city-projects/sustainability/-selectview-1>
- Boulder, CO: <https://www.pyxeraglobal.org/how-boulder-colorado-created-a-zero-waste-roadmap/>
and <https://www.bouldercounty.org/environment/sustainability/sustainability-plan/>
- Eugene, OR: <https://drive.google.com/file/d/1Z-JHsnHyhy7qHn-8MOaNm57DxSAoAZwN/view>
- Fort Collins, CO: <https://www.fcgov.com/sustainability/files/2019-sustainabilityandadaptationplan.pdf>
- Hillsboro, OR: <https://www.hillsboro-oregon.gov/departments/city-manager-s-office/sustainability>
- Park City, UT: <https://www.parkcity.org/departments/sustainability>
- Phoenix, AZ: <https://www.phoenix.gov/sustainability/goalhttps://www.phoenix.gov/sustainabilitysite/Documents/Final%20COP%202015-16%20Sustainability%20Brochure%2003.27.17.pdf>
- Salt Lake City, UT: <https://www.slc.gov/sustainability/climate-positive/>
- Santa Fe, NM: https://www.santafenm.gov/sustainable_santa_fe_plan
- Seattle, WA: <https://www.seattle.gov/environment/climate-change/climate-planning/climate-action-plan>
- https://www.seattle.gov/Documents/Departments/Environment/ClimateChange/2013_CAP_20130612.pdf
- Sedona, AZ: <https://www.sedonaaz.gov/home/showpublisheddocument?id=40957>
- Telluride, CO: https://mcusercontent.com/45794dd4deb0a48d92b415574/files/db86a259-d6c2-6dcb-7cd6-be4f41ac845e/Town_of_Telluride_CAP_Factsheet_FNL_6.25.pdf
- Westminster, CO: <https://www.cityofwestminster.us/Residents/CityServices/Sustainability/SustainabilityPlan>
- List of 50 Largest Cities in US Climate Mitigation Plans: https://ballotpedia.org/Climate_action_plans_in_the_50_largest_cities
- C40 (World's Biggest Cities Committed to Fighting Climate change): <https://www.c40.org/other/agenda-for-a-green-and-just-recovery>

XV. Acknowledgements

The LARES Chair and Vice Chair wish to thank all Task Force members for their hard work, research, expertise, experience, and perspectives which all contributed to this document.

All LARES Task Force members wish to thank the Subcommittee members who dedicated so much time and energy to this task. Thank you to the community members who attended meetings and/or communicated questions, concerns, and suggestions to us. Thank you to our family members who supported us in our quest to make the world a better place. Thank you to the County Council for granting our charter and providing us this opportunity.

We particularly wish to thank County Council Chair Randall Rytj, Environmental Services Manager Angelica Gurule, Director of Public Works Anne Laurent. These are incredibly busy people who attended nearly every meeting and provided countless advice, knowledge, resources, and guidance along the way. We could not have done this without your support: thank you.

Thank you to Amy Danforth for all of your administrative help. Thank you to the Board of Public Utilities, the Transportation Board, the Department of Public Utilities, and all LAC staff members who provided information and data, who answered questions, and who helped bring this report together. We are grateful for your time, knowledge, and help.

A sincere thank you to Deputy Director of Public Works Jon Bulhuis, Head of Department of Public Utilities Philo Shelton, Community Development Director Paul Andrus, Fleet Manager Pete Mondragon, Transit Coordinator Annette Granillo, and Traffic and Streets Manager Juan Rael for your time and assistance.



Thank you for what you do for our community!



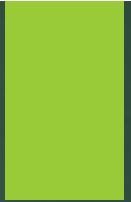
LA RES Task Force

LOS ALAMOS RESILIENCY, ENERGY AND SUSTAINABILITY TASK FORCE

PRESENTATION BY KATIE LEONARD

Task Force Members

- ▶ Katie Leonard, Chair
- ▶ Robert Gibson, Vice Chair
- ▶ Sue Barns
- ▶ Elizabeth Daly
- ▶ Chick Keller
- ▶ Roy Michelotti
- ▶ Heidi Rogers
- ▶ Steve Tobin



Subcommittee Members

- ▶ Lia Brodnax
- ▶ Skip Dunn
- ▶ Ben Hill
- ▶ Jack Kennison
- ▶ Dan Leonard
- ▶ Dina Pesenson
- ▶ Oral Saulters
- ▶ Greg White



County Staff



- ▶ Angelica Gurule, Environmental Services Manager
- ▶ Anne Laurent, Public Works Director
- ▶ Randall Ryti, Chair, County Council
- ▶ Amy Danforth, Senior Office Specialist

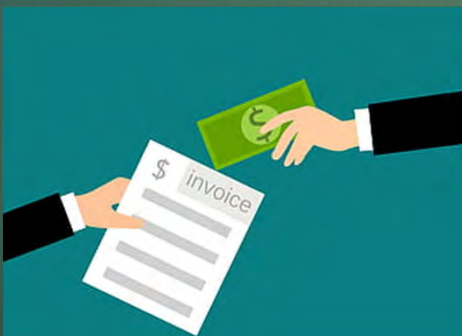
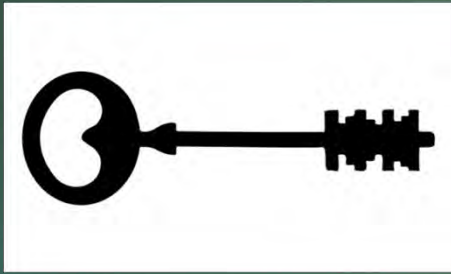
Subcommittees

- ▶ Community Planning & Zoning
- ▶ Electricity Supply & Demand
- ▶ Natural Gas (NG) Reduction
- ▶ Transportation & Mobility
- ▶ Waste, Consumption & Natural Resources (WCNR)

General Recommendations

- ▶ **Recommendation "Zero:"** Establish "Net Zero" GHG emissions as a long-term goal for County government and the community.
- ▶ **Recommendation 1:** Perform a baseline GHG emissions study.
- ▶ **Recommendation 2:** Create a Climate Change Action Plan, to be updated every 5 years or as needed.
- ▶ **Recommendation 3:** Produce an annual Climate Change Action Report.
- ▶ **Recommendation 4:** Create an on-going citizen body tasked to advise Council on reducing GHG emissions.
- ▶ **Recommendation 5:** Integrate the goal of net zero GHG emissions, practices to achieve net zero, and other sustainability practices into all County government operations. Appropriate staffing additions or redirection may be necessary.

Community Planning & Zoning



Electricity Supply & Demand

- ▶ Net carbon free electricity is a **core starting point** for reducing the carbon impact of sectors such as transportation & heating
 - ▶ Electricity needs to lead aggressively in reducing carbon
 - ▶ Fortunately, prices of wind and solar have come down ~70% in past decade, making them the **cheapest way to produce a kWhr in NM**
- ▶ With the Uniper Contract in 2022, LAC will increase carbon free power from ~10% to ~30% of total usage
 - ▶ We can choose more contracts like Uniper and buy less from the free market, which is mostly gas



NM ranked 3rd in US for wind power
- Alb. Journal, Aug. 2019

Estimated Electricity Purchases 2022



Electricity Supply & Demand

- ▶ Recommend acquisition of wind and solar in the **short term**; while looking for nuclear options, such as CFPP, in the **long term**
- ▶ Recommend rapid action on **managing the intermittency** inherent in wind, solar and LAC's run-of-the-river hydro dams.
 - ▶ Storage
 - ▶ Demand response - variable rates during the day to move the load around
 - ▶ Recommend hiring a consultant to advise our path forward with intermittency



CFPP in Idaho



Utility scale storage



In home storage – increase reliability

NG Replacement Challenge



- ▶ **Virtually entire community is heated with NG**
 - ▶ 7700 NG meters – each will have unique replacement needs
 - ▶ >75% of NG use is residential
 - ▶ ~75% of NG use is space heating
 - ▶ Balance is water heating, cooking, pilot lights
- ▶ **Conversion to electric resistance heating is not practical**
 - ▶ Peak NG use 5000 therms/hr (cold early a.m.) – equiv. to 150 MW electric
 - ▶ Normal electric use 8-20 MW
 - ▶ Electric heating cost 6 X NG heating cost (at current rates)

NG Replacement Strategy

▶ In new construction

- ▶ Compact architectures - Multi-family/business & 2-3 story buildings
- ▶ Solar heating - Solar access & heat pump back-up required

▶ For both new construction & retrofits

- ▶ Insulation (including windows & doors) is “most bang for the buck”
- ▶ Electric heat pumps
 - ▶ Also cool (air condition)
 - ▶ 3-4 X more efficient than electric resistance heating

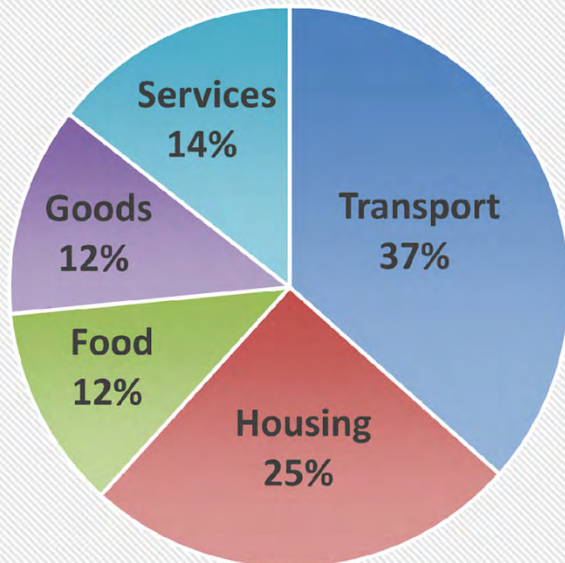
▶ Secondary uses

- ▶ Hot water - utilize solar thermal, heat pumps, or tankless POS electric
- ▶ Substitute electric induction for conventional cookstove when replacing

▶ Electric supply, distribution, and service may require upgrading (TBD)

Transportation & Mobility

Los Alamos County Households GHG footprint
(percentage contribution of sources)



Transportation & Mobility

- ▶ Increase & Incentivize Public Transportation Ridership
- ▶ Improve Bicycle and Walking Infrastructure Including More Crosswalks
- ▶ Increase Publicly Accessible Electric Vehicle Charging Infrastructure
- ▶ Increase the Number of Electric Vehicles (EV) in LAC Fleet & ACT, Eventually Making LAC 100% EV
- ▶ Implement Shaded Parking and a County-Wide No Idling Policy
- ▶ Launch Municipal Bike Share Program
- ▶ Encourage Private Electric Vehicle Purchase and Charging During Low Peak Hours
- ▶ Convert Municipal Small Engines, Such as Lawn and Garden Equipment, to be Fossil Fuel-Free

Waste, Consumption & Natural Resources

To comprehensively address LAC's GHG emissions, we need to fully consider the activities and resources of the community.

- Reduction of greenhouse gases generated by resident, business and County activities **other than** natural gas use, electrical generation, transportation and buildings.
- Ensuring community & environmental resiliency through climate-informed stewardship of water and natural spaces.



WCNR

Achieving significant GHG reduction requires us to:

- ▶ Analyze and understand our *total* carbon footprint at County and personal levels
- ▶ Address significant GHG sources through:
 - Zero Waste initiatives (waste reduction, composting, recycling)
 - Reduced consumption of high-carbon goods, food, and services (which account for **more than 1/3** of a household's carbon footprint); refrigerants; and construction materials

Ensuring future community & environmental resiliency under climate change requires us to:

- ▶ Proactively address stewardship of our water supply
 - Conservation and stormwater runoff management
- ▶ Manage our outdoor spaces: wildfire prevention, carbon sequestration, soil & water retention, habitat preservation, human health & wellbeing, and recreation
- ▶ Effectively engage with broader state/regional/national initiatives

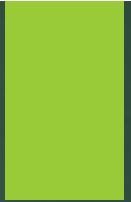
Addressing these areas reduces GHGs and provides economic benefits as well as improvements to health, equity, environment, and quality of life.

Community Outreach & Education

- ▶ Necessary in all areas and for all goals/recommendations
- ▶ Clear, consistent message with up-to-date & accurate information
 - LAC Website
 - Communications from County
 - Mail
 - Utility Bills
 - Annual Update*
 - Other
 - Newspaper Articles
 - Farmer's Market Booth
 - Surveys/Polls
 - Banners on Overpass
 - Educational Events
 - PEEC
 - Library
 - Friday Night Concerts
 - Local Groups (Scouts, service, other)
 - Ads in and on ACT Buses
 - School Outreach
 - Staff & Students
 - Parents
 - Presentations
 - Assemblies
 - Student Shadowing Opportunities
 - Youth Sustainability Ambassador
 - Neighborhood Sustainability Leaders
 - Sustainability Fairs
 - Other Community Events
 - Community Engagement
 - Young People = Renewable Resource!

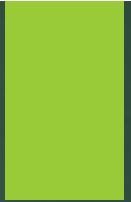
Timeline Moving Forward

- ▶ RES Final Report due in February 2022
- ▶ Community Outreach
 - ▶ Poll/survey
 - ▶ Farmer's Market
 - ▶ Public Lectures/Other Outreach



Thank You!

► Questions?





County of Los Alamos

Staff Report

November 17, 2021

Los Alamos, NM 87544
www.losalamosnm.us

Agenda No.:

Index (Council Goals): DPU FY2021 - 3.0 Be a Customer Service Oriented Organization that is Communicative, Efficient, and Transparent

Presenters: Cornell Wright

Legislative File: 14796-21

Title

Begin 2021 Board of Public Utilities Annual Self-evaluation -and- Revise Appendix M (Annual Self-Evaluation Template) of the BPU Procedural Rules.

Recommended Action

I move that the Board of Public Utilities approve revision of the BPU Procedural Rules, Appendix M, question II.D.2. to read *"Are there systems for modifying policy, procedures, processes, and priorities when DPU organizational performance does not meet standards?"* as indicated in Attachment B.

Utilities Manager Recommendation

The Utilities Manager recommends approval of the motion as presented.

Body

The board will begin the annual self-evaluation of its own performance as outlined in section 3.9 of the BPU Procedures Manual. The current self-evaluation follows the template taken from the APPA Handbook for Public Power Policymakers. In preparation for this initial discussion, board members are asked to review the current format, along with the results from the 2020 self-evaluation. During the 2020 self-evaluation when discussing question II.D.2 the board felt this question could be revised for clarity in future evaluations. Members again mentioned systems for tracking and reviewing customer service feedback. Chair Wright developed the revised question and presents it for board discussion and approval.

During this item, in accordance with the Procedures Manual, the DPU staff, county staff, County Council, and the public will have an opportunity to make suggestions for self-evaluation questions. The board may wish to discuss soliciting additional input or modifying aspects of the current self-evaluation format. The chair proposes that after this preliminary discussion, the detailed self-evaluation be conducted during the December regular meeting and the final evaluation be approved at the January 2022 meeting. If the revision to Appendix M is approved the Executive Assistant will then update the Self-Evaluation form and distribute it to the board prior to the December meeting.

Alternatives

The Board could choose to postpone this item.

Attachments

A - 2020 Final Self-evaluation

B - BPU Procedural Rules_Appendix M_Proposed Revision

BOARD OF PUBLIC UTILITIES SELF-EVALUATION CALENDAR YEAR 2020

Approved February 24, 2021

In accordance with Section 3.9 of the BPU's Procedures Manual, during November and December, the BPU will perform an annual self-evaluation of its own performance.

QUESTION	SCORE	COMMENTS
I. GENERAL BOARD AREAS		
A. Is there a Board policy manual addressing meeting procedures, committee roles and structure, election and term of officers, new member orientation, and related matters?	4.8	
B. Do all Board members participate in a formal orientation?	4.6	
C. Are Board procedures adhered to regarding bylaws, open meeting requirements, compliance with legal regulations, etc.?	5.0	
D. Are meeting packets complete and distributed prior to meetings?	4.6	
E. Is the length of Board meetings appropriate?	3.8	It was generally agreed that meetings run long. It was suggested that separate meetings could be proposed for special and/or lengthy topics.
F. Is there an annual Board calendar?	5.0	
G. Does the Board receive sufficient information to make good decisions?	3.6	Some members expressed a desire for more context and background information for complex issues, including targeted industry research when being presented with contract options.
H. Are decisions made in a timely manner?	4.0	See III.D.2.
II. BOARD POLICY AREAS		
A. Accountability		
1. Does the Board understand its obligation to see the organization acts in the best interests of DPU customer and citizens of the county?	5.0	
2. Does the Board act with diligence and objectivity on behalf of DPU customers and the County?	4.6	

BOARD OF PUBLIC UTILITIES SELF-EVALUATION CALENDAR YEAR 2020

Approved February 24, 2021

B. Responsibility		
1. Do Board members understand their roles?	4.8	
2. Do Board members understand the difference between their policy role and management's administrative role?	4.6	
3. Do Board members actions reflect this understanding?	5.0	
C. Policy Direction		
1. Do Board members understand the mission, goals and strategies of the organization?	4.6	
2. Does the Board give clear directions to management on the mission and goals of the organization?	4.0	The Utilities Manager suggested that special topics sessions/workshops could help the board navigate more complex issues.
3. Does the Board spend appropriate time on policy consideration and direction versus operational issues?	4.2	
D. Monitoring		
1. Does the Board have a system for receiving and monitoring information about the DPU's organizational performance?	4.0	The board continued to express interest in exploring how to better monitor customer service (e.g. numbers and types of complaints.) Interest was also expressed in discussing the level of granularity in performance metrics. It was suggested to discuss this issue further during infrastructure updates, or perhaps a special meeting if needed.
2. Are there systems for corrective action where performance is below standard or reward when performance is above standard?	3.4	The board felt this question could be revised for clarity in future evaluations. Members again mentioned systems for tracking and reviewing customer service feedback.
3. Are organizational goal setting and achievements taken into account during the DPU Manager's evaluation?	5.0	
E. Other Communication and Advocacy		
1. Does the Board represent the community interests it serves?	4.4	

BOARD OF PUBLIC UTILITIES SELF-EVALUATION CALENDAR YEAR 2020

Approved February 24, 2021

2. Does the Board communicate the value of the organizations to its stakeholders?	3.2	Members noted that the board relies heavily on the DPU for much communication with the public. The DPU quarterly reports in particular have a wealth of information for both board members and customers.
3. Does the Board seek input and involve its stakeholders in policy considerations and decisions?	4.0	Members noted this is a continuous struggle. Interest was expressed in finding more informal ways to interact with residents in public settings and improve engagement during board meetings.
4. Do Board members support the organization publicly?	4.8	Members discussed expressing individual opinion versus board opinion.
5. Does the Board communicate effectively with the County Council?	5.0	
III. BOARD RESPONSIBILITY AREAS		
A. Legal		
1. Does the Board act within the guidelines set by the county charter and policies and procedures document?	5.0	
2. Are there written policies on Board ethics and conflicts of interest?	5.0	Annual disclosures are signed by each member.
B. Financial		
1. Does the Board approve annual operating and capital budgets and receive periodic (at least quarterly) progress reports?	5.0	
2. Does the Board review a financial plan for the organization and receive sufficient information to monitor its financial strength and performance?	4.8	The quarterly and annual reports also provide timely updates on these issues.
3. Are financial goals and comparative ratios established and does the Board receive tracking information?	5.0	
4. Are the requirements for an annual audit met and does the Board receive a report on the results?	4.0	While reports are available, it was requested that more information on the annual audit results be distributed and available for board discussion if desired.
5. Are the organizations and the Board indemnified sufficiently against insurable risk?	5.0	

BOARD OF PUBLIC UTILITIES SELF-EVALUATION CALENDAR YEAR 2020

Approved February 24, 2021

6. Is the Board proactive in pushing for rate increases with the County Council when these increases are necessary for the financial health of the DPU?	4.6	
C. Planning		
1. Is the Board informed about the business environment in which the organization is operating?	4.0	Members noted the challenges with understanding some of the more complex aspects of DPU business, but thanked staff for providing briefings and materials to assist the board.
2. Does the Board review and approve the organization's mission, goals, and major strategic initiatives?	5.0	
3. Do Board members usually attend annual DPU strategy and planning meetings?	5.0	
D. Board/Management Relations		
1. Is there a written job description and/or employment contract for the DPU Manager?	5.0	
2. Does the Board conduct a formal, annual performance review of the DPU Manager?	4.6	Members indicated that the board should adhere to a stricter timeline in the future.
3. Is the DPU Manager's compensation linked to the results of this review?	3.8	The board noted that this is not fully within its own control.
4. Does the Board make resources available for the DPU Manager's continued professional development?	5.0	
5. Is there a succession plan for the DPU Manager, with exposure to the Board of possible successors?	N/A	More formal information on this item is requested in the near future.
6. Has the Board established an effective working relationship with the DPU Manager?	5.0	
7. Is there Board/management cooperation on determining the future direction of the organization?	5.0	The board noted that it is a very collaborative relationship.
8. Are Board/DPU Manager roles clearly defined so the Board focuses on	5.0	

**BOARD OF PUBLIC UTILITIES SELF-EVALUATION
CALENDAR YEAR 2020**

Approved February 24, 2021

its policy role and avoids micro-management?		
9. Does the Board provide overall staffing direction to the DPU Manager without becoming involved in specific personnel matters?	5.0	Direction is limited to general staffing levels.
10. Is the Board explicit about the information it needs from the DPU Manager to fulfill its governance function?	4.0	
F. Education and Development		
1. Do Board members participate in educational opportunities recommended and offered by the DPU or other entities that enhance their effectiveness as a board member?	3.6	Members felt many opportunities are given, and expressed interest that those continue to be suggested and made available. Members encouraged each other to take advantage of these opportunities when possible.

Los Alamos County Board of Public Utilities
Policies and Procedures Manual

Appendix M
BPU Annual Self-Evaluation Template

REASONS FOR SELF-EVALUATION

- *Promotes understanding of roles and responsibilities*
- *Provides orientation for new members*
- *Addresses, and may help resolve, board conflicts*
- *Clarifies what members expect from the group and self*
- *Identifies priorities for the board's future efforts*
- *Identifies strengths and weaknesses*
- *Clarifies areas for improvement in board performance*
- *Possibly mandated by the County Charter*
- *Helps identify needed changes to the Policies and Procedures Manual*

CRITERIA

Enter a number from 1 to 5 next to each question and make comments as appropriate:

5 = all the time

3 = some of the time

1 = seldom or not at all

SELF-ASSESSMENT QUESTIONS

I. General Board Areas

- A. Is there a board policy manual addressing meeting procedures, committee roles and structure, election and term of officers, new member orientation, and related matters?
- B. Do all board members participate in a formal orientation?
- C. Are board procedures adhered to regarding bylaws, open meeting requirements, compliance with legal regulations, etc.?
- D. Are meeting packets complete and distributed prior to meetings?
- E. Is the length of board meetings appropriate?
- F. Is there an annual board calendar?
- G. Does the board receive sufficient information to make good decisions?
- H. Are decisions made in a timely manner?

II. Board Policy Areas

- A. Accountability
 - 1. Does the board understand its obligation to see the organization acts in the best interests of DPU customer and citizens of the county?

2. Does the board act with diligence and objectivity on behalf of DPU customers and the County?

B. Responsibility

1. Do board members understand their roles?
2. Do board members understand the difference between their policy role and management's administrative role?
3. Do board members actions reflect this understanding?

C. Policy Direction

1. Do board members understand the mission, goals, and strategies of the organization?
2. Does the board give clear directions to management on the mission and goals of the organization?
3. Does the board spend appropriate time on policy consideration and direction versus operational issues?

D. Monitoring

1. Does the board have a system for receiving and monitoring information about the DPU's organizational performance?
2. ~~Are there systems for corrective action where performance is below standard or reward when performance is above standard?~~ Are there systems for modifying policy, procedures, processes, and priorities when DPU organizational performance does not meet standards?
3. Are organizational goal setting and achievements considered during the DPU Manager's evaluation?

E. Other Communication and Advocacy

1. Does the board represent the community interests it serves?
2. Does the board communicate the value of the organizations to its stakeholders?
3. Does the board seek input and involve its stakeholders in policy considerations and decisions?
4. Do board members support the organization publicly?
5. Does the board communicate effectively with the County Council?

III. Board Responsibility Areas

A. Legal

1. Does the board act within the guidelines set by the county charter and policies and procedures document?
2. Are there written policies on board ethics and conflicts of interest?

B. Financial

1. Does the board approve annual operating and capital budgets and receive periodic (at least quarterly) progress reports?
2. Does the board review a financial plan for the organization and receive sufficient

information to monitor its financial strength and performance?

3. Are financial goals and comparative ratios established and does the board receive tracking information?
4. Are the requirements for an annual audit met and does the board receive a report on the results?
5. Are the organization and the board indemnified sufficiently against insurable risk?
6. Is the board proactive in pushing for rate increases with the County Council when these increases are necessary for the financial health of the DPU?

C. Planning

1. Is the board informed about the business environment in which the organization is operating?
2. Does the board review and approve the organization's mission, goals, and major strategic initiatives?
3. Do board members usually attend annual DPU strategy and planning meetings?

D. Board-Management Relations

1. Is there a written job description and/or employment contract for the DPU Manager?
2. Does the Board conduct a formal, annual performance review of the DPU Manager?
3. Is the DPU Manager's compensation linked to the results of this review?
4. Does the board make resources available for the DPU Manager's continued professional development?
5. Is there a succession plan for the DPU Manager, with exposure to the board of possible successors?
6. Has the board established an effective working relationship with the DPU Manager?
7. Is there board/management cooperation on determining the future direction of the organization?
8. Are Board/ DPU Manager roles clearly defined so the board focuses on its policy role and avoids micro-management?
9. Does the Board provide overall human resources direction to the DPU Manager without becoming involved in specific personnel matters?
10. Is the Board explicit about the information it needs from the DPU Manager to fulfill its governance function?

V. Education and Development

- A. Do Board members participate in educational opportunities recommended and offered by the DPU or other entities that enhance their effectiveness as a board member?



County of Los Alamos

Staff Report

November 17, 2021

Los Alamos, NM 87544
www.losalamosnm.us

Agenda No.:

Index (Council Goals):

Presenters: Board of Public Utilities

Legislative File: 14745-21

Title

Tickler File for the Next Three Months

Attachments

A - BPU Tickler Dec. 2021 to Feb. 2022



County of Los Alamos

Los Alamos, NM 87544
www.losalamosnm.us

BPU Tickler

December 2021 - February 2022

File Number	Title
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Agenda Date: 12/15/2021

14161-21	Construction Contract	06 Consent
	Approval for Construction Contract for Gas Border Station Metering, SCADA and Overpressure Protection Project	
	Department Name: DPU	Length of Presentation:
	Drop Dead Date:	Sponsors: James Alarid
AGR0801-21a	General Services Agreement	06 Consent
	PLACEHOLDER: Approval of Construction Contract for the Installation and Maintenance of Electric Vehicle Charging Stations	
	Department Name: DPU	Length of Presentation:
	Drop Dead Date:	Sponsors: Steve Cummins
15058-21	Construction Contract	06 Consent
	Award of IFB xx-xx for the Purpose of Bayo Booster Non-Potable Water Storage Tank Construction Project - Phase I with [Name of Vendor] in the Amount of \$[amount of contract], plus Applicable Gross Receipts Tax.	
	Department Name: DPU	Length of Presentation:
	Drop Dead Date:	Sponsors: James Alarid
14794-21	Construction Contract	07 Business
	Award of Bid No. IFB 22-27 for the Purpose of the White Rock Water Resource Reclamation Facility (WRRF) Construction Project in the Amount of \$_____ plus a ____% Contingency and Applicable Gross Receipts Tax.	
	Department Name: DPU	Length of Presentation:
	Drop Dead Date:	Sponsors: Engineering Project Manager Clay Moseley
AGR0799-21a	General Services Agreement	07 Business
	PLACEHOLDER: Power Purchase Agreement (25 mw, 3-year PPA)	
	Approval of Services Agreement No. AGR__-____ with [vendor] in the amount of \$[amount], plus Applicable Gross Receipts Tax, for the Purpose of [enter purpose as stated on the AGR]	
	Department Name: DPU	Length of Presentation:
	Drop Dead Date:	Sponsors: Steve Cummins
OR0927-21a	Ordinance	07 Business
	ORDINANCE ENDORSEMENT BY BPU: Waste Water Rate Increase	
	Department Name: DPU	Length of Presentation:
	Drop Dead Date:	Sponsors: Heather Garcia

File Number	Title	
14885-21	Status Report Quarterly Conservation Program Update Department Name: DPU Drop Dead Date:	08 Status Reports Length of Presentation: Sponsors: James Alarid
14951-21	Calendar Approval of Board of Public Utilities Meeting Calendar for 2022 Department Name: DPU Drop Dead Date:	4.G. General Board Business Length of Presentation: Sponsors: Cornell Wright
14797-21	Briefing/Report (Dept, BCC) - No action requested 2021 Board of Public Utilities Annual Self-evaluation Department Name: DPU Drop Dead Date:	4.G. or 9. General Board Business Length of Presentation: Sponsors: Cornell Wright
14746-21	Calendar Tickler File for the Next Three Months Department Name: DPU Drop Dead Date:	4.I. Preview Length of Presentation: Sponsors: Board of Public Utilities
14742-21	Minutes Approval of Board of Public Utilities Meeting Minutes Department Name: DPU Drop Dead Date:	6.A. Minutes Length of Presentation: Sponsors: Board of Public Utilities
14750-21	Status Report Monthly Status Reports Department Name: DPU Drop Dead Date:	8.A. Monthly Status Reports Length of Presentation: Sponsors: Philo Shelton
Agenda Date: 01/19/2022		
14957-21	Briefing/Report (Dept,BCC) - Action Requested Affirmation of the Incorporated County of Los Alamos Open Meetings Resolution No. 21-01 Department Name: DPU Drop Dead Date:	4.G. General Board Business Length of Presentation: Sponsors: Cornell Wright
14959-21	Election Election of Board of Public Utilities Chair and Vice-chair for 2022 Department Name: DPU Drop Dead Date:	4.G. General Board Business Length of Presentation: Sponsors: Cornell Wright
14961-21	Appointment Appointment of Board Member to Audit Committee for 2022 Department Name: DPU Drop Dead Date:	4.G. General Board Business Length of Presentation: Sponsors: Cornell Wright

File Number	Title	
14963-21	Briefing/Report (Dept,BCC) - Action Requested	4.G. General Board Business
	Schedule and Selection of Members to Attend Boards & Commissions Luncheons for 2022	
	Department Name: DPU	Length of Presentation:
	Drop Dead Date:	Sponsors: Cornell Wright
14949-21	Briefing/Report (Dept,BCC) - Action Requested	4.G. General Board Business
	Approval of Meeting Agenda Outline for 2022	
	Department Name: DPU	Length of Presentation:
	Drop Dead Date:	Sponsors: Cornell Wright
14964-21	Calendar	4.I. Preview
	Tickler File for the Next Three Months	
	Department Name: DPU	Length of Presentation:
	Drop Dead Date:	Sponsors: Board of Public Utilities
14966-21	Minutes	6.A. Minutes
	Approval of Board of Public Utilities Meeting Minutes	
	Department Name: DPU	Length of Presentation:
	Drop Dead Date:	Sponsors: Board of Public Utilities
14965-21	Status Report	8.A. Monthly Status Reports
	Monthly Status Reports	
	Department Name: DPU	Length of Presentation:
	Drop Dead Date:	Sponsors: Philo Shelton

Agenda Date: 02/16/2022

14752-21	Status Report	08 Status Reports
	Department of Public Utilities Quarterly Report - FY21/Q1 (compiled by Public Relations Manager)	
	Department Name: DPU	Length of Presentation:
	Drop Dead Date:	Sponsors: Philo Shelton



County of Los Alamos

Staff Report

November 17, 2021

Los Alamos, NM 87544
www.losalamosnm.us

Agenda No.:

Index (Council Goals):

Presenters: Board of Public Utilities

Legislative File: 14741-21

Title

Approval of Board of Public Utilities Meeting Minutes

Recommended Action

I move that the Board of Public Utilities approve the meeting minutes as presented:

Body

REQUESTED REVISIONS TO THE DRAFT MINUTES

Draft minutes are sent to members after each meeting for their review. Members may then send changes to be incorporated prior to final approval of the minutes at the next regular meeting.

There were no suggested changes.

Attachments

A - Draft BPU Regular Meeting Minutes - October 20, 2021

B - Utilities Manager Report - October 20, 2021



County of Los Alamos

Minutes

Board of Public Utilities

1000 Central Avenue
Los Alamos, NM 87544

*Cornell Wright, Chair; Stephen McLin, Vice-chair;
Eric Stromberg, Steve Tobin and Carrie Walker Members
Philo Shelton, Ex Officio Member
Steven Lynne, Ex Officio Member
James Robinson, Council Liaison*

Wednesday, October 20, 2021

5:30 PM

Remote Zoom Meeting:
<https://us06web.zoom.us/j/81247300908>

REGULAR SESSION

1. CALL TO ORDER

The regular meeting of the Incorporated County of Los Alamos Board of Public Utilities was held on Wednesday, October 20, 2021 via Zoom video conferencing platform. Board Chair Cornell Wright called the meeting to order at 5:33 p.m. BPU members, staff and the public participated remotely. This social distancing was to comply with the recommendations of the Centers for Disease Control (CDC) to prevent the spread of COVID-19. Members of the public were notified of the ability to live-stream the meeting online and submit public comment during the meeting. The following board members were in attendance:

Present 7 - Chair Wright, Vice Chair McLin, Board Member Stromberg, Board Member Tobin, Board Member Walker, Board Member Shelton and Board Member Lynne

2. PUBLIC COMMENT

Chair Wright opened the floor for public comment on the Consent Agenda or items not otherwise included on the agenda. There was no public comment.

3. APPROVAL OF AGENDA

A motion was made by Chair Wright, seconded by Member Tobin, that the agenda be approved as presented. The motion passed with the following vote:

Yes: 5 - Members McLin, Stromberg, Tobin, Walker, and Wright

4. BOARD BUSINESS

4.A. Chair's Report

Chair Wright reminded members of the Special Meeting scheduled for November 5, 2021 which will consist of an update on the Integrated Resource Plan.

4.B. Board Member Reports

Member Tobin requested additional information about the balancing area at a future meeting. Mr. Shelton responded that this could be accomplished by presenting this topic at the November 5th meeting on the IRP presentation since it is a related topic.

4.C. Utilities Manager's Report

Mr. Shelton reviewed his written report which is attached to the minutes. He provided summarized comments and responded to board member inquiries as appropriate.

4.D. County Manager's Report

Mr. Lynne provided updates on the following County issues:

- 1). County action plan in response to the NNSA mandate of COVID-19 vaccination for LANL contractors, visitors, and guests is being formulated.
- 2). Two new Deputy County Managers have been selected: Ms. Linda Matteson and Ms. Anne Laurent commenced their duties this week.
- 3). Recruitments are underway and in different stages of progress for the vacancies of Broadband Manager, Communications & Public Relations Manager and Business & ERP Manager.
- 4). He and Mr. Shelton met with the current and previous US Forest Service District Rangers to discuss the transfer of six parcels of land to the County. This process has been underway for a few years and has been stalled due to the pandemic.

Mr. Lynne responded to board member inquiries and provided clarifying information as appropriate.

4.E. Council Liaison's Report

Councilor Robinson provided updates on the following Council agenda items:

- 1). Downtown Master Plans for Los Alamos & White Rock were approved at the October 19th meeting.
- 2). Progress on Mirador subdivision
- 3). Presentation by the Historic Preservation Committee
- 4). Starting October 26, 2021, County Council will return to a Zoom-only format in response to the rising number of COVID-19 positive cases within Los Alamos County.
- 5). Council is in the process of identifying a single point of contact for COVID-related matters since this has become a long-term issue.
- 6). The Utility Policy Committee will meet on Friday, October 22nd.
- 7). Council may consider a Vacancy Ordinance by the end of this year.

There were no questions from board members.

4.F. Environmental Sustainability Board Liaison's Report

Mr. Eric Loechelle, ESB Chair updated the Board on the following topics:

- 1). Ms. Dina Pesenson was elected Vice Chair of the ESB
- 2). Los Alamos County Landfill Gas Update: received a presentation by the Vice President of SCS Engineers on the Los Alamos Closed Landfill Gas Extraction System. Methane concentrations are being monitored are within EPA standards. The current system may need to be replaced with a smaller one in five to ten years. May be option to sell current one to cover cost of a smaller system.
- 3). Pesticide Presentation and Discussion of Proposed Recommendation: received a

presentation from Vice Chair Pesenson on pesticide and herbicide use in Los Alamos County. She asked that the board consider passing a recommendation to the Council that Los Alamos County operations stop using Glyphosate containing products. The recommendation will be discussed at the October ESB Meeting. Some questions asked included how much of an impact would not spraying cause in terms of labor and will there be a need for more employees? Would the County and residents be ok with more dandelions and weeds? Councilor Williams noted that he would support the recommendation to Council.

4). Bear Cart Public Information Involvement Plan (PIIP): Carts should arrive July 2022-September 2022. Will be deployed July 2022-July 2023 county wide with high bear traffic areas the priority. The ESB is tasked with identifying exceptions for community members not wanting a bear resistant cart. ESB will conduct a community Open Forum Survey for the community to provide public comments regarding the deployment of bear carts. The results will be shared with the ESB to help us refine the deployment process. Mr. Loechelle responded to board member inquiries and provided clarifying information as appropriate.

4.G. General Board Business

There were no items for this meeting.

4.H. Approval of Board Expenses

There were no items for this meeting.

4.I. Preview of Upcoming Agenda Items

In addition to the items already listed in the tickler provided in the agenda packet, the following items were identified for the tickler for upcoming meetings:

- 1) 11/17/21 - NuScale presentation
- 2) 11/17/21 - LARES presentation

5. PUBLIC HEARING(S)

There were no public hearings scheduled for this meeting.

6. CONSENT AGENDA

Member McLin moved that the Board of Public Utilities approve the items on the Consent Agenda as presented and that the motions in the staff reports be included in the minutes for the record. The motion passed by the following vote:

Yes: 5 - Members McLin, Stromberg, Tobin, Walker, and Wright

6.A. [14740-21](#) Approval of Board of Public Utilities Meeting Minutes

I move that the Board of Public Utilities approve the meeting minutes as presented:

- 6.B. [14981-21](#) Amendment to Memorandum of License and Agreement Between the Bureau of Reclamation Department of Interior, Incorporated County of Los Alamos, New Mexico And the Middle Rio Grande Conservancy District for the Construction, Operation and Maintenance of a Hydroelectric Power plant at El Vado Dam.

I move that the Board of Public Utilities endorse the Middle Rio Grande Project Amendment Memorandum of License and Agreement, Intergovernmental Agreement No: 6-AG-53-05370_AMD1(2021) and forward to County Council for approval.

- 6.C. [AGR0788-21](#) Approval of Task Order No. 95 Under Services Agreement No. AGR16-044 with Parker Construction, LLC for Trench and Installation of Conduit at Connie and Cheryl

I move that the Board of Public Utilities approve Task Order No. 95 Under Services Agreement No. AGR16-044 with Parker Construction, LLC in the amount of \$81,772.41, plus Gross Receipts Tax, and a Contingency in the amount of \$8,177.00 for a total of \$89,949.41 for Trench and Installation of Conduit at Connie and Cheryl

7. BUSINESS

- 7.A. [OR0913-21a](#) Ordinance No. 711: Loan/Grant Agreement with the New Mexico Finance Authority for Wastewater Plant Filtration System (Water Trust Board Loan/Grant)

Deputy Utility Manager-Engineering, Mr. James Alarid presented this item. Following is the substance of the item being considered:

Los Alamos County was awarded \$2,500,000 in the 2021 legislative session from the Water Trust Board to construct a filtration treatment process at the Los Alamos Wastewater Treatment Plant. The new filtration process will improve the water quality of the effluent to achieve Class A effluent which will allow Los Alamos County to expand the use of effluent water and conserve potable water. The higher quality water can be used in closer proximity to populated areas and with less restrictions on the times when irrigation can occur. The filtration improvements have been planned for a number of years in the capital improvement plan prepared as part of the Non-Potable Water Master Plan in 2013. Upon notification of the successful award in June 2021 the Department of Public Utilities (DPU) engaged Bohannon-Huston Inc. to design the new filtration process to have a shovel ready project to bid when the loan/grant agreement is executed in January 2022. The design is complete and has been approved by the New Mexico Environment Department Construction Programs Bureau. The project will be under construction through the summer of 2022 and be complete in the fall of 2022.

The award includes a combination loan and grant totaling \$2,500,000. The grant component is \$1,200,000 and the loan is \$1,300,000 at 0% interest with a 0.25% annual fee on the balance. In addition, the DPU must contribute \$210,000 in matching funds. The closing of the loan/grant agreement is scheduled for January 14, 2022. If **Ordinance No. 711** is not approved, the project will not be awarded and staff will continue to pursue grant opportunities to fund the project. \$900,000 has been budgeted in this fiscal year to fund the County's required match of \$210,000. The first of 20 annual payments will be

made when the construction is completed.

The Board discussed this item and requested clarification where necessary.

Chair Wright opened the floor for public comment on this Ordinance. There was no public comment.

If approved by BPU, **Ordinance No. 711** will be Introduced at the November 9th regular Council Meeting and a Public Hearing will be held on December 7, 2021.

Member McLin moved that the Board APPROVE INCORPORATED COUNTY OF LOS ALAMOS ORDINANCE NO. 711, AN ORDINANCE AUTHORIZING THE EXECUTION AND DELIVERY OF A WATER PROJECT FUND LOAN/GRANT AGREEMENT BY AND BETWEEN THE NEW MEXICO FINANCE AUTHORITY AND THE INCORPORATED COUNTY OF LOS ALAMOS, NEW MEXICO, IN THE TOTAL AMOUNT OF \$2,500,000, EVIDENCING AN OBLIGATION OF THE BORROWER/GRANTEE TO UTILIZE THE LOAN/GRANT AMOUNT SOLELY FOR THE PURPOSE OF FINANCING THE COSTS OF CONSTRUCTION OF A FILTRATION TREATMENT PROCESS AT THE WASTEWATER TREATMENT PLANT AND PAYING AN ADMINISTRATIVE FEE, AND SOLELY IN THE MANNER DESCRIBED IN THE LOAN/GRANT AGREEMENT; PROVIDING FOR THE PLEDGE AND PAYMENT OF THE LOAN AMOUNT SOLELY FROM NET REVENUES OF THE WATER AND WASTEWATER UTILITY FUND; CERTIFYING THAT THE LOAN/GRANT AMOUNT, TOGETHER WITH OTHER FUNDS AVAILABLE TO THE BORROWER/GRANTEE, IS SUFFICIENT TO COMPLETE THE PROJECT; APPROVING THE FORM OF AND OTHER DETAILS CONCERNING THE LOAN/GRANT AGREEMENT; RATIFYING ACTIONS HERETOFORE TAKEN; REPEALING ALL ACTION INCONSISTENT WITH THIS ORDINANCE; AND AUTHORIZING THE TAKING OF OTHER ACTIONS IN CONNECTION WITH THE EXECUTION AND DELIVERY OF THE LOAN/GRANT AGREEMENT AND FORWARD TO COUNCIL WITH A RECOMMENDATION FOR APPROVAL.

The motion passed by the following vote:

Yes: 5 - Members McLin, Stromberg, Tobin, Walker, and Wright

7.B. [OR0917-21a](#) Ordinance No. 712: NMED Loan Refinance for Project CWSRF 083 (White Rock Water Resource Reclamation Facility Construction Project)

Sponsor and Deputy Utility Manager-Engineering, Mr. James Alarid indicated that Deputy Utility Manager-GWS, Mr. Jack Richardson and Engineering Project Manager, Mr. Clay Mosely would present this item. The following is the substance of the item being considered:

The Clean Water State Revolving Loan #CWSRF 083 was executed on April 12, 2019, to fund the design and construction of the project. The design contract was executed on July 31, 2019, in the amount of \$2,199,144 (including NMGR). The remaining funds in the loan for construction is \$14,800,856, which is the current approved budget for the project. Upon completion of design in May 2021, the engineer's construction estimate for the project was \$16,173,717 (including NMGR) which when combined with the design costs was \$1,384,387 over the \$17,000,000 loan. Prior to issuing the bid staff, staff's plan to fund the shortfall between the established budget and Engineer's Estimate was to seek \$1.3 Million in County ARPA Funds that County Council tentatively approved DPU to request and fund the remaining balance with reserves.

This year, DPU is experiencing significant cost overruns on other utility projects due to the COVID-19 pandemic impacts causing material shortages and supply chain delays leading to significant cost increases. DPU received two bids on October 11, 2021, for Bid No. IFB 22-27 for the Purpose of the White Rock Water Resource Reclamation Facility (WRRF) Construction Project. While the bid results are still under review, both bids well exceeded the engineer's estimate and budget authority for the project. Next, DPU approached the NMED Construction Programs Bureau, who administers the CWSRF loan, about other funding opportunities and the possibility to increase the existing loan amount. NMED has also experienced large bid increases with other New Mexico cities and counties and per staff's request, NMED prepared the Ordinance (*Attachment A*) to increase the loan amount to a maximum of \$30 Million while maintaining the original interest rate at 2.38%. \$30 million is a worst-case scenario for the purpose of establishing adequate budget authority by ordinance and avoid delays by having to revise the ordinance again in the future. The final loan amount will be established by the final actual costs for design and construction.

DPU realizes this is a huge cost increase and therefore staff prepared a Financial Narrative presented as *Attachment B*. Mr. Mosely and Mr. Richardson reviewed what has occurred to date with the project and the need for additional budget authority. Without budget authority, the bid committee must recommend the cancellation of this bid. If the ordinance is not approved, the project will be delayed. The existing project funding and including existing wastewater fund reserves are not sufficient to build a replacement wastewater treatment facility. There are \$14,800,856 dollars budget in this fiscal year. The project intent is to finance the entire cost to design and construct the project. If progress is not made to bring the wastewater plant into compliance with the EPA discharge permit limit there is a potential to incur fines from EPA. Given this is a plant replacement, there are no additional staff impacts. The Budget Forecast provided in *Attachment C* shows that there will need to be a 2% per year rate increase over the next four years to cover the increased payment for principal and interest associated with a \$30 million loan.

The Board discussed this item and requested clarification where necessary.

Chair Wright opened the floor for public comment on this Ordinance. There was no public comment.

If approved by BPU, **Ordinance No. 712** will be introduced at the October 26th regular Council Meeting and a Public Hearing will be held on November 9, 2021. Amended loan documents will then be finalized and closing scheduled 30-days later.

Member McLin moved that the Board approve Incorporated County of Los Alamos Ordinance No. 712, An Ordinance authorizing the Utilities Manager to submit a request and necessary documents to the New Mexico Environment Department to increase the loan amount as authorized in County Ordinances 687 and 689, up to a maximum loan amount of Thirty Million Dollars (\$30,000,000.00) for the NMED Project CWSRF 083 under the same terms and conditions set forth for the original loan, and forward to the County Council for Approval. The motion passed by the following vote:

Yes: 5 - Members McLin, Stromberg, Tobin, Walker, and Wright

8. STATUS REPORTS

8.A. [14748-21](#) Monthly Status Reports

The following informational status reports were provided to the Board in the agenda packet:

- 1) Electric Reliability Update
- 2) Accounts Receivables Report
- 3) Risk & Safety Report

OSHA data was not available at the time of the agenda packet publication.

8.B. [14398-21](#)

Quarterly Update on Utility System - Gas Distribution System

Deputy Utilities Manager-GWS, Mr. Jack Richardson provided detailed information during his hour-long slide presentation. A copy of his slides was included in the agenda packet. The Board discussed this item and requested clarification where necessary. Chair Wright thanked Mr. Richardson for his detailed and informative presentation.

9. PUBLIC COMMENT

Chair Wright opened the floor for public comments on any issue. There was no public comment.

10. ADJOURNMENT

Chair Wright adjourned the meeting at 8:08 p.m.

APPROVAL

Board of Public Utilities Chair Name

Board of Public Utilities Chair Signature

Date Approved by the Board

**Utility Manager's Report
October 20, 2021**

1. The County continues to have an indoor mask mandate and has implemented a weekly testing regime for unvaccinated employees to help slow the spread of COVID-19. About 81% of County employees are vaccinated. LANL is requiring a visitor vaccination attestation form be completed before entering the lab. This past week, DPU has seen an impact to its operations with one employee in the hospital with an illness related to COVID-19 and some on quarantine. Many of these cases are due to their children being exposed at school.
2. Attended the UAMPS annual board member strategic planning meeting. Board discussions were regarding updates to pool projects and budget policies. Board training was on "Behavioral Characteristics of Fraudsters" and presentations and discussions were on Resource Adequacy Policy and Regional Transmission Organizations (RTO's) policy. The CFPP is half-way completed on its core borings and geotechnical investigations, and so far, the findings are good geotechnical characteristics for the project. UAMPS received additional subscription from a current member and as a result LAC's subscription increased by 0.35 MW to 2.15-MW based on the investment cap of \$1.26 Million.
3. For the PNM/Avangrid merger case (PRC Case Number 20-00222-UT) the final Brief in Chief was filed. Next month it is anticipated the hearing examiner will make a recommendation to PRC on the case. While there is no deadline for issuance of the Recommended Decision, once a decision is made, the parties will have 13 days after filing of the Recommended Decision to file Exceptions. The parties will have an additional 8 days to file responses to the Exceptions of other parties. Then the case will be considered by the Commission. The stipulation is requesting an option for full demolition of the SJGS be considered including using whole life cost analysis in its evaluation.
4. Westmoreland who supplies coal to the SJGS has had issues with their long wall due to encountering a significant void in the coal seam and this Monday they seemed to have made good progress in mining coal at nearly 10,000 tons of coal which is enough for one day of operation at SJGS. Next, Westmoreland is working to restore the reserve pile of coal for the plant to burn. There are approximately 19 days of coal on the ground available to continue the SJGS operation.
5. The ownership group with the San Juan Generating Station have prepared and presented in a half day meeting a draft term sheet to Farmington and Enchant. Farmington and Enchant have provided an initial response to this draft term sheet and they have a separate meeting schedule with PNM the first week of November to work out additional details regarding the proposed property transfer and transfer of water rights. Once all these details are finalized, the term sheet will be brought back to BPU and Council for consideration.

6. The AMI project installer is now delayed several months due to shipping issues. However, GWS Staff have received their materials and continue to replace commercial water meters and obsolete gas meters as time allows. Also, staff is making progress with customers that have obstructions to remove or correct according to DPU Rules and Regulations.
7. The LANL Technical Working Group continued its presentation and review on the remedial measures performed at MDA-L to remove volatile organic compounds such as TCA and TCE that were stored in drums and buried in drilled out tuft columns. The remedy is to continue monitoring the vapor plume and N3B will reactive the Soil Vapor Extraction System should these vapors increase in concentration due to a drum leaking. N3B reported the vapor concentrations are low enough it should not adversely impact water quality below this vapor plume.
8. The White Rock Water Resource Recovery Plant received two bids, however the bid review committee consisting of four DPU staff and two members from the consultant team cannot make a recommendation to award either bid due to available budget authority. Staff will be making a presentation later in this meeting.
9. Based on the BPU's Strategic Planning session, staff has updated its action plans to match the updated goals and objectives. Next, Staff has initiated the asset management team discussions in preparation of next year's budget.
10. Held two meetings with Bandelier and LANL regarding planned utility upgrades throughout the park.
11. Held a meeting regarding the Natural Gas Utility with the Los Alamos Resiliency, Energy, and Sustainability (LARES) Task Force Sub-committee. Next Month's BPU meeting will have a presentation by LARES
12. Participated in a full day of interviews in filling the new Inter-Governmental Affairs Manager position with the County.



County of Los Alamos

Staff Report

November 17, 2021

Los Alamos, NM 87544
www.losalamosnm.us

Agenda No.:

Index (Council Goals): DPU FY2020 - 2.0 Achieve and Maintain Excellence in Financial Performance

Presenters: Heather Garcia

Legislative File: AGR0794-21

Title

Approval of General Services Agreement No. AGR 21-57 with IC System in the amount of fourteen and one-half percent (14.5%) of any recovered amount on all referral accounts for the Purpose of Accounts Receivable Collection Services.

Recommended Action

I move that the Board of Public Utilities endorse General Services Agreement No. AGR 21-57 with IC System, not to exceed, fourteen and one-half percent (14.5%) of any recovered amount on all referral accounts for the purpose of Accounts Receivable Collection Services and forward to Council for approval.

Utilities Manager Recommendation

The Utilities Manager and staff recommend approval of the motion as presented.

Body

County staff currently performs initial collection activities for utility, landfill, and miscellaneous receivables for accounts less than (120) days past due. As of December 31, 2020, the County Utilities' outstanding accounts receivables over (120) days past due was approximately \$187,000. Collection activities for accounts over (120) days past due have not been conducted since the implementation of a new Enterprise Resource Planning system in 2018.

The County outsources the billing of ambulance services to Credit Bureau Systems, Inc. dba Ambulance Medical Billing ("AMB"). AMB is responsible for collections during the first 90-120 days after billing. The County, through AMB, will turn over ambulance accounts greater than (120) days past due to the Contractor. The County anticipates ambulance receivables turned over for collection services will total between \$50,000-\$150,000 per year.

The Department of Public Utilities (DPU) issued a Request for Proposal (RFP) soliciting for qualified contractors to provide accounts receivable collection services. Of the responses received and evaluated, IC System was selected by the RFP evaluation committee based on several factors including effectiveness and efficiency of process, experience and expertise, and cost.

Founded in 1938, IC System provides collection services to city, county, and state municipalities throughout the U.S. With dedicated government collection representatives who are experienced in utility accounts, nonprofit medical clinics, and emergency ambulance services. IC System utilizes a proprietary software, ICE (Intelligent Collections Engine), which is a web based to

increase access and ease for customers and provide account transparency. IC System undergoes a comprehensive network and system security assessment on a regular basis through a third-party information security management company. IC System also will provide the county with skip tracing and data scrubbing services, which will require minimal data to be collected by the county and transferred for collection activities.

The term of contracted services with the selected vendor is seven years, commencing December 8, 2021, through December 7, 2028. The county shall pay IC System, not to exceed, fourteen and one-half percent (14.5%) of any recovered amount on all referred accounts. Collected payments, less contractor's service fee, will be transferred monthly to the county via electronic wire transfer.

Alternatives

Collection efforts will continue in the Customer Care Center as normal. Accounts that are inactive and older than 4 years of age will be brought forth in a resolution to board and council as uncollectible.

Fiscal and Staff Impact

Any inactive accounts over 120 days past due that are collected by IC System will improve uncollected accounts receivable amounts and increase revenue.

Attachments

A - AGR21-57 IC System

B - RFP21-57 Accounts Receivable Collection Services with Addendum



INCORPORATED COUNTY OF LOS ALAMOS SERVICES AGREEMENT

This **SERVICES AGREEMENT** ("Agreement") is entered into by and between the **Incorporated County of Los Alamos**, an incorporated county of the State of New Mexico ("County"), and **I.C. System, Inc.** ("Contractor"), collectively the "Parties", to be effective for all purposes December 8, 2021.

WHEREAS, the County Purchasing Officer determined in writing that the use of competitive sealed bidding was either not practical or not advantageous to County for procurement of the Services and County issued Request for Proposals No. 21-57 (the "RFP") on May 23, 2021, requesting proposals for Accounts Receivable Collection Services as described in the RFP; and

WHEREAS, Contractor timely responded to the RFP by submitting a response dated June 22, 2021 ("Contractor's Response"); and

WHEREAS, based on the evaluation factors set out in the RFP, Contractor was the successful Offeror for the services listed in the RFP; and

WHEREAS, the Board of Public Utilities approved this Agreement at a public meeting held on November 17, 2021;

WHEREAS, the County Council approved this Agreement at a public meeting held on December 7, 2021; and

WHEREAS, Contractor shall provide the Services, as described below, to County.

NOW, THEREFORE, for and in consideration of the premises and the covenants contained herein, County and Contractor agree as follows:

SECTION A. DEFINITIONS:

1. "**Consumer**" means any person or company obligated or allegedly obligated to pay a debt owed the County.
2. "**CSV**" means comma-separated values.
3. "**FFIEC**" means Federal Financial Institutions Examination Council.
4. "**FISMA**" means Federal Information Security Modernization Act.
5. "**FTP**" means File Transfer Protocol, which is a standard communication protocol used for the transfer of computer files from a server to a client on a computer network.
6. "**GLBA**" means Gramm-Leach-Bliley Act.

7. *"HIPAA"* means Health Insurance Portability and Accountability Act.
8. *"HITRUST"* means Health Information Trust Alliance.
9. *"ICE"* means Intelligent Collections Engine.
10. *"ISO"* means International Organization for Standardization.
11. *"NCUA"* means National Credit Union Share Insurance Fund.
12. *"NIST CSF"* means National Institute of Standards and Technology Cybersecurity Framework.
13. *"Phone Append"* means the process of adding phone numbers to an existing database.
14. *"Place"* or *"Placed"* means the act of referring past due delinquent Consumer accounts to the Contractor for collections .
15. *"Referral File(s)"* means past due delinquent accounts Placed with Contractor by County for collections. For purposes herein "delinquent accounts" shall be those designated County Consumer accounts for County ambulance services, one or more of County utility services including natural gas, water, wastewater, and electric service, and County environmental service fees including but not limited to refuse collection, transportation and disposal that remains outstanding as of 120 days from the last date of service for the designated County services and which the County has not collected the past due amount from the Consumer.
16. *"Scrub"* means the process of amending or removing data in a database to find and validate the most accurate Consumer contact information.
17. *"Skip Tracing"* means the process of locating a Consumer to collect on accounts Placed with the Contractor.
18. *"TCPA"* means Telephone Consumer Protection Act.

SECTION B. SERVICES:

1. **Generally.** Contractor shall provide to the County collection services ("Services") for County delinquent Consumer accounts, using, at a minimum, the processes described herein and in Contractor's Response, incorporated by reference herein, for the following types of past due delinquent Consumer accounts greater than one hundred twenty (120) days past due, utility receivables, landfill tipping fee receivables, ambulance billing receivables, and miscellaneous accounts receivable as determined by County. Contractor's Services shall include, but not be limited to:
 - a. Provision of an online payment portal and online account management tools, available twenty-four (24) hours a day, three hundred sixty-five (365) days per year, for both Consumers and County;
 - b. Unlimited County staff accounts and ambulance billing contractor accounts, assigned by Contractor upon County request, for County access to Contractor

- provided online tools, upload Referral Files, access to County Referral accounts, and ability to generate activity reports;
 - c. Account placement processing and data scrubs, the process where Contractor shall compare received County Referral Files to that, for example, in National Change of Address database, address standardization, Phone Append, and bankruptcy and deceased available databases;
 - d. Acceptance of Referral Files from County and secure file transmission using FTP or through online tools;
 - e. Collection letter production and mailing;
 - f. Provision of a toll-free "800" telephone line that Placed accounts can use to contact Contractor;
 - g. Skip Tracing processing, which includes the process of comparing expired telephone or email addressed to those found via other national databases and using updated information to attempt collection efforts;
 - h. Gross or net payment remittal processing and invoicing;
 - i. Close and return/recall processing for Referral Files deemed uncollectable including but not limited to persistent skips, bankruptcies, deceased responsible party, no asset indigent, and recall/cancels;
 - j. Account balance update processing;
 - k. Correspondence, bankruptcy and deceased file processing;
 - l. Multi-lingual Collectors availability for Collection Services; and
 - m. Access to the Contractor's ICE™ system to an unlimited number of County designated users.
2. **Project Initiation Meeting.** Within thirty (30) days from the date of final execution of this Agreement, the Contractor shall hold a project kick-off meeting in coordination with the County's designated project manager ("Project Manager"). During the kick-off meeting, Contractor and County shall establish a project schedule for transfer of designated County ambulance service, utility service, and environmental service (e.g., waste collection and disposal) outstanding Consumer accounts.
3. **Collection Process.** Contractor shall use, at a minimum, the collection process as described in Contractors' Proposal and as excerpted herein as **Exhibit "A"** to collect on the accounts properly Placed by County with Contractor. Contractor shall notify County, in writing or via e-mail, of any substantial or material change to the process during the Term of the agreement. Contractor shall take no further action and remove from their systems Referral Files Placed with Contractor by mistake or where payment has been made but not properly or timely recorded by County. Ambulance collections accounts may be withdrawn if moved to indigent collections.
4. **Data Transfer of County Consumer Accounts.** Contractor shall, during the kick-off meeting provide:
- a. The method for transfer of Referral Files for upload and transfer into Contractor's proprietary software.
 - b. In addition to the Referral Files, the County may also request that Contractor accept for collection other accounts as needed,
 - c. After the initial transfer of the Referral Files, County shall monthly submit additional County Consumer accounts meeting the criteria of the initial Referral Files if there any accounts meeting the Referral File criteria.
 - d. For each Referral File, County shall provide to Contractor, the following Consumer information:

- i. Consumer name,
- ii. Consumer phone numbers,
- iii. Consumer address,
- iv. Date of service or date fee or fine was charged,
- v. Date of delinquency; and
- vi. Any Consumer service agreement(s) or rules that explains terms of payments for services.

5. Credit Reporting and Legal Actions.

- a. Credit Reporting. Contractor shall, when permitted by regulations and when requested by County, report Placed accounts to the applicable credit bureaus within sixty (60) days of account Placement. Contractor shall offer Consumers a thirty (30)-day period in which to resolve or pay their debts to avoid reporting the debt information. Contractor shall advise County of any additional detailed information necessary for credit bureau reporting.
- b. Legal Action. Contractor shall not in any manner or form initiate legal proceedings in the name of or on behalf the County.

6. Data Ownership, Records, and Data Security.

- a. Consumer Data. All data provided to Contractor by County is and remains the property of County. Contractor shall not lease, sell, or otherwise provide to any third-party County Consumer records without written authorization from the County. Contractor is authorized to provide to its related and affiliated entities, identified as vendor in its proposal, County data for scrubbing and collections. At the end of the Term of this Agreement or termination, Contractor shall return all records, data, and amounts then in its possession as related to the services provided herein.
- b. Data Security. Contractor shall provide a secure system for receiving, storing processing or otherwise working with information provided by County, and shall agree to be fully bound by the provisions of the Privacy Act and applicable fair lending laws, credit reporting rules and HIPAA laws. Contractor shall, at a minimum, employ the security measures and undergo regular comprehensive network and system security assessments as provided in their proposal. Contractor shall maintain all records in accordance with the most restrictive requirements of any County, state and federal requirements. Contractor shall retain all such records and statements pertaining to the Collection Service for County for a period of no less than three (3) years from the close of each year's operation. Upon termination of the Agreement, Contractor shall provide all Contractor's retained County data to County in MS Excel or CSV format within (30) business days. Contractor shall then ensure destruction or secure archiving and storage of any remaining County data in its system.
- c. Records. All records, in either electronic or hard-copy format, pertaining to the operations of Contractor's Collection Service shall, upon five (5) business days prior notice from County, be open for inspection and/or audit by County. Contractor understands that County is a public body and subject to State of New Mexico public records requirements. Contractor shall timely provide to County all records it may have in its possession for responding to public records request.

7. **Compliance with Laws.** Contractor shall comply with any and all applicable provisions of local, state, or federal law regulating debt collections as may be found in, but not limited to the Fair Debt Collection Practices Law. Contractor shall maintain complete and accurate records of Collection Service transactions in accordance with accepted industry accounting practices and this Agreement, and shall maintain records in a secure location, whether electronically or physical, to prevent disclosure or destruction.
8. **Collections and Status Reports.**
 - a. On request of County, Contractor shall meet virtually or in-person with County and review each invoice, explain charges, discuss problems and mutually agree on courses of action which may be required to provide improved control and/or service.
 - b. **Collections Reporting.** Contractor shall remit to County routine, detailed account information and summary information on all collections based on a monthly reporting period on or before the 15th day after the end of the reporting period, accounting for all collections made up to and including the last day of reporting period. Contractor's accounting control and records of reported collection service shall be used as the basis to verify charges payable to Contractor. Contractor, throughout the Term of the Agreement, shall provide County, at a minimum, the online reporting capabilities and tools to generate ad hoc reports as described in **Exhibit "B."**
9. **Call Centers.** Contractor shall maintain call centers and operations within the continental United States. For hosted or cloud-based services offered by Contractor, data centers of cloud service providers shall be located within the United States, as required by County Technology Standards.
10. **Contractor Uncollectable Accounts.** Contractor shall continue collection activities until a Placed Consumer account has reached its applicable statute of limitations for debt collection. At that time, the Placed Consumer account shall be closed by the Contractor, the Contractor shall cease debt collection activities on said account, and shall notify the County of the account closure within thirty (30) days by sending a Special Activity Report.

SECTION B. TERM: The term of this Agreement shall commence December 8, 2021, and shall continue through December 7, 2028, unless sooner terminated, as provided herein.

SECTION C. COMPENSATION:

1. **Amount of Compensation.** Contractor shall be compensated for the above services pursuant to the following terms and conditions:
 - a. County shall pay Contractor the amount, not to exceed, FOURTEEN AND ONE-HALF PERCENT (14.5%) of any recovered amount on all Referral File accounts.
 - b. The 14.5% fee shall be withheld from any payments received by Contractor through its services herein. Contractor shall monthly provide a detailed statement of payments received by Contractor, the levy of the 14.5% service fee, and remaining amount(s) due and payable to the County.
 - c. Contractor shall transfer monthly any County Consumer received payments, less Contractor's service fee, to County via electronic wire transfer using account information provided by County. Contractor shall segregate transfers based on the fee type collected and shall transfer payments into the appropriate County accounts as provided by County.

- d. No fee shall be due and payable to Contractor based on accounts where County has placed lien on real property pursuant to state law.

SECTION D. TAXES: Contractor shall be solely responsible for timely and correctly billing, collecting and remitting all NMGRT levied on the amounts payable under this Agreement.

SECTION E. STATUS OF CONTRACTOR, STAFF, AND PERSONNEL: This Agreement calls for the performance of services by Contractor as an independent contractor. Contractor is not an agent or employee of County and shall not be considered an employee of County for any purpose. Contractor, its agents or employees shall make no representation that they are County employees, nor shall they create the appearance of being employees by using a job or position title on a name plate, business cards, or in any other manner, bearing County's name or logo. Neither Contractor nor any employee of Contractor shall be entitled to any benefits or compensation other than the compensation specified herein. Contractor shall have no authority to bind County to any agreement, contract, duty or obligation. Contractor shall make no representations that are intended to, or create the appearance of, binding County to any agreement, contract, duty, or obligation. Contractor shall have full power to continue any outside employment or business, to employ and discharge its employees or associates as it deems appropriate without interference from County; provided, however, that Contractor shall at all times during the term of this Agreement maintain the ability to perform the obligations in a professional, timely and reliable manner.

SECTION F. STANDARD OF PERFORMANCE: Contractor agrees and represents that it has and shall maintain the personnel, experience and knowledge necessary to qualify it for the particular duties to be performed under this Agreement. Contractor shall perform the Services described herein in accordance with a standard that meets the industry standard of care for performance of the Services.

SECTION G. DELIVERABLES AND USE OF DOCUMENTS: All deliverables required under this Agreement, including material, products, reports, policies, procedures, software improvements, databases, and any other products and processes, whether in written or electronic form, shall remain the exclusive property of and shall inure to the benefit of County as works for hire; Contractor shall not use, sell, disclose, or obtain any other compensation for such works for hire. In addition, Contractor may not, with regard to all work, work product, deliverables or works for hire required by this Agreement, apply for, in its name or otherwise, any copyright, patent or other property right and acknowledges that any such property right created or developed remains the exclusive right of County. Contractor shall not use deliverables in any manner for any other purpose without the express written consent of County.

SECTION H. EMPLOYEES AND SUB-CONTRACTORS: Contractor shall be solely responsible for payment of wages, salary or benefits to any and all employees or contractors retained by Contractor in the performance of the Services. Contractor agrees to indemnify, defend and hold harmless County for any and all claims that may arise from Contractor's relationship to its employees and subcontractors.

SECTION I. INSURANCE: Contractor shall obtain and maintain insurance of the types and in the amounts set out below throughout the term of this Agreement with an insurer acceptable to County. Contractor shall assure that all subcontractors maintain like insurance. Compliance with the terms and conditions of this Section is a condition precedent to County's obligation to pay compensation for the Services and Contractor shall not provide any Services under this Agreement unless and until Contractor has met the requirements of this Section. County requires

Certificates of Insurance or other evidence acceptable to County that Contractor has met its obligation to obtain and maintain insurance and to assure that subcontractors maintain like insurance. Should any of the policies described below be cancelled before the expiration date thereof, notice shall be delivered in accordance with the policy provisions. General Liability Insurance and Automobile Liability Insurance shall name County as an additional insured.

1. **General Liability Insurance:** ONE MILLION DOLLARS (\$1,000,000.00) per occurrence; ONE MILLION DOLLARS (\$1,000,000.00) aggregate.
2. **Workers' Compensation:** In an amount as may be required by law. County may immediately terminate this Agreement if Contractor fails to comply with the Worker's Compensation Act and applicable rules when required to do so.

SECTION J. RECORDS: Contractor shall maintain, throughout the term of this Agreement and for a period of six (6) years thereafter, records that indicate the date, time, and nature of the services rendered. Contractor shall make available, for inspection by County, all records, books of account, memoranda, and other documents pertaining to County at any reasonable time upon request.

SECTION K. APPLICABLE LAW: Contractor shall abide by all applicable federal, state and local laws, regulations, and policies and shall perform the Services in accordance with all applicable laws, regulations, and policies during the term of this Agreement. In any lawsuit or legal dispute arising from the operation of this Agreement, Contractor agrees that the laws of the State of New Mexico shall govern. Venue shall be in the First Judicial District Court of New Mexico in Los Alamos County, New Mexico.

SECTION L. NON-DISCRIMINATION: During the term of this Agreement, Contractor shall not discriminate against any employee or applicant for an employment position to be used in the performance of the obligations of Contractor under this Agreement, with regard to race, color, religion, sex, age, ethnicity, national origin, sexual orientation or gender identity, disability or veteran status.

SECTION M. INDEMNITY: Contractor shall indemnify, hold harmless and defend County, its Council members, employees, agents and representatives, from and against all liabilities, damages, claims, demands, actions (legal or equitable), and costs and expenses, including without limitation attorneys' fees, of any kind or nature, arising from Contractor's performance hereunder or breach hereof and the performance of Contractor's employees, agents, representatives and subcontractors.

SECTION N. FORCE MAJEURE: Neither County nor Contractor shall be liable for any delay in the performance of this Agreement, nor for any other breach, nor for any loss or damage arising from uncontrollable forces such as fire, theft, storm, war, or any other force majeure that could not have been reasonably avoided by exercise of due diligence.

SECTION O. NON-ASSIGNMENT: Contractor may not assign this Agreement or any privileges or obligations herein without the prior written consent of County.

SECTION P. LICENSES: Contractor shall maintain all required licenses including, without limitation, all necessary professional and business licenses, throughout the term of this Agreement. Contractor shall require and shall assure that all of Contractor's employees and

subcontractors maintain all required licenses including, without limitation, all necessary professional and business licenses.

SECTION Q. PROHIBITED INTERESTS: Contractor agrees that it presently has no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of its services hereunder. Contractor further agrees that it shall not employ any person having such an interest to perform services under this Agreement. No County Council member or other elected official of County, or manager or employee of County shall solicit, demand, accept or agree to accept a gratuity or offer of employment contrary to Section 31-282 of the Los Alamos County Code.

SECTION R. TERMINATION:

1. **Generally.** County may terminate this Agreement with or without cause upon ten (10) days prior written notice to Contractor. Upon such termination, Contractor shall be paid for Services actually completed to the satisfaction of County at the rate set out in Section C. Contractor shall render a final report of the Services performed to the date of termination and shall turn over to County originals of all materials prepared pursuant to this Agreement.
2. **Funding.** This Agreement shall terminate without further action by County on the first day of any County fiscal year for which funds to pay compensation hereunder are not appropriated by County Council. County shall make reasonable efforts to give Contractor at least ninety (90) days advance notice that funds have not been and are not expected to be appropriated for that purpose.

SECTION S. NOTICE: Any notices required under this Agreement shall be made in writing, postage prepaid to the following addresses, and shall be deemed given upon hand delivery, verified delivery by telecopy (followed by copy sent by United States Mail), or three (3) days after deposit in the United States Mail:

County:

Business Operations Manager
Incorporated County of Los Alamos
Department of Public Utilities
1000 Central Avenue, Suite 150
Los Alamos, New Mexico 87544

Contractor:

John Erickson, President
I.C. System, Inc.
444 E. Highway 96
St. Paul, Minnesota 55126

SECTION T. INVALIDITY OF PRIOR AGREEMENTS: This Agreement supersedes all prior contracts or agreements, either oral or written, that may exist between the parties with reference to the services described herein and expresses the entire agreement and understanding between the parties with reference to said services. It cannot be modified or changed by any oral promise made by any person, officer, or employee, nor shall any written modification of it be binding on County until approved in writing by both County and Contractor.

SECTION U. NO IMPLIED WAIVERS: The failure of the County to enforce any provision of this Agreement is not a waiver by the County of the provisions or of the right thereafter to enforce any provision(s).

SECTION V. SEVERABILITY: If any provision of this Agreement is held to be unenforceable for any reason: (i) such provision shall be reformed only to the extent necessary to make the intent of the language enforceable; and (ii) all other provisions of this Agreement shall remain in effect.

SECTION W. CAMPAIGN CONTRIBUTION DISCLOSURE FORM: A Campaign Contribution Disclosure Form was submitted as part of the Contractor's Response and is incorporated herein by reference for all purposes.

SECTION X. LEGAL RECOGNITION OF ELECTRONIC SIGNATURES: Pursuant to NMSA 1978 § 14-16-7, this Agreement may be signed by electronic signature.

SECTION Y. DUPLICATE ORIGINAL DOCUMENTS: This document may be executed in two (2) counterparts, each of which shall be deemed an original.

IN WITNESS WHEREOF, the parties have executed this Agreement on the date(s) set forth opposite the signatures of their authorized representatives to be effective for all purposes on the date first written above.

ATTEST

INCORPORATED COUNTY OF LOS ALAMOS

NAOMI D. MAESTAS
COUNTY CLERK

BY: _____
STEVEN LYNNE **DATE**
COUNTY MANAGER

Approved as to form:

J. ALVIN LEAPHART
COUNTY ATTORNEY

I.C. SYSTEM, INC.

BY: _____
JOHN ERICKSON **DATE**
PRESIDENT

Exhibit “A”
I.C. System, Inc. Collection Strategy
AGR21-57

Contractor shall use, at a minimum, the collection process as described in Contractors’ Proposal and as excerpted herein as **Exhibit “A”** to collect on the accounts properly Placed by County with Contractor. Contractor shall notify County, in writing or via e-mail, of any substantial or material change to the process during the Term of the Agreement.

Account Segmentation

The first stage of our collection methodology begins with Account Segmentation. This stage enables IC System to create efficiencies in our approach by organizing the account inventory into distinct Segments, each with a unique work effort designed to improve recoveries.

Our Account Segmentation model is based on a machine learning algorithm developed by our scoring vendor NLP Logix. This complex algorithm uses proprietary demographic models, recovery scores built by our own proprietary model, and characteristics from similar debt experiences.

From this Account Segmentation model, we divide accounts into five Segments. These Segments will then dictate the approach we take to those accounts. For instance, the Segment determines number and frequency of letters and call attempts on an account.

With the segmentation model divided into five segments, the value of the segments range in priority from 1 to 5 (i.e. Segment 1 is the most valuable, and Segment 5 is the least valuable).

Account inventory will be spread across the five (5) Segments according to the results of each account’s scoring. Moreover, each account is evaluated regularly to determine the calling strategy of the segment.

Throughout the process, IC System follows a rigid performance review model to validate and refine our efforts. We use several internal touchpoints designed to prompt review and assessment of our strategy. During the first 30 days of our efforts on any new project, we monitor our efforts daily to ensure the strategy is a success.

Los Alamos County can be assured that IC System will follow analytical models to achieve maximum account penetration, both in terms of providing excellent performance and adhering to any contact restrictions. Our analytical models take state or federal laws collection restrictions into consideration, and this approach limits the risk to both IC System and our client. Data Scrubs follow Account Segmentation, which generally takes Place on the first day of placements.

Data Scrubs

To ensure the best possible information is on file, IC System engages collection industry vendors to provide us with the following data points within 24 hours of

account placement:

Best Possible Mailing Address: Vendors identify the best possible mailing address for the responsible party. Addresses are standardized to meet USPS guidelines to ensure the fastest possible mailing time.

Bankruptcy & Deceased Identification: IC System places all accounts with a vendor to ensure we are not actively collecting on accounts that may be part of a bankruptcy proceeding or where the responsible party is deceased. In addition to upfront identification of bankruptcy or deceased status, the vendor continues to monitor the account on behalf of IC System. If the responsible party becomes deceased or files bankruptcy after the initial account placement, we are notified. The account is then closed and the information is passed to the client.

Mobile Phone Identification: TCPA violations can be costly. To minimize the risk of dialing any cell phone number manually or predictively, IC System scrubs all phone numbers daily to ensure they are not mobile telephone numbers. Because IC System uses the LiveVox HCI dialing system to dial cell phones in a TCPA-compliant manner, we mitigate legal liability.

Several courts have found this method to be TCPA-compliant.

Intensive Collection Strategy

With Account Segmentation and Data Scrubs complete, our Intensive Collection Strategy begins. This process involves a series of letters and calls, depending on the debt Segment in question.

Letters: Upon placement, accounts with a valid address receive the initial validation notice from IC System. The validation notice advises the Consumer of the balance due and notifies them of their rights as outlined by federal and state laws. If there is no address provided or the address is invalid, the account will be eligible for Skip Tracing.

In cases where our collection representatives contact a Consumer who has not had an initial validation notice mailed or the notice was returned due to a bad address, the validation notice will be resent.

After the initial validation notice, additional letters will be sent based on a review of the validation letter's effectiveness and an analysis of the account's subsequent recoverability. This approach gathers characteristic data about consumers who resolve their accounts, and then applies that understanding to new accounts Placed. As a result, letter treatment strategies are dynamic, and additional letters are applied to the accounts with the highest likelihood of paying based on past performance.

Accounts may also be subject to additional lettering based on activity taken on the account. These non-collection letters may include requests for additional information, receipt letters, attorney letters, debt validation, payment arrangement letters, pre-authorized payment reminders, and others.

Our in-house letter analysts review the effectiveness of our letter plans and make changes to enhance our lettering process. IC System can also send unique letters

via our ADHOC lettering tool. This allows IC System the ability to make changes and send additional letters / notices as the situation demands. Our ICET[™] collection software automatically sends all required follow-up letters / notices.

For example, IC System sends payment reminder letters for ongoing payment plans to ensure we are compliant with all state and federal laws.

IC System captures all letter / notice images and saves them to the account.

E-mails: IC System also allows the Consumer to provide an email address. We will communicate via email going forward if it is preferred. We use the same letter rules and regulations for emails.

Calls: IC System's approach to calls draws from our Account Segmentation model, based on a machine learning algorithm developed by our scoring vendor NLP Logix. The algorithm identifies patterns in Consumer historical payment behaviors, consisting of historical data and applies a 'probability-to-pay' score to similar or 'like parties' with outstanding accounts.

The Segmentation model consists of five Segments. The value of the Segments range in priority from 1 to 5 (i.e., Segment 1 is the most valuable, and Segment 5 is the least valuable). The client's inventory is spread across the five Segments based on the initial scoring of each account.

Our intensive collection strategy also staggers call attempts based on the account's position within our Segmentation models. Each account is evaluated regularly to determine the calling strategy.

Accounts typically follow the model below for call and letters.

Segment	Collection Efforts
Segment 1 Balance of \$1500 or more	Day 1-30 <ul style="list-style-type: none">• 2 call attempts per day, first 2 weeks from placement, up to 40 call attempts• Inbound IVR available 24/7• Manual work effort weekly• Manual skip tracing• Automated skip efforts• Validation Letter sent
	Day 31-60 <ul style="list-style-type: none">• 1 call attempt per day, up to 20 call attempts• Inbound IVR available 24/7• Automated skip efforts• Manual work effort by descending balance, bi-weekly• Compromise offer letter sent (if applicable)
	Day 61-120 <ul style="list-style-type: none">• 1 call attempt every other day• Inbound IVR available 24/7• Automated skip efforts• Manual work effort by descending balance, monthly

	Day 121-365 <ul style="list-style-type: none"> • 1 call attempt per week • Inbound IVR available 24/7 • Manual work effort by descending balance, monthly
	Day 365+ Work efforts resume when new or additional information is acquired.
Segment 2 Balance between \$750 and \$1499	Day 1-30 <ul style="list-style-type: none"> • 2 call attempts per day, first 2 weeks from placement, up to 40 call attempts • Inbound IVR available 24/7 • Manual work effort weekly • Manual skip tracing • Automated skip efforts • Validation Letter sent
	Day 31-60 <ul style="list-style-type: none"> • 1 call attempt per day, up to 20 call attempts • Inbound IVR available 24/7 • Automated skip efforts • Manual work effort by descending balance, bi-weekly • Compromise offer letter sent (if applicable)
	Day 61-120 <ul style="list-style-type: none"> • 1 call attempt every other day • Inbound IVR available 24/7 • Automated skip efforts • Manual work effort by descending balance, monthly
	Day 121-365 <ul style="list-style-type: none"> • 1 call attempt per week • Inbound IVR available 24/7 • Manual work effort by descending balance, monthly
	Day 365+ <ul style="list-style-type: none"> • Work efforts resume when new or additional information is acquired
Segment 3 Balance between \$500 and \$749	Day 1-30 <ul style="list-style-type: none"> • 1 call attempt per day, first 2 weeks from placement, up to 20 calls/attempts • Inbound IVR available 24/7 • Manual work effort weekly • Automated skip efforts • Validation Letter sent
	Day 31-60 <ul style="list-style-type: none"> • 1 call attempt every other day, up to 10 call attempts • Inbound IVR available 24/7 • Automated skip efforts • Manual work effort by descending balance, monthly • Compromise offer letter sent (if applicable)
	Day 61-120 <ul style="list-style-type: none"> • 1 call attempt every other week • Inbound IVR available 24/7 • Manual work effort by descending balance, monthly

	Day 121-365 <ul style="list-style-type: none"> • 1 call attempt monthly • Inbound IVR available 24/7
	Day 365+ <ul style="list-style-type: none"> • Work efforts resume when new or additional information is acquired
Segment 4 Balance between \$125 and \$499	Day 1-30 <ul style="list-style-type: none"> • 1 call attempt per day, first 2 weeks from placement, up to 20 calls/attempts • Inbound IVR available 24/7 • Manual work effort weekly • Automated skip efforts • Validation Letter sent
	Day 31-60 <ul style="list-style-type: none"> • 1 call attempt every other day, up to 10 call attempts • Inbound IVR available 24/7 • Automated skip efforts • Compromise offer letter sent (if applicable)
	Day 61-120 <ul style="list-style-type: none"> • 1 call attempt every other week dialer rotation • Inbound IVR available 24/7
	Day 121-365 <ul style="list-style-type: none"> • 1 call attempt monthly • Inbound IVR available 24/7
	Day 365+ <ul style="list-style-type: none"> • Work efforts resume when new or additional information is acquired
Segment 5 Balance equal to or less than \$124.99	Day 1-30 <ul style="list-style-type: none"> • 1 call attempt every other day dialer rotation, up to 10 call attempts • Inbound IVR available 24/7 • Automated skip efforts • Validation Letter sent
	Day 31-60 <ul style="list-style-type: none"> • 1 call attempt every other day dialer rotation, up to 10 call attempts • Inbound IVR available 24/7
	Day 61-120 <ul style="list-style-type: none"> • 1 call attempt monthly • Inbound IVR available 24/7
	Day 121-365 <ul style="list-style-type: none"> • 1 call attempt monthly dialer rotation • Inbound IVR available 24/7
	Day 365+ <ul style="list-style-type: none"> • Work efforts resume when new or additional information is acquired

Payment Demand Flow

IC System collection representatives request the balance to be paid in full on every contact. If the Consumer is unable to pay the full balance, our collection

representatives will begin to probe financial resources, while at the same time applying our negotiation order to determine a payment plan that improves the financial outcomes of both the Consumer and our client. Our collection representatives have a standard flow for payment negotiations, but the below guide will be modified based on the client's specific requirements.

Noting Accounts

After each call, a collection representative records notes in our system based on the outcome of the call, whether it be a conversation with the Consumer or a third party and trigger a follow-up event which may be one or more of the following:

- **Contacted Priority Follow-Up:** The Consumer's account is updated with a follow-up date based on the outcome of the call.
- **Promise to Pay:** A payment arrangement has been agreed upon. The account will be removed from active collections and put into a collection representative's ownership. The account will be monitored until it is paid in full.
- **Canceled Payment or NSF:** If the status of account changes the collection representative is notified that the arrangement is broken. With the account no longer in a paying status, the account is now eligible for active collections again.
- **Spinner Phones:** The Consumer's phone is updated as a 'spinner' which is a number that we believe to be correct, but we remain unable to reach the Consumer using that number. These accounts are then called at varied times to reach the Consumer.
- **Skip Tracing:** Once all phone numbers on file are considered invalid, an account is flagged for Skip Tracing.

Contact Strategy

Our Call Center Command monitors all calling campaigns to ensure we consistently have the proper number of calls available. We do not use separate outbound and inbound teams. We have found that a blended calling strategy of outbounds and inbounds, with a priority Placed on inbound calls, maximizes efficiency.

Call Center Command varies the time of scheduled dialing campaigns. A strategically fluctuating campaign schedule ensures consumers receive calls at different times throughout the day.

Our Contact Strategy is also designed to ensure compliance with all state and federal calling restrictions thanks to our Call Center Command and ICE™. Additionally, our calling system records every call. Each call remains in storage for a minimum of five (5) years. Higher value accounts are manually assigned to ensure work effort. Furthermore, manual efforts are taken in addition to call center technology. This is done through ICE™.

Skip Tracing

IC System's Skip Tracing model unfolds over three steps:

Step 1: Upon account placement, ICE™ will Scrub all accounts against our national databases to determine whether a phone number is a landline or cell phone. The initial Scrub will also gather any supplementary contact data and filter the account for possible exceptions (bankruptcy, deceased, etc.).

Step 2: If an account has no phone number, it will be Skip Traced. If the first vendor attempted does not provide a new phone number, we will then send that account to a second vendor to locate a new phone number.

Step 3: If an account has a valid phone number provided by the client, and we determine that number is no longer a valid phone number during the collection process, the account will be submitted to Skip Tracing. If the first vendor does not provide a new phone number, we will then send that account to a second vendor to locate a new phone number.

Skip Tracing by Balance Range

The balance size affects the frequency of Skip Tracing in our model. Using data learned about the average promise to pay and dollars collected per call on Skip Traced accounts in the past, IC System's Skip Tracing model varies based on the balance size. Based on the historical returns of the balance segments detailed below, we add additional Skip Tracing efforts to those balance segments that have proven more likely to pay.

Balances \$0-\$500: IC System Skip Traces accounts once all known numbers are determined to be invalid. Our vendors will then look for additional information every 10 days for the first 90 days of the account.

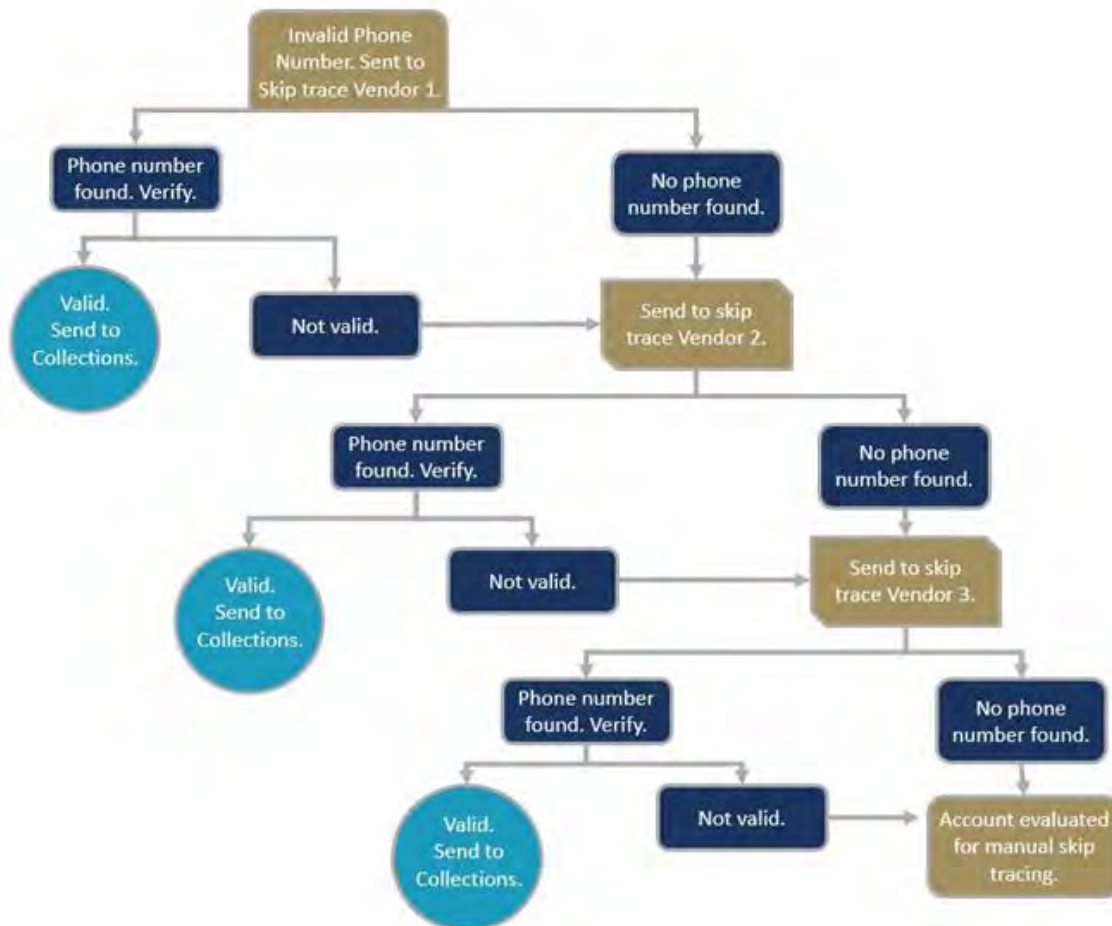
Balances \$501-\$1,000: IC System Skip Traces accounts once all known numbers are determined to be invalid, and then we will have our vendors look for additional contact information every 30 days for the first 90 days of the account.

Balances \$2,500-\$5,000: IC System Skip Traces accounts once all known numbers are determined to be invalid. Our vendors will then look for additional information every 10 days for the first 90 days of the account.

Balances \$5000+: IC System Skip Traces accounts once all numbers are determined to be invalid. Our vendors will then look for additional information every 10 days for the first 90 days of the account.

Depending on the age and value of the information the client provides, we may follow the above process regardless of whether we have a valid phone number on file.

Additionally, our Skip Tracing abilities are not limited. We can modify plans and balance ranges if we find the returns are better in different ranges.



Manual Skip Tracing Process

In addition to ICET™ systematic Skip Tracing process, manual Skip Tracing efforts may be required. Manual Skip Tracing will be applied to an account in two instances:

1. If an account has been assigned to a collection representative and he/she determines additional information is required.
2. If we determine additional information is needed on accounts beyond what is provided. In the latter case, an account may already have two working numbers for collection representatives to call, but additional data may increase the likelihood of recovery depending on the demographics of the account.

IC System utilizes work queues that auto-refresh. Collection representatives work the highest value accounts first as determined by our Segmentation model. In addition to balance and age of debt, the work queues sort themselves by recent work history. This allows accounts that have not been skipped to take priority.

The manual Skip Tracing inventory is separated into three work queues:

- Segments 1-2 worked every 14 days
- Segment 3 worked monthly
- Segment 4-5 worked every other month

Below is a list of manual resources that our collection representatives utilize to Skip trace effectively:

- 411.com
- Accurint
- Addresses.com
- CBC Innovis
- Experian
- Dexknows
- Google.com
- White Pages

Exhibit “B”
Online Reporting Capabilities and Tools
AGR21-57

Contractor, throughout the Term of the Agreement, shall provide County, at a minimum, the online reporting capabilities and tools to generate ad hoc reports as described below.

- 1) Reports shall be standardized to support collection activities, financial reporting, and online account management.
- 2) County shall have the ability to generate reports based on date parameters and sorting options selected by County.
- 3) Reports shall be exportable to, at a minimum, the following formats:
 - XML file with report data
 - CSV
 - PDF
 - MHTML
 - Microsoft Excel
 - TIFF
 - Microsoft Word
- 4) Reports shall include, but shall not be limited to the following:

Report Name	Description
Statement Report (Invoice)	These combined reports include a Statement that lists the date of payment, name of the consumer, client identification number, payment status (SIF, PIF), gross payment amount, agency fee, and client portion. The report also includes an Invoice that displays the amount due to the client, the amount due to IC System and associated other totals.
Batch Track Report	This report shows monthly batch placements by count and dollars submitted, collections against those placements on a monthly basis, and recovery percentages of those collections by month. The report also displays remaining inventory for each batch and value of accounts recalled or closed. The report can be delivered according to client specifications and has flexible options for display.
Close and Return Report	This is a report of accounts worked by IC System that are deemed uncollectable. These include persistent skips, bankruptcies, deceased responsible party, no asset indigent, and recall/cancels. IC System maintains an online archival system where all records, complete with all work effort and coding, including closure reasons, are stored. These accounts may be accessed and displayed for viewing.

Collection Effectiveness (Stair Step) Report	Similar to a batch track, this report (often called a stair step report) details amounts collected each month per batch, for the history of the batch.
Debt Acknowledgement Report	A report used to balance both the dollar value and number of debts against the customer's placement. This report is also available for the client to run using the Online Tools application.
Inventory Progress Report	On-demand inventory reports (Detail and Summary versions) that sort and present a client's responsible party in any order. The detail report includes the client account numbers and shows current account status descriptions. The summary report presents totals by category.
Special Activity Report	A weekly report containing information about special accounts including bankruptcies, deceased, fraud, disputes, etc.
Client Payments and Reversals	This ad-hoc report can be pulled via our Online Tools. It shows payments, NSF or reversals, and transaction detail within a given time frame. Transaction detail includes account and responsible party information, entry and payment dates, amount, and transaction type.

**LOS ALAMOS COUNTY
PROCUREMENT DIVISION**

101 Camino Entrada, Building 3, Los Alamos, New Mexico 87544

(505) 662-8191

Advertised: May 23, 2021

Closing Date: June 22, 2021

Request for Proposals ("RFP")

RFP Number: 21-57

RFP Name: Accounts Receivable Collection Services

GENERAL INFORMATION

1. **RFP Submission Procedure Change.** Due to the current COVID-19 (coronavirus) pandemic and Public Health Emergency declaration by the New Mexico Governor, until further notice, the following procedure is in effect: Proposals in response to this Requests for Proposals (RFP), may be submitted either in paper form, in a sealed envelope, or electronically by email in PDF format. All other requirements stated in the solicitation document remain unchanged and in effect.

Only one of the following submission methods is required:

2. **ELECTRONIC SUBMISSION:** Emails should be addressed to: lacbid@lacnm.us. Subject line **must** contain the following information: **RESPONSE – RFP21-57 Accounts Receivable Collection Services** It is strongly recommended that a second, follow up email (without the proposal included or attached) be sent to [Jaime Kephart, Senior Buyer, jaimke.kephart@lacnm.us](mailto:jaime.kephart@lacnm.us) to confirm the Proposal was received.

The body of the email must contain enough information for the identity of the Proposer to be clear, including company name, name of person sending the email, and contact information including email address and phone number.

Only emails with proposals received in the lacbid@lacnm.us email box prior to **2:00 p.m. Mountain Time, June 22, 2021** will be reviewed.

Proposals submitted by email will be opened only after the closing date and time stated in the solicitation document.

3. **PAPER FORM SUBMISSION:** Sealed proposals in one (1) clearly labeled unbound original, three (3) bound copies and one (1) USB flash drive or CD, will be accepted at the Office of the Chief Purchasing Officer, Procurement Division - 101 Camino Entrada, Building 3, Los Alamos, NM 87544, until **2:00 p.m. Mountain Time, June 22, 2021** for this solicitation. **Clearly mark the RFP Number and Name and Offeror on the outside of the sealed proposal, including outer envelope and/or shipping label.** The USB flash drive or CD should be clearly identified. It is the responsibility of the Offeror to assure that the information submitted in both its written response and the electronic version are consistent and accurate. If there is a discrepancy between what is provided on the paper document and the USB flash drive or CD, the written paper response shall govern.

4. Directions to Procurement office:



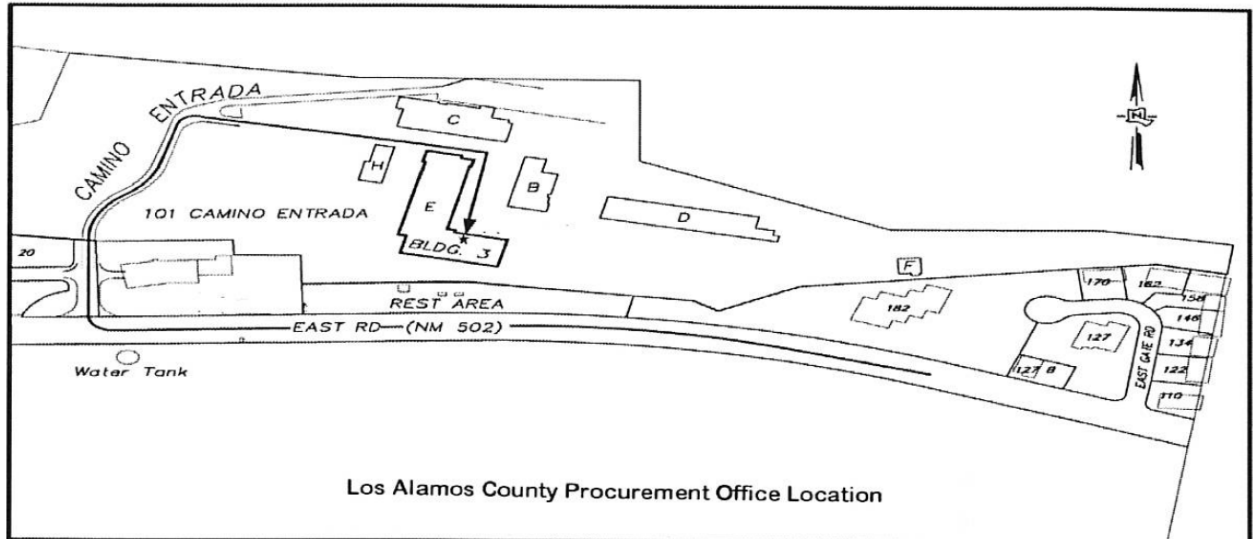
1. Drive WEST on NM-502 to Los Alamos.

- o Camino Entrada (formerly known as Airport Basin) is 0.4 miles past East Gate Drive, just past East Entrance Park Rest Area.



2. Turn RIGHT on Camino Entrada.

- Road slopes downhill and curves to the right.
- ➡ 3. Take second RIGHT into driveway through gated fence (before the stone sign “Pajarito Cliffs Site”).
 - Follow the signs to Building 3, the L-shaped building in the center of the complex.
 - If you pass the Holiday Inn Express and the Airport, you’ve gone too far.
- 4. Enter glass door marked “PROCUREMENT.” See map below.



5. The Incorporated County of Los Alamos (“County”) invites Proposals from all qualified respondents. No Proposal may be withdrawn after the scheduled closing time. Proposals will not be accepted after the scheduled closing time. **Please make note of the submittal requirements outlined in this solicitation.** Read and follow the instructions carefully. **Include the required documents provided in this RFP as part of your submittal packet.** Any misinterpretation or failure to comply with the submittal requirements could result in rejection of the proposal. Proposal preparation is at the Offeror’s expense.
6. Any change(s) to the solicitation will be conveyed through the written addenda process. Read carefully and follow all instructions provided on any addendum, as well as the instructions provided in the original solicitation.
7. Any questions must be received in writing at least five (5) days prior to the date fixed for when proposals are due.
8. County reserves the right, at its sole discretion, to accept or reject any proposals; to waive any and all irregularities in any or all statements or proposals; to request additional information from any or all respondents; and to award a contract to the responsible Offeror whose proposal is most beneficial to County. While County intends to execute a contract for the services listed herein, nothing in this document shall be interpreted as binding County to enter into a contract with any Offeror or Proposer.
9. Bids and Proposals are Public Records. Pursuant to the New Mexico Inspection of Public Records Act, NMSA 1978, Chapter 14, Article 2, all materials submitted under this RFP/IFB shall be presumed and considered public records. Except to the extent any information may be protected by state or federal law, proposals shall be considered public documents and available for review and copying by the public.
10. The County contemplates a multi-term contract as a result of this RFP. The term of the contract may be for a period of up to seven (7) years. This is the written determination of the Chief Purchasing Officer that: such a contract will serve the best interests of the County by promoting economies in County procurement.
11. Proposers are notified that they must propose pricing for each potential year of the contract.

12. Proposers/Offerors are informed that State law requires that all foreign corporations (NMSA 1978 §53-17-5) and limited liability corporations (NMSA 1978 §53-19-48) procure a certificate of authority to transact business in the state prior to transacting business in the state of New Mexico.
13. The Chief Purchasing Officer has determined a preference is applicable to this offer. A bidder or offeror must submit a written request for preference, with a copy of the state-issued preference certificate, with its proposal to qualify for this preference. Ref. County Code Section. 31-261(b) and Section 13-1-21 NMSA 1978 et al.

CONTACT INFORMATION

1. For project-specific information, contact [Heather Garcia](#), at heather.garcia@lacnm.us; (505) 662-8198.
2. For procurement process information, contact [Jaime Kephart, Senior Buyer](#), at Jaime.kephart@lacnm.us; (505) 662-8191.

NEED STATEMENT

The Incorporated County of Los Alamos ("County") does not currently have the ability to perform collection efforts past (120) days overdue for utility, landfill and ambulance services provided by the County. The County is in need of a third-party vendor to perform this function.

BACKGROUND

The County currently performs initial collection activities for utility, landfill, ambulance services and miscellaneous receivables for accounts less than (120) days past due. As of December 31, 2020, the County's outstanding accounts receivables over (120) days past due was approximately \$187,000. Collection activities for accounts over (120) days past due have not been conducted since the implementation of a new Enterprise Resource Planning system in 2018.

The County outsources the billing of ambulance services to Credit Bureau Systems, Inc. dba Ambulance Medical Billing ("AMB"). AMB is responsible for collections during the first 90-120 days after billing. The County, through AMB, will turn over ambulance accounts greater than (120) days past due to the Contractor. Billed ambulance revenue is approximately \$500,000-\$600,000 per year, with current collection efforts yielding approximately \$350,000-\$550,000 annually. The County anticipates ambulance receivables turned over for collection services will total between \$50,000-\$150,000 per year. Only one award may result from this RFP.

Visit the Los Alamos County website (www.losalamosnm.us) and the tourism website (www.visit.losalamos.com) for more information about the County.

SCOPE OF SERVICES (or WORK)

1. The selected Offeror shall provide collection services for the following types of past due accounts receivable:
 - Utility Receivables
 - Landfill Tipping Fee Receivables
 - Ambulance Billing Receivables
 - Miscellaneous Accounts Receivable
2. Contractor shall accept accounts placed by County under terms of the resulting agreement and will use its best efforts to collect said accounts utilizing means legal, necessary and proper.

3. County plans to place existing delinquent accounts greater than (120) days past due with Contractor immediately upon execution of an Agreement. Other accounts will be referred to Contractor throughout the calendar year. The number of accounts referred to Contractor shall be solely within the discretion of County. Further, County, itself or through its ambulance billing contract, shall make collection efforts and written demands prior to turnover and will inform the debtor of the consequences of failure to make payments.
4. County shall provide to Contractor information about payments made directly to County on accounts turned over to Contractor and will pay the collection fee on these amounts.
5. Contractor shall not initiate legal proceedings on accounts without prior authorization by County. However, Contractor will report referred accounts to the applicable credit bureaus. Contractor will advise County of detailed information necessary for credit bureau reporting.
6. All data made available to Contractor by County is and remains the property of County, Contractor must provide a secure system for receiving, storing processing or otherwise dealing with information provided by County and must agree to be fully bound by the provisions of the Privacy Act and applicable fair lending laws, credit reporting rules and Health Insurance Protection and Accountability (HIPPA) Act laws.
7. Contractor agrees to return to County, at no charge, accounts referred by mistake.
8. County shall pay no fee for Contractor when the balance due has been reduced resulting from County action such as application of refund, security deposit or credit adjustment. Also, no fee will be paid based upon a collection resulting from County receiving payment due to a customer refinancing or selling their home when a lien of any amount was in place. County would normally not place a balance upon which there is a lien with the collection agency.
9. Contractor shall follow the applicable provisions of federal law regulating debt collections appearing in the Fair Debt Collection Practices Law. Contractor shall maintain complete and accurate records of collection service transactions in accordance with accepted industry accounting practices, and shall maintain records in a secure location, whether electronically or physical, to prevent disclosure or destruction. Contractor shall ensure record retention in accordance with County, state and federal requirements. Contractor shall retain all such records and statements pertaining to the collection agency service operations for County for a period of no less than three (3) years from the close of each year's operation.
10. Contractor's accounting control and records of reported collection service shall be used as the basis to verify charges payable to Contractor.
11. All records pertaining to the operations of this collection agency service shall upon reasonable notice be open for inspection and/or audit by County at any or all reasonable times.
12. On request of County, Contractor shall meet with County and review each invoice, explain charges, discuss problems and mutually agree on courses of action which may be required to provide improved control and/or service.
13. Contractor shall remit to County routine, detailed account information and summary information on all collections based on a monthly reporting period on or before the 15th day after the end of the reporting period, accounting for all collections made up to and including the last day of reporting period.
14. Contractor shall maintain call centers and operations within the continental United States. For hosted or cloud-based services offered by Contractor, data centers of cloud service providers shall be located within the United States, as required by County Technology Standards.

15. If Contractor offers online customer access, Contractor's proposed Use Agreement or Terms of Use should be included with the proposal.

INFORMATION RELATED TO THE SCOPE OF WORK

1. See Exhibit D for more information related to the scope of work.

PROPOSAL REVIEW AND EVALUATION

Proposals shall be handled so as to prevent disclosure of the identity of any Offeror or the contents of any proposal to competing Offerors during the process of negotiation.

After the RFP has closed, Procurement Division staff prepares a register of proposals containing the name of each Offeror, the number of modifications received, if any, and a description sufficient to identify the item offered. The register of proposals is open to public inspection only after contract award. Procurement Division staff delivers the RFP submittals to the Evaluation Committee Chairperson. The Evaluation Committee reviews and evaluates the submittals. Interviews are only for the purpose of clarification, and may be used for adjusting the final score. Discussions may be conducted with responsible offerors who submit proposals determined to be reasonably likely to be selected for award for the purpose of clarification to ensure full understanding and conformation with solicitation requirements for the purpose of obtaining best and final offers.

The total evaluation score with or without the cost factor of each proposal received from a qualifying vendor shall be multiplied by 1.05. After application of the factor, the contract shall be awarded to the highest score. If one or more scores are equal, the same procedure shall be followed with respect to the next category of offerors listed, and the next, until an offer qualifies for award. The priority of categories of offers is as follows: (1) Local business; (2) Resident business.

The Evaluation Committee Chairperson forwards the final evaluation results to the Procurement Division. Award shall be made to the responsible Offeror whose proposal is determined in writing by the Evaluation Committee to be the most advantageous to the County, taking into consideration the evaluation criteria set forth in the solicitation.

AWARD OF SOLICITATION

Following award of the solicitation by County Council, the successful Offeror will be required to execute a contract with County in accordance with the terms and conditions set forth in the Services Agreement, a sample of which is attached as Exhibit "A." Offeror may identify any exception or other requirements to the terms and provisions in the Services Agreement, along with proposed alternative language addressing the exception; County may, but is not required to, negotiate changes in contract terms and provisions. The Services Agreement as finally agreed upon must be in form and content acceptable to County.

OBLIGATIONS OF FEDERAL CONTRACTORS AND SUBCONTRACTORS; EQUAL OPPORTUNITY CLAUSES

Contractors and Subcontractor shall abide by the requirements of 41 CFR §§ 60-1.4, 60- 300.5 and 60-741. These regulations prohibit discrimination against qualified individuals based on their status as protected veterans or individuals with disabilities, and prohibit discrimination against all individuals based on their race, color, religion, sex, sexual orientation, gender identity, or national origin. Moreover, these regulations require that covered prime contractors and subcontractors take affirmative action to employ and advance in employment individuals without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, protected veteran status or disability.

Contractors and subcontractors agree to comply with all the provisions set forth in 29 CFR Part 471, Appendix A to Subpart A.

ILLEGAL ACTS

The Los Alamos County Procurement Code, Article 9, imposes remedies and penalties for its violation. In addition, New Mexico criminal statutes impose felony penalties for illegal bribes, gratuities, and kickbacks.

CERTIFICATION FORM REGARDING DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS

An Offeror shall complete the Certification Regarding Debarment, Suspension, and Other Responsibility Matters Form, attached as Exhibit "B," and submit with the proposal. This Form serves as a warrant of the vendor's responsibility, and may not necessarily preclude the vendor from consideration for award.

CAMPAIGN CONTRIBUTION DISCLOSURE FORM

A Campaign Contribution Disclosure Form is attached as Exhibit "C." The Offeror is requested to complete and submit with the proposal. If Form is not submitted with the proposal, upon award, Contractor must submit this form, in accordance with Chapter 81 of the laws of 2006 of the State of New Mexico.

VERIFICATION OF AUTHORIZED OFFEROR

A Verification of Authorized Offeror Form is attached as Exhibit "D." The Offeror is requested to complete and submit with the proposal. This Form provides County with the name and information of the authorized Officer who can obligate the selected firm in providing the services to Los Alamos County.

PROPOSAL FORMAT

To facilitate evaluation, Proposals shall be submitted with the sections listed below in the order indicated. Proposer shall include sufficient detail for County to evaluate the Proposal.

Proposals shall address the following items:

1. Effectiveness and Efficiency of Process:

- a. Describe in detail and provide diagram(s) of the Proposer's collection process. This should include samples of call scripts and letters used in the collection process.
- b. Provide a description and examples of reports that would be provided to County to demonstrate collection efforts, amounts collected, and status of accounts.
- c. Provide a description of the account information needed for the collection process, particularly with requirements needed for reporting to credit bureaus.
- d. Provide a description of the security measures the Proposer employs to secure financial records and statements pertaining to the collection agency service operations.

2. Experience and Expertise:

- a. Provide a description of the firm, including the relevant experience of the management team that would be assigned to this account.
- b. Provide the most recent four years' worth of statistical results of the company/agency's effectiveness in collecting. The results should be broken down between private and public sector clients.

3. Cost Proposal:

- a. Provide a detailed fee schedule for your services.

4. References

- a. Provide three current references (include: organization name, contact name, contact address, contact phone number, email and a description of the services provided).

DOCUMENTATION THAT SHOULD BE SUBMITTED WITH PROPOSAL:

- Exhibit B: Certification Regarding Debarment, Suspension, and Other Responsibility Matters – Primary Covered Transactions
- Exhibit C: Campaign Contribution Disclosure Form
- Exhibit D: Verification of Authorized Offeror
- Exhibit E: Deviations from RFP and Coverage Requirements
- Proposed Use Agreement or Terms of Use for Online Customer Access (if applicable)

PROPOSAL EVALUATION CRITERIA: As described and/or demonstrated in the RFP response.

	Criteria As defined in "Proposal Format" above	Weighted Points
1	Effectiveness and Efficiency of Process	30
2	Experience and Expertise	20
3	Cost Proposal	20
4	References	20
5	Completeness of Proposal	15
	Total Score	105

Exhibit "B"

**CERTIFICATION REGARDING DEBARMENT, SUSPENSION, AND
OTHER RESPONSIBILITY MATTERS – PRIMARY COVERED TRANSACTIONS
RFP NO: 21-57**

RFP Name: Accounts Receivable Collection Services

This document should be returned with RFP submittal.

- (1) I or We, _____ (the "Vendor") hereby certify to the best of our knowledge and belief that neither the Vendor nor any of its principals:
- (a) are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any federal, state, or local department or agency;
 - (b) have, within a 3-year period preceding this proposal, been convicted of or had a civil judgment rendered against them for - commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state, or local) transaction or contract under a public transaction; violation of federal or state antitrust statutes; or commission of embezzlement, theft, forgery, bribery; falsification or destruction of records; making false statements; or receiving stolen property;
 - (c) are presently indicted for or otherwise criminally or civilly charged by a governmental entity (federal, state, or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and
 - (d) are not considered to be an "immediate family member" of a County employee or public official. Immediate family means the employee's or public official's spouse, parents, step-parents, child, step-child, sibling, step-sibling, half-sibling, grandparent, grandchild, aunt, uncle, niece, nephew, or their in-laws, or an individual claimed by the public official or his/her spouse as a dependent under the United States Internal Revenue Code.
 - (e) have within a 3-year period preceding this Application had one or more public transactions (federal, state, or local) terminated for cause or default.
- (2) If we are unable to certify to any of the statements in this certification, we shall attach an explanation hereto.
- (3) Certification to any of the statements in this certification will be thoroughly reviewed, and may not necessarily preclude the Vendor from consideration for award.
- (4) Falsification of any statement in this Form shall constitute grounds for non-consideration of the vendor's proposal or rescinding of a contract award.

Date

Authorized Representative's Signature

Print Name

Print Title

Exhibit “C”

CAMPAIGN CONTRIBUTION DISCLOSURE FORM

RFP NO: 21-57

RFP Name: Accounts Receivable Collection Services

This document should be returned with RFP submittal.

Any prospective contractor seeking to enter into a contract with the Incorporated County of Los Alamos must file this form disclosing whether they, a family member or a representative of the prospective contractor has made a campaign contribution to an applicable public official during the two (2) years prior to the date on which prospective contractor submits a proposal or, in the case of a sole source or small purchase contract, the two (2) years prior to the date prospective contractor signs the contract, if the aggregate total of contributions given by the prospective contractor, a family member or a representative of the prospective contractor to the public official exceeds TWO HUNDRED FIFTY DOLLARS (\$250.00) over the two (2) year period.

THIS FORM MUST BE FILED BY ANY PROSPECTIVE CONTRACTOR WHETHER OR NOT THEY, THEIR FAMILY MEMBER, OR THEIR REPRESENTATIVE HAS MADE ANY CONTRIBUTIONS SUBJECT TO DISCLOSURE.

The following definitions apply:

“Applicable public official” means a person elected to an office or a person appointed to complete a term of an elected office, who has the authority to award or influence the award of the contract for which the prospective contractor is submitting a competitive sealed proposal or who has the authority to negotiate a sole source or small purchase contract that may be awarded without submission of a sealed competitive proposal.

“Campaign Contribution” means a gift, subscription, loan, advance or deposit of money or other things of value, including the estimated value of an in-kind contribution, that is made to or received by an applicable public official or any person authorized to raise, collect or expend contributions on that official's behalf for the purpose of electing the official to either statewide or local office. “Campaign Contribution” includes the payment of a debt incurred in an election campaign, but does not include the value of services provided without compensation or unreimbursed travel or other personal expenses of individuals who volunteer a portion or all of their time on behalf of a candidate or political committee, nor does it include the administrative or solicitation expenses of a political committee that are paid by an organization that sponsors the committee.

“Contract” means any agreement for the procurement of items of tangible personal property, services, professional services, or construction.

“Family member” means a spouse, father, mother, child, father-in-law, mother-in-law, daughter-in-law or son-in-law of:
(a) a prospective contractor, if the prospective contractor is a natural person; or
(b) an owner of a prospective contractor;.

“Pendency of the procurement process” means the time period commencing with the public notice of the request for proposals and ending with the award of the contract or the cancellation of the request for proposals.

“Person” means any corporation, partnership, individual, joint venture, association or any other private legal entity.

“Prospective contractor” means a person who is subject to the competitive sealed proposal process set forth in the Procurement Code or is not required to submit a competitive sealed proposal because that person qualifies for a sole source or a small purchase contract.

“Representative of a prospective contractor” means an officer or director of a corporation, a member or manager of a limited liability corporation, a partner of a partnership or a trustee of a trust of the prospective contractor.

DISCLOSURE OF CONTRIBUTIONS: (Report any applicable contributions made to the following - COUNTY COUNCILORS: Denise Derkacs; David Izraelevitz; David Reagor; James Robinson; Randal Ryti; Sara Scott; and Sean Williams.)

Contribution Made By:			
Relation to Prospective Contractor:			
Name of Applicable Public Official:		Governor _____	
Contribution(s) Date(s)	Contribution Amount(s):	Nature of Contribution(s):	Purpose of Contribution(s):
	\$		
	\$		
	\$		
	\$		
	\$		

(Attach extra pages if necessary)

Signature

Date

Title (position)

—OR—

NO CONTRIBUTIONS IN THE AGGREGATE TOTAL OVER TWO HUNDRED FIFTY DOLLARS (\$250.00) WERE MADE to an applicable public official by me, a family member or representative.

Signature

Date

Title (position)

Exhibit "D"

VERIFICATION OF AUTHORIZED OFFEROR

RFP NO: 21-57

RFP Name: Accounts Receivable Collection Services

This document should be returned with RFP submittal.

Sec. 31-261. - State and local preferences.

(a) *Definitions.* For the purposes of this section:

- (1) The terms "resident business" and "resident veteran business" shall be defined as set out in NMSA 1978, § 13-1-21;
- (2) The term "local" as applied to a business shall mean that it meets the requirements of the above definition, maintains its principal office and place of business in Los Alamos County, and has a required Los Alamos County business license.

(b) *Requirements for preference qualification.* The chief purchasing officer shall determine if a preference is applicable to a particular bid or offer on a case-by-case basis. A bidder or offeror must submit a written request for preference, with a copy of the state-issued preference certificate, with its bid or proposal to qualify for this preference.

- (1) If a corporation, it shall be incorporated in New Mexico and maintain its principal office and place of business in the state;
- (2) A person shall have qualified with the state chief purchasing officer as a resident business or resident veteran business and obtained a certification number as provided in NMSA 1978, § 13-1-22.

(c) *Preference factor.*

- (1) The preference factor for qualifying resident and local businesses applied to bids and proposals shall be five percent.
- (2) The preference factor for qualifying resident veteran businesses shall be in accordance with the requirements set forth in NMSA 1978, § 13-1-21.

(d) *Invitations for bids.* When bids are received, the price quoted by the qualifying vendor shall be multiplied by 0.95. After application of the preference factor, the contract shall be awarded to the lowest bidder. If one or more low prices are equal, the bid shall be awarded with respect to the next category of offerors listed below, and the next, until an offer qualifies for award. The priority of categories of offers is as follows:

- (1) Local business;
- (2) Resident business.

(e) *Requests for proposals.* When proposals are received, the total evaluation score with or without the cost factor of each proposal received from a qualifying vendor shall be multiplied by 1.05. After application of the factor, the contract shall be awarded to the highest score. If one or more scores are equal, the same procedure shall be followed with respect to the next category of offerors listed, and the next, until an offer qualifies for award. The priority of categories of offerors is the same as listed in subsection (d) of this section.

(f) *Exemptions from preferences.* The resident and local preference specified in this article shall not be applied:

- (1) To requests for qualifications;
- (2) To any purchase of goods or services in excess of \$500,000.00;
- (3) When the expenditure of federal funds designated in whole or in part for a specific purchase is involved; or
- (4) When the expenditure of grant funds, a condition of which prohibits a local preference, is involved.

(Ord. No. 02-098, § 2, 12-2-2008; Ord. No. 02-305, § 8, 2-25-2020)

Are you requesting Preference?

☐ YES

☐ NO

By answering "yes," the bidder or offeror is submitting a written request for preference.

A Bidder or Offeror must submit a copy of the state-issued preference certificate with its bid or proposal to qualify for this preference.

Having read the proposal conditions and examined the scope of services and deliverables for this RFP, this Proposal is hereby submitted by:

Signature and Printed Name of Authorized Offeror Title

Organization's Legal Name State of Incorporation

Email Address

Mailing Address City State Zip Code

Physical Address City State Zip Code

Telephone No.

Federal Tax I.D. # NM CRS # (if located in-state)

Contract Manager Printed Name, Title and Email Address

If your firm meets the definition of one or more of the types of business described below as defined by the Small Business Administration, please check the appropriate box:

- ☐ Small Business
- ☐ Woman-owned Business
- ☐ Minority-owned Business

RFP Name: Accounts Receivable Collection Services

(Offeror must cite specific deviations, if applicable. If none are applicable, please indicate such and sign this exhibit)

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Exhibit "G"
INFORMATION RELATED TO THE SCOPE OF WORK
RFP NO: 21-57
RFP Name: Accounts Receivable Collection Services

1. **What collection attempts are performed or will be performed internally prior to placement?**
Utility accounts: When accounts are active, account holders receive letters, phone calls, shut off notices, and then their services are disconnected. Once accounts are final and unpaid, one more letter is automatically generated. In most cases, a second letter is manually produced about a month later. Ambulance Billing: collection attempts are made to the extent of submitting the account information on reviewed aged accounts to a credit bureau after a minimum of 90 days.
2. **Will the selected vendor be allowed to litigate balances exceeding a certain dollar amount on your behalf, with your explicit approval?** No.
3. **What is the total dollar value of accounts available for placement now by category, including any backlog?** Approximately \$205,000 in utility, landfill, misc. receivable accounts; Ambulance billing: approximately \$100,000 to \$200,000.
4. **What is the total number of accounts available for placement now by category, including any backlog?** Utility, landfill, misc. receivables: approximately 400; Ambulance billing: 250 - 500
5. **What is the average balance of accounts by category?** Utility, landfill, misc. receivables: \$505; Ambulance billing: \$50 to \$400
6. **What is the average age of accounts at placement (at time of award and/or on a going-forward basis), by category?** At time of award, utility, landfill, ambulance and misc. receivable accounts will be placed with awardee. Those accounts will range in age from less than a year to five years. Going forward, accounts will be placed around 120 days past due or sooner.
7. **What is the monthly or quarterly number of accounts expected to be placed with the vendor(s) by category?** Utility, landfill, misc. receivables: approximately 5-10 accounts per month; Ambulance Billing: range of 5 – 10 monthly.
8. **What is the monthly or quarterly dollar value of accounts expected to be placed with the vendor(s) by category?** Utility, landfill, misc. receivables: \$500 to \$1500 per month; Ambulance billing: \$1,000 – \$3,500 monthly.
9. **What has been the historical rate of return or liquidation rate provided by prior collections contracts, and/or what is anticipated or expected as a result of this procurement?** 15% historically.
10. **What is your current internal process if you determine the debtor may be deceased?**
Utility, landfill, misc. receivables: the estate is billed. If an account remains unpaid for 4 years, it is

typically written off at the end of the fourth fiscal year. Ambulance billing accounts unpaid at the end of the fourth fiscal year are reviewed by Los Alamos County Council for approval of write-off.

11. **What is your current process if any external collection agency vendor informs you the debtor may be deceased?** Depends on evidence provided.
12. **If applicable, will accounts held by incumbent or any backlog be moved to any new vendor(s) as a one-time placement at contract start up?** Yes.



INCORPORATED COUNTY OF LOS ALAMOS

101 Camino Entrada, Building 3
Los Alamos, New Mexico 87544 (505) 661-4568
Procurement Division

June 15, 2021

TO ALL HOLDERS OF SOLICITATION DOCUMENTS FOR:

Request for Proposals No. RFP21-57
RFP Name: Accounts Receivable Collections Services

Addendum No. 1

This Addendum No. 1 forms a part of the Solicitation Documents and modifies, as noted below, the original Solicitation Documents identified above.

This Addendum provides questions received and the County's answers to all potential Offerors/Proposers:

- 1) Why has this bid been released at this time?
 - a) The previous contract for accounts receivable collection services ended in 2018. County does not have resources in-house to perform these services and has determined a need to reinstate these services.
- 2) Can you please provide greater explanation of your expectations related to any required subcontracting to minority-owned, women-owned, or other types or categories of small or disadvantaged businesses? For example, what is required with the proposal, and what is required to comply during the term of the contract?
 - a) There is no specific expectation or preference for minority-owned, women-owned, small or disadvantaged businesses or subcontractors for this RFP. Offeror is welcome to describe its capacity in this regard.
- 3) Are bidders permitted to deviate in any way from any manner of quoting fees you may be expecting? For example, if there is a pricing page in the RFP, can bidders submit an alternate fee structure? If there is no pricing page in the RFP, do you have any preference for how bidders should quote fees or can bidders create their own pricing categories?
 - a) There is no pricing page in the RFP, and a fees structure is required for the RFP submission and is a graded criterion for selection.
- 4) Please describe your level of satisfaction with your current or recent vendor(s) for the same purchasing activity, if applicable.

- a) No current contract is in place for these services.
- 5) Has the current contract gone full term?
- a) No current contract is in place for these services.
- 6) Have all options to extend the current contract been exercised?
- a) No current contract is in place for these services.
- 7) Who is the incumbent, and how long has the incumbent been providing the requested services?
- a) There is no incumbent for the County providing these services.
- 8) How are fees currently being billed by any incumbent(s), by category, and at what rates?
- a) No current contract is in place for these services.
- 9) What is the collection success rate (recovery rate/liquidation percentage) of the current incumbent(s)?
- a) No current contract is in place for these services.
- 10) What estimated or actual dollars were paid last year, last month, or last quarter to any incumbent(s)?
- a) There is no incumbent in place, nothing was paid for these services in the last fiscal year.
- 11) To how many vendors are you seeking to award a contract?
- a) One vendor will be selected for this contract.
- 12) To what extent are these accounts owed by private consumers versus commercial businesses?
- a) Ambulance billing will be 100% private customer. Utilities is approx. 90% residential and 10% commercial.
- 13) Will accounts be primary placements, not having been serviced by any other outside collection agency, and/or will you also be referring secondary placements? If so, should bidders provide proposed fees for secondary placements also?
- a) Accounts over 120 days past due placed with the selected Offeror will be primary placements.
- 14) What collection attempts are performed or will be performed internally prior to placement?
- a) Los Alamos County billing and customer support staff currently work with customers to set up payment plans or bring accounts to current via phone calls, letters, door tags, and disconnection of utility services. Los Alamos County will also place liens on properties if

applicable. Ambulance billing is handled through a third-party biller who collects payments and sets up payment plans. After a third statement is sent with no response, outstanding balances would be referred directly to the selected Offeror.

15) What is the average age of accounts at placement (at time of award and/or on a going-forward basis), by category?

a) Ambulance and utility billing accounts will be at least 120 days.

16) What billing servicer do you utilize?

a) The County has its own billing staff and uses its ERP system to generate all bills for utility customers. Ambulance billing is handled by Credit Bureau Systems, Inc. dba Ambulance Medical Billing (AMB).

17) Have all cases been fully adjudicated by the time of placement?

a) Yes.

18) If applicable, will accounts held by any incumbent(s) or any backlog be moved to any new vendor(s) as a one-time placement at contract start up?

a) No accounts are currently held with any other vendor. All accounts will be placed directly with the selected Offeror from the county or AMB.

19) What is your case management/accounting software system of record?

a) The county currently uses Tyler Munis as its ERP and billing software. This system has been in place since 2018. AMB for ambulance billing uses their own management/accounting software.

20) Who is your electronic payment/credit card processing vendor?

a) Utility billing currently uses Paymentus for payment/credit card processing. For ambulance billing, a third-party vendor, AMB, contracts their own payment/credit card services.

21) What process should a vendor follow, or which individual(s) should a vendor contact, to discuss budget-neutral services outside of the scope of this procurement, but related to it, designed to recover more debt prior to outside placement and lower collection costs?

a) The County does not require the Offeror to go outside the scope of work identified in the RFP.

22) How do your current processes and/or vendor relationship(s) systematically determine if the death of a responsible party has occurred?

a) Ambulance billing requests the death certificate from next of kin. Utilities is usually notified by family members, but no process is in place.

- 23) How do your current processes and/or vendor relationship(s) handle the death of a responsible party?
- a) No process is currently in place. Estate is currently held responsible.
- 24) Do you have a designated process or policies around deceased accounts today, and what is envisioned in the future?
- a) Past due deceased accounts are currently treated as any other account, and if attempts to collect are unsuccessful after 120 days, the account would be placed with the collections agency. Offerors should include in their proposals their capacity and processes to collect on deceased accounts.
- 25) Do you currently search and file probated estate claims? Have you considered an automated tool to identify and file probated estate claims?
- a) No. Offerors should include in their proposals their ability to provide automated tools to identify and file probated estate claims.
- 26) Can you confirm if this procurement replaces the one that was issued in 2013?
- a) Yes, it does.
- 27) With what frequency will accounts be referred (i.e., weekly, monthly, etc.)?
- a) Monthly.
- 28) With what frequency will the County provide update/payment files to the contractor (i.e., daily, weekly, etc.)?
- a) As needed based on occurrence.
- 29) Is there a backlog of accounts that will be referred to awarded vendors? If yes, what is the TOTAL dollar value and number count of this backlog?
- a) Please refer to the RFP.
- 30) What is the average age of any backlog accounts to be referred?
- a) Five (5) years or less.
- 31) Will the inventory currently assigned to existing agencies be pulled and sent to any new agencies awarded? If yes, what is the estimated volume (# and \$ value) and the average age of the accounts to be re-referred to a new agency?
- a) There is no incumbent or vendor currently performing collection efforts for the County as described in the RFP.
- 32) What percentage of accounts will have a judgment in place at the time of referral, if any?

- a) It is unclear what is meant by “judgement.” The percentage of accounts placed with the selected Offeror will change with the business need.

33) Will the County continue any collection efforts on accounts after referral to the agencies? If yes, please describe those efforts?

- a) The County will not continue collection efforts on accounts after referral but will accept payments and will notify selected Offeror of any collections made on referred accounts. Please see page 4, item 8 of the RFP.

34) Page 2, Items 10 & 11: These section state that the term of the contract will be up to (7) years and that the bidder must propose pricing for each year. Please confirm that you would like seven (7) line items of pricing, one for each (potential) year of the contract.

- a) Yes, please provide a chart of total costs/pricing for each year of the total term of contract.

35) Page 3, Item 12: Does the County wish for the bidders to supply copies of its license/COA with the proposal or is this only required after contract award?

- a) Offerors are not required to provide this documentation in their Proposals, but those who possess it at the time of the Proposal are asked to include it. Prior to entering into a contract, the selected Offeror must prove that they are in good standing with the state of New Mexico and must procure a certificate of authority to transact business in the state of New Mexico as stated in Item 12 of the RFP. It is the responsibility of Offerors to know, understand, and comply with the requirements for specific license(s) for this work. Offerors should consult with their own attorneys to ensure compliance with all licensing requirements. Offerors may also choose to visit the New Mexico Regulation and Licensing Department website. The website address is provided as a courtesy below, but should not be construed as being an all-inclusive list of requirements.

http://www.rld.state.nm.us/financialinstitutions/Collection_Agencies_Managers_and_Rep_ossessors.aspx

36) Page 3, Item 13: Please advise what weight (if any) is applied for ‘preference’ in the evaluation scoring. (For example, does a preferred vendor receive additional points towards its overall evaluation score vs. non-preferred vendors)?

- a) Refer to the Proposal Review and Evaluation section of the RFP. The total evaluation score with or without the cost factor of each proposal received from a qualifying vendor, as defined in Exhibit D of the RFP, shall be multiplied by 1.05. After application of the factor, the contract shall be awarded to the highest score. If one or more scores are equal, the same procedure shall be followed with respect to the next category of offerors listed, and the next, until an offer qualifies for award. The priority of categories of offers is as follows:(1) Local business; (2) Resident business.

37) Page 6, Item 4 “References”: Is it acceptable to submit more than three (3) references?

a) Yes, more than 3 references are acceptable, however, no additional points will be awarded for submitting more than 3 references.

38) Do we understand the following correctly? The County currently has a vendor for accounts aged under 120 days, but is seeking a vendor for accounts aged over 120 days.

a) The County currently conducts its own efforts for accounts aged less than 120 days for ambulance billing and utility billing. County is seeking a vendor for accounts that are past due 120 days or greater.

39) Page 19, question #9 indicates a historical liquidation rate of 15%. Please confirm that 15% pertains to accounts older than 120 days.

a) Yes, this pertains to accounts that are over 120 days.

40) Page 3, "Background," reads, "The County anticipates ambulance receivables turned over for collection services will total between \$50,000-\$150,000 per year." However, page 19, question #8 indicates that at best, the annual placements might be \$60,000. Which figure is more likely?

a) Current research indicates approx. \$82,000 annually on average. These numbers are based on many variants which is why the range was provided.

All other provisions of the Solicitation Documents shall remain unchanged. This Addendum No. 1 is hereby made a part of the Solicitation Documents to the same extent as those provisions contained in the original documents and all itemized listings thereof.

Each Respondent is requested to acknowledge receipt of this Addendum No. 1 with the Proposal Forms.

I hereby acknowledge receipt of this Addendum No.1.

Signed	Print Name	Date
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Title	Company
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County of Los Alamos

Staff Report

November 17, 2021

Los Alamos, NM 87544
www.losalamosnm.us

Agenda No.:

Index (Council Goals): DPU FY2021 - 2.0 Achieve and Maintain Excellence in Financial Performance

Presenters: Steve Cummins

Legislative File: 15085-21

Title

Recommendation to Council for Approval and Adoption of Incorporated County of Los Alamos Code Ordinance No 02-324, An Ordinance Amending Chapter 40, Article II, Division 2, Section 40-63 to Extend the Option of Redirecting Department of Public Utilities Profit Transfers by Council Action to the Joint Utility System Fund for Purposes Designated by the Council.

Recommended Action

I move that the Board of Public Utilities recommend to Council approval and adoption of Incorporated County of Los Alamos Code Ordinance 02-324 as presented.

..Utilities Manager & Staff Recommendation

The Utilities Manager and Staff recommends approval of the motion as presented.

Body

On February 25, 2020, Incorporated County of Los Alamos Code Ordinance No 02-302 was adopted by County Council to redirect profit transfer from both the gas and electric utilities for a period of three years from FY 2020 until FY 2022. As part of the FY 2022 Budget preparation, DPU staff had prepared a 10-Year Profit Transfer Budget Options for renewal and replacement of utility infrastructure that supports the need to extend this period for an additional ten years. The BPU/Council sub-committee discussed in October 2021 and recommended to extend this period for another 10 years. To extend this Ordinance for another ten years it requires the ordinance modify the dates under Section 40-63 (12) (c) until 2032. This simple revision enables the Council to redirect the profit transfers within the DPU for purposes as specified by the Council for accelerating investment in utility infrastructure.

Alternatives

The BPU could elect to wait to endorse these items pending further discussion, however because of the budget preparation, review, and approval process and schedule, such action would result in having to prepare two drafts of the FY23-24 Budget, one including the profit transfer, and another with no profit transfer. The BPU/Council sub-committee, CAO, CMO and DPU staff have reviewed the proposed revisions and collectively endorsed moving forward as proposed.

Fiscal and Staff Impact

As part of the FY22 Budget, Staff presented a 10-year capital improvement plan that exclusively used the profit transfer proceeds that are redirected back to the DPU for renewal and replacement CIP projects. This program is approximately \$820,000 per year that benefits the Utility. Most of these renewal and replacement projects proposed on this CIP list are designed in house and coordinated with Public Works road construction projects.

Attachments

A - Incorporated County of Los Alamos Draft Code Ordinance No. 02-324

INCORPORATED COUNTY OF LOS ALAMOS CODE ORDINANCE 02-324

AN ORDINANCE AMENDING CHAPTER 40, ARTICLE II, DIVISION 2, SECTION 40-63 TO EXTEND THE OPTION OF REDIRECTING DEPARTMENT OF PUBLIC UTILITIES PROFIT TRANSFERS BY COUNCIL ACTION TO THE JOINT UTILITY SYSTEM FUND FOR PURPOSES DESIGNATED BY THE COUNCIL

WHEREAS, the Incorporated County of Los Alamos ("County") is an incorporated county of the State of New Mexico as provided in Section 5, Article 10 of the New Mexico Constitution; and

WHEREAS, County Charter Section 506 requires that the County and its Department of Public Utilities ("DPU") through its Board of Public Utilities ("BPU") include in its annual budget requirements an amount for payment of in lieu of franchise fees and the taxes that would be normally assessed against privately owned gas and electric utilities; and

WHEREAS, the Council has established in the County Code of Ordinances ("Code"), in Chapter 40, Article II, Division 2 codes reflecting these Charter requirements; and

WHEREAS, one of the Charter requirements in Section 509, is to transfer any remaining operating profits to the County's General Fund; and

WHEREAS, in County Ordinance 02-302 adopted by Council on February 25, 2020, to which provided, in part changes to Section 40-63 of the County Code of Ordinances ("Code4"); and

WHEREAS, Section 40-63(c)(12)(iii) provided for the fiscal years 2020 through 2022 that the Council would be authorized to, prior to transferring specified profits on the County's electric and natural gas systems from the Department of Public Utilities to the County's General Fund, to return or redirect the General Fund profits back to specific DPU projects; and

WHEREAS, the County's Board of Public Utilities and Council wish to extend the time in which Council has this option to return and redirect the General Fund profit transfers; and

NOW, THEREFORE, BE IT ORDAINED BY THE GOVERNING BODY OF THE INCORPORATED COUNTY OF LOS ALAMOS:

Section 1. Chapter 40, Article II, Division 2, Section 40-63 of the County Code of Ordinances of the Incorporated County of Los Alamos is hereby amended as follows:

Sec. 40-63. - Budget.

(a) Generally. The board shall submit a proposed budget to the council for adoption in accordance with article V, sections 506 and 509 of the Charter. The annual budget shall be a complete financial plan for the ensuing fiscal year, consisting of an operating and a capital budget conforming to article V, section 509 of the Charter, and the items listed in subsection (c) of this section. Should the council fail to adopt the department's proposed budget on or before the start of the ensuing fiscal year, the latest approved budget of the department shall be the budget of the department until the council adopts a new budget for the ensuing fiscal year. Budget changes shall be recommended by the board to the council for consideration for approval.

(b) Financial review. After publication of audited financial statements, BPU shall review the results from the previous fiscal year and the related updated ten-year projections of rates and revenues, funding of reserves (the schedule of funds) and capital project program plan as submitted to it by the director. Based upon this review, the board shall determine and recommend to the council for their consideration and approval, as part of the annual budget submission, the following possible changes to the ten-year projections:

- (1) Rate adjustments;
- (2) Adjustments to schedule of funds;
- (3) Adjustments to the capital program;
- (4) Designation of any additional specific remaining amounts as operating profits transfers to the general fund beyond those planned for as indicated in subsection (c)(12).

(c) Budget items. The budget shall include, but not be limited to:

- (1) A projection of revenues from commodity sales of each utility system by customer type, interest income, service fees and other sources;
- (2) Reserve accounts required by the Charter, bond ordinances and bond indentures;
- (3) A projection of normal expense for each utility system;
- (4) A projection of funds required for each replacement and addition and improvement project and a statement of objectives and schedule for their completion;
- (5) A projection of funds needed for contingencies;
- (6) A schedule of funds in accordance with section 40-65;
- (7) A capital-asset budget indicating new equipment associated with department projects;
- (8) A projection of bond payments, redemptions and other transactions under the bond ordinance or indentures;
- (9) A staffing schedule of the department showing the number of persons assigned to department projects and programs and changes therein for the fiscal year;
- (10) A ten year plan update showing the status of the replacement and addition and improvement projects of the department;
- (11) The disposition of net county revenues, if any, generated as a result of economy energy sales, bulk power sales, or brokered power sales shall be governed by subsection (b) of this section;

(12) A profit transfer. Charter section 509 anticipates possible profit transfers from the utility system to the general fund. The county as owner should have a return on its investment in the utility system. It is also prudent fiscal management to plan for a specific level of return. Therefore, this paragraph clarifies that expectation and sets the following budget policy:

a. After providing for the items specified in Charter section 509 1. through 5., the budget shall include an amount for planning purposes for each fiscal year of at least five percent of the electric and gas utilities gross retail revenue and exclusive of that from the county and schools for commodities for their sole use, and an additional amount representing a percentage of the revenue from the department of energy, generated as a result of the department of energy/county joint power pool coordination agreement, for transfer to the general fund as operating profits.

b. After completion and approval of the county's audit, the profit transfer amount for the current fiscal year shall be calculated based upon actual audited revenues from the previous fiscal year. Those calculated amounts will be presented to council to approve as profit transfers to the general fund in the current fiscal year.

c. For the period of fiscal years 2020 through 2032, after approval of the profit transfer amounts, but prior to the transfers occurring, the council may, through formal action, re-direct these amounts to be used within the joint utility system fund for purposes designated by the council. Those purposes may include, but are not limited to, accelerating investment in utility infrastructure, investing in utility infrastructure to facilitate coordination with roads projects, investing in utility infrastructure to facilitate economic development and housing projects, facilitating utility debt restructuring, and transferring funds between individual utility sub-funds.

(d) Capital project program plan. In addition to items listed in subsection (c) of this section, the utilities board shall submit a capital project program plan which includes the following information concerning any planned capital project: program justification, funding sources, a proposed schedule and completion date, breakdown of elements into projected contracts with estimated costs; and other necessary financial information.

(e) Plan approval. A capital project program plan approved by the council shall require no further council action aside from the normal consent calendar process except any contract costs or commitments which exceed, or are anticipated to exceed, the total original budget estimates.

(f) Written notice. The utilities board shall provide notice, in writing, for its approval of any deviation from the capital project program plan to the council.

Section 2. Effective Date. This Ordinance shall become effective thirty (30) days after notice is published following its adoption.

Section 3. Severability. Should any section, paragraph, clause or provision of this ordinance, for any reason, be held to be invalid or unenforceable, the invalidity or unenforceability of such section, paragraph, clause or provision shall not affect any of the remaining provisions of this ordinance.

Section 4. Repealer. All ordinances or resolutions, or parts thereof, inconsistent herewith are hereby repealed only to the extent of such inconsistency. This repealer shall not be construed to revive any ordinance or resolution, or part thereof, heretofore repealed.

ADOPTED this _____ day of _____ 2021.

**COUNCIL OF THE INCORPORATED COUNTY
OF LOS ALAMOS**

**Randall T. Ryti,
Council Chair**

ATTEST: (Seal)

**Naomi D. Maestas
Los Alamos County Clerk**



County of Los Alamos

Staff Report

November 17, 2021

Los Alamos, NM 87544
www.losalamosnm.us

Agenda No.:

Index (Council Goals): DPU FY2020 - 1.0 Provide Safe and Reliable Utility Services; DPU FY2021 - 3.0 Be a Customer Service Oriented Organization that is Communicative, Efficient, and Transparent; DPU FY2021 - 6.0 Develop and Strengthen Partnerships with Stakeholders

Presenters: Steve Cummins

Legislative File: 15027-21

Title

Presentation of the 2021 Electric Reliability Plan

Recommended Action

No Action-Discussion and BPU feedback

Staff Recommendation

No Recommendation, For Discussion and BPU feedback

Body

DPU continually updates the Electric Reliability Plan as a working document to capture the current distribution system conditions resulting from our Asset Management Program and direction from the Board of Public Utilities. The plan also includes some historical information for context. It is intended to be a guide for the Electric Distribution Asset Management Team. The document is not intended to be a published report and is provided here to facilitate a high level discussion with our governing bodies.

Staff will walk the Board through the updated 2021 Electric Reliability Plan with the goal of seeking feedback and consensus on the report. Staff will also address the most recent outages along with lessons learned and changes needed within the operation.

Alternatives

None

Fiscal and Staff Impact

No fiscal impact associated with the 2021 Electric Reliability Plan that is updated as a normal part of staff workload.

Attachments

A - 2021 Electric Reliability Plan

LOS ALAMOS COUNTY DEPARTMENT OF PUBLIC UTILITIES

2021 ELECTRIC RELIABILITY PLAN

(FOR INFORMATION & DISCUSSION ONLY)

Stephen Marez, PE, PMP
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Executive Summary

This report is the update to the Electric Reliability Plan “ERP” and is a living-document. The purpose for this report is to have a path forward to achieve and maintain a SAIDI (System Average Interruption Duration Index) of 60 minutes or less for the residents of Los Alamos County.

As the SAIDI illustrates, there has been success in the strategy to address and improve the system reliability. However, and because of the single substation source in the Los Alamos town site and White Rock, there is a single point of failure that can cause the loss of power to a large portion of our customers.

The Los Alamos County Department of Public Utilities “DPU”, electric distribution “ED” spends most of its operational budget on pro-active and preventive Operations and Maintenance (O&M) and constructs capital projects to improve the system reliability. Section VII of this report provides a summary of the many major system reliability improvement projects completed over the past ten years.

Los Alamos County now has over 333 customers in process or connected to the utility with Solar system installations. The connected load is 3,039 kW with 278 kW pending (as of 11-1-21). The Department goal for distributed generation is 6,000 kW (6 MW), including the 1 MW utility scale solar facility at the Eco Station.

The installation of new Advanced Metering Infrastructure (AMI) system improved outage response times with the implementation of the outage identification. The new Sensus meter software allows staff to see all meters affected by an outage and respond directly to the affected area, eliminating more extensive troubleshooting and inspections previously needed to identify the source an outage. When an outage is detected or reported, the utility will access the scope of the outage and begin the customer notification process.

Projects within the county have been delayed due to the Covid pandemic and are experiencing continued delays associated with the ongoing supply chain issues.

The Electric Distribution (ED) shop is divided into three crews. The first is a 4-person crew assigned primarily to the overhead distribution system, replacing rotten poles, weathered cross-arms and aged or obsolete transformers. The challenge with the overhead distribution system is that a portion of it is at least 40 years of age and operating near or past its useful life. The second is a 3-person crew primarily dedicated to pro-actively replacing live-front and obsolete switchgear, transformers, and sections of underground power lines that have failed multiple times. Line crews also convert old un-insulated service lines to newer insulated service lines. The third is a 3-person crew that primarily works on major capital improvement projects, replacing the aged infrastructure but adds improved reliability features such as new line protection facilities, loops, tie-lines, or 3 phase conversions. In recent years ED

has spent a significant amount of time supporting new developments within the County.

As previously noted, the single most important reliability project the department needs to undertake is the construction of a second substation for the Los Alamos town site. The *Los Alamos Switchgear Substation "LASS"* is tentatively planned to be completed within 12 months and located at the County Landfill. The new substation is critical to meet the future electrical supply needs of Los Alamos and maintain the system reliability success ED has demonstrated in the last decade.

The report provides an overview of the existing transmission and distribution system for the Los Alamos County service area, and potential impacts on the overall system reliability. The transmission lines within Los Alamos are owned by DOE-NNSA with the O&M performed by LANL line crews.

The focus and discussion of the ERP is on the electrical distribution system, the department's Asset Management Program (AMP), strategies for short-term and long-term action plans, and their impact on system reliability and revenue requirements.

Power disruptions due to source outages are not included within the reliability statistics of the county as they are not under our control.

I. System Overview:

Los Alamos Power Pool

The Los Alamos Power Pool (Power Pool) is the product of The Electric Energy and Power Coordination Agreement (ECA) between the Los Alamos County Department of Public Utilities and the Department of Energy (DOE) through the National Nuclear Security Administration (NNSA). The Power Pool purchases, sells, and schedules the power required for DPU and Los Alamos National Laboratory (LANL). The Power Pool currently has 93 MW of summer capacity and 78 MW of winter capacity. LAPP purchases market power as necessary to meet the power demand in excess of LAPP's owned capacity, or sells excess power into the market when the power demand is lower than LAPP's capacity.

Los Alamos Transmission System

Public Service Company of New Mexico (PNM) provides 115 kV transmission service into Los Alamos from the Norton and STA substations. PNM also provides primary and back-up relay protection to the DOE-owned transmission lines since we are connected to the bulk electric system within PNM's Balancing Area. DOE has a looped 115 kV transmission system with several substation internal to the Los Alamos County service area. White Rock has its own substation and Townsite is fed from the new TA-3 substation as illustrated in Figure 1. DPU Power System Operators operate the transmission system, manage generation resources, and provide merchant desk services for LAPP, 24 hours per day, 365 days per year.

Remote operations are done via a Supervisory Control And Data Acquisition (SCADA) system, but currently there is limited control over the DPU distribution system. Section VI describes alternatives to expand the SCADA system into the DPU distribution system to improve system reliability.

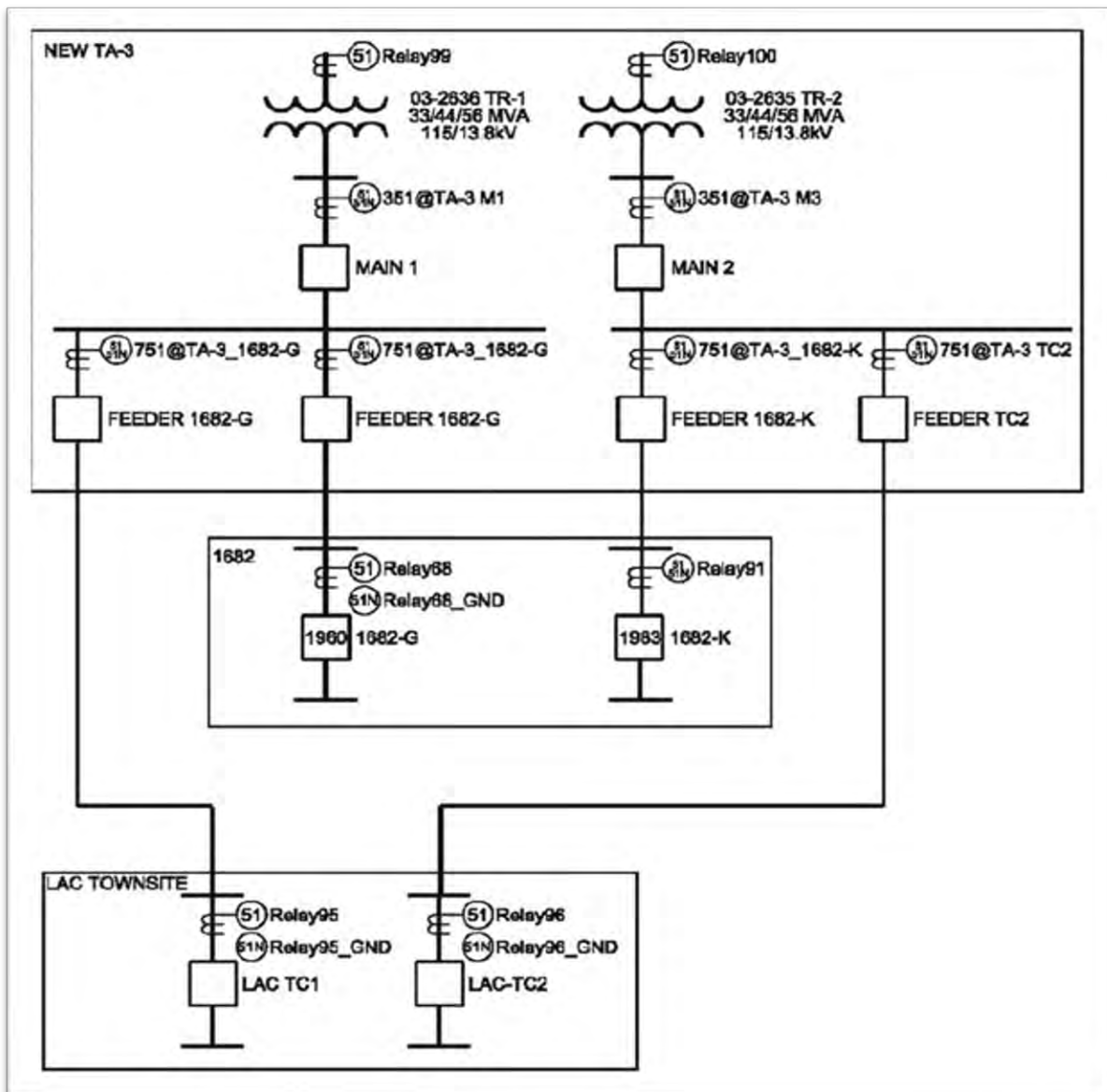


Figure 1. 115KV Transmission lines and TA-3 Substation feed into Los Alamos

Los Alamos Townsite Electric Distribution System

DPU

The Los Alamos Townsite switching station's switchgear, illustrated in Figure 2, provides power to the Los Alamos Townsite community and is fed by LANL's TA-3 substation via two 15 kV express feeders, labelled TC-1 and TC-2; and normally fed from a 30 MVA transformer, labelled TR-1. There is a back-up tie to a second 30 MVA transformer, labelled TR-2. The Townsite switching station bus is configured into two sections, half-bus for TC-1 and half-bus for TC-2. Upon loss of power to TC1 or TC2, DPU can manually transfer the outage bus-section to the energized bus-section.

Circuit 13: Western Area and Ski Hill

Circuit 14: Eastern Area and Pajarito Cliff Site

Circuit 15: Quemazon , NC3, Ponderosa Estates

Circuit 16: North Mesa and Barranca Mesa

Circuit 17: Downtown Commercial North of Trinity

Circuit 18: Downtown Commercial South of Trinity and DP Road

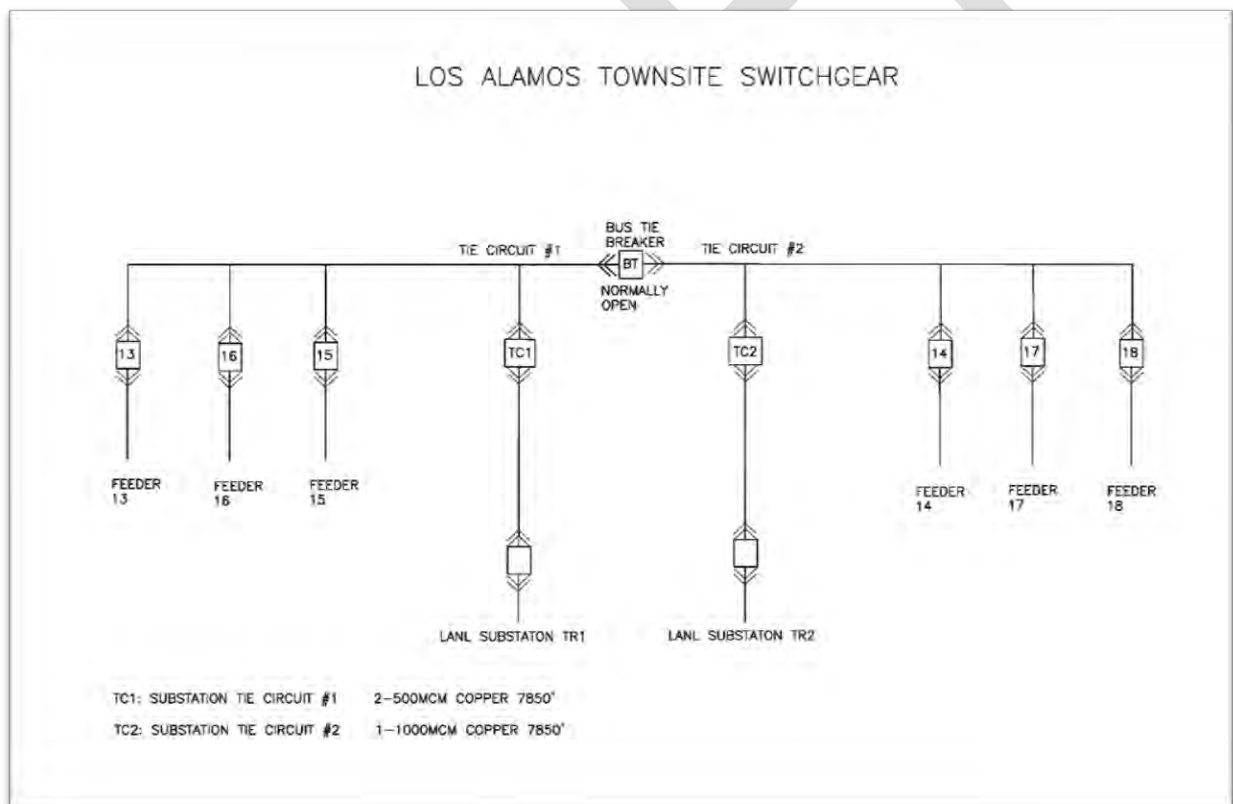


Figure 2. Los Alamos Townsite Switching Station

White Rock Electric Distribution System

The White Rock substation provides power to the White Rock community and consists of primary and back-up 115KV to 12.47 KV transformers with metal-clad switchgear as illustrated in Figure 3. The primary feed TR1 was installed in 2006 and consists of a 10 MVA transformer with metal-clad switchgear. The secondary back-up feed TR2 is the original 50 year old 7.5 MVA transformer and new metal-clad switchgear installed in 2019. The TR2 transformer is also fitted with new primary side breakers. Service is transferred to TR2 when transmission line service is required by LANL or if maintenance on TR1 facilities are required. Switching between the TR1 and TR2 systems is done manually by paralleling both systems. DPU has a switching procedure in place to ensure the paralleling process is conducted safely. Having the back-up substation transformer has great reliability value.

Circuit WR1: East of Rover

Circuit WR2: West of Rover

Circuit WR3: El Mirador Subdivision

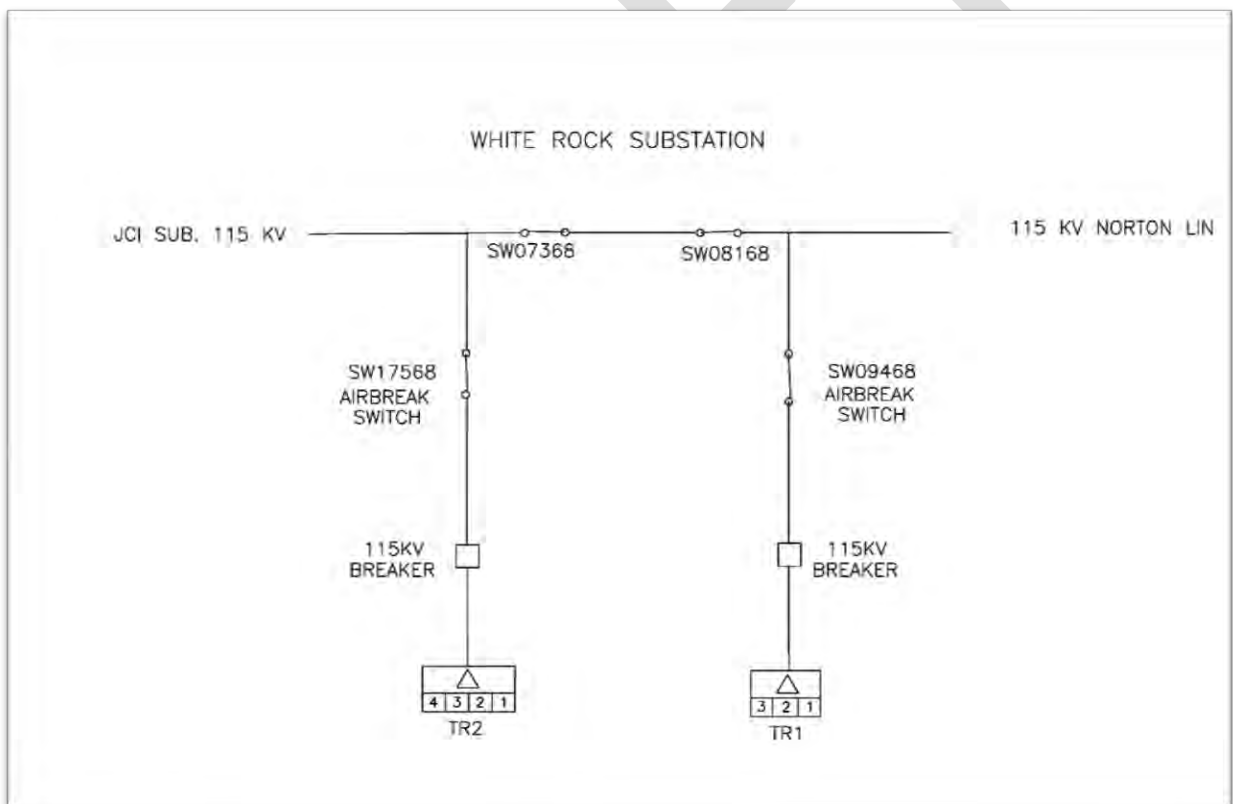


Figure 3. White Rock Substation

Los Alamos County Photovoltaic infrastructure (Landfill Array)

The PV site located at the landfill on East Jemez Road supplies 1.0 MW of energy to the local grid. The integration of the PV sources onto TC-1 and TC-2 is illustrated in Figure 4.

S&C Vista padmounted switchgear is utilized to integrate the PV generation source onto TC-1 and TC-2. The Vista's utilize bi-directional SEL 451 (Schweitzer Engineering Laboratories) relays to accommodate the reverse power flow conditions from the PV site that can support battery storage in the future if needed. The PV site is currently operated by Toshiba's prototype control system called micro-EMS. Currently it is only used for monitoring the solar PV output now that the batteries have been decommissioned. The prototype will need to be replaced in the future if there is a need to control any facilities on the distribution system. The Power Pool does have the capability to provide emergency power to some of its customers upon complete loss of 115KV transmission power to Los Alamos (this procedure has not been tested and would require full cooperation and control from LANL).

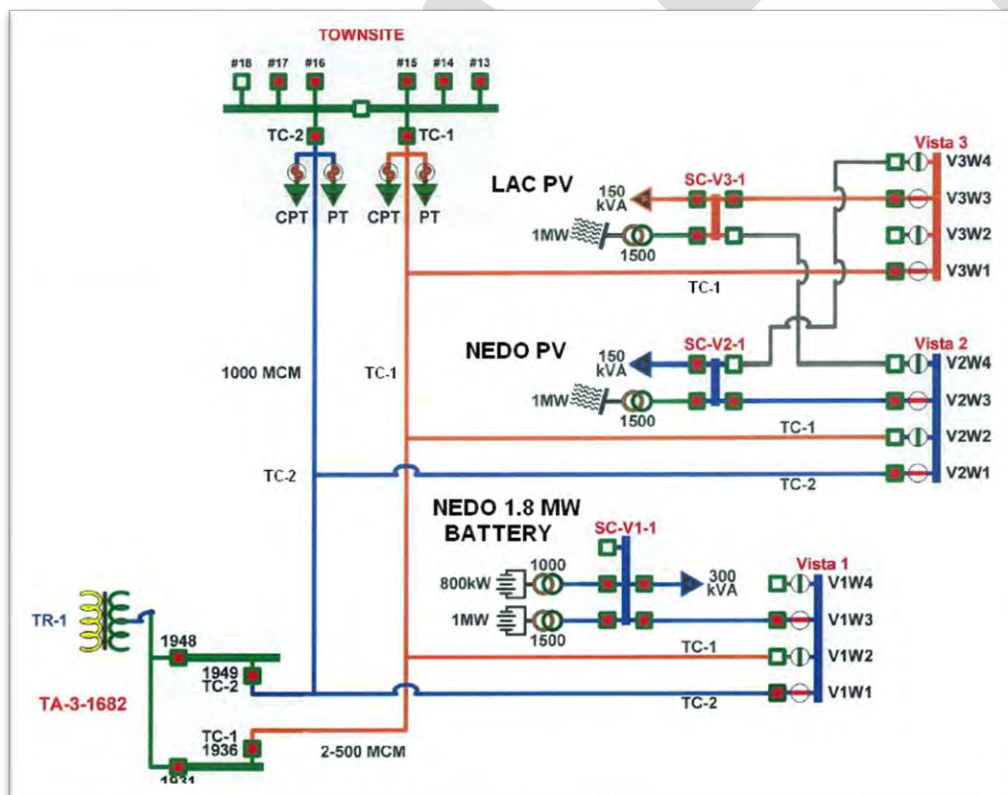


Figure 4. PV Integration onto TC-1 and TC-2

II. Description of Relevant Systems and Impact on Reliability

The Regional Transmission Grid:

There are two 115 KV transmission lines into Los Alamos as illustrated in Figure 5. The transmission line from the Norton Substation to the White Rock Substation is jointly owned by PNM and DOE. PNM owns approximately five miles of the line from Norton to the River and DOE owns approximately 9 miles from the river to the White Rock substation. PNM operates the Norton Substation and DOE-LANL operates the STA substation at PNM's direction. The White Rock, ETA, TA-53, TA-3 and WTA substations are all operated by the Power Pool. The Norton line (NL line) originates at the Norton Substation west of Santa Fe and the Reeves line (RL line) originates at the B-A Substation north of Albuquerque. The two transmission lines are primarily "H" wood structures and are approximately 53 and 46 years old respectively. PNM performs an annual line patrol and maintains the transmission lines to provide reliable and continuous service for Los Alamos.

The RL and NL transmission lines have a service capacity of 115 MVA and 130 MVA respectively and are presently loaded at 77% and 68% of capacity; under a single 115KV transmission line operating condition. Currently DOE-NNSA is completing the National Environmental Policy Act (NEPA) environmental review process for a third 115 kV line from the Norton to the STA substation. Today the need for this third line is primarily driven by LANL's programmatic load forecasts. Looking 10+ years into the future, electrification of the space heating and transportation sectors to achieve DOE and County carbon reduction goals could become a significant driver of transmission capacity needs.

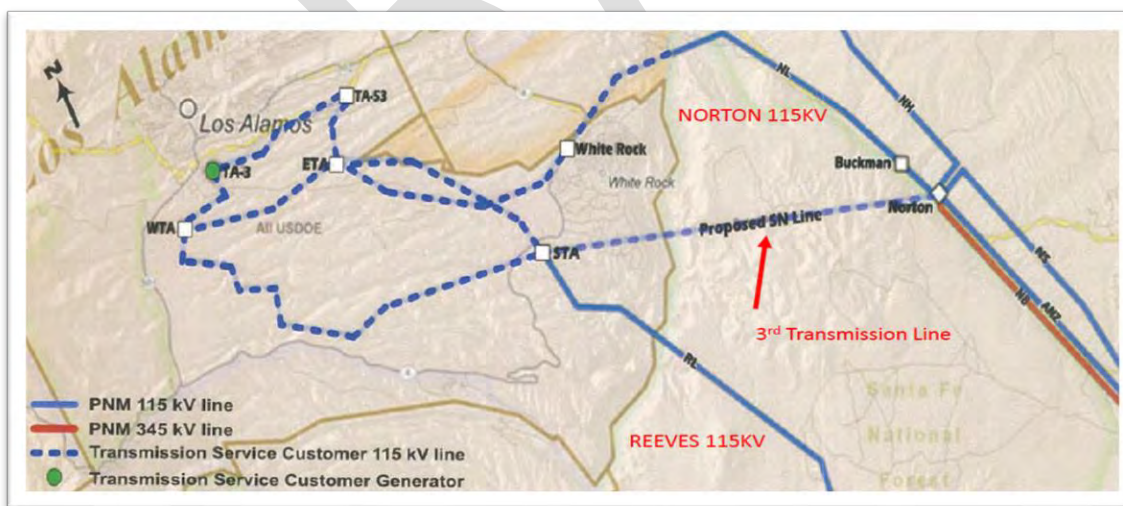


Figure 5. Regional 115KV transmission to Los Alamos

The NL and RL transmission lines are normally operated in a looped configuration. However, there are times when a section of the transmission line is taken out of service due to emergency maintenance or annually to comply with the North

American Electric Reliability Corporation (NERC) service reliability standards. NERC requires that relays and breakers be removed from service and tested periodically to ensure the protective equipment is functional when called upon. However, operating the NL or RL transmission lines in single radial mode exposes Los Alamos to full loss of power should there be a transmission line contact during these NERC testing periods. LANL should continue and ensure that NERC testing is completed when good weather avails. LANL provides DPU with advance notice for scheduled line maintenance, equipment outages, configuration changes, etc. LAC pre-plans and places its engineering and line operations staff on stand-by notice until LANL can place the system back to normal.

Outages due to Gas Supply Shortages

During February 2011, severe cold fronts caused natural gas shortages and outages affecting the northern part of the State. During these natural gas shortage events LAC may be asked to curtail a percentage of their gas use. In the event LAC is asked to curtail some gas load, DPU has developed an electric load shedding plan that will reduce gas heating consumption with the planned power outage. The curtailment of electric supply will cause gas appliance to stop without losing pilot light. The gas demand by circuit is illustrated in Table 1.

Table 1. Gas hourly usage per feeder (estimated)

Feeder	Number of Customers	Ccf per hour (High)	Ccf per hour (Mid)	Ccf per hour (Low)	% Cust Dropped
13	1675	838	1256	1675	16.3%
14	537	430	580	644	10%
15	1871	936	1403	1871	19.6%
16	1839	920	1379	1839	20.3%
17	193	193	338	591	9.2%
18	212	212	371	649	3.6%
WR1	1590	795	1193	1590	10.5%
WR2	963	482	722	963	9.5%
WR3					1%
TOTALS	8880	4806	7242	9822	100%

The Local Transmission Grid:

LANL owns the 115 kV transmission lines within the DOE laboratory area and operates them in a looped configuration to link its five (5) substations; STA, ETA, WTA, TA53, and TA3 as illustrated in Figure 6. The 23.5 miles of transmission lines are patrolled and maintained annually. All transmission right-of-way is within DOE property, readily accessible and could be repaired quickly in the event of a major problem. Therefore, the regional transmission system within LANL is expected to be very reliable.

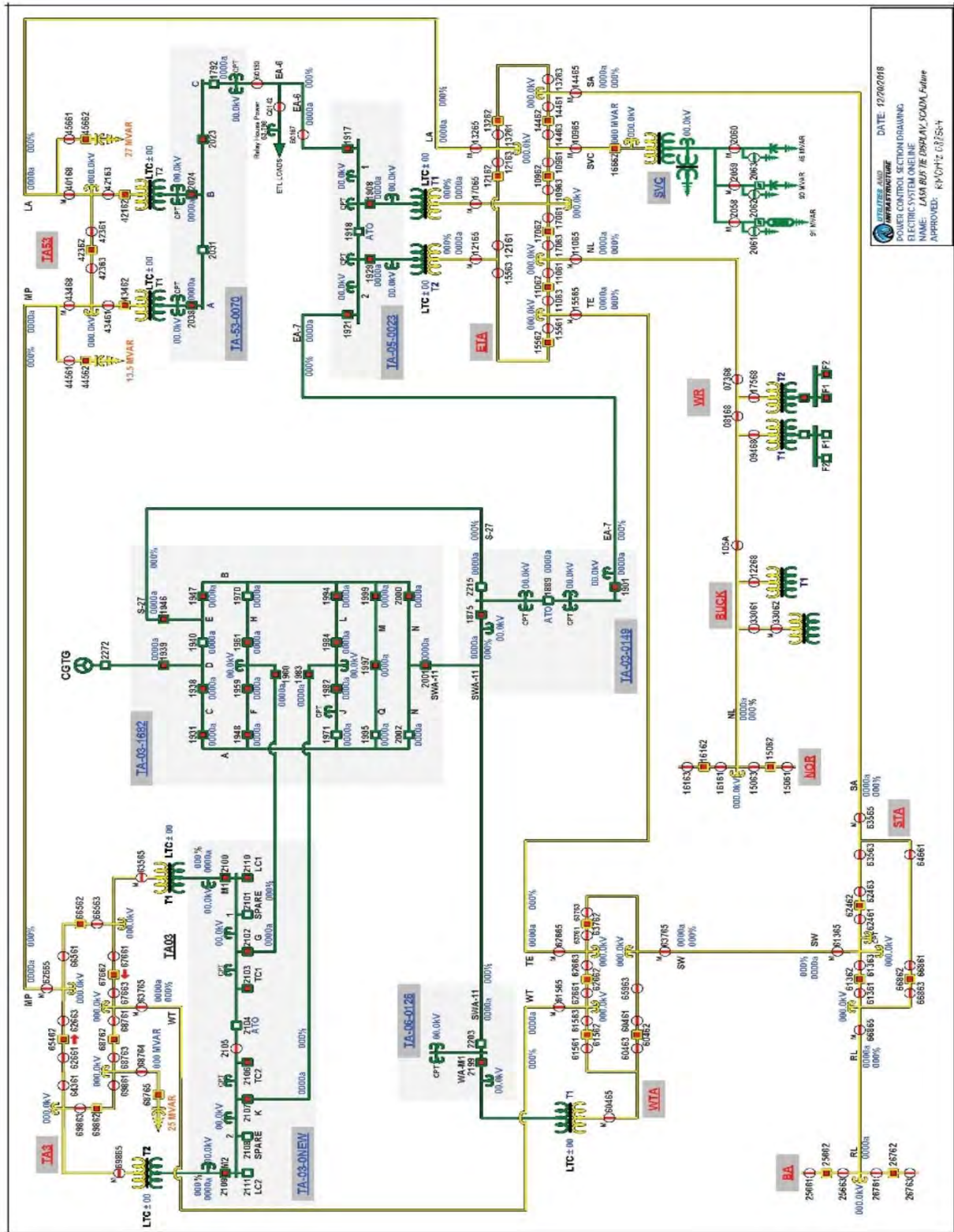


Figure 6. DOE 115KV Transmission Lines (draft diagram)

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The White Rock substation is fed from PNM's Norton substation (NL line) and via LANL's ETA substation (NL' line). The substation is fed directly from the looped 115 KV transmission system, has redundant transformers and therefore, can be considered as having very reliable transmission service.

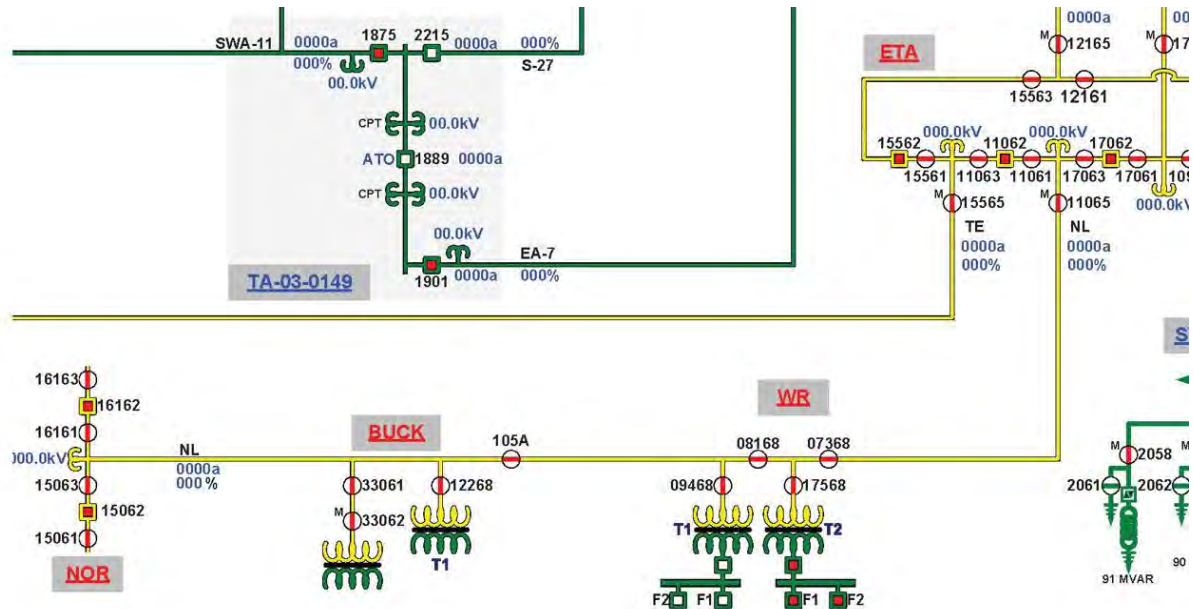


Figure 8. Lower section shows White Rock Substation (WR) (Draft diagram provided by LANL)

LANL's old TA-3 substation is 50-60 years old including its two 30 MVA transformers, TR-1 and TR-2, and the TR-1 unit failed in 2019. In 2010, LANL and DPU commissioned the "TA-3 and TA-53 Substation Replacement Feasibility Study" which looks at the replacement options for TA-3. LANL secured congressional funding for the TA-3 substation replacement project for 2016; 2 years beyond earlier estimates. The new LANL substation TR-1 and TR-2 were commissioned in July 2021.

With the installation of the LANL TA-3 substation replacement project, DPU is adding a second switching station, the Los Alamos Switchgear Station (LASS). LASS is installed next to the DPU's battery site. The new LASS was installed in December of 2018 awaiting the completion of the new TA-3 Substation and the installation of new LC1 and LC2 feeders to connect the two stations. The installation of the LASS feeders LC-1 and LC-2 are not yet scheduled. The connection should be completed by Fall 2022.

The Local Distribution Grid:

At the distribution level, the vulnerability is the lack of redundant substation sources in Los Alamos and White Rock. For comparison purposes, Los Alamos is served by 9 water wells and White Rock is served by 3 water wells, yet each location has a single substation electrical source! The water well comparison is illustrated because water distribution networks function very similar to electric distribution networks. Having multiple sources for water supply eliminates the threat of any one system failure. On the electrical side of things, there are no back-up electrical substation sources to re-route power in the event of a catastrophic failure at either Townsite or White Rock substations. This means that a failure at either substation location would have to be repaired to restore full electrical service.

Case in point:

Townsite outage October 14, 2021 (report from LANL engineering)

The cause of the outage that occurred last Thursday night was found to be an Old TA-3 Substation Transformer TR2 differential relay that triggered both high side breakers and low side secondary main (03-1682 breaker 1983) to open. Breaker 1983 opening interrupted power from the new TA-3 Substation via duct bank k to 1682 loads (Both TC-1 and TC-2). LANL crews restored power in 10 minutes remotely via the SCADA system.

Townsite outage October 22, 2021

The outage was caused by a failure of a potential transformer in the new TA-3 substation. A breaker opening interrupted power from the new TA-3 Substation via duct bank K to 1682 loads (Both TC-1 and TC-2). The townsite was being supplied power from that station. LANL crews restored power in 2 hours.

The Townsite substation serves almost 6500 customers with primarily 6 feeders; and a feeder outage may affect between 800 to 3600 customers. Section VI illustrates how having two additional sources will configure the Los Alamos distribution grid such that the 6500 customers that can be served by 12 feeders, thereby substantially reducing the customers per feeder, i.e., potential feeder power outages would affect less customers in the future.

The Townsite switchgear substation (Townsite) has six (6) feeders, #13, #14, #15, #16, #17, and #18. In addition, LANL provides *primary metering* points to DPU to serve other LAC customers via LANL distribution lines including Royal Crest mobile home park, NM Consortium Building, Los Alamos Medical Center (LAMC), Ski Hill, Pueblo & Rendija Canyons, and Totavi in San Ildefonso Pueblo. Overall, eight (8) distribution feeders serve the Los Alamos community as illustrated in Figure 9.

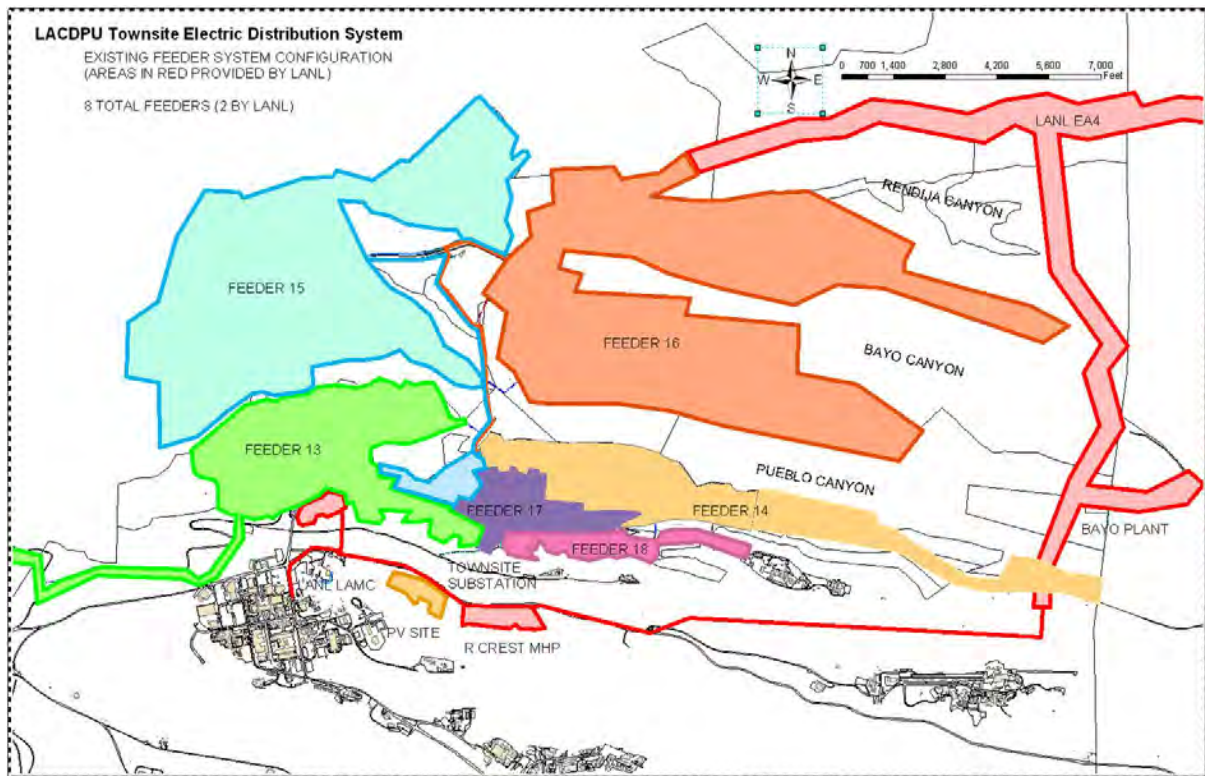


Figure 9. Existing Los Alamos Distribution Area

The White Rock community is served by the White Rock substation as illustrated in Figure 10. The substation was upgraded during 2006 with the installation of a new 10 MVA transformer and the addition of a new 15 kV metal-clad distribution switchgear bus. The substation transformer is presently operating at 60% capacity during the winter peaks. The new switchgear substation contains four circuit breakers for Feeders WR1, WR2, WR3 and one spare. The substation includes an older 7.5 MVA transformer and the new 15 kV switchgear substation bus installed in FY20. The 7.5 MVA transformer and switchgear is utilized when LANL requires 115 kV transmission line outage on the Unit TR2 side of the substation. From a transformer reliability perspective, having two transformers is certainly a plus. From a switchgear bus reliability perspective, having the spare 7.5 MVA transformer tied to the new switchgear is the best and only alternative.

On the distribution side, the WR1 and WR2 feeders can be paralleled within a quarter mile but it has limited use because each feeder remains mostly radial. An ideal looped configuration is when the feeders can be paralleled at each end. For example, the WR2 feeder was looped during 2013 with the construction of the mile long WR2 UG Feeder tie. The project consisted of a new UG power line along SR 4 with new loops to La Senda areas A and B, and Pajarito Acres 1 and 2. The addition of the WR3 feeder provides a tie between WR2 and WR3 on State Road 4.

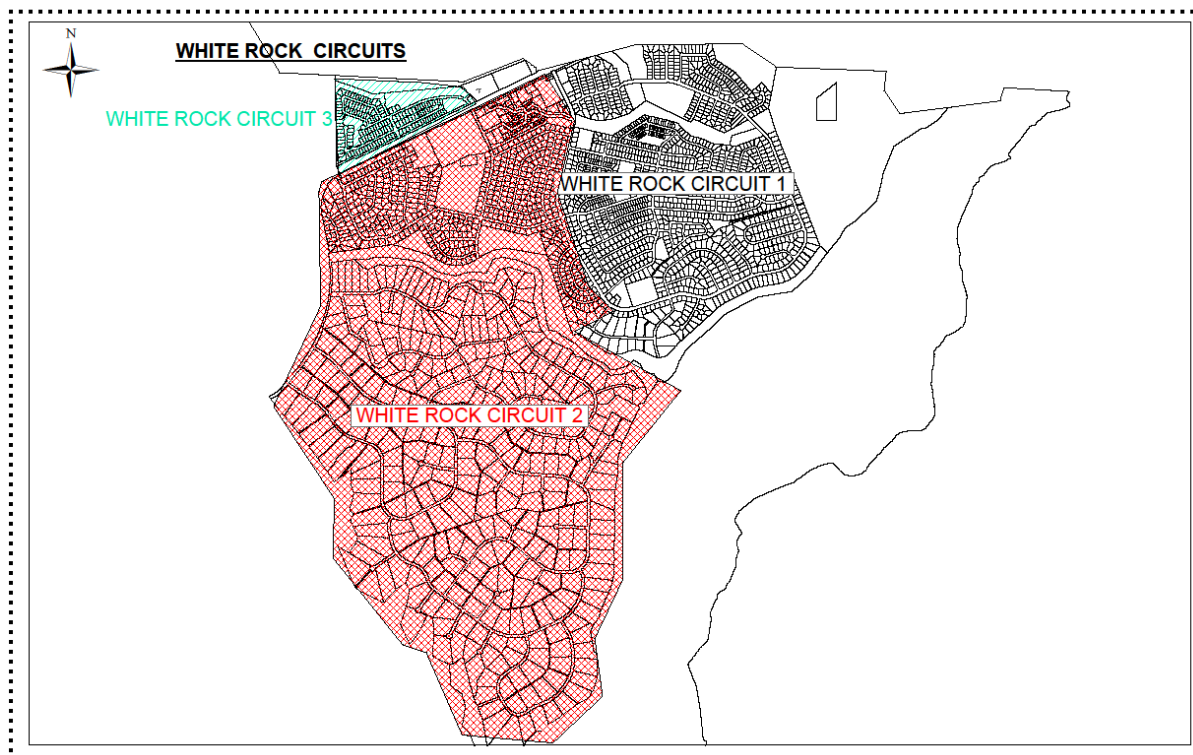


Figure 10. White Rock Distribution Area

The projected load in the White Rock service area does not require the need for a second substation now or in the foreseeable future. From a distribution source perspective, the reliability for the White Rock service area is dependent on keeping the substation energized having two transformers and two independent switching stations.

III. Discussion of SAIDI Performance

Analysis of Performance Measures

DPU measures its system reliability with four (4) performance factors as defined by IEEE Standard 1366-2003.

SAIDI = System Average Interruption Duration Index. This is the total duration of interruption for the average customer during a predefined period of time; or

$$\text{SAIDI} = \frac{\text{Sum of all customer outage durations}}{\text{Total number of Customers Served}}$$

SAIFI = System Average Interruption Frequency Index. This is how often the average customer experiences an outage over a predefined period of time; or

$$\text{SAIFI} = \frac{\text{Total number of customer interruptions}}{\text{Total number of Customers Served}}$$

CAIDI = Customer Average Interruption Duration Index. This is the average time required to restore service; or

$$\text{CAIDI} = \frac{\text{Sum of all customer outage durations}}{\text{Total number of customer interruptions}} = \frac{\text{SAIDI}}{\text{SAIFI}}$$

ASAI = Average System Availability Index. This is the fraction of time that a customer has received power during the defined reporting period; or

$$\text{ASAI} = \frac{\text{Service hours available} - \text{SAIDI}}{\text{Customer demand hours}} = \frac{8760 - \text{SAIDI}}{8760}$$

Table 2. Reliability Performance Measurement Factors

Twelve Month History	September 2021	
Total # Accounts	9045	
Total # Interruptions	39	
Sum Customer Interruption Durations	11028:48:00	hours:min:sec
# Customers Interrupted	7262.0	
SAIFI (APPA AVG. = 1.0)	0.80	int./cust.
SAIDI (APPA AVG. = 1:00)	1.13	hours
CAIDI	1.31	hours:min/INT
ASAI	99.9994%	% available

The calculations are based on a 12-month history. All outages' effects will remain in the calculations for one year as demonstrated in Figure 11.

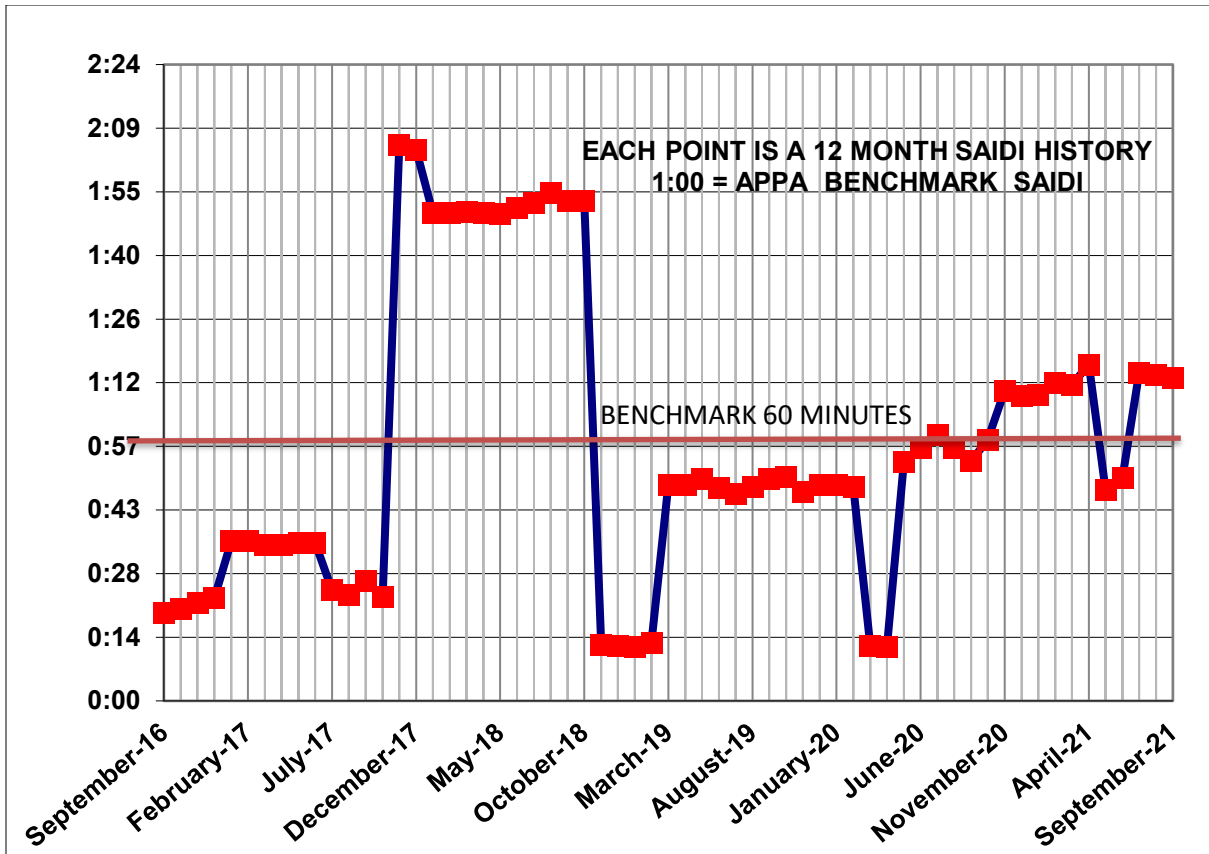


Figure 11. Graph of LAC SAIDI with 60-minute TARGET

Table 3. illustrates the SAIDI of each feeder and the SAIDI due to weather or on LANL source feeders. The high SAIDI for the EA4 feeder was due to a LANL source failure and beyond LAC control. The WR1 SAIDI has been largely due to overhead line failures due to human causes. The WR2 SAIDI is largely due to faults in single phase primary UG sections with secondary or residual caused problems.

Table 3. Reliability Performance on a per Feeder Basis

Most Recent SAIDI, 1 Year Running (September 2020 - October 2021)											
Number of Customers per Feeder										Weather	LANL
1655	539	1875	1842	209	213	165	1586	961	9045		
Circuit	Circuit	Circuit	Circuit	Circuit	Circuit					SAIDI	SAIDI
13	14	15	16	17	18	EA4	WR1	WR2	TOTAL	28:51	2:06
4:49	2:54:27	14:24	41:32	0:00	0:00	13:38	6:55:04	21:34	0:40		

SAIDI

The SAIDI is illustrated in Table 4. DPU's service area is like that of Kit Carson Electric Coop (KCEC) and Jemez Mountains Electric Coop (JMEC); whereas PNM's service area is more urban. KCEC, JMEC, and DPU service area includes mountainous terrain with heavy winter snow fall. The five (5) year SAIDI average for DPU is around 1 hours and 3 minutes and is typical for utilities serving mountainous terrain but the County's goal is 60 minutes or less.

Table 4. LAC SAIDI at the end of each calendar year

SAIDI 5 YEAR TOTAL (MINUTES)					
2016	2017	2018	2019	2020	AVG
23	124	110	12	48	63

Overview of past year's SAIDI & Disturbances

We continue to have sporadic and random underground line section failures throughout the system, and this can be expected into the future. Areas with direct bury conductors, 30 years of age or older are subject to failure. Human causes of outages also occur due to digging without proper locates and automobile accidents hitting above ground equipment.

With the overhead system, we've had a few tree issues blowing into the open-secondary (un-insulated) service lines in customer back-yards. The utility has an ongoing contract with a tree trimming contractor to proactively trim trees as they grow into the lines. The replacement of open secondary conductors with insulated triplex conductors prevents these outages. The utility also prevents major pole and transformer failures largely because of our pole and transformer replacement program.

Strategy for improving the SAIDI

Improving system reliability is working based on the following strategy:

- (1) Continue to perform a root-cause analysis for every power outage.
- (2) Continue with the Asset Management Program, "AMP", for line inspections, O&M, etc.
- (3) Continue to monitor line sections which have failed in the past; prioritize, and place into the AMP.
- (4) Continue to dedicate one crew for overhead power line O&M.
- (5) Continue to dedicate one crew for underground power line replacement.

- (6) Manage Outage Response to minimize outage times and reduce SAIDI. The procedure for outage response is attached in the appendix "A".

IV. Description of Distribution System and impacts on Reliability

Distribution System

DPU owns and operates the Electric Distribution System (EDS) in Los Alamos and White Rock areas. The EDS is comprised of approximately 66% underground (UG) distribution and 34% overhead (OH) distribution serving approximately 9045 customers. There are approximately 6645 customers in the Los Alamos area and 2,400 customers in White Rock.

For OH distribution, the major components are power poles, overhead conductor, and pole mounted transformers. The transformers are either two (2) bushing conventional or single (1) bushing completely self-protected (CSP). The two-bushing transformers are often referred to as *delta* transformers by the line crews because they require two energized primary phases to produce full customer service power of 120/240 volts. The CSP transformers require only one energized primary phase to produce full power.

For UG distribution, the major components are switchgear, primary junction boxes, primary cable, pad mounted transformers, secondary cable, and secondary junction boxes. Single phase pads provide power to residential areas and three-phase pads provide power to commercial businesses.

There are two operating distribution voltages in the DPU's system, 13.2 kV line-to-line (7.62 kV line-to-neutral) in Los Alamos Townsite; and 12.47 kV line-to-line (7.2 kV line-to-neutral) in White Rock. LAC can utilize the same distribution system components such as poles, fuses, wire, insulators, rubber goods, switchgear, etc. in both areas because the components are rated at 15 kV line-to-line. However, DPU must keep different transformer inventories for Townsite and White Rock because of the different operation voltages.

Age and replacement challenges

Any portion of the OH system that exceeds 50 years of age is operating at or near the end of its useful life. Similarly, a large portion of the UG system was installed during the 1970s with cable technology that had an expected useful life of 30-40 years. Therefore, DPU must proactively replace these sections of the distribution network within the next 15 years or sooner. DPU has estimated the cost of these replacements to be approximately 16 million dollars pre COVID.

The OH and UG systems have repair and replacement challenges which may impact the SAIDI as replacement projects are underway. Figure 12. illustrates a map showing inaccessible areas due to right-of-way encroachment or customer blockage. Having inadequate work access or having to work around landscaped areas, etc.,

make it difficult for DPU to replace rotten poles and overloaded transformers. For the UG system, having to dig in and around areas congested with buried utilities makes it difficult to dig for routine repairs.

For the overhead system, most of the replacement work needs to be performed while the existing power line is energized or while *hot*. *Hot* work safety procedures require the feeder over-current protection be disabled (from normal reclosing) while the work is being performed. This means that an inadvertent line contact may kick-out an entire feeder (or line section) while the *hot work* is underway. Similarly, and with underground systems, replacing of live-front (uninsulated) equipment will generally require an outage *before and after* the work; again, for safety purposes. Therefore, replacing portions of the existing system will generally require the disabling of the overcurrent protection, small power outages or switchovers, additional safety precautions, slower work process, etc. Replacement projects may impact the SAIDI.

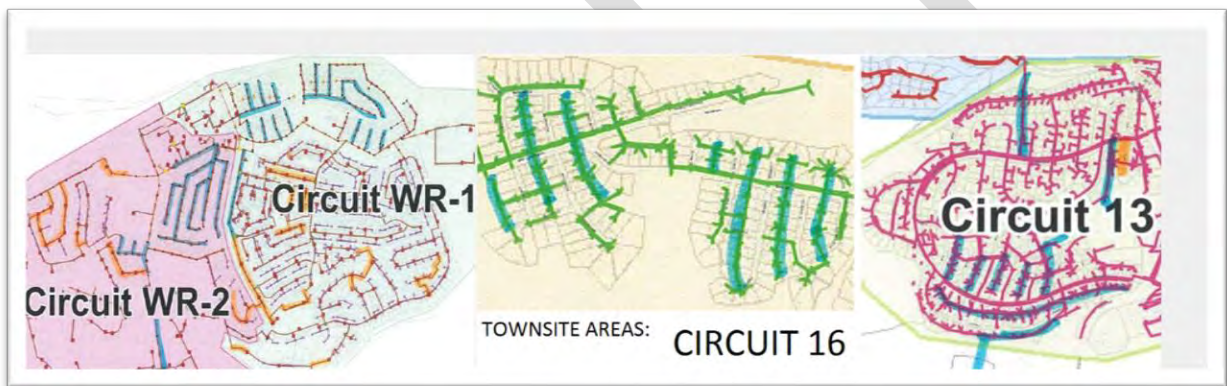


Figure 12. Areas not readily accessible

Maintain, repair, or replace

Through the AMP process, the lingering question is whether to maintain, repair or replace. Based in the AMP process success, DPU will continue to operate under the following guidance:

1. DPU must adequately maintain its electric distribution system moving forward so that equipment can reach and exceed its useful life. For OH, this means pole inspection and treatment every 10 years for new poles and 5 years for older poles. For UG, this means continuing with the AMP with respect to quarterly inspections & routine O&M.
2. DPU must continue to track repairs to its distribution system; after several failures, UG sections must be planned for replacement.
3. DPU must continue to prioritize replacement efforts to critical feeder sections which impact the most customers and have the biggest impact on the SAIDI.

Sections V and VI provide short-term and long-term action plans that must be pursued in parallel largely because of the age of the distribution system. These plans can impact the revenue requirements for the utility, but LAC is conscientious about implementing the plans over several years. The DPU strategy is to continue to improve the system reliability while maintaining electrical rates below rates of neighboring utilities. Also, DPU will continue to ask for utility board feedback with regards to electric reliability, value, and the impacts to rates to support those two efforts. DPU strives to provide the highest level of reliability, while maximizing the life of the existing infrastructure and maintaining competitive rates.

V. Discussion of Short-Term Action Plans

Asset Management Program for OH

Under the department's AMP, each of 10 crew members is responsible for his Feeder. Six linemen are assigned the six overhead distribution feeders: 13, 15, 16, EA4, WR1 & WR2. Each year, the AMP program requires that each lineman perform quarterly line patrols, a detailed feeder assessment, and provide input with regards to feeder areas that require immediate and long-term action plans. For example, tree trimming, leaning pole, loose guy wire, etc. would be considered an immediate action. Feeder conversions, tie-lines, reconductoring, etc. would be considered long term actions.

Overhead Pole Replacement Program

In 2005, all distribution poles were inspected and treated at the ground line. Almost 268 poles or roughly 13% of the system poles were rejected and temporarily braced until they could be replaced. In 2012 and as part of the REDINet project, DPU and Redinet cost-shared for the replacement of approximately 45 poles to accommodate the installation of the REDINet fiber network in parts of Los Alamos and White Rock (government & school facilities).

Inspections were performed again in 2013, 2018, and 2021. In 2013 DPU started an overhead maintenance crew to primarily focus on overhead pole & cross-arm replacement and tree trimming. To date, DPU's in-house crews have replaced over 250 utility poles. To replace rejected and braced poles at inaccessible locations as illustrated in Figure 14., DPU purchased a back-yard pole setting unit and purchased steel replacement poles. Steel poles weigh approximately 50% of what a wood pole type Douglas fir weighs; but cost twice as much. Figure 14. illustrates a typical braced pole and a new steel pole.

POLE REPLACEMENT PROJECT 2015

The department hired contractors to replace overhead line sections across canyons from Canyon Road to Diamond Drive and San Ildefonso. Figure 13. shows OH line sections replaced. The department also replaces poles in a continuous effort to maintain the system. Replacing sections of the overhead conductor wire which have

been in service over 50 years; particularly those areas which contain obsolete CWC (copper-weld-copper) wire is an ongoing effort.

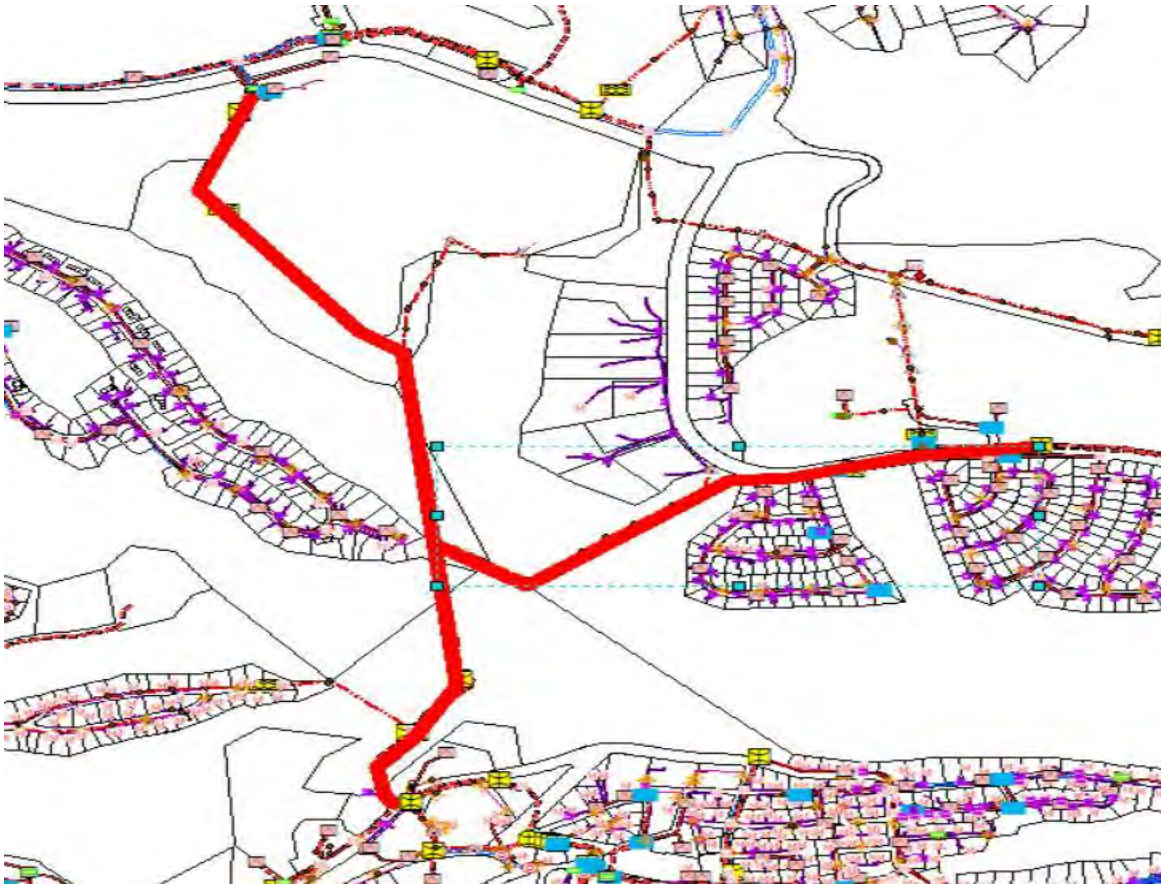


Figure 13. Pole and Conductor Replacement Project 2015



Figure 14. Typical braced pole & backbone broken pole; & new Steel Pole

Infrared OH line inspection

During the winter, the department will continue to *infra-red* critical sections of the underground and overhead systems to look for hot spots as illustrated in Figure 15. Hot spots are areas that have loose connections leading to high-resistant points; these points will eventually burn up, fail, and cause a power outage.

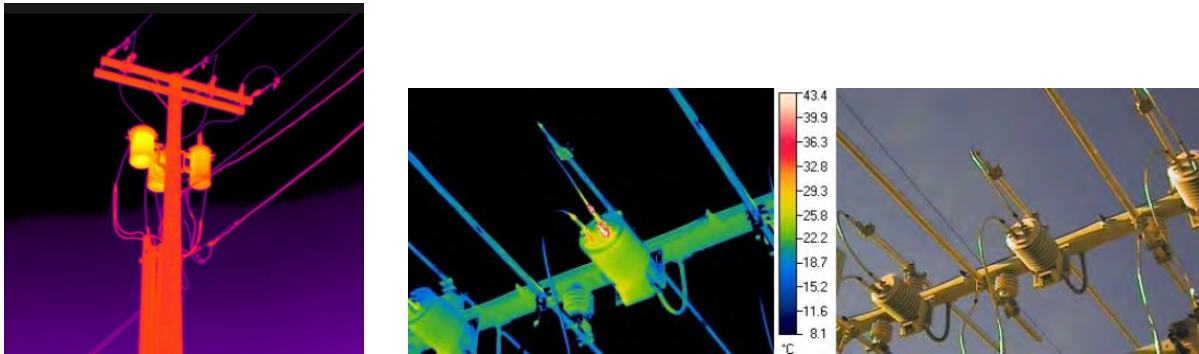


Figure 15. Infra-red picture for transformer pole & air break switch

Asset Management Program for UG

Four linemen are assigned the four underground distribution feeders: 14, 17, 18, & LAMC/Landfill. Similarly, each year the linemen perform quarterly line patrols, a detailed feeder assessment, and provide input with regards to feeder areas that require immediate and long-term action plans. For example, unleveled equipment, equipment oil leakage, rodent intrusion, equipment tagging, etc. would be considered an immediate action. Switch replacement, live-front transformer replacement, rust, or oxidized paint, etc., would be considered a long-term action plan.

UG Primary Replacement Program

As previously stated, much of the existing primary underground distribution system consists of typical 1970s cable standards with 30–40-year cable life expectancy including: non-jacketed, direct buried, 175 mil insulation, XLP (cross link poly), non-strand filled cable. Today's primary underground cable has a 40–50-year cable life expectancy including: exterior jacket, 220 mil (more insulation), TRXLPE (tree retardant cross link poly) or EPR (ethylene propylene rubber), strand-filled and installed in conduit. The department is now in need of a replacement cable pulling machine. The machine is equipped with a winch to pull cable into the conduit. The new machine will cost approximately \$175,000.

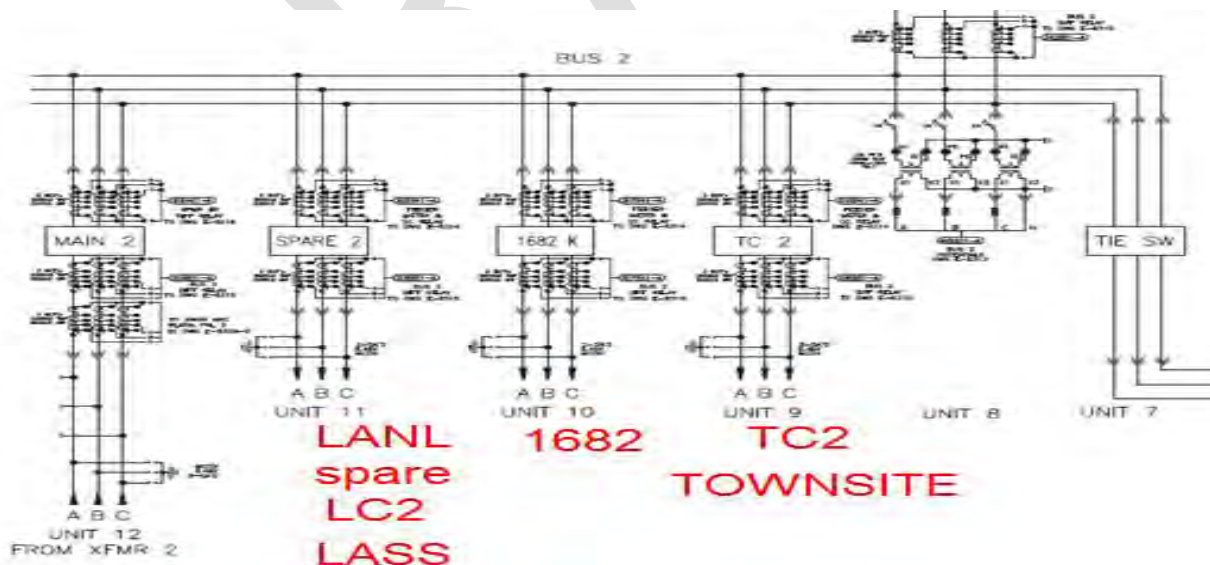
DPU continues to experience primary cable failures in most subdivision areas, but mainly during the wet seasons. Moist ground tends to accelerate the *treeing effect* in the cable insulation leading to primary cable failures. The *tree effect* provides the shorting path, or *fault*, between the energized conductor and grounded neutral.

When primary cable sections experience two or more *faults*, the line section is ranked with a low or high priority. When high priority primary line sections are designed for replacement, other engineering and reliability upgrade features are added. For example, radial lines may be converted to loops, single phase lines may be converted to three phase, ridding of live-front equipment, adding sectionalizing points, re-routing for accessibility, etc. The idea is to ensure that even if the newly installed line fails, power can be restored even faster than before while impacting the least number of customers. For example, the Canyon URD Project, San Ildefonso, Sioux Village, Del Norte / Del Sol, Tsankawi, Meadow Lane, NM4, Trinity, Arizona, 35th street, 36th Street, Woodland, Club Road, 48th Street, Diamond Drive, 15th Street, WR2 Loop Addition, Trinity Apartment Replacement Project, NM502, DP Road phase 1, Rim Road, LAMC replacement and the LASS Feeder project are projects which included loops, tie-points, and other reliability improvement designs as part of the original replacement project.

VI. Discussion of Long-Term Action Plans

New LASS Substation Addition

The top reliability project for DPU is the construction of the new LASS Substation addition near the County landfill as illustrated in Figure 17. The LASS Substation is needed to maintain the SAIDI target into the future. LASS is also critical to the supply of steady and reliable electric power to the residents of the Los Alamos Townsite; more so if the Townsite area is expected to grow electrically.



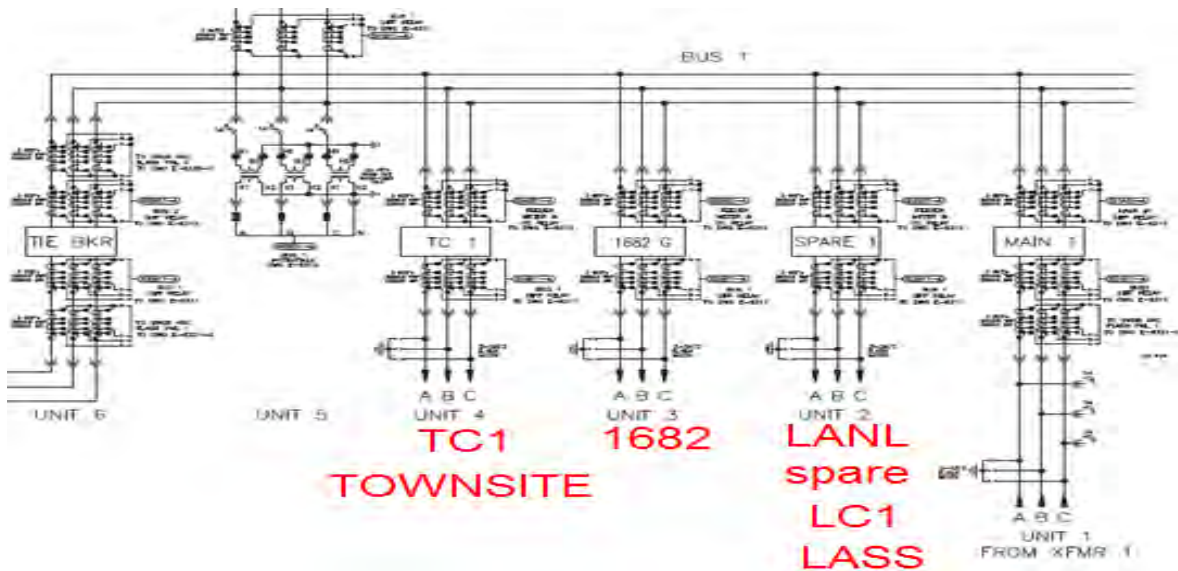


Figure 16. Three-line diagram of TA-3 Substation

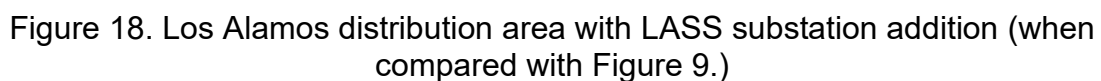


Figure 17. LASS station Location Relative to LANL

The LASS substation will relieve load from the existing Townsite switching station. The station will tie to TA-3 on breakers LC1 and LC2. Under existing conditions and for a TC1 feeder outage, the Townsite peak demand exceeds the TC2 feeder ampacity rating as illustrated in Table 5. below.

Feeder	Size	Rating	Max Carrying Load	Townsite Peak Load
TC1	(2) 500 mcm CU	720 amp	16 MW	
TC2	1000 mcm Cu	615 amp	14.1 MW	16 MW

1. Reduce the number of customers on Townsite substation feeders 13, 15, & 16 (by moving half the customers on those feeders to LASS).
2. Provide new feeders 13T, 15T, 16T, S6, SM6.
3. Provide power to DPU customers with DPU power lines and not from LANL power lines, i.e., Transfer Station, LAMC (S6), Elk Ridge MH Park.
4. Add 50% additional system redundancy during scheduled or unscheduled outages to Townsite Substation Feeders. Feeders 13T, 15T, & 16T on LASS can back feed feeders on Townsite 13, 15, 16, Ski Hill and LAMC.



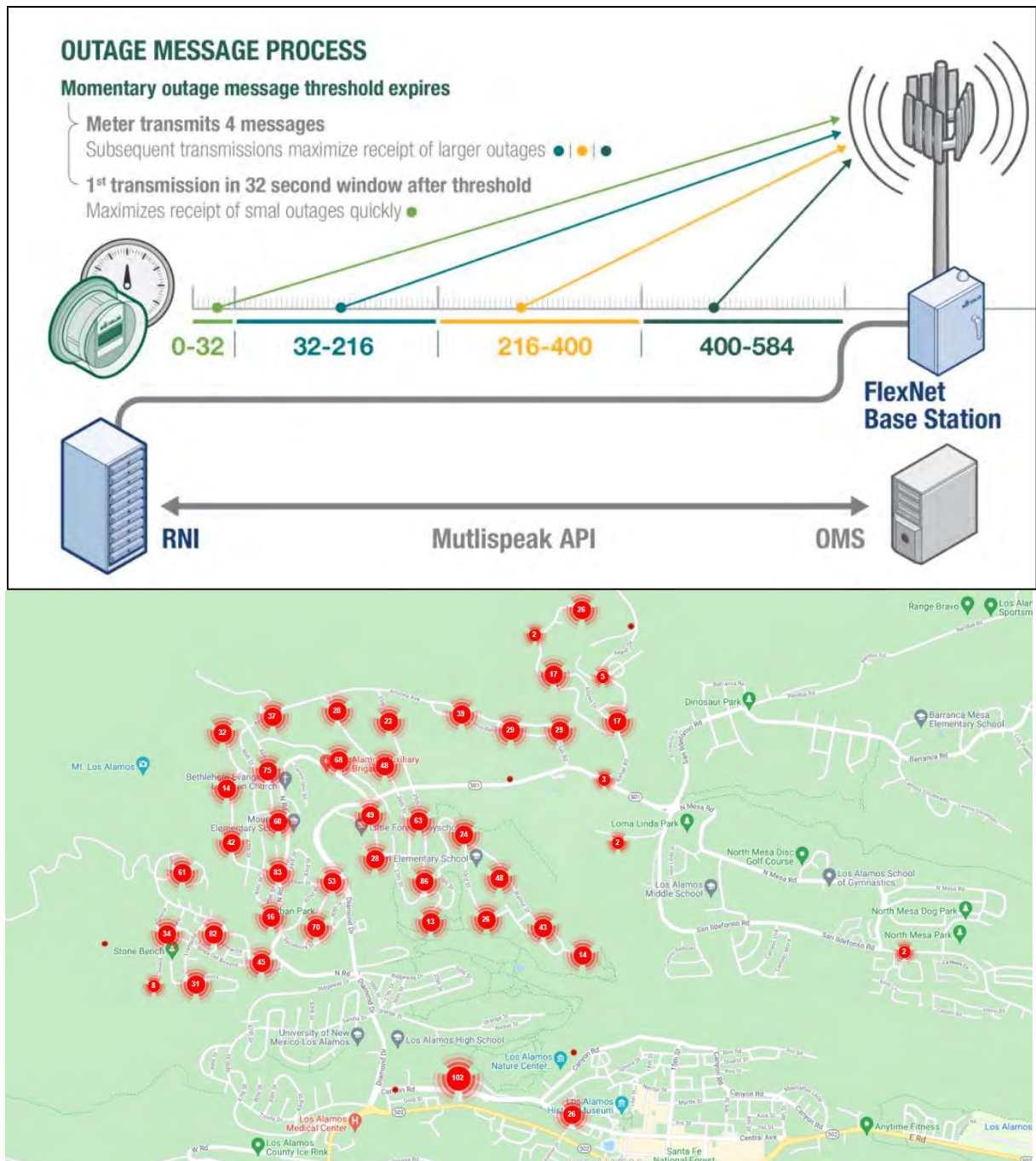
Distribution system SCADA expansion

The Power Pool has SCADA capabilities at the Townsite and White Rock substations. The Power Operations Center monitors the individual feeder relay for breaker status and real-time power flows. During a power outage, the DPU lineman must patrol the power line to find and isolate the problem; then, return to the substation to develop a restoration plan and restore power. The Primary Power Operations Center is located at LANL TA-3 with a fully capable back-up center located at PCS building #5.

The DPU electric distribution department will develop and install a SCADA system which will monitor the electric equipment in the field. The system is estimated to cost \$250,000. The system will incorporate information from the AMI, ArcGIS, and the Milsoft Modeling system to provide real-time system status to crews in the field and engineering. The new SCADA system will be based in Building #5 at PCS.

Engineering utilizes an electric distribution modeling system developed by Milsoft. The system is called WindMil. The model provides essential information on circuit loading and connectivity options. The model can analyze circuit configurations to ensure that circuits are not overloaded, and loads are balanced. The model is a living system that is modified as improvements are made in the system. With the implementation of a SCADA system, the model will provide real-time system performance. The Milsoft package can then be expanded to provide a full real-time outage management system. The information will be accessible to linemen and engineers remotely, to assist in outage response. This is the future plan for the system.

Feeders 13 and 16 have four feeder line electronic reclosers (EOCRs) that can be integrated into the SCADA system. The EOCRs can be retrofitted with a SCADA card, a microwave radio, and integrated into a new microwave radio communication system. These *node additions* can be mapped into the SCADA system for remote monitoring. With SCADA control, an outage can be detected by LAC electric distribution crews and immediately be aware of the power outage area. This is even more granular with the new AMI outage management system showing power outages down to the meter level. Linemen now can dispatch directly to the problem area and not have to rely on customer outage calls. When the linemen isolate and repair the overhead power line problem, the lineman can restore power quickly. The linemen will notify the public information officer and County Dispatch center to publish press releases, web site information and online media to inform customers about the outage cause, duration, and scope of repairs. Sensus outage identification system model and outage map shown here.



Similarly, and after the new LASS substation is constructed, all *back feeding* tie-points can be fitted with SCADA system radios. During power outages, the switches can be remotely monitored by engineers to help the DPU linemen re-route and restore power more efficiently. In summary, developing a new SCADA system into the distribution feeder network will help DPU identify outages quickly; allow linemen to be dispatched directly to the problem areas, re-route power and restore power quickly and efficiently.

Three Phase Primary OH Backbone Rebuild

Table 6. illustrates the feeder length of the main three-phase OH back bone system with pole quantities. The long-term plan is to replace all three phase back bone poles to ensure the long-term reliability; a single major back-bone pole failure could potentially impact thousands of customers. On April 1, 2012, a single WR2 pole failure had a 40-minute impact on the SAIDI for 1 year. Single-phase pole laterals which serve less than 50 customers will be replaced on a lower priority basis. As previously stated, the DPU OH maintenance crew and on-call contractor will work on the pole replacement project. After the major back-bone poles are replaced, DPU will focus on replacing the backbone overhead conductor.

Table 6. Three Phase Main Feeder OH Backbone Lengths

FEEDER #	# OF POLES	MILES OF LINE
13	81	3.44
Ski Hill	70	3.5
15	111	3.15
16	137	4.53
WR1	65	1.83
WR2	73	3.41
EA4	150	9
TOTALS	687	28.86

Primary UG Improvement Projects:

Major underground replacement projects or additions were constructed in the past: 0.8 mile, WR2 Loop Addition, 1.2-mile, Canyon Road Rebuild Project, and 1.0 mile, Tsikumu Village Primary Replacement Project. The three projects had become burdensome to DPU customers and affected the SAIDI year after year. The projects not only replaced the failed underground sections but also added three phase power line sections and new single phase primary loops. Each project cost about \$500K and it will be difficult to sustain those type of projects in the future without impacting utility rates. Recently material costs have increased substantially placing more pressure on electric rates.

Major underground capital replacement projects have been identified in the immediate future by the asset management team, see Appendix C. DPU is prepared to deal with major SAIDI impact projects as they may arise in the future. A list of major projects includes the Los Pueblos and Totavi area, La Senda and Pajarito Acres, Timber Ridge, La Vista, and Big Rock Loop.

Other long term UG projects which will provide long-term reliability improvement is the addition of new UG or OH Loops. DPU has many radial lines which power anywhere from 30 to 100 customers; a failure on the radial line leaves few

alternatives to restore power in a timely fashion. These long radial power lines, should be looped at some point to minimize the number of customers effect in an outage. Figure 19. illustrates priority areas for Loop additions in White Rock.

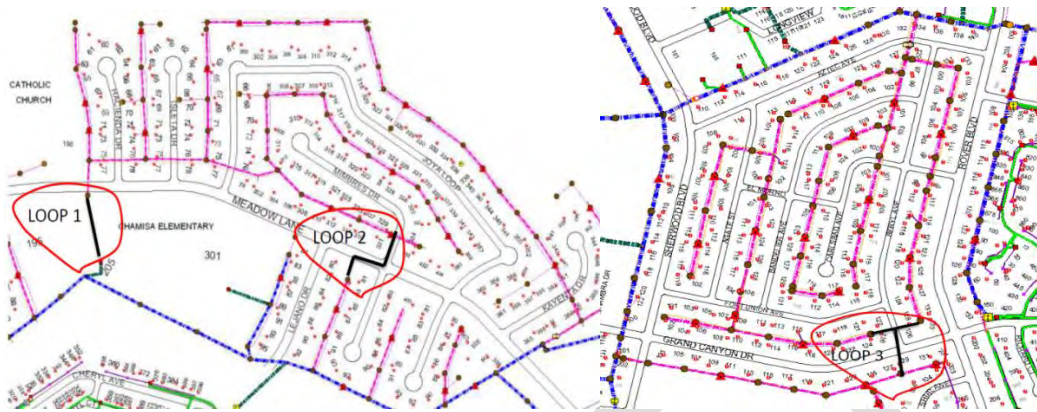


Figure 19. Single Phase Loop Addition Targets in White Rock

Vacuum Fault Interrupter Transformer additions in large subdivisions

DPU has many underground subdivisions with single phase primary laterals with 10+ transformers configured in a daisy-chain. When DPU experiences a faulted line section, it must identify the fault, isolate it, then back feed the outage area from a new power source. Back feeding is done by manually transferring electrical load with a 200-amp elbow; at least two times during the restoration process. With continual line section failures, the manually back feeding process is resulting in secondary and residual failures, i.e., elbows or other weakened points.

Therefore, DPU must look at other engineering solutions in identifying and isolating failed line sections so that no secondary or residual failures occur. Figure 20 illustrates a reasonable engineering solution (\$8K per Vacuum Fault Interrupter (VFI) transformer) where faults can be detected, identified to smaller line segments, and allows DPU linemen to safely re-route power without utilizing elbows or fuses. The VFI solution will simply trip the interrupter in a safe manner and no secondary failures.

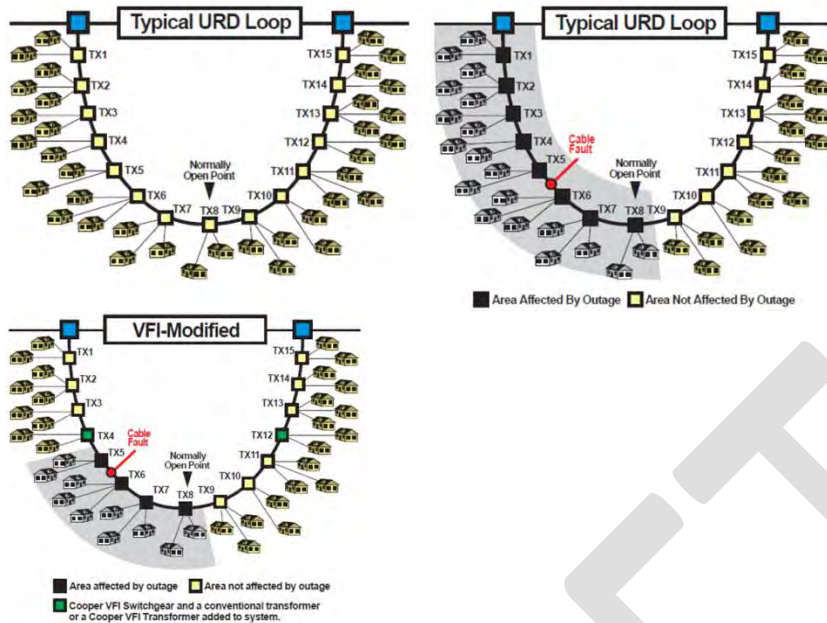


Figure 20. VFI Transformer Fault Isolation & Restoration Solution

New East Gate Substation Addition

The proposed East gate substation is similar in need to the LASS substation except that it provides a power source and feeder redundancy to the east side of Los Alamos. The substation need will be in proportion to the electrical needs for development along DP Road and the Camino Entrada area. The LAC-LANL jointly owned EA4 feeder is 9 miles in length and spans across rough mesa terrain from Pueblo to Rendija Canyons. The EA4 feeder provides power to the wastewater treatment Plant, water wells and pumps along Rendija Canyon, and to the San Ildefonso - Totavi area. The age and condition of the EA4 feeder, construction ability, and inaccessibility may prove to be an unreliable feeder source into the future without major capital investment. Also, power outages to the EA4 feeder may shut-down critical LAC water and wastewater treatment facilities unpredictably. Replacement costs for the EA4 feeder will exceed 2 million dollars.

Figure 21 illustrates the added redundancy to the east side of Los Alamos with the addition of the new East gate substation. The substation adds new feeders for the DP road area (18T), Pajarito Cliffs Site, Bayo Plant, San Ildefonso, and a new feeder 14T to add redundancy to the Townsite substation's Feeder 14. This project would be in the 5–7-year outlook. An alternative prime location is the east side of TA-21, if and when the TA-21 area is converted to county ownership.

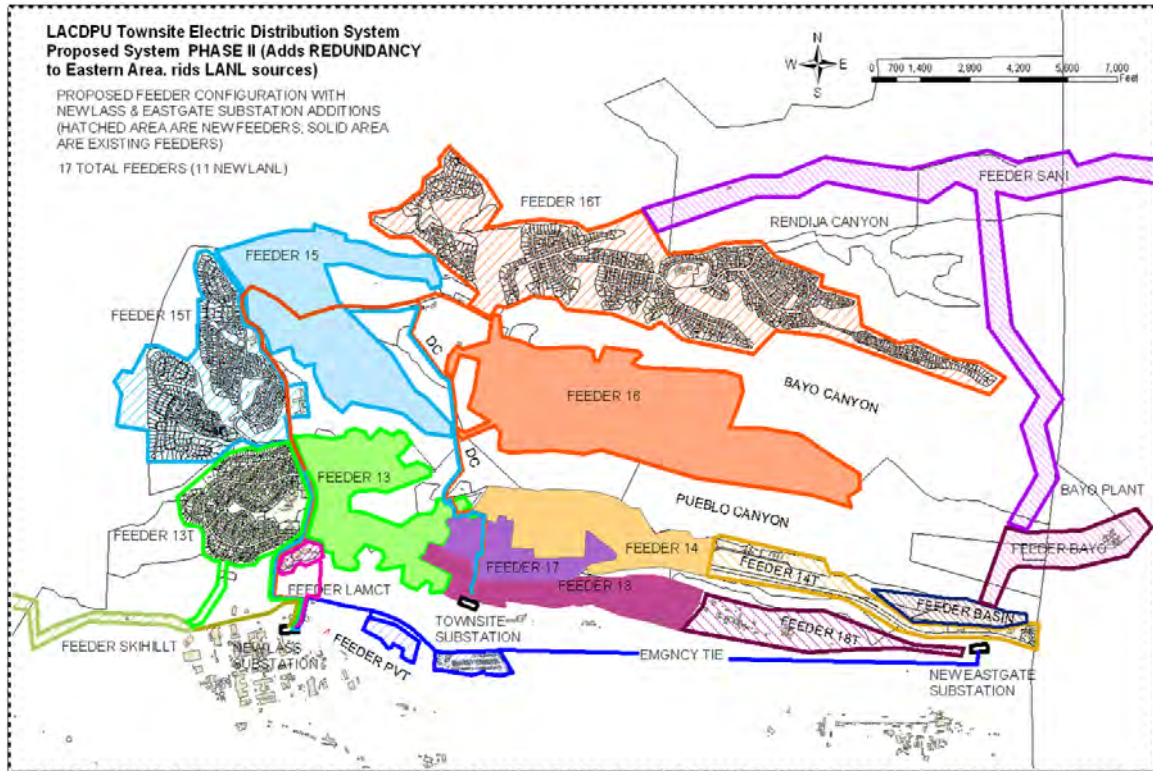


Figure 21. Los Alamos distribution area with East gate substation addition (when compared with Figure 9)

VII. System Reliability Improvement Projects Completed

DPU developed projects that were not high revenue but impacted the SAIDI significantly. For example, performing a new over-current protection study and implementing the suggested changes, assigning each of 10 linemen his feeder of responsibility, performing quarterly line inspections, performing a root-cause after every power outage, increased O&M which required mostly labor such as tree-trimming, insulating every pole-top transformer for animal contacts, etc.

Tables 7 through 10 below summarize the System Reliability Improvement Projects (SRIP) completed by DPU since 2011 and Figure 11 illustrates the SAIDI over the past five years. As illustrated, DPU can't overlook the positive impacts of the SRIP with the SAIDI. Also, the SRIP helped mitigate and correct system deficiencies which would otherwise have impacted the deficient SAIDI even more.

Table 7. System Reliability Improvement Projects (est. & rounded)

	Reliability Improvement Projects	Area	Year	Cost
1	Feeder 15-16 OH Rebuild	2.7 miles Feeders 15-16	2011	\$1100K
2	Feeder 15-16 UG Rebuild	2 miles	2011- 2012	\$600,000
3	Feeder 14 UG Rebuild	Downtown	2011- 2012	\$200,000
4	Feeder 17 Expansion	Downtown	2011- 2012	\$200,000
5	New Feeder 18 & Expansion	Downtown	2011- 2012	\$200,000
6	10 PME Switchgear Replacements	Townsite	2011- 2012	\$300,000
7	Padmount Transformer Replacement (live front to dead-front conversion)			
	300 KVA	Golf Course	2012	\$12,000
	500 KVA	Smiths	2012	\$18,000
	150 KVA	Conoco	2012	\$8,000
	300 KVA	Ashley Inn	2011	\$12,000
	Four (4) 225KVA	Bomber Field	2011	\$50,000
	300 KVA	VFW	2012	\$12,000
	300 KVA	Long View	2012	\$12,000
				\$124,000
8	Overhead to Underground Conversion			
	Sycamore Tank		2012	\$10,000
	Golf Course Well		2012	\$10,000
	Bomber Field	retire 1200 ft	2011	\$25,000
9	Primary Replacement Projects			
	IRIS	1100 ft. 3PH	2012	\$50,000
	Loma Vista (replace & add loop)	500 ft 1 ph	2011	\$75,000
	712 IRIS primary replacement	300 ft 1 ph	2011	\$15,000
10	Contract Tree Trimming	Underway	2012	\$100,000
11	30 Utility Pole Change outs	Service wide	end 2012	\$150,000

Table 8 System Reliability Improvement Projects (est. & rounded)

	Reliability Improvement Projects	Area	Year	Cost
1	Tsikumu 1 phase replacement (3 phase addition)	2800 ft. 2800 ft.	2014	\$ 150,000 \$ 350,000
2	WR2 3 phase feeder Tie (3 phase UG loop with 1 ph loops)	4200 ft.	2013	\$ 400,000
3	Canyon Ph 1 & 2 (1 ph replacement) (3 phase addition)	5000 ft. 900 ft.	2013-2014	\$ 500,000
4	LAMC Source-Transfer Replacement		2013	\$ 200,000
5	Feeder 13 Diamond Tie	1300 ft.	2014	\$ 75,000
6	PME Switchgear Replacements			
	901 Trinity Site	2	2013	\$ 50,000
	Trinity Village	2	2014	\$ 60,000
	LAMC	1	2014	\$ 40,000
	Oppenheimer/Trinity	1	2014	\$ 40,000
7	Padmount Transformer Replacement (live front to dead-front conversion)			
	300 KVA	35 Rover	2014	\$ 12,000
	Miscellaneous 1 phase	White Rock	2013-2014	\$ 30,000
	Miscellaneous 1 phase	Townsite	2013-2014	\$ 30,000
8	Primary Replacement Projects			
	Range Road to Cemetery 1 phase	750 ft.	2014	\$ 40,000
	Trinity Village 3 phase, 1 phase	200 ft.	2014	\$ 50,000
	Knecht to DP Road	1200 ft.	2013	\$ 200,000
9	In house Tree Trimming		2013-2014	\$ 40,000
10	60 Utility Pole Change outs	White Rock	2013-2014	\$ 60,000
		Townsite	2013-2014	\$ 60,000
				\$ 2,387,000

NOTE:

The Tsikumi, WR2, LAMC, Canyon, and Trinity Village projects replaced the failed primary UG sections but also added new engineering design features including new Loops and tie-points; and replaced live-front equipment with new dead-front (insulated) transformers and switchgear.

Table 9. System Reliability Improvement Projects (est. & rounded)

	Reliability Improvement Projects	Area	Year	Cost
1	Diamond Drive Phases 1 to 5	2 miles Feeders 13,15,16	2015	\$875,000
2	Del Norte / Del Sol Subdivisions	2 miles	2005- 2006	\$800,000
3	Townsite Switchgear	Downtown	2006	1,216,000
4	White Rock Substation Transformer	White Rock	2005	\$553,000
5	Central Avenue Upgrade	Downtown	2009	\$300,000
6	15 PME Switchgear Replacements	Townsite	2014- 2021	\$450,000
7	Padmount Transformer Replacement (Live front to dead-front conversion)		2014- 2021	\$50,000/yr
8	Meadow Lane primary replacement	2500 ft 3 PH	2010	\$200,000
9	Primary Replacement Projects Trinity Avenue with Smiths Piedra loop Sioux	1100 ft. 3PH 3000 ft. 1PH 2400 ft. 3 PH	2011 2012 2013	\$400,000 \$150,000 \$200,000
10	Contract Tree Trimming	Underway		\$40,000/yr
11	Utility Pole Change outs	Service wide	ongoing	\$150,000

NOTE:

The Feeder 15-16 rebuild included new engineering design features such as larger conductor for emergency operations, dampeners to avoid conductor galloping across the canyons, and was raptor protection friendly. A new UG feeder 18 was introduced to the distribution grid to power most of the Los Alamos downtown area. The downtown area is now served by two commercial-only Feeders #17 and #18.

Table 10. Project Conductor Footages Installed (not all inclusive of all projects)

LOS ALAMOS TOWNSITE UNDERGROUND CABLE INSTALLATIONS (FEET)				
PROJECT SUBDIVISION OR AREA	1 PHASE PRIMARY CABLE	3 PHASE PRIMARY CABLE	1 PHASE SECONDAR Y CABLE	YEAR INSTALLED
EASTERN AREA WEST OF CANYON	2821		11978	1978
TIMBER RIDGE, LOMA VISTA, RIDGE PARK, OPENNHEIMER	9724	17088	9506	1975-80
WESTERN AREA	9045	11349	20596	1980
RIDGEWAY, UPPER SANDIA, UPPER TRINITY, UPPER FAIRWAY	5447	16242	12009	2004
PONDEROSA ESTATES	7179	6828	5996	1992
LOS PUEBLOS NAVAJO	11079		20015	1978
BROADVIEW BIG ROCK LOOP LA MESA	25160	12813	23015	1980-90
LOMA LINDA	2410		4988	1980
QUEMAZON	31705	30570	23444	2001-3
NC1 NC2 BURNED AREA	37858	87063	53776	2004-5
DEER TRAIL	2406		1571	2000
TRINITY - DP ROAD TO 20TH		30972		2013
DEL NORTE DEL SOL SUBDIVISIONS	15495		13740	2006
ENTRADA PAJARITO CLIFFS		21792		2012-16
RIM ROAD QUARTZ	4044		9187	2018
SAN IDELFONSO TSANKAWI	11497	40149	12229	2014
EAST ROAD AIRPORT TO ENTRADA		18360		2017
NM502 PROJECT TEWA TO CENTRAL AND TRINITY	5200	12100		2020
DP ROAD PHASE 1	1100	5000		2021
CANYON ROAD NM502 TO 15TH	2821	9832		2006
DIAMOND DRIVE		32760		2007-9

VIII. Future System Reliability Projects

Projects with approx. estimates prior to COVID

EASTERN AREA (WEST OF CANYON ROAD) \$200,000
TIMBER RIDGE \$150,000
RIDGEWAY \$ 250,000
OPENNHEIMER \$300,000
WESTERN AREA \$200,000
PONDEROSA ESTATES \$200,000
LOS PUEBLOS \$1.6 MILLION over 2 years
NAVAJO \$200,000
TOTAVI \$150,000
BIG ROCK LOOP \$300,000
LOMA LINDA \$200,000
DP ROAD PHASE II \$ 300,000
PAJARITO ACRES \$1.8 MILLION over 4 years
PIEDRA LOOP \$ 800,000 over 2 years
DENVER STEELS \$ 300,000
ESTATES \$ 300,000
BROADVIEW \$ 250,000
BRYCE AVE. \$ 400,000
ARAGON AVE \$ 400,000

IX. Summary

In 2001 the Cerro Grande Fire North community reconstruction began and was completed in 2004. In 2006 the first system wide condition assessment was completed. DPU was struggling with the system reliability and the SAIDI was over 5 hours per consumer. At that time, there were many problems in the distribution system and DPU needed to develop short-term and long-term action plans to address the different infrastructure issues. In 2005 the townsite switch station was installed providing new breaker control and feeder separations. The cross-canyon loads were separated from the downtown circuits. In 2005 the White Rock substation Unit 2 failed and was replaced in 2006 with new switchgear which provided the additional WR3 feeder. In 2010, the department developed an Electric Reliability Plan, "ERP"; the ERP identified the issues and problems into three different work areas: engineering, overhead, and underground. The 2010 ERP described the strategy for the short-term and long-term action plans in the three work areas. During 2010, increased revenue funds were authorized to address the different action plans and the SAIDI steadily decreased. The workload was tough and DPU crews all too often functioned in a reactive mode, i.e., problem occurs, fix it, move on to another problem.

Also in 2011, the ERP was updated, and the action plans were updated as well. Increased revenue funds were authorized to continue with the action plans and the SAIDI continued to decrease. By 2012, the ED department had started to catch up with the increased workload and the department reorganized its FTES (full time employees). Two operations staff retired but were replaced with two new linemen; this allowed the department to develop a third line operations crew.

By 2013 and 2014, the ED department was able to catch up enough that 2 crews were primarily assigned to pro-active O&M and replacement projects. For the first time in recent memory, DPU can properly plan and replace sections of the electrical distribution grid which have failed in the past. By the same time, DPU had met its SAIDI target. However, the SAIDI target would not have been possible without the increased revenue and operational funds authorized.

The Asset Management Program incorporates field inspections from the linemen into the system condition assessment. The linemen provide the necessary information to prioritize system replacement requirements. These requirements are then entered into the next budget cycle for the Utility Board and Council.

Though DPU has met the SAIDI target of 1 hour or less, there are still challenges ahead as identified in this, the 2021 Reliability Plan update. The drive to meet the SAIDI target begins with the customers who expect a steady and reliable electrical supply but ends with them as well; because the customers must sustain the electrical rates which provide the revenue stream to meet and sustain the SAIDI target. However, DPU recognizes the balance between electric reliability and the retail cost for electricity compared to our neighboring utilities AND how much DPU customers are willing to support. Therefore, DPU will continue to engage its customers through a customer survey on this issue. Also, Increased installation of solar panels in the county and energy conservation measures are decreasing revenue to the department.

Appendix A: OUTAGE RESTORATION PROCEDURE

The purpose for this document is to formalize a **consistent procedure** when responding to outages affecting the substation breakers or electronic and hydraulic reclosers “OCRs”; collaboratively referred to OCDs.

BACKGROUND:

As you are aware, Engineering and Operations is continuously being graded on its SAIDI which is the Sum of Customer Interruption Durations / Total number of consumers. The goal is to have a SAIDI less than 60 minutes but ours consistently exceeds that value. At the present time, maintaining a SAIDI of 60 minutes will be difficult to achieve due to the age of our electrical system and the lack of system redundancy. As we continue the overhead rebuild process, continue our underground replacement strategy and add additional substations, the SAIDI will trend down. In the meantime, though, it is very important that we don't impact the SAIDI more than necessary during the outage restoration process. The following procedure attempts to minimize outage time but also makes you aware of the potential impacts of energizing the OCDs under 3 phase conditions.

FACTS ABOUT OUTAGES:

According to NRECA and other studies, 70-80 percent of Faults on overhead systems are temporary or of a transient nature. In addition, 70% of all Faults are single-line-to ground Faults. What this means is that 50% - 56% of the time, RESETTING the OCD and CLOSING IN (on 1 shot) will restore power. However, it's also important to recognize that 30% of the time, a larger problem such as phase-to-phase, 3 phase Fault, “tree on line”, “downed power pole”, etc. could exist. Energizing a PH-PH or 3PH fault, creates substantially higher fault currents than 1 PH faults thereby potentially causing greater equipment damage; even worse, energizing a permanent fault near human contact could be disastrous.

Therefore, the following procedure shall be used when responding to OCD type outages: When a breaker operates –

call Stephen Marez 505-780-0481 and begin public information procedures. Obtain outage information from the Meter Management System. Determine which protective devices have operated.

STEP 1:

BEFORE you energize an OCD, INTERROGATE the substation breaker or OCR control. **Here's what you want to look for:**

- 2 or 3 Phase Faults (other than 1 Ph);

- Ph to Ph (or 2 phase) generally means “slapping of lines” - watch for that on long spans (such as canyon crossings);
- 3 Ph Faults generally means something fell across line, pole down, etc. i.e., a PERMANENT Fault, **don't RECLOSE but start patrolling**; look for areas with trees, call dispatch to see if anyone reported an accident;
- Faults higher than 4000 amps for **Townsite**; a value this high is within **the first mile** and so take a quick **patrol before energizing**;
- The OCDs are preprogrammed to provide a distance to the Fault, look for that value and phase;
- Faults around 3000 amps are immediately downstream of the OCRs at North and Barranca Mesas, perform a quick patrol;
- Faults higher than 3000 amps for **White Rock** are within 0.75 miles; 2200 amps (Rover) - 1300 amps (Sherwood) are at the end of the lines.

STEP 2:

If you do want to close the OCD (remember it's OK 55% of the time), **FIRST**, **place the OCD on Non-Reclosing** or 1-Shot before energizing.

- For the Multilin substation breakers, place the breaker on “Recloser Disabled”. Note: any operation within 30 seconds after a manual close, even when placed on NORMAL (reclosers ENABLED), **will lock-out the breaker**; we experienced this before.
- For the ABB OCRs, place the breaker on “Recloser Blocked”.

STEP 3:

If the OCD holds after the several minutes, place the OCD back to NORMAL by disabling the Non-Reclosing or Recloser Blocked functions or Enabling the Recloser Function.

ADDITIONAL INSTRUCTIONS:

- Do not respond on the **FIRST OCCURRENCE** when Dispatch calls about a voltage sag or blink to the LANL system. When there is a substation breaker operation at The LAC Townsite substation, EVERYONE tied to the substation (including LANL) will experience a voltage sag or flicker. Keep note of the occurrence; if the problem persists **SEVERAL** times (say 3 blinks), then go to the substation, determine which feeder experienced the operation, interrogate the OCD, and patrol.

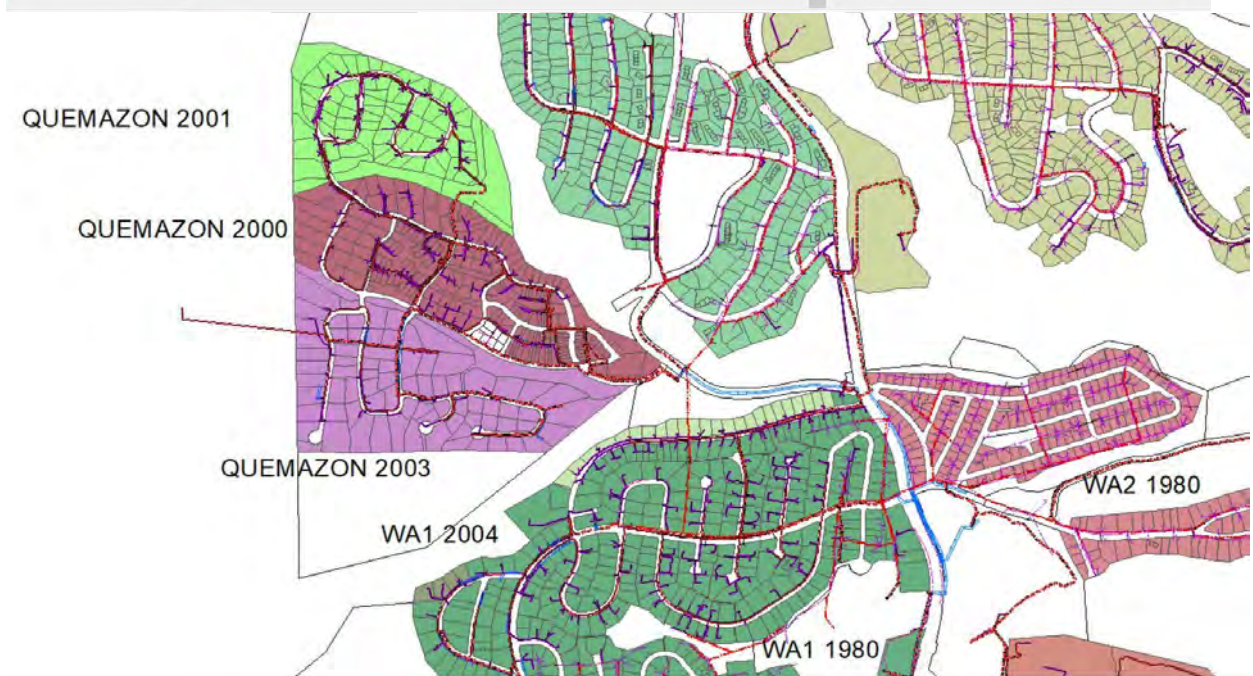
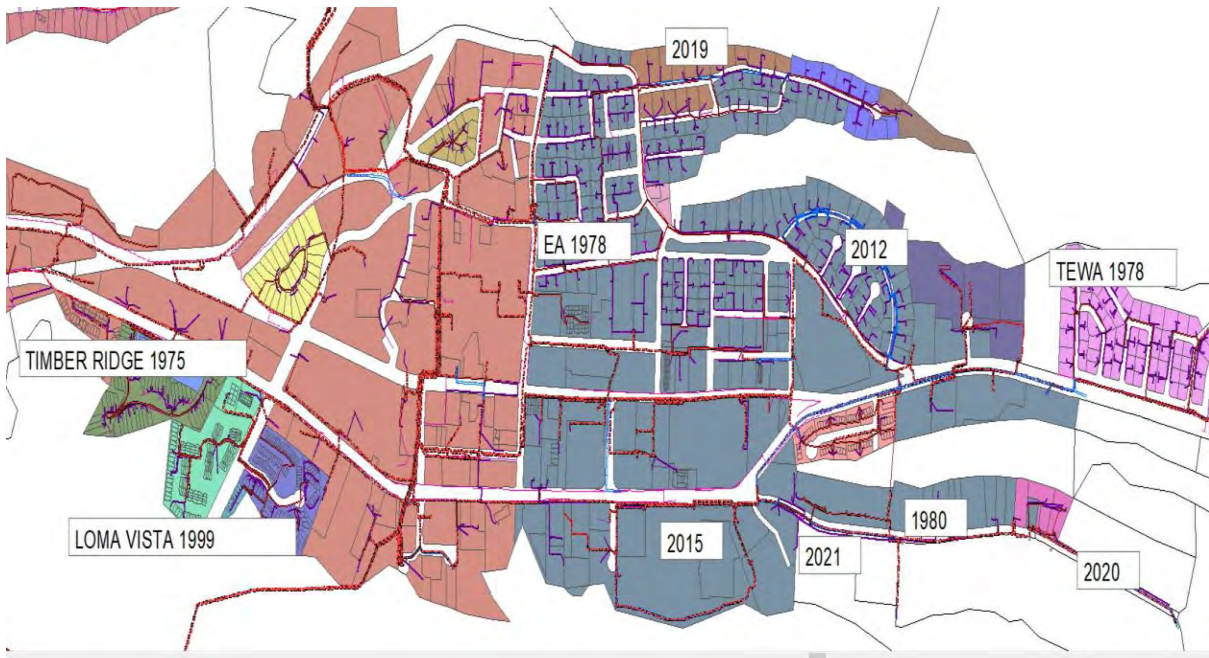
- Similarly, if someone calls that their lights went off-and-on; take note of the call but don't respond unless it happens on **SEVERAL** occasions. It's obvious the OCD/OCR is doing its job; recall that 70-80% of Faults are momentary or transient in nature.
- In either situation, notify Stephen Marez about the incident on the following day. We will then download the OCD information and follow up on the cause and location of the disturbance.

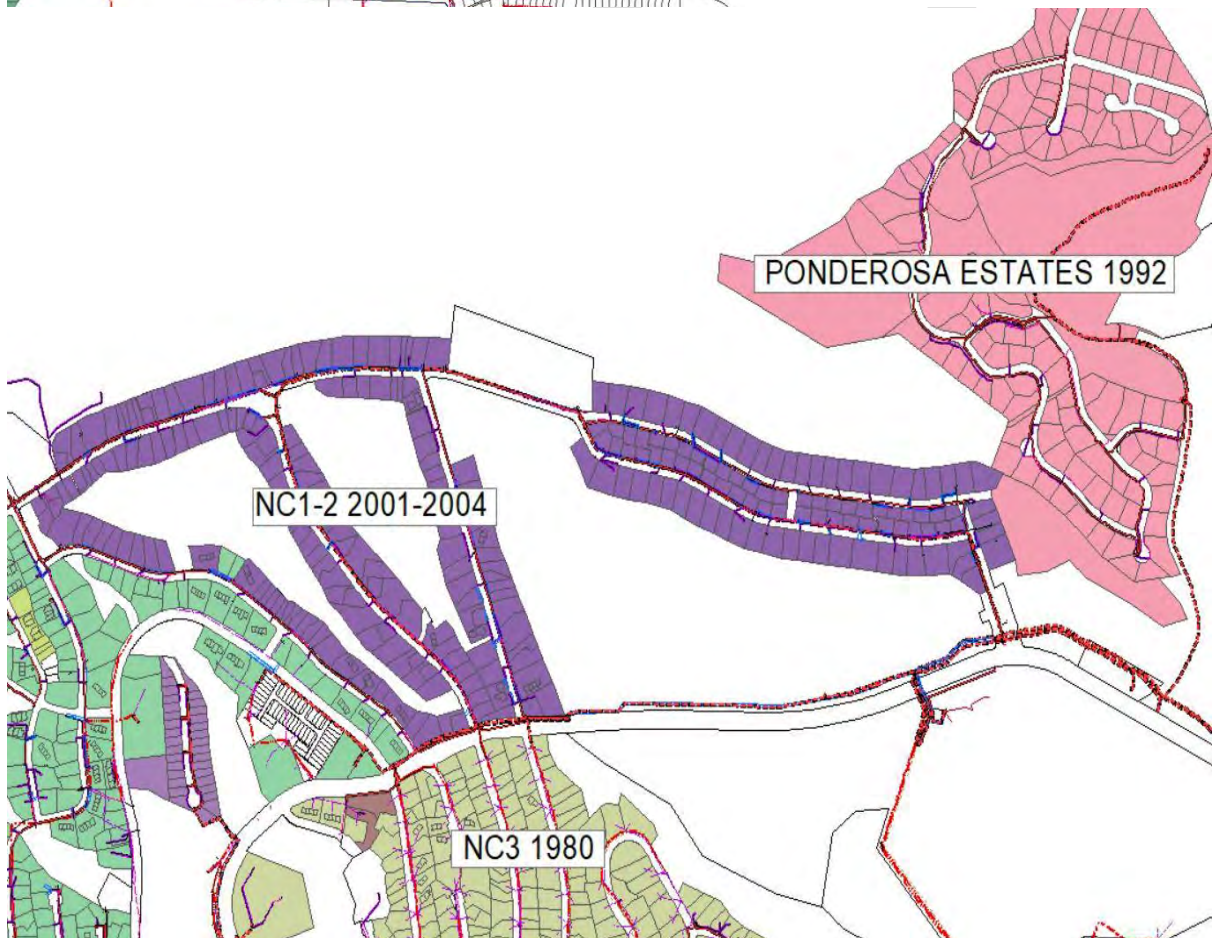
ANY QUESTIONS ASK!!

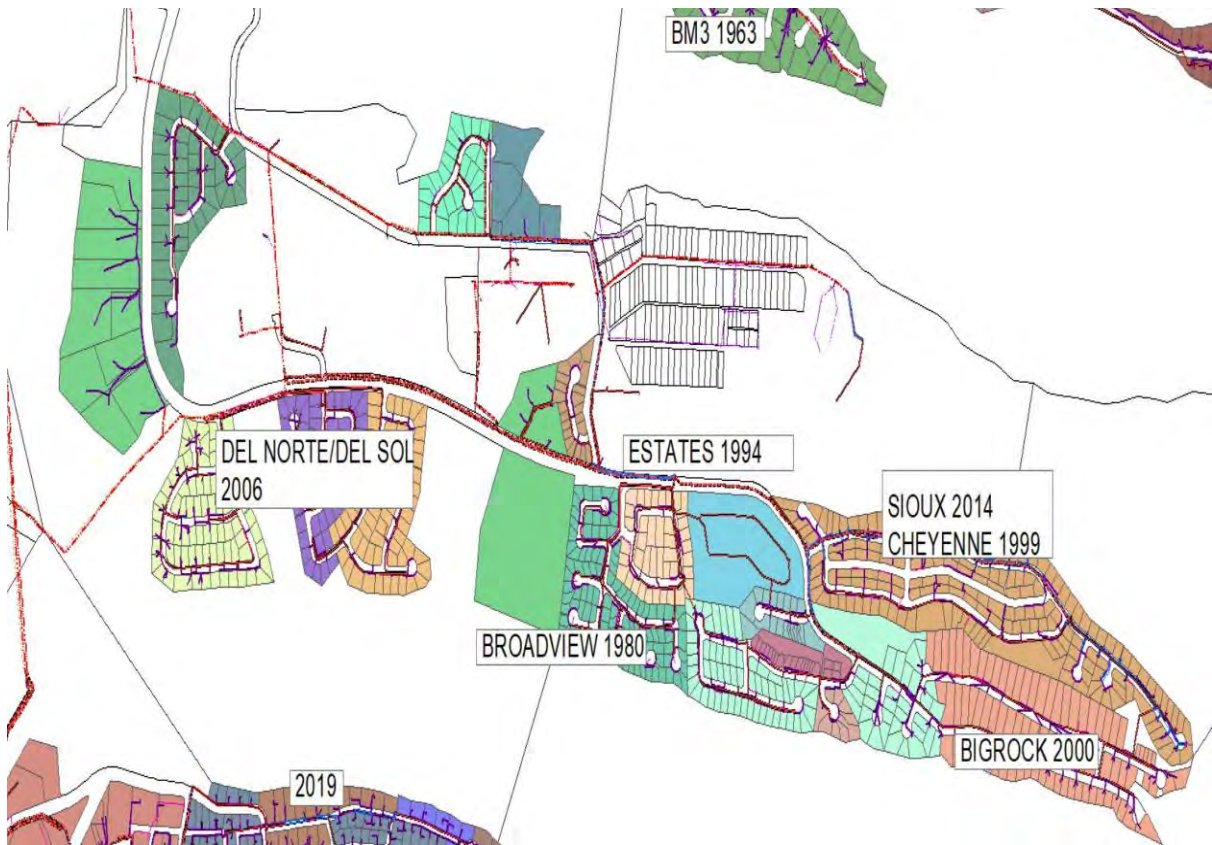
DRAFT

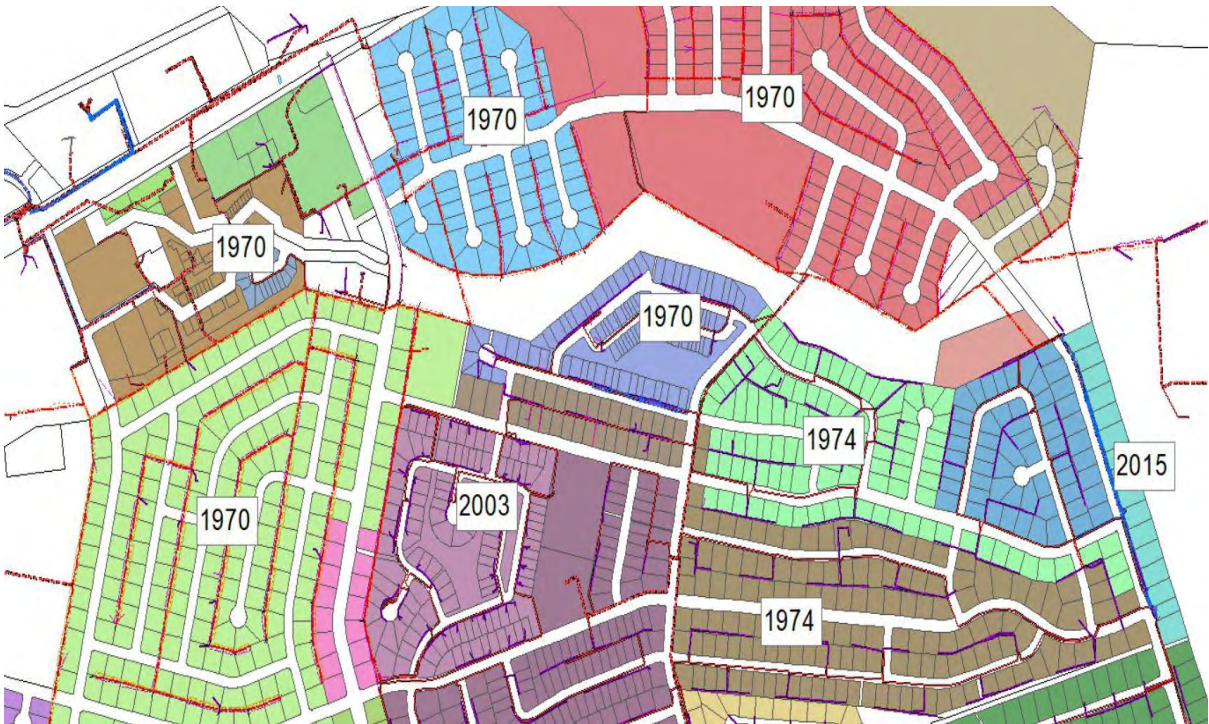
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Appendix B:
SUBDIVISION MAPS WITH AGE











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APPENDIX C: ASSESSMENT PRIORITY LIST FY2021

CIRCUIT-PRIORITY-RANK	DESCRIPTION
13-1-1	REPLACE SWITCHES SC1305A, SC1309 AND SC1309A
13-1-2	THREE PHASE LINE FEEDING MARY DEAL - MULTIPLE FAILURES
13-1-3	NEED TO REPLACE TRANSFORMERS 725 AND 726
13-1-4	NEED TO RELOCATE TRANSFORMERS 1058, 1059 TO SIDEWALK
13-1-5	NEED TO REPLACE TRANSFORMERS 856 AND 857
13-1-6	NEED TO INSTALL SWITCH CABINET IN PLACE OF VAULT - CANYON RD ACROSS 3850
13-2-1	REPLACE 1000' 3 PHASE PRIMARY 500MCM FROM STATION TO OPPENHEIMER
13-2-2	REPLACE OVERHEAD CONDUCTORS AND CROSSARMS ALONG ORANGE
14-1-1	REPLACE 15TH AND IRIS SWITCH SC1401A
14-1-2	REPLACE YMCA SWITCH SC1401A2
14-1-3	REPLACE YMCA TRANSFORMER #1117
14-1-4	REPLACE SOMBRILLO SWITCH SC 1404A AND REPLACE LINE TO NM502
14-1-5	REPLACE EASTGATE SWITCH T23201
14-2-1	REPLACEMENT OF TRANSFORMERS: 852,969,787,788,972,968,970,1117
14-2-2	SHANNON SWITCH INSTALL JUNCTION AND REMOVE SC20505
14-2-3	REPLACEMENT OF SWITCHES SC1404A,1405,1406,1407,1406A,1408,1409,1406B,1410
15-1-1	CHANGE OUT POLES AT ARKANSAS 3091,3093,3095,3098,3087,3095
15-1-2	REPLACE URD PRIMARY LINE FROM SYCAMORE TO PUEBLO COMPLEX
15-1-3	REPLACE SC1517 PMH9 AT QUEMAZON
15-1-4	REPLACE SC 1501A ON ROSE STREET

16-1-1	INSTALL PRIMARY J-BOXES AT 897 & 921 ESTATES DR.
16-1-2	REPLACE PRIMARY CABLE IN LA MESA RRAILER PARK
16-1-3	INSTALL PRIMARY J-BOXES AT CORNER OF KRISTI LN AND BROADVIEW
16-1-4	INSTALL PRIMARY J-BOXES AT CORNER OF TIFFANY AND BROADVIEW
16-1-5	INSTALL LOOP FEED FOR TOTAVI
16-2-1	REPLACE 1 PHASE PRIMARY SECTIONS ON LOS PUEBLOS : 2000' TOTAL
16-2-2	SINGLE PHASE PRIMARY AT LOS PUEBLOS
14-2-3	REPLACEMENT OF SWITCHES 1603A, 1604,1605,1605A,1605B,1610
17-1-1	REPLACE POLE #6152
17-1-2	REPLACE POLE #6154
17-1-2	REPLACE POLE 6137
17-1-3	REPLACE POLE #6138
17-1-4	REPLACE POLE # 6143
17-1-5	REPLACE POLE #6144
17-1-6	REPLACE POLE #6034
17-1-7	REPLACE POLE #6011
17-1-8	REPLACE POLE #6002
17-1-9	REPLACE POLE #6037
18-1-1	REPLACE SWITCH SC1803
18-1-2	INSTALL TRANSFORMER PAD AT MERRICK -
18-1-3	REPLACE OPEN DELTA TRANSFORMERS AT DP ROAD
18-1-4	REMOVE TRANSFORMER 1101 FROM MAIN TIE TO 18 AT DP ROAD
EA4-1-1	REPLACE MULTIPLE POLES AND CROSSARMS

WR1-1-1	REPLACE 4000' 1-PHASE PRIMARY: CHERYL CT, CONNIE
WR1-1-2	REPLACE 4 PADMOUNT SWITCHES ON ARAGON AVE. WR1-3,WR3-2,WR3-3,WR3-4,WR3-5,WR3-6
WR1-1-3	CHANGE OUT TRANSFORMER P3631 AT DNCU MALL
WR2-1-1	CONDUCTOR REPLACEMENT LA SENDA AND PIEDRA LOOP
WR2-1-2	REPLACE CONDUCTOR VALLE DEL SOL



County of Los Alamos

Staff Report

November 17, 2021

Los Alamos, NM 87544
www.losalamosnm.us

Agenda No.:

Index (Council Goals): DPU FY2020 - 1.0 Provide Safe and Reliable Utility Services; DPU FY2020 - 3.0 Be a Customer Service Oriented Organization that is Communicative, Efficient, and Transparent; DPU FY2020 - 5.0 Achieve Environmental Sustainability; DPU FY2020 - 6.0 Develop and Strengthen Partnerships with Stakeholders

Presenters: Steve Cummins

Legislative File: 15055-21

Title

Discussion on San Juan Replacement Energy Plan for the Current ECA Term (led by Jordan Garcia, Power System Supervisor)

Body

As Los Alamos County's impending exit from the San Juan Generating Station (SJGS) approaches, Power Operations has investigating ways to meet the Power Pool's load obligations for the current ECA contract term. One of the Power Operations team's many roles is to secure generation on both short and long-term bases as needed. Short-term energy procurement is a vital piece of our business model as we have a negative reserve margin and are net buyers on the open market. The exit from SJGS will create a large energy shortfall for the Power Pool.

Most generating stations on the grid have their own pricing, and trade individually. Los Alamos has historically subscribed to Mid-Columbia (Mid-C), Palo Verde, and Four Corners. Mid-C is a major trading point in the Pacific Northwest, Palo Verde is a major trading point in the Southwest and Four Corners is one of the most active hubs that the Power Pool has access too. All these market hubs are very volatile depending on the conditions of the market itself. The past year has hosted some of the most intense market fluctuations Operations has witnessed in decades. For illustrative purposes, think about the energy market as three separate markets: long-term, short-term, and real-time. The long-term market sells large amounts of energy for periods greater than one year and incorporates risk and volatility with a market adder. Long-term purchasing really favors standard blocks of energy roughly 25MW increments. The market will offer shaping of energy (non-standard blocks) for additional costs and risks premium. Short-term energy is a one year or less offering (either annually, quarterly, monthly or day ahead). This pricing is more market-based with less risk priced in and less of an adder because conditions are somewhat more predictable. Lastly, the real-time market is now ruled by an optimization engine for the Energy Imbalance Markets.

Each energy market has its strengths and weaknesses, and it is a collective decision by the Power Pool on what approach to adopt. Below are the considerations that go into this decision:

PPA Size: The Pool currently has a reserve margin of -25% that has Power Operations buying energy on the open market throughout the year. The original intent of this PPA was to keep the Power Pool whole considering the retirement of SJGS, the addition of the Uniper 15MW Wind and Solar PPA, and LANL CT operations. While there is forecasted load growth from Super Computing and other Programs during this three-year period, the schedule is flexible. In addition to the increased load the addition of LANL's Combustion Turbine (CT) and its new run schedule can possibly create an

oversupply issue in the shoulder months when power demand is lower. It is imperative that we do not ask the Laboratory to curtail CT operations. If the PPA capacity was any lower than the 25 MWs it would increase our reliance on the short-term market and that pricing has been unfavorable since this past June, with the outlook being more expensive for the next two years. With these considerations the Power Pool decided 25MWs is an optimal PPA size.

PPA Price: As mentioned above, the forward pricing outlook for our receipt points is very high for the next two years. There is particular emphasis on the summer months with pricing curves topping out at over \$213/MWh currently. Locking in a price now will alleviate the reliance on variable pricing in the future. The unique attribute of this PPA is that combined with actual wind and solar generation, the offered price is lower than current and forecast future market rates. The not to exceed amount would be \$38,073,900.00 which is based on futures at the Palo Verde Index (PV), with no renewable energy. The addition of the wind and solar into this PPA decreases the expected amount to \$33,346,650.00, a reduction of \$4,727,250.00. The existing 15 MW PPA with Uniper, contractually gives LAC the first right of refusal on all the excess wind and solar generated from the two projects at the PV index plus \$0.75/MWh non-firm. Power Operations believes it would be difficult taking advantage of the excess capacity due to our Network Integrated Transmission Service Agreement (NITSA) requirements with PNM. This short term PPA will take advantage of this excess generation at a fixed price of \$34.50/MWh, reducing the average market price for the forward-looking high load and low load hours of approximately \$72.75/MWh, to an estimated \$51.00/MWh firm. This PPA is projected to deliver between 28% and 40% renewable energy over the term of this agreement. It is unlikely that the Power Pool would receive competitive bids on a similar PPA because it would require building new wind and solar only to serve a three-year contract. All the wind generation within PNM's balancing area has been sold along with the available transmission capacity. There are more opportunities for additional solar, but they would require a 15-year agreement for building the additional capacity.

PPA Point of Receipt: This PPA will be received on PNM's system which will not include any additional transmission charges. In addition, with lack of merchant generation in WECC, we can point to the generation source for this energy which will be well received with our Balancing Area

Alternatives

Not Replacing the energy Output of SJGS is not an option. We have a load demand that must be met with a known generation resource. In addition, we have impending load growth that will need to be met as well. Power Operations stresses that 25 MW is the optimal PPA size; however, 20 and 30 MW options were prepared for comparison.

For the 20MW option:

- Adds **+\$1/MWh**, for a non-standard block premium; this is roughly the risk premium associated with having to cover when 4C is not available and the wind and solar are not producing.
- The % of carbon free MWs increases as a function of less MWhs but is also limits the upside of the wind generation in a good wind year.

For the 30MW option:

- Adds **+\$2.50/MWh**, for a +\$1/MWh non-standard block premium and a +\$1.50/MWh on the shape as there are more hours not covered by excess renewables
- The expected % of carbon free MWs goes down, but it leaves room in a good wind year to gain that back (just hard to say with exactness). However, even in a good wind year because the wind is largely in the LL hours the price would not be mitigated all that much because of the renewable short fall in the HL hours compared to the 30MW volume.

Fiscal and Staff Impact

Cost of the energy already accounted for in budgeting process. Normal part of Operations for Staff Impact.



County of Los Alamos

Staff Report

November 17, 2021

Los Alamos, NM 87544
www.losalamosnm.us

Agenda No.:

Index (Council Goals):

Presenters: Philo Shelton

Legislative File: 14749-21

Title

Monthly Status Reports

Body

Each month the Board receives in the agenda packet informational reports on various items. No presentation is given, but the Board may discuss any of the reports provided.

Attachments

A - Electric Reliability Report

B - Accounts Receivable Report

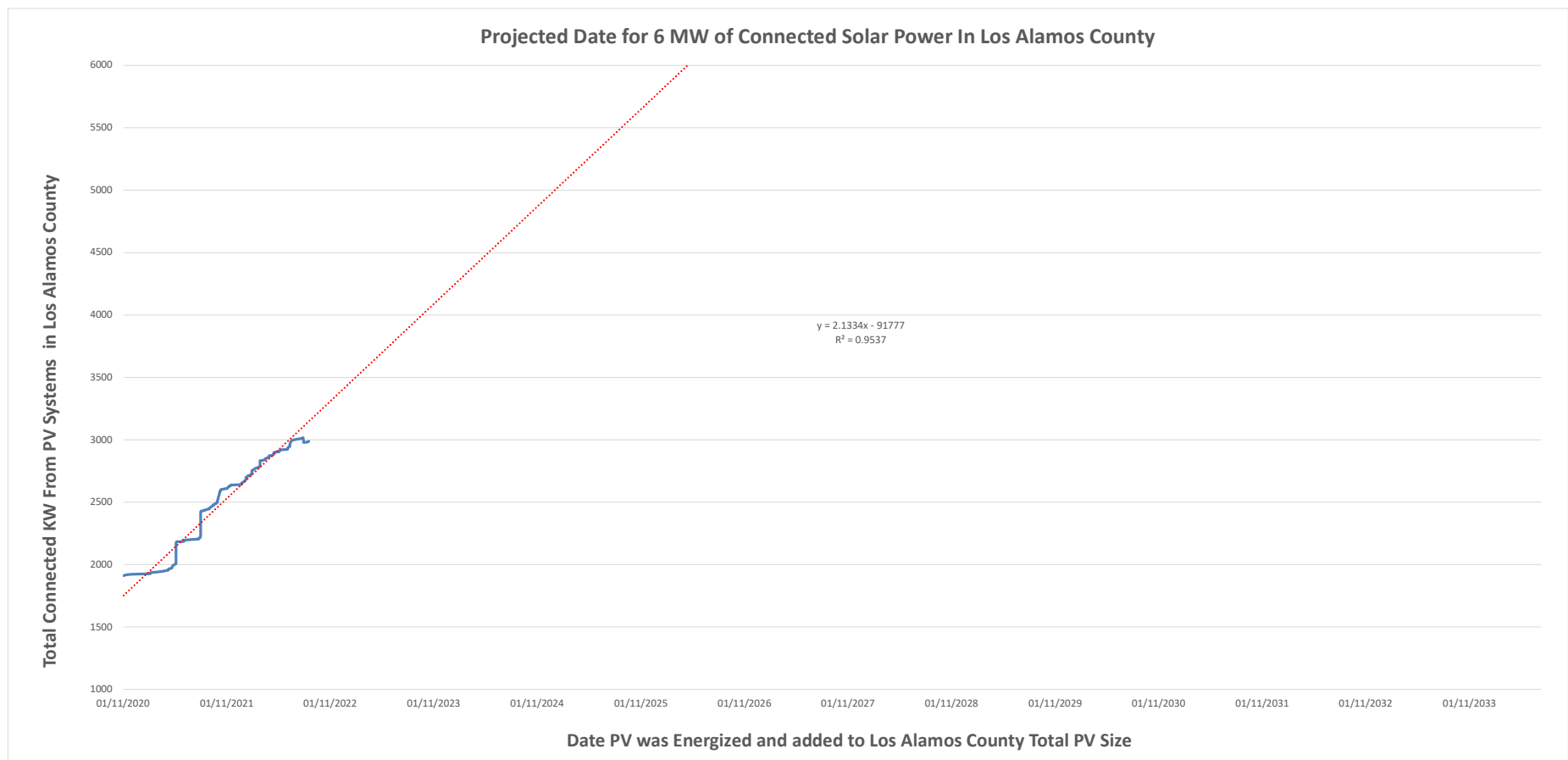
C - Safety Report

STATUS REPORTS

ELECTRIC RELIABILITY

PREPARED BY

Alan Horton
Associate Engineer



PV info:

NUMBER OF CUSTOMERS	335
TOTAL KW	3340.52
CONNECTED KW	3039.76
Connected Residential KW	1356.47
Connected Commercial KW	1683.29
KW Pending	300.76

**Prepared by Alan Horton
Associate Engineer L.A.C.U.**

Page 312 of 324

[illegible]

Twelve Month History	October 2021	
Total # Accounts	9045	
Total # Interruptions	40	
Sum Customer Interruption Durations	12043:16:00	hours:min:sec
# Customers Interrupted	8325.0	
SAIFI (APPA AVG. = 1.0)	0.92	int./cust.
SAIDI (APPA AVG. = 1:00)	1.19	hours:min
CAIDI	1.26	hours:min/INT
ASAI	99.9994%	% available

- **SAIFI - System Average Interruption Frequency Index**

A measure of interruptions per customer (Per Year)

$$\text{SAIFI} = \frac{(\text{Total number of customer interruptions})}{(\text{Total number of customers served})}$$

- **SAIDI – System Average Interruption Duration Index**

A measure of outage time per customer if all customers were out at the same time (hours per year)

$$\text{SAIDI} = \frac{(\text{Sum of all customer outage durations})}{(\text{Total number of customers served})}$$

- **CAIDI – Customer Average Interruption Duration Index**

A measure of the average outage duration per customer (hours per interruption)

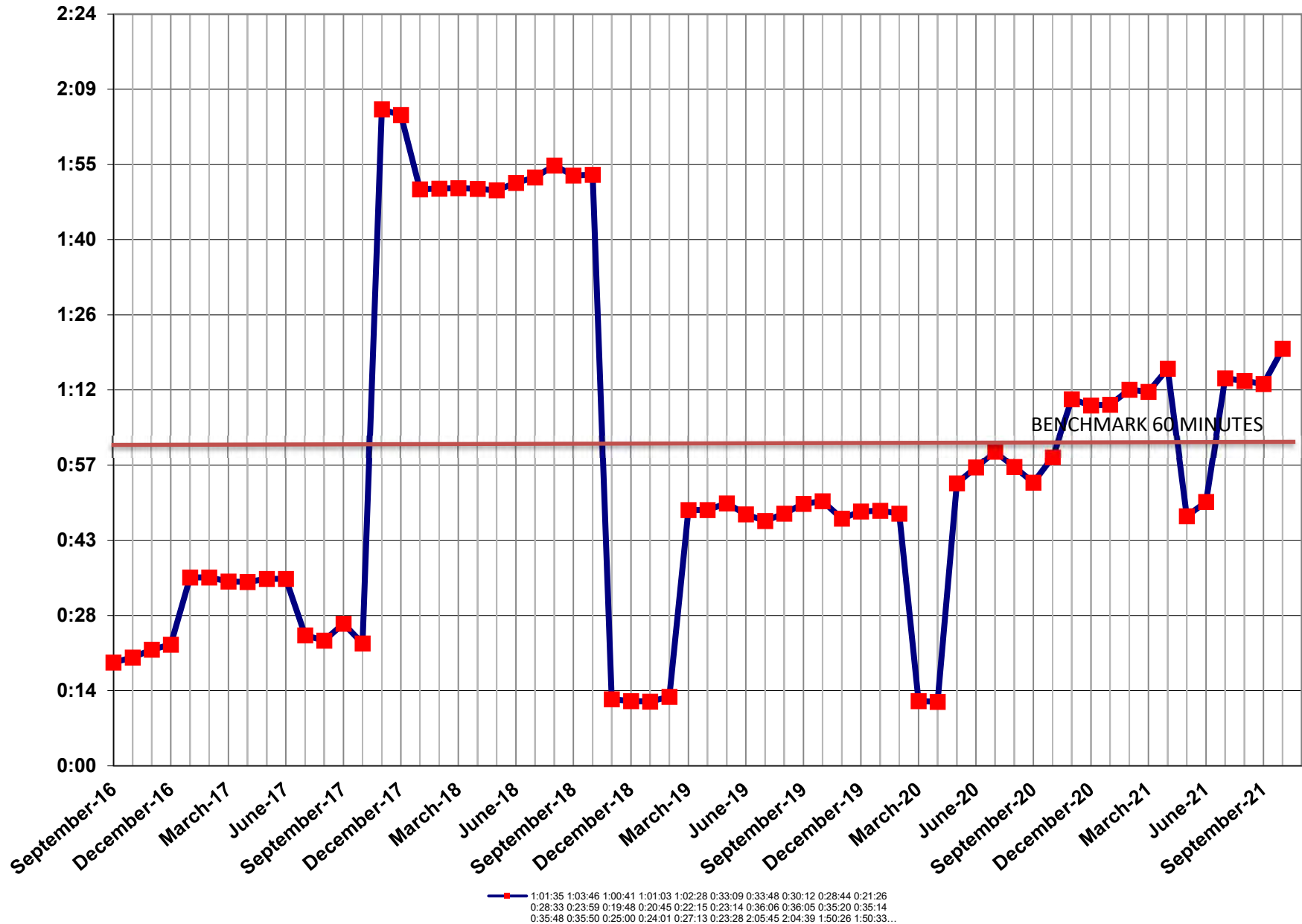
$$\text{CAIDI} = \frac{(\text{Sum of all customer outage durations})}{(\text{Total number of customer interruptions})} = \frac{\text{SAIDI}}{\text{SAIFI}}$$

- **ASAI – Average System Availability Index**

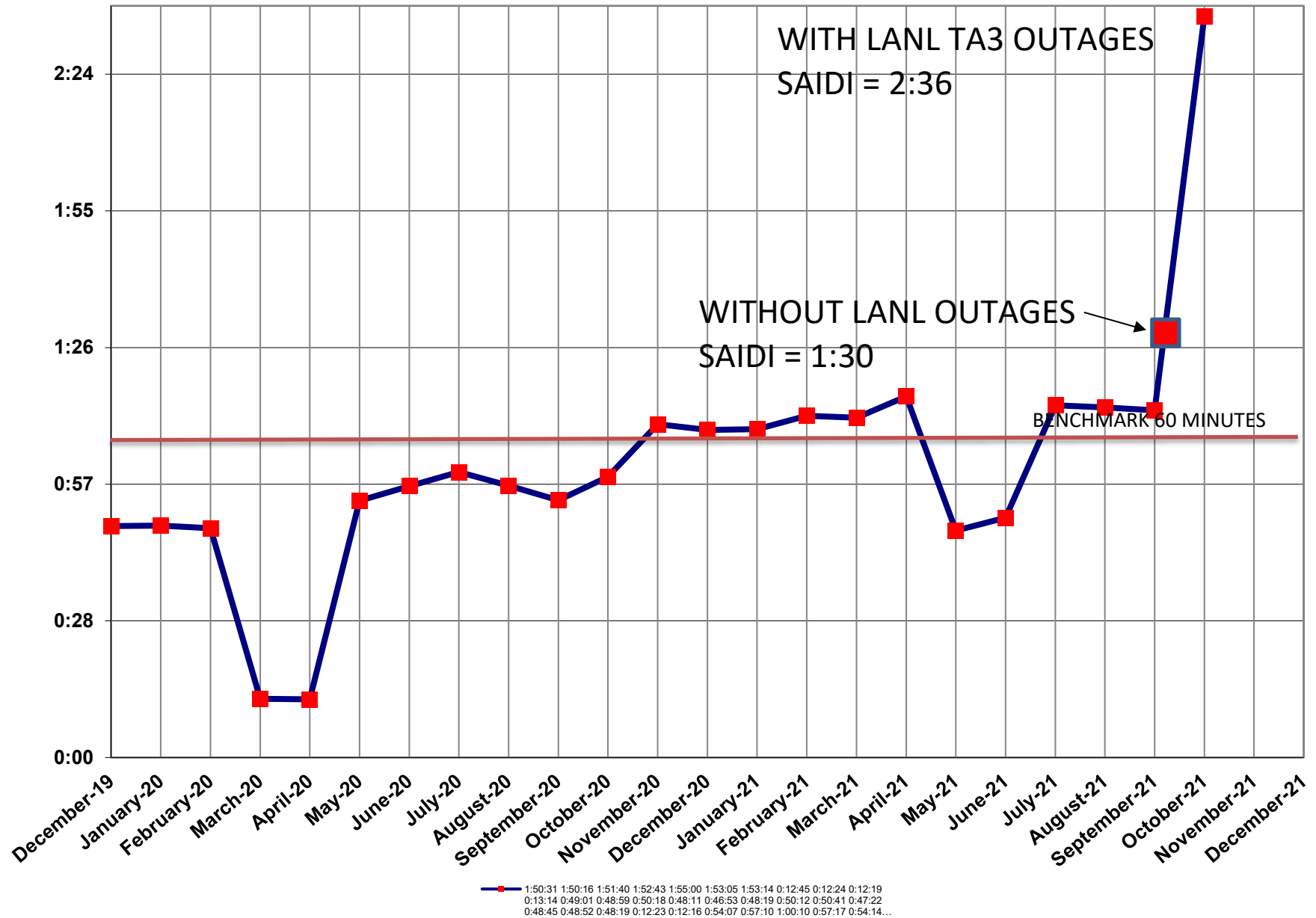
A measure of the average service availability (Per unit)

$$\text{ASAI} = \frac{(\text{Service hours available})}{(\text{Customer demand hours})} = \frac{8760 - \text{SAIDI}}{8760}$$

EACH POINT IS A 12 MONTH SAIDI HISTORY
1:00 = APPA BENCHMARK SAIDI



EACH POINT IS A 12 MONTH SAIDI HISTORY
1:00 = APPA BENCHMARK SAIDI



STATUS REPORTS

ACCOUNTS RECEIVABLES

PREPARED BY

Joann Gentry
Senior Management Analyst

Los Alamos County Utilities Department
Active Receivables Over 90 Days Past Due
November 1, 2021

Account	Customer ID	Acct Type	Comments	90 - 119	120 +
3000629	2109228	CM	Email to corporate for payment on account	\$ 65.27	\$ -
3004096	2215647	RS	Current payment arrangement, Pd \$360 on 11/2	\$ 82.00	\$ -
3002803	2098438	RS	Current payment arrangement	\$ 83.05	\$ -
3002770	2119478	RS	Door Tag issued 11/2/2021, Pd \$321.66 on 11/3	\$ 84.04	\$ -
3007810	2014855	RS	Current payment arrangement, Pd \$270 on 11/5	\$ 94.26	\$ -
3000323	2075918	CM	Email to AP on past due account	\$ 99.49	\$ -
3002822	2093218	RS	Door Tag issued 11/2/2021, Pd \$571.14 on 11/3	\$ 122.35	\$ -
3007047	2021698	CM	Current payment arrangement, Pd \$900 on 11/5	\$ 146.09	\$ -
3002100	2102038	RS	Door tag issued 11/3/2021, Pd \$609.52 on 11/5	\$ 163.86	\$ -
3002818	2137568	RS	Door Tag issued 11/2/2021, Pd \$150 & setup Payment Arrangement	\$ 163.87	\$ -
3004109	2216012	RS	Door Tag issued 11/3/2021, Pd \$530.27 on 11/3	\$ 168.29	\$ -
3002363	2045808	RS	Door Tag issued 11/2/2021, Pd \$300 on 11/5	\$ 218.07	\$ -
3003527	2011346	RS	Paid \$877.74 on 11/2/2021	\$ 234.20	\$ -
3003563	2216289	RS	Door tag issued 11/3/2021	\$ 249.64	\$ -
3200050	2215671	RS	Paid \$882.19, no longer 90 days past due	\$ 296.03	\$ -
3004918	2214789	RS	Door Tag issued 11/2/2021, Pd \$814.13 on 11/5	\$ 395.98	\$ -
3005246	2000373	RS	Current payment arrangement, Pd \$160 on 11/2	\$ 183.46	\$ 1.95
3005024	2016194	RS	Current payment arrangement, Pd \$400 on 11/1	\$ 353.47	\$ 3.62
3002801	2112548	RS	Door Tag issued 11/2/2021	\$ 166.24	\$ 34.06
3200074	2215539	CM	Emailed ACH form, will draft acct monthly	\$ 86.09	\$ 44.47
3000320	2075918	SC	Email to AP on past due account	\$ 173.01	\$ 45.45
3008024	2020168	RS	Current payment arrangement	\$ 205.06	\$ 52.09
3006107	2026961	RS	Paid \$500 on 11/2/2021	\$ 266.74	\$ 97.88
3008478	2024535	RS	Inactive to active 10/14/2021, Pd \$102.01 on 11/5	\$ -	\$ 102.01
3010128	2114898	RS	Current payment arrangement	\$ 15.35	\$ 118.51
3002477	2009142	RS	Current payment arrangement	\$ 171.09	\$ 130.03
3009945	2136208	RS	Inactive to active 10/06/2021	\$ -	\$ 192.48
3007256	2022141	RS	House Vacant - Lien on property	\$ -	\$ 330.75
3004329	2069558	RS	Current payment arrangement	\$ 187.54	\$ 350.45
3001502	2106778	CM	Current payment arrangement	\$ 274.75	\$ 398.58
3004242	2208833	RS	Door Tag issued 11/2/2021, Pd \$200 on 11/4	\$ 57.26	\$ 425.45
3002412	2003472	RS	Door tag issued 11/3/2021-Property Lien	\$ 41.37	\$ 454.29
3001509	2136448	CM	Current payment arrangement	\$ 1,087.30	\$ 802.83
3006274	2097578	RS	Current payment arrangement, applied ERAP, Pd \$150 on 11/3	\$ 1,149.36	\$ 804.63
3007360	2015299	RS	Current payment arrangement	\$ 284.69	\$ 934.19
3002328	2139618	RS	Door Tag issued 11/2/2021	\$ 65.67	\$ 994.33
3004024	2004969	RS	Current payment arrangement	\$ -	\$ 1,146.13
3003969	2012357	RS	Door Tag issued 11/2/2021, Pd \$500 on 11/2	\$ 166.61	\$ 1,274.00
3004060	2085918	RS	Door Tag issued 11/2/2021	\$ 137.63	\$ 1,289.08
3005737	2028518	RS	Current payment arrangement - Property Lien, Pd \$150 n 11/2	\$ 286.23	\$ 1,570.90
3006513	2036208	RS	Property Lien	\$ 265.83	\$ 2,891.75
				\$ 8,291.24	\$ 14,489.91
41 Accounts					<u>\$ 22,781.15</u>

Los Alamos County Utilities Department
Receivables More than 60 Days Inactive Accounts
November 1, 2021

YEAR	OUTSTANDING 11/1	# OF ACCOUNTS	OUTSTANDING 10/1	# OF ACCOUNTS
FY18	\$ 18,165.87	89	\$ 18,267.88	90
FY19	\$ 52,525.50	195	\$ 52,525.50	195
FY20	\$ 50,122.60	192	\$ 50,122.60	192
FY21	\$ 62,911.56	350	\$ 60,972.38	349
FY22	\$ 12,588.44	95	\$ 9,648.79	60
TOTAL	\$ 196,313.97	921	\$ 191,537.15	886

YEAR	Account Type	OUTSTANDING 11/1	# OF ACCOUNTS	OUTSTANDING 10/1	# OF ACCOUNTS
FY18	Residential	\$ 13,018.13	82	\$ 13,120.14	83
	Commercial	\$ 5,147.74	7	\$ 5,147.74	7
FY19	Residential	\$ 49,945.16	177	\$ 49,945.16	177
	Commercial	\$ 2,580.34	18	\$ 2,580.34	18
FY20	Residential	\$ 42,301.74	181	\$ 42,301.74	181
	Commercial	\$ 7,820.86	11	\$ 7,820.86	11
FY21	Residential	\$ 49,705.94	324	\$ 49,716.76	324
	Commercial	\$ 13,205.62	26	\$ 11,255.62	25
FY22	Residential	\$ 9,916.61	91	\$ 5,526.58	58
	Commercial	\$ 2,671.83	4	\$ 4,122.21	2
TOTAL		\$ 196,313.97	921	\$ 191,537.15	886

STATUS REPORTS

SAFETY

PREPARED BY

Steve Klepeis
Risk Manager

DEPARTMENT OF PUBLIC UTILITIES CLAIMS

Information Provided by the County Risk Manager

YEAR	REPORT MONTH	BPU MTG DATE	TORT CLAIMS	WORKERS COMP	PROPERTY DAMAGE
2021	OCT	11/17/21	Claimant alleges furnace dame as result of replacement of gas meter.	NONE	NONE
2021	SEP	10/20/21	1. Claimant states damage to various fixtures in building new filtration system was installed 2. Claimant states gas leak to regulator caused damage to GLR-04	NONE	NONE
2021	AUG	09/15/21	NONE	NONE	NONE
2021	JUL	08/18/21	NONE	NONE	NONE
2021	JUN	07/21/21	NONE	NONE	NONE
2021	MAY	06/16/21	NONE	NONE	NONE
2021	APR	05/19/21	NONE	NONE	NONE
2021	MAR	04/21/21	NONE	NONE	NONE
2021	FEB	03/17/21	1. GWS employee backed into parked unoccupied motorist's vehicle. 2. GWS snowplow slid into motorist under icy conditions.	An ED employee slipped and fell on ice; injured right wrist/hand; able to return to work with no lost days.	A GWS employee backed into a shed at the Aquatic Center. GWS is repairing damage.
2021	JAN	02/24/21	NONE	NONE	1. A GWS employee misjudged backing clearance and backed vehicle 1113 into 1202, with minor damage. 2. A Utilities EP Hydro employee misjudged backing clearance and backed vehicle 1242 into a parked snow plow, resulting only in a small hole in 1242 tailgate. Winter weather conditions.
2020	DEC	01/20/21	On DP Road, GWS driver making turn misjudged clearance and struck a support leg of a flagging machine owned by Southwest Safety; \$3800+- damage claimed.	NONE	NONE
2020	NOV	12/16/20	Claimant alleges that lightning struck a County utility pole causing a voltage surge that damaged his computer. Recommended for denial.	NONE	Claim in which a Utilities employee reported that the toolbox slid in the truck he was driving, and it broke the truck's rear window.

DEPARTMENT OF PUBLIC UTILITIES CLAIMS

Information Provided by the County Risk Manager

YEAR	REPORT MONTH	BPU MTG DATE	TORT CLAIMS	WORKERS COMP	PROPERTY DAMAGE
2020	OCT	11/18/20	Claim involving Electrical Distribution: a claimant alleges that home appliances were damaged due to a failure of their neutral conductor, causing voltage overload in part of their electrical panel. ED has responded that the County has no way of knowing or predicting that a house service conductor will fail. Claim has been recommended for denial.	NONE	NONE
2020	SEP	10/21/20	NONE	A lineman fractured/lacerated his right middle finger when removing a heavy manhole cover; returned to duty same day.	NONE
2020	AUG	09/16/20	Resident and her insurer claim sewer back-up damage due to County main problem	GWS worker using high pressure wand; wand slipped, causing contact and skin abrasion to wrist.	NONE
2020	JUL	08/19/20	Water main repair caused debris to enter residence plumbing, clogging house facilities; plumber's bill claimed.	NONE	Break-in reported at El Vado. Damage and theft of federally owned property being stored on premises; no damage or theft to County.
2020	JUN	07/15/20	A claimant experienced water damage to his residence due to a County water line leak.	Lineman lacerated his hand using a knife to splice cable (6/8/2020)	NONE
2020	MAY	06/17/20	NONE	NONE	NONE
2020	APR	05/20/20	NONE	NONE	NONE
2020	MAR	04/15/20	NONE	NONE	NONE
2020	FEB	03/18/20	NONE	NONE	NONE
2020	JAN	02/19/20	Resident incurred plumber bill; didn't know outage was due to main break.	NONE	NONE

LOS ALAMOS COUNTY - RISK MANAGEMENT

Note: Sept 2021 data was not provided in time for the October 20th BPU Agenda so both months are included for the November 17th BPU Agenda.

MONTH	ADMIN	EL DIST	EL PROD	GWS	WA PROD	WWTP
	Hours Worked	Hours Worked	Hours Worked	Hours Worked	Hours Worked	Hours Worked
Jan - 2021	4445.0	2200.0	2760.0	4754.0	1523.0	1760.0
Feb - 2021	3492.0	1828.0	1954.0	3813.0	1181.0	1333.0
Mar - 2021	3716.0	1907.0	1961.0	3987.0	1277.0	1265.0
Apr - 2021	3722.0	1886.0	1922.0	4009.0	1313.0	1380.0
May - 2021	3653.0	1914.0	1944.0	4286.0	1268.0	1326.0
June - 2021	3638.0	1732.0	1823.0	3818.0	1299.0	1378.0
July - 2021	5803.0	2757.0	2901.0	5429.0	1924.0	2039.0
Aug - 2021	3801.0	1938.0	1850.0	4033.0	1351.0	1346.0
Sept - 2021	3474.0	1714.0	1784.0	3766.0	1281.0	1368.0
Oct - 2021	3502.0	1846.0	1896.0	3996.0	1322.0	1394.0
Nov - 2020	3413.0	1687.0	1780.0	3910.0	1206.0	1429.0
Dec - 2020	4664.0	2358.0	2517.0	5275.0	1589.0	1897.0
Total Hrs Worked ->	47323.0	23767.0	25092.0	51076.0	16534.0	17915.0
Number of Recordable Injury and Illness Cases*	0	1	0	0	0	0
OSHA Recordable Injury & Illness Incidence Rate	0.00	8.42	0.00	0.00	0.00	0.00
Number of OSHA Days Away Days Restricted (DART) cases	0	0	0	0	0	0
OSHA Days Away Days Restricted (DART) Rate	0.00	0.00	0.00	0.00	0.00	0.00

*ONE ELECTRICAL DISTRIBUTION INJURY REMAINS.

THE REMAINING INJURY WAS MINOR. EMPLOYEE WAS TREATED AND PROMPTLY RETURNED TO FULL DUTY.

INJURIES REQUIRING MEDICAL ATTENTION BEYOND FIRST AID ARE REQUIRED TO BE CONSIDERED OSHA RECORDABLE INJURIES , RETAINED IN THIS RECORD FOR 1 YEA REGARDLESS OF HOW MINOR THEY MAY BE.



County of Los Alamos

Staff Report

November 17, 2021

Los Alamos, NM 87544
www.losalamosnm.us

Agenda No.:

Index (Council Goals):

Presenters: Philo Shelton

Legislative File: 14751-21

Title

Department of Public Utilities Quarterly Report - FY22/Q1
(compiled by Julie Williams-Hill, Public Relations Manager)

Body

The Board requested that the quarterly report be presented each quarter that shows the status of the utility and provides project updates.

Attachments

The final Quarterly Report was not available prior to publication of the meeting packet. A copy will be distributed to the board on November 17th or as soon as it is available.