

# Interim Report July 2021 DRAFT

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# DRAFT

**Electrical Subcommittee - I made green text I suggest you skip over for now**

(Task Force and Subcommittee Members are listed on page one after Table of Contents)

**Executive Summary (list of goals) (1-2 pages max)**

→ high level/generalization

? List of recommendations?

**Introduction**

**Background/Research/Data (Baseline or other, if applicable)**

**Protocol Followed (if applicable)**

**1) The County Council and the Board of Public Utilities formalize the net-zero carbon commitment and adopt a more ambitious timeline and benchmarks for its implementation.**

**Background/Research/Data (Baseline or other)**

Currently, Los Alamos County has only three sources of carbon-free electricity, hydroelectric power from Western Area Power Administration (WAPA), El Vado and Abiquiu dams. These resources combined constitute only 12% of the total energy demand for LAC. When the power purchase agreement (PPA) with Uniper comes into effect in 2022, the proportion of carbon-free electricity will increase dramatically to 37%, hydroelectric resources plus Uniper. This tripling of carbon-free power is a tremendous first step and LAC DPU and BPU should be commended for taking it. However, the current pledge to be a net carbon zero electricity provider by 2040 constitutes a goal included by 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. No measurable progress was made on this goal until this recent PPA with Uniper, nearly nine years after its initial adoption. In addition, this commitment by the BPU, while sincere and in good faith, could be amended, extended, or even abandoned at the sole discretion of the BPU. To that end, the County Council and BPU should formalize this net-zero carbon commitment with a timeline and benchmarks for its implementation.

**Outcome**

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

**Case Study/Public Education/Educational Materials (if appropriate)**

## Strategy

### Sub-strategies/Tactics

### Impact/Examples in Other Communities

### Economic Impact

### Benefits Other than CO2 Reduction

## Challenges & Anticipated Barriers

Power purchase agreement with Laramie power plant in WY.

## Community Outreach

## References/Resources

**2) The DPU and BPU should develop a strategy that prevents uncertainty in the LANL/LAC relationship from hindering LAC's achievement of its net carbon zero goals.**

**Time Frame: CY2022**

## Background/Research/Data (Baseline or other)

We recognize that the collaboration between LAC and LANL through the Energy Coordination Agreement (ECA) has benefits for LAC as well as challenges.

## Outcome

### Case Study/Public Education/Educational Materials (if appropriate)

## Strategy

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 fear being that LAC would be “stuck” with too many resources. This has resulted in inaction.

We suggest a different strategy for handling the uncertainty in the ECA, especially since the root cause of the uncertainty is not likely to change. We recommend purchasing portions of utility scale solar and wind projects and or a great amount of PPA such as that LAC has already engaged in as part of the Uniper Contract. 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% to 100% lower cost per unit energy than the average cost of wholesale power in LAC. [Uniper contract, Lazard, NREL]

## Impact/Examples in Other Communities

**Economic Impact:** Cost spikes have become more frequent in recent years. 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 decide to not use them, will render LAC less susceptible to large cost spikes. Furthermore, strategies such as curtailment or

selling power on the open market would allow for cost effective management of these resources.

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**Benefits Other than CO2 Reduction**  
**Challenges & Anticipated Barriers**  
**References/Resources**

### **3) LAC should aggressively pursue investment in energy storage resources.**

#### **Background/Research/Data (Baseline or other)**

An enabling technology required for the smooth integration of intermittent energy sources such as wind and solar into the electrical grid is energy storage. Generation from wind and solar resources does not always coincide with user demand. Such situations can reduce predictability for grid managers.

#### **Outcome**

LAC should hire consultants to develop a strategy constituting multiple pathways for the development and deployment of energy storage resources.

**Case Study/Public Education/Educational Materials (if appropriate)**

#### **Strategy**

**Sub-strategies/Tactics**

**Impact/Examples in Other Communities**

**Economic Impact**

#### **Benefits Other than CO2 Reduction**

Investment in energy storage can increase reliability of the electricity delivered to LAC customers by reducing short duration and local power disruption. As such, part of the consultants research should look at the pros/cons of centralized count wide storage vs. neighborhood storage vs residential storage.

With respect to power back-up, a storage system would also be utilized for peak shaving and general demand management. It would allow the DPU flexibility in choosing when to purchase energy from the grid and better manage local wind and solar generation.

**Challenges & Anticipated Barriers**

**References/Resources**

**4) We recommend DPU and BPU develop an "Intermittency Management Strategy " in order to make informed decisions and prepare for owning intermittent energy generating sources such as wind and solar. Such a study would include but not be limited to demand management, curtailment of generation, and time of use metering.**

**Time Frame: ASAP**

**Background/Research/Data (Baseline or other)**

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Outcome  
Case Study/Public Education/Educational Materials (if appropriate)  
Strategy  
    Sub-strategies/Tactics  
Impact/Examples in Other Communities  
Economic Impact  
Benefits Other than CO2 Reduction  
Challenges & Anticipated Barriers  
References/Resources

5) The DPU and BPU act aggressively to obtain carbon zero resources. following the example of other communities in the purchase of our own renewable resources, such as Taos.

Time Frame  
Background/Research/Data (Baseline or other)  
Outcome  
Case Study/Public Education/Educational Materials (if appropriate)  
Strategy  
    Sub-strategies/Tactics  
Impact/Examples in Other Communities  
Economic Impact  
Benefits Other than CO2 Reduction  
Challenges & Anticipated Barriers  
References/Resources

6) LAC should continue to pursue the feasibility of small modular reactor technologies.

Time Frame  
Background/Research/Data (Baseline or other)  
Outcome  
Case Study/Public Education/Educational Materials (if appropriate)  
Strategy  
    Sub-strategies/Tactics  
Impact/Examples in Other Communities  
Economic Impact  
Benefits Other than CO2 Reduction  
Challenges & Anticipated Barriers  
References/Resources

7) LAC should support the continued adoption of residential PV installation. In addition we recommend that LAC study the benefits of residential storage systems with and without PV installations.

Time Frame  
 Background/Research/Data (Baseline or other)  
 Outcome  
 Case Study/Public Education/Educational Materials (if appropriate)  
 Strategy  
     Sub-strategies/Tactics  
 Impact/Examples in Other Communities  
 Economic Impact  
 Benefits Other than CO2 Reduction  
 Challenges & Anticipated Barriers  
 References/Resources

8) We recommend that the county either purchase utility scale solar and wind resources, or purchase those resources from an entity that aggregates renewable energy resources.

Time Frame  
 Background/Research/Data (Baseline or other)  
 Outcome  
 Case Study/Public Education/Educational Materials (if appropriate)  
 Strategy  
     Sub-strategies/Tactics  
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 References/Resources

9) Anticipating that demand management is encouraged in the "Intermittency Management Strategy" of Recommendation 4, we recommend that a consultant be hired to produce a detailed plan for how LAC should optimally go about implementing demand management.

**Time Frame: Following Recommendation 4**

## **Background/Research/Data**

A range of equipment that consume electric power have some time flexibility in terms of when they use power. A partial list is given here:

- Residential:
  - Electric water heaters
  - Electric cars
  - Air conditioning - the suggestion is cooling down unoccupied buildings at the end of the work day, while there is still solar power, but before people come home

from a traditional work day. Thus, reducing the need for power during the high cost evening maximum.

- County/school operations:
  - Pumping of water to water tanks can be shifted to when solar power is a maximum, which would also be the time of lowest cost power. A calculator should be performed to see if the usage of higher power water pumps might be a wise purchase to take optimal advantage of the cheap, zero carbon, middle day power.
  - Subject matter experts should be engaged to see (a) how much the current waste treatment plants can take advantage of time of strategy designed to use maximum power when solar energy is most abundant, (b) might investment in equipment such as larger tanks be advisable from a demand management perspective. Might it be cost effective to operate the plant differently to use more low cost, zero carbon energy in the middle of the day.

#### **Outcome**

#### **Case Study/Public Education/Educational Materials (if appropriate)**

#### **Strategy**

##### **Sub-strategies/Tactics**

#### **Impact/Examples in Other Communities**

#### **Economic Impact**

#### **Benefits Other than CO2 Reduction**

#### **Challenges & Anticipated Barriers**

#### **References/Resources**

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### **10) DPU and BPU support the expansion of electric vehicle charging infrastructure.**

#### **Time Frame**

#### **Background/Research/Data (Baseline or other)**

#### **Outcome**

#### **Case Study/Public Education/Educational Materials (if appropriate)**

#### **Strategy**

##### **Sub-strategies/Tactics**

#### **Impact/Examples in Other Communities**

#### **Economic Impact**

#### **Benefits Other than CO2 Reduction**

#### **Challenges & Anticipated Barriers**

#### **References/Resources**

### **11) We that the LAC adopt a community education strategy around the adoption of more efficient electric appliances for residential use, i.e. heat-pumps, air-conditioning, water-heaters, magnetic-induction stoves, etc.**

#### **Time Frame**

Background/Research/Data (Baseline or other)

Outcome

Case Study/Public Education/Educational Materials (if appropriate)

Strategy

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Please keep in mind:

- **The word “data” is plural. “These data *are*...”**
- **Goal Time Frames:** Short-term, medium-term, long-term, 6 months, 1-2 years, 3-5 years, 10+ years, 20+ years, ongoing, other?
- **Economic Impact:** Initial investment, maintenance, growth of program, staff needed, etc.
- **Other Benefits:** equity/social justice, beautification, health improvements, shade/green space, other.
- **Community Impact and/or Community Outreach/Education Needed**
- **Please provide a Glossary of Terms/Acronyms** if needed (there will be one Glossary at the end of the whole document)
- Please **bold** the section titles
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