

## Integrated Resource Planning Follow Up Analysis

Presented to: Los Alamos County

November 8, 2017



#### Agenda



- IRP Portfolio Costs
  Adjustments
- Cost of Carbon Neutral Compliance
- Value of a Combined Entity Post 2025
  - Quantified Value Evaluation
  - Qualitative Assessment of Synergies



### **IRP Portfolio Costs Adjustments**

#### Portfolio Costs Adjusted Upwards to More Appropriately Reflect True Solar Costs





- Pace Global adjusted the way the solar resources are modeled to capture full costs, which resulted in incremental costs for all IRP Stochastic Portfolios.
- Stochastic Portfolio 9 remains to be the most cost effective portfolio and IRP conclusions do not change.



### Issue 1: Cost of Carbon Neutral Compliance

# Cost of Carbon Neutral Compliance Estimated at \$14.3 Million Extra for LAC over the IRP Horizon





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Portfolio	LAPP New Builds	Average Reserve Margin (2017-2036)	2017-2036 NPV Costs (\$2016 Thousand)
S9: Solar with Storage Short Capacity	Solar with Storage (onsite): • 2017 - 13 MW • 2025 - 8 MW • 2030 - 6 MW	LAPP Summer: -11% LAPP Winter: -26%	\$415,770
S12: Solar with Storage CC Short Capacity	Solar with Storage (onsite): • 2017 - 10 MW • 2025 - 5 MW CC (offsite): • 2017 - 3 MW • 2025 - 3 MW • 2030 - 6 MW	LAPP Summer: -11% LAPP Winter: -26%	\$401,477

- Stochastic portfolio 9 and 12 provide insight of potential costs of the carbon neutral compliance for LAC.
- No compliance portfolio falls far short of LAC's Carbon Neutral Goal by 2040.

#### **Stochastic Portfolio 9 Focuses on Solar with Storage** (Short Capacity)



# Stochastic Portfolio 12 Replaces Some Solar with Storage Capacity with CC



Stochastic Portfolio 12 builds solar with storage for LANL compliance and purchase shares of a large CC to maintain the same reserve margin as Stochastic Portfolio 9.





### Issue 2: Value of a Combined Entity Post 2025

#### Background: Value of Combined Entity Post 2025



- The IRP (June 2017) involved a preliminary assessment of the benefit of extending the ECA based on a deterministic analysis.
  - The analysis showed that the ECA extension post 2025 provided a lower Net Present Value (NPV) costs for the combined entity than if both parties agreed to separate.
  - This deterministic portfolio however, did not turn out to be the preferred portfolio after completing the stochastic analysis.
  - Hence we need to rerun the evaluation of the ECA extension using the "preferred stochastic portfolio" rather that the deterministic least cost portfolio as the basis of the analysis.
- In addition, our preliminary analysis indicated that the current allocation method does not appear to be optimal, since LANL benefits from joint operation while LAC benefits from separation.
- Since the savings to LANL exceed the higher costs for LAC, there are opportunities for both parties to benefit from continued joint operation with a different allocation scheme.
- The order of magnitude of the savings and costs for both parties must also be updated to reflect a comparison with the Preferred Resource Plan.

#### Value of a Combined Entity Post 2025 is Evident in both Savings and Synergies





#### Combined Portfolio is More Economic than Split Portfolios of LAC and LANL (Post 2025)



Portfolio	LAPP New Builds	Average Reserve Margin (2017-2036)	Total NPV Costs (\$2016 Thousand)
S9 Preferred Resource Plan	Solar with Storage (onsite): • 2017 - 13 MW • 2025 - 8 MW • 2030 - 6 MW	LAPP Summer: -11% LAPP Winter: -26%	LAC : \$64,950 LANL: \$350,820 <b>Total : \$415,770</b>
S13.1 (Split – LAC)	<b>Solar with Storage:</b> • 2017 - 3 MW • 2030 - 6 MW	LAC Summer: 65% LAC Winter: -11%	LAC: \$ 60,037
D13.2 (Split – LANL)	<b>Solar with Storage:</b> • 2017 - 10 MW • 2025 - 8 MW	LANL Summer: -47% LANL Winter: -46%	LANL: \$ 361,530
D13 (LAC + LANL)			LAC:\$60,037 LANL:\$361,530 <b>Total:\$421,567</b>

- Splitting post 2025 results in lower costs for LAC, but higher costs for LANL.
- This suggests potentially different allocation of costs among the two parties for a **win-win** solution.



# Splitting Post 2025 Results in Lower Costs for LAC, but Higher Costs for LANL

NPV (\$000)	Portfolio 13 (Split after 2025)	Portfolio 9 (ECA Extension)	LANL Savings (Expenses)
LANL	361,530	350,820	10,709
LAC	60,037	64,950	(4,912)
LANL + LAC	421,567	415,770	5,797



- Splitting post 2025 results in lower costs for LAC, but higher costs for LANL.
- This suggests potentially different allocation of costs among the two parties for a win-win solution.

#### Compelling Synergies for the LAPP to Extend ECA Post 2025



- Maximize the value of hydro generation resources on federal land by allowing LANL to tap into double RECs.
- A split scenario increases the volume of market transactions for both parties and further exposing them to market risks, unless the parties enter into contractual PPA agreement.
- LAPP optimizes the value of LRS PPA by directly serving LAPP load. In a split scenario, LAC will likely sell excess power into the market.
- A LAPP pool allows the two parties to jointly pursue solar and storage opportunities. This could lead to cost savings through economies of scale.
- A split scenario implies potential duplicate functions in the two organizations for procuring and managing energy, capacity, and ancillary services.
- Complementary load shapes of LANL and LAC provides value to both entities, particularly in a market with increasing DER, intermittent resources, and balancing needs.

# LAC Brings Fully Amortized Low Cost Resources to the Pool



- Two local hydroelectric power plants (Abiquiu and El Vado) with a summer capacity of 23.8 MW and winter capacity of 4 MW. The debt services on both plants have been fully paid off, providing renewable and low cost power.
- A 10 MW PPA with Laramie River Station (LRS) through the life of the plant. As a must-run unit, LRS costs are on par with market prices and could be relied upon to serve its load.
- Solar facility (1 MW) and WAPA hydro PPA (1 MW)



Note: San Juan Unit 4 is expected to retire in 2022.

#### A Split Scenario will Discontinue LANL's Access to LAC's Hydro and Solar Resources that Qualify for Double RECs



- The 1 MW Solar Project at LANL TA-61 site, together with Abiquiu Unit 3 are located on federal land and they qualify for double renewable energy credits (RECs) for LANL.
- In a split scenario, LANL will not have access to the renewable generation credits from the hydro resources and the low priced base load power from LRS, unless a separate contractual arrangement could be struck between LAC and LANL.
- To maintain its renewable generation compliance, LANL must refill these renewable resources locally. This could be challenging from a timing and cost perspective, especially considering the uncertainty of the local federal land availability for solar projects.

#### On the Other Hand, LAC will Need to Be Long In Capacity in the Summer Given its Carbon Neutral Goal by 2040



- To achieve milestones towards a carbon neutral goal by 2040, LAC will need to sell the power produced in LRS to the WECC market, while building/contracting renewable capacities to meet the carbon neutral goal.
- This indicates a long capacity position in the current market outlook that does not reward building portfolios with excess capacity.
- A split scenario will mean that LAC will lose access to the only gas fired generation in the LANL pool.

#### **Complementary Load Shapes are Valuable in a Market with Increasing DER and Balancing Needs**



- LANL and LAC load shapes complement each other.
  - LANL load typically peaks during the afternoon, when the air conditioning and the laboratory equipment are in use
  - LAC load typically peaks in the evening
- Such complementary load shapes provide value to both entities, particularly in a market with increasing DER, intermittent resources, and balancing needs.

