

Foxtail Flats Solar + Battery Energy Storage System

February 7, 2024

Los Alamos Power Pool (LAPP) Goals

- LAC and DOE/NNSA are working together to achieve similar carbon-free electricity goals
 - LAC Carbon neutral goal by 2040
 - Executive Order 14057: 100 percent carbon pollution-free electricity on a net annual basis by 2030, including 50 percent 24/7 carbon pollution-free electricity
- Provide reliable & cost-effective power
- Implement the Integrated Resource Plan's (IRP) path forward: pursue long-term solar, wind and BESS resources to meet load forecast and replace retired generation

LAPP Approval at 12/11/24 Operating Committee Meeting

2. Approval of Foxtail Flats Solar + BESS as LAPP Approved Resources

Mr. Shelton moved that the 170MW Foxtail Flats Solar generation and Battery Energy Storage System resource be approved to be added, to the new Electric Coordination Agreement (ECA), under Attachment A, Exhibits, expected to be signed by July 1, 2025, contingent upon the County finalizing the Power Purchase Agreement (PPA) and an Energy Storage Agreement with D.E Shaw Renewable Investments, and approval by the Board and Council and DOE/NNSA. Ms. Begay seconded.

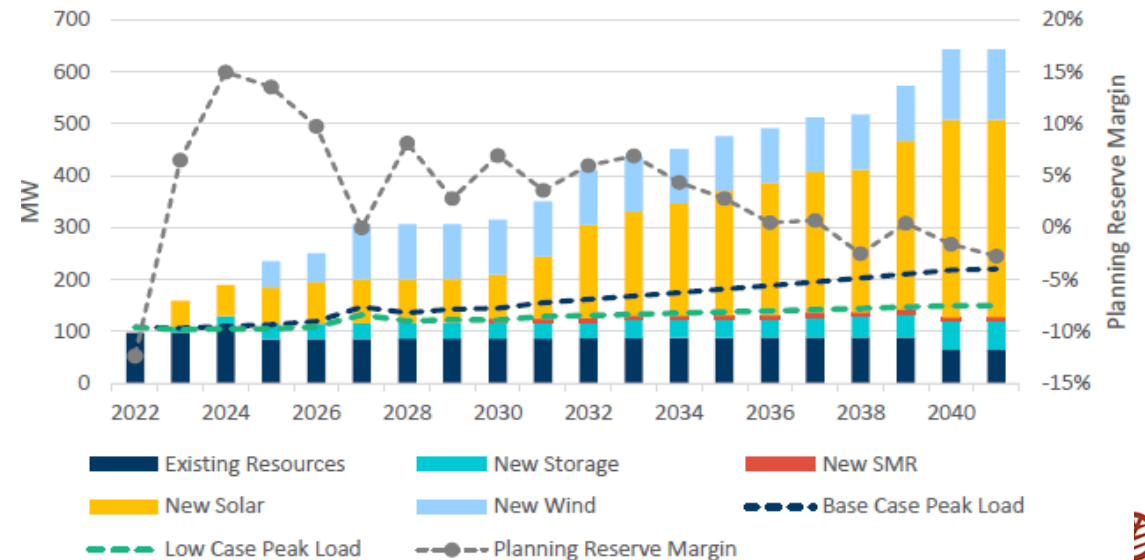
Integrated Resource Plan & Preferred Portfolio

- IRP guides DPU's path to meeting the carbon-free energy goals
- Create a diverse generation and storage portfolio – solar, BESS (storage) and wind
- Geothermal and simple cycle turbine in consideration
- Wind unlikely due to a lack of transmission

Exhibit 3: LAC and LANL IRP Preferred Resource Plan Cumulative New Builds Summary

Year	Storage	Solar	Wind	SMR	Total
	MW	MW	MW	MW	MW
2025	30	70	50	0	150
2027	30	85	105	0	220
2030	30	85	105	8	228
2035	35	240	105	8	388
2040	55	380	135	8	578
2041	55	380	135	8	578

Exhibit 4: Preferred Resource Plan Resources, LAPP Peak Load, and PRM



Why Solar + Battery Energy Storage System?

Pros

- Solar in New Mexico is abundant
- Solar is lower cost than other electric resources
- Solar has a more reliable generation profile than wind
- BESS allows storing excess daytime power and delivering it when needed
- Foxtail Flats is located near four-corners region, which is an ideal location to sell excess power

Cons

- Intermittency
 - Impacted by bad weather
 - No power at night
 - Operationally more complicated
- BESS is expensive and has limitations

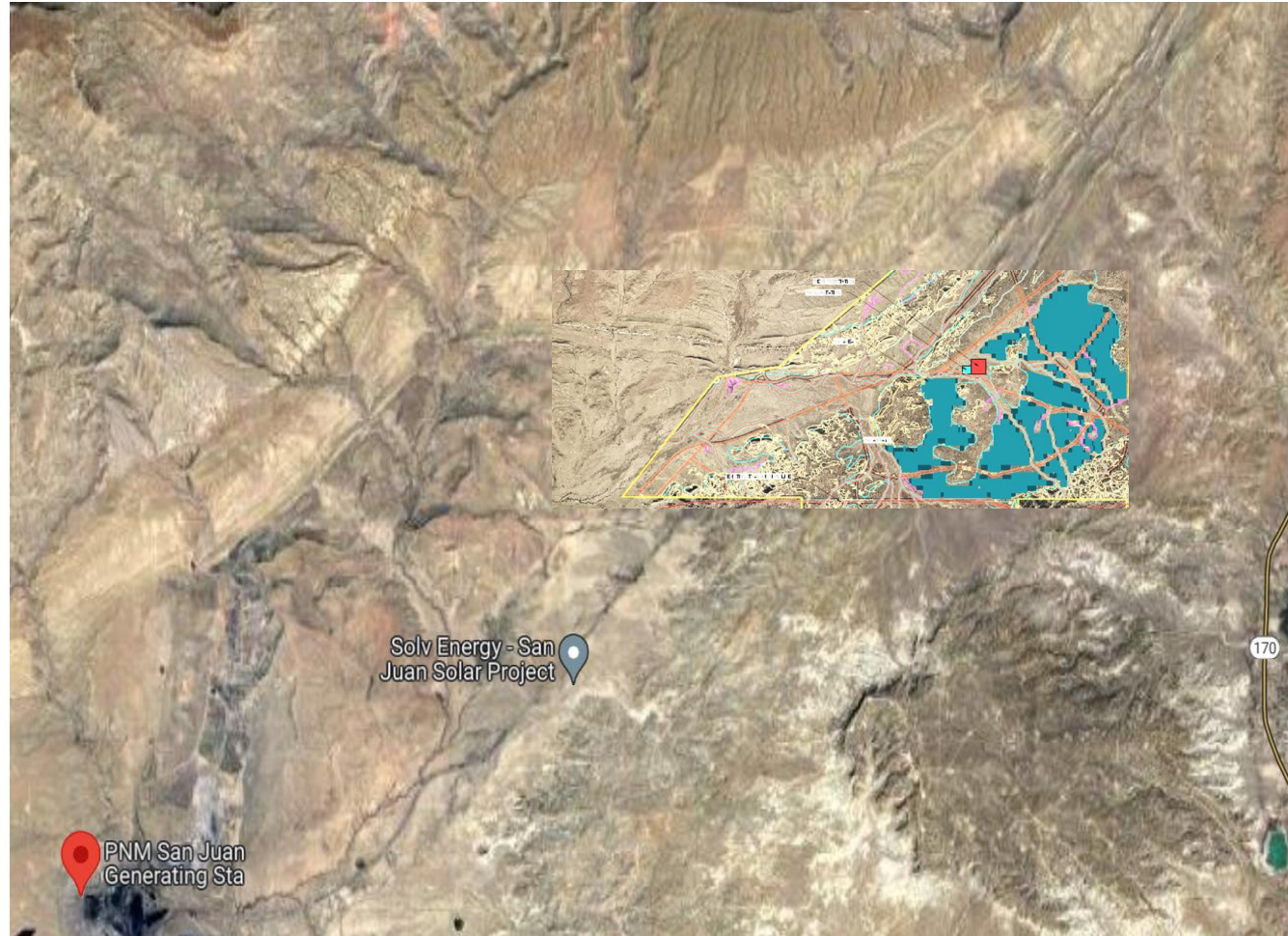
Terms of the Agreements

- **Solar Power Purchase Agreement (PPA)**
 - 170 MW (megawatts) solar for 20 years at \$37.88 / MWh
 - Take-or-pay, Production Tax Credit (PTC) charge if curtailed
- **BESS Energy Storage Agreement (ESA)**
 - 80 MW / 320 MWh of BESS for 20 years at \$13.50 / kW-month
 - 100% of capacity available for all 20 years
 - Can fully charge and discharge once per day

DPU is Pursuing Partnerships for Generation Diversification

- Mercuria
 - 50 MW of solar for 10 years @ \$37.88
 - Mitigates large portion of sales risk for excess solar
 - Strengthens relationship with Mercuria who has proven to be reliable with providing recourses and solutions to LAC
- Sandia/Kirtland
 - 30 MW of solar + 20 MW / 80 MWh of BESS for 20 years @ \$37.88 & \$13.50 / kw-month
 - 20-year commitment establishes a stronger partnership
- LAPP
 - 90 MW solar for first 10 years
 - 140 MW solar after 10 years
 - 60 MW / 240 MWh BESS for 20 years
 - With potential to grow as BESS tech advances

Proposed PV + BESS Project



Proposed PV + BESS Project

- Lease option in effect
- Transmission partially constructed
- 1 of 2 Transformers on-hand, 2nd has been ordered
- 400 MW interconnection agreement with PNM is in effect, avoids the 3-to-5-year interconnection study facing new projects
- DESRI's San Juan Solar project is under construction, planned commissioning in 2024

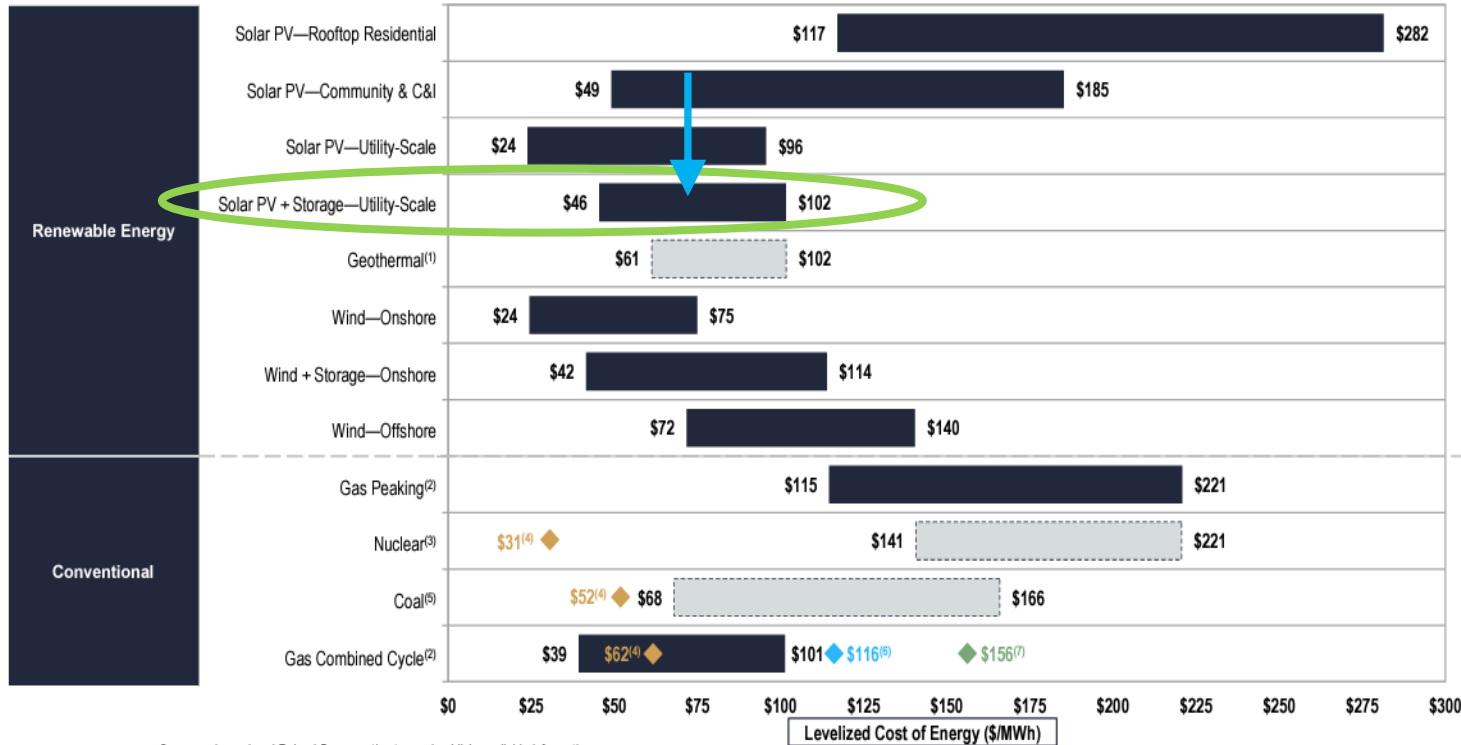
Solar + BESS Costs and Carbon-Free Energy

- Average Solar + BESS cost: \$74.79 / MWh (assumes full 320 MWh charge and discharge each day)
- Fixed price for 20 years, no escalator
- LAPP actual CY2023 cost of power: \$76.94 / MWh
- LAPP 24% carbon-free in 2023
- Net of Mercuria, Foxtail Flats Solar's 350,000 MWh / year results in LAPP 72% carbon-free in 2027
- Net of Mercuria and Sandia Kirtland, Foxtail Flats Solar's 260,000 MWh / year results in LAPP 59% carbon-free in 2027

Solar + BESS Costs

Levelized Cost of Energy Comparison—Unsubsidized Analysis

Selected renewable energy generation technologies are cost-competitive with conventional generation technologies under certain circumstances



- Foxtail Flats Solar is in the expected price range for solar + BESS projects

How to use the BESS

Date / HE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
HASP Average																								
2 year HASP Average	\$ 52	\$ 58	\$ 57	\$ 58	\$ 61	\$ 68	\$ 73	\$ 74	\$ 73	\$ 70	\$ 70	\$ 71	\$ 73	\$ 76	\$ 82	\$ 87	\$ 96	\$ 105	\$ 108	\$ 110	\$ 100	\$ 84	\$ 72	\$ 66
Jan.	\$ 57	\$ 64	\$ 64	\$ 64	\$ 68	\$ 75	\$ 82	\$ 84	\$ 83	\$ 81	\$ 81	\$ 83	\$ 85	\$ 88	\$ 94	\$ 100	\$ 109	\$ 119	\$ 121	\$ 124	\$ 113	\$ 93	\$ 81	\$ 73
Feb.	\$ 58	\$ 65	\$ 64	\$ 64	\$ 68	\$ 75	\$ 82	\$ 84	\$ 83	\$ 80	\$ 80	\$ 82	\$ 84	\$ 87	\$ 93	\$ 98	\$ 108	\$ 118	\$ 120	\$ 122	\$ 111	\$ 91	\$ 81	\$ 73
Mar.	\$ 57	\$ 64	\$ 63	\$ 63	\$ 67	\$ 75	\$ 81	\$ 84	\$ 83	\$ 79	\$ 79	\$ 81	\$ 82	\$ 85	\$ 91	\$ 96	\$ 106	\$ 116	\$ 118	\$ 121	\$ 110	\$ 91	\$ 79	\$ 72
Apr.	\$ 56	\$ 63	\$ 62	\$ 63	\$ 66	\$ 74	\$ 81	\$ 83	\$ 82	\$ 78	\$ 78	\$ 80	\$ 81	\$ 84	\$ 89	\$ 95	\$ 104	\$ 114	\$ 116	\$ 119	\$ 108	\$ 90	\$ 78	\$ 71
May.	\$ 56	\$ 63	\$ 62	\$ 63	\$ 66	\$ 74	\$ 80	\$ 82	\$ 80	\$ 77	\$ 77	\$ 78	\$ 79	\$ 82	\$ 88	\$ 93	\$ 102	\$ 112	\$ 114	\$ 116	\$ 106	\$ 88	\$ 78	\$ 71
Jun.	\$ 55	\$ 61	\$ 61	\$ 61	\$ 65	\$ 72	\$ 79	\$ 80	\$ 78	\$ 75	\$ 74	\$ 76	\$ 77	\$ 80	\$ 85	\$ 90	\$ 99	\$ 108	\$ 111	\$ 113	\$ 104	\$ 86	\$ 75	\$ 69
Jul.	\$ 54	\$ 60	\$ 59	\$ 60	\$ 63	\$ 71	\$ 77	\$ 78	\$ 77	\$ 73	\$ 73	\$ 75	\$ 76	\$ 80	\$ 85	\$ 90	\$ 99	\$ 109	\$ 112	\$ 114	\$ 104	\$ 87	\$ 75	\$ 68
Aug.	\$ 53	\$ 59	\$ 59	\$ 59	\$ 63	\$ 70	\$ 76	\$ 77	\$ 75	\$ 72	\$ 72	\$ 74	\$ 76	\$ 80	\$ 85	\$ 91	\$ 100	\$ 110	\$ 114	\$ 116	\$ 105	\$ 87	\$ 74	\$ 68
Sept.	\$ 53	\$ 58	\$ 58	\$ 58	\$ 61	\$ 68	\$ 74	\$ 75	\$ 73	\$ 71	\$ 71	\$ 73	\$ 74	\$ 77	\$ 83	\$ 88	\$ 97	\$ 106	\$ 110	\$ 112	\$ 101	\$ 85	\$ 72	\$ 66
Oct.	\$ 52	\$ 58	\$ 57	\$ 58	\$ 61	\$ 68	\$ 73	\$ 75	\$ 73	\$ 70	\$ 70	\$ 72	\$ 73	\$ 77	\$ 82	\$ 88	\$ 97	\$ 106	\$ 109	\$ 111	\$ 100	\$ 84	\$ 72	\$ 66
Nov.	\$ 52	\$ 58	\$ 57	\$ 58	\$ 61	\$ 68	\$ 73	\$ 74	\$ 73	\$ 70	\$ 70	\$ 71	\$ 73	\$ 76	\$ 82	\$ 87	\$ 96	\$ 105	\$ 108	\$ 110	\$ 100	\$ 84	\$ 72	\$ 66
Dec.	\$ 54	\$ 61	\$ 61	\$ 61	\$ 64	\$ 71	\$ 77	\$ 80	\$ 79	\$ 77	\$ 77	\$ 80	\$ 83	\$ 86	\$ 93	\$ 99	\$ 109	\$ 118	\$ 119	\$ 122	\$ 111	\$ 91	\$ 79	\$ 71

- Discharging the BESS from 5-10pm optimizes the system value
- 80MW/320MWh BESS: 53MW discharge for 6 hours

Cost Summary

- Fixed price for 20-years, no escalator
- Solar cost: \$18.8 million/year
- Sales to Mercuria \$5.54 million/year
- Net Solar cost: \$13.3 million/year
- BESS cost: \$13.0 million/year
- Solar + BESS Cost: \$26.3 million/year
- Total solar delivered energy: 497,000 MWh/year
- Net LAPP delivered energy: 263,363 MWh/year

Reasons for Recommending

- Ideal combination of factors
 - Carbon free – Builds towards 2022 IRP preferred portfolio and positive reserve margin
 - Available, needed, and timely – 3-year development
 - cost competitive and fixed price
 - Good location – No Wheeling for delivering energy to LAPP, KAFB/SK, relatively low cost to wheel to Four Corners market
 - High operational flexibility with 80 MW / 320 MWh BESS