LOS ALAMOS

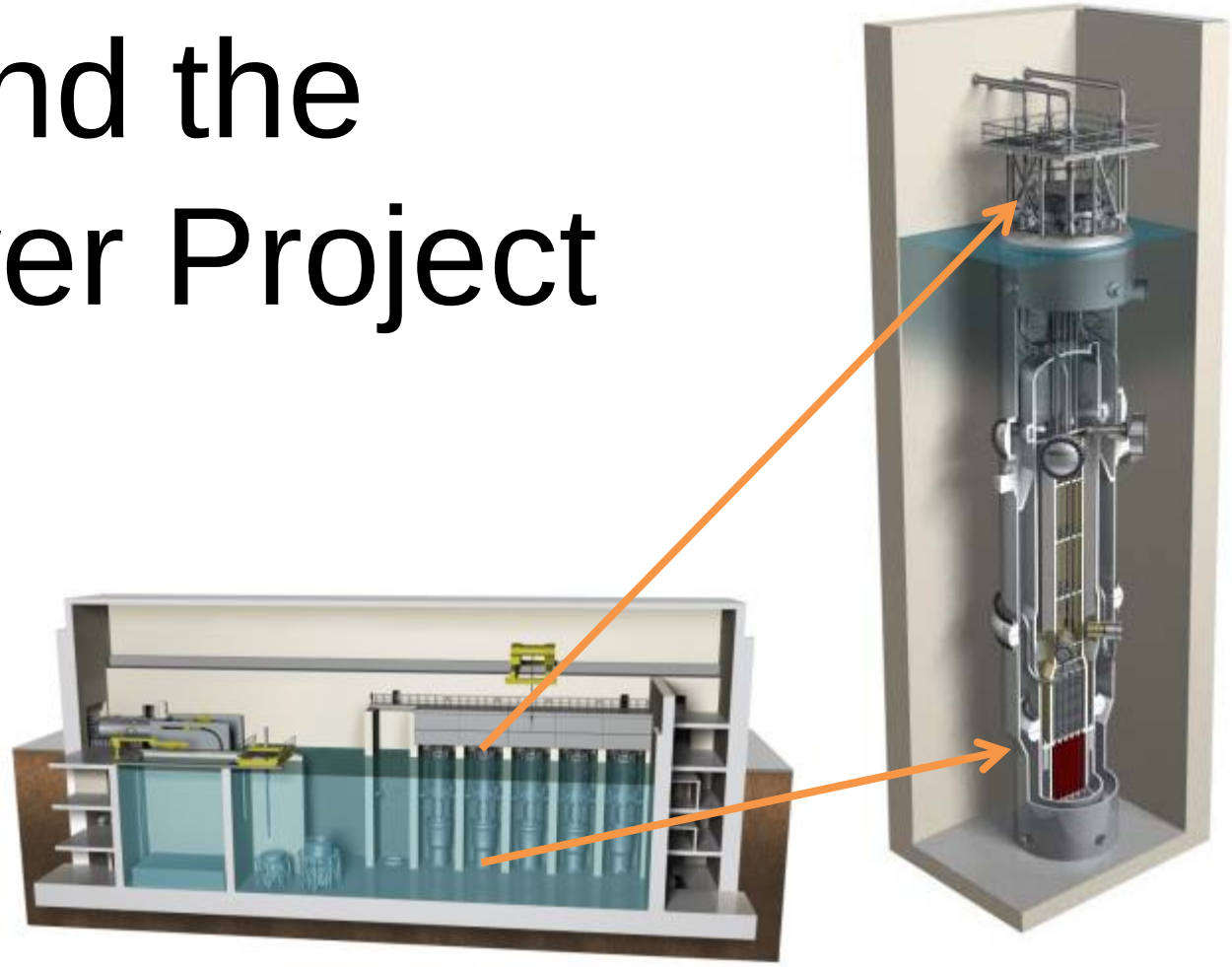
BOARD OF PUBLIC UTILITIES
ADDITIONAL MEETING DOCUMENTS

Additional or revised information or documents are often passed out to the Board at the meetings. Whenever possible, this informational cover page will accompany those documents.

MAKE 20 COPIES OF ANY DOCUMENTS, INCLUDING THIS COVER SHEET, AND RETURN TO JAIME KEPHART PRIOR TO THE MEETING.

MEETING DATE	3/6/2018 (Joint BPU/Council Meeting)
AGENDA ITEM	6.A. Discussion on the Carbon Free Power Project
DOCUMENT TITLE(S)	Los Alamos and the Carbon Free Power Project "Option"
FROM	Steve Cummins, Deputy Utility Manager Power Supply
NEW OR REVISED? Is this a revision that is different from what was in the agenda packet or is it something entirely new?	New
RECOMMENDED ACTION If you have a new or revised recommended motion for the Board, enter it here.	**N/A**
ADDITIONAL INFORMATION Please VERY BRIEFLY explain the purpose of this information or document.	This is the presentation Mr. Cummins gave during the meeting. It was not included in the agenda packet.

Los Alamos and the Carbon Free Power Project "Option"



March 6, 2018

Joint Board of Public Utilities and County Council

Informational Meeting

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Agenda Topics Update

- UAMPS – A Team Approach by Jackie Flowers
- IRP Summary
- Why Nuclear Power
- Power Generation diversified portfolio Option
- High Level Cost Breakdown
- First-Of-A-Kind Risk Management
- Avoiding the pitfalls of Nuclear Power Plant Construction
- Engineering, Procurement and Construction (EPC) Contracts
- Key Takeaways

IRP Summary

IRP considered the following metrics in the analysis:

Cost (LCOE), Risk, Environmental, Operational (Transmission and Largest Contingency Risk, Control Risk, Development Risk and Weather Dependent Risk)

Preferred Resource Plan:

- Solar with Storage built onsite. The firming mechanism could be either battery storage or onsite RICE units.
- If the Carbon Free Power Project (SMNR) costs can be capped and development risk can be mitigated, it could be considered especially in the event that local land becomes unavailable for the amount of solar needed to achieve renewable goals.

Capital Investments:

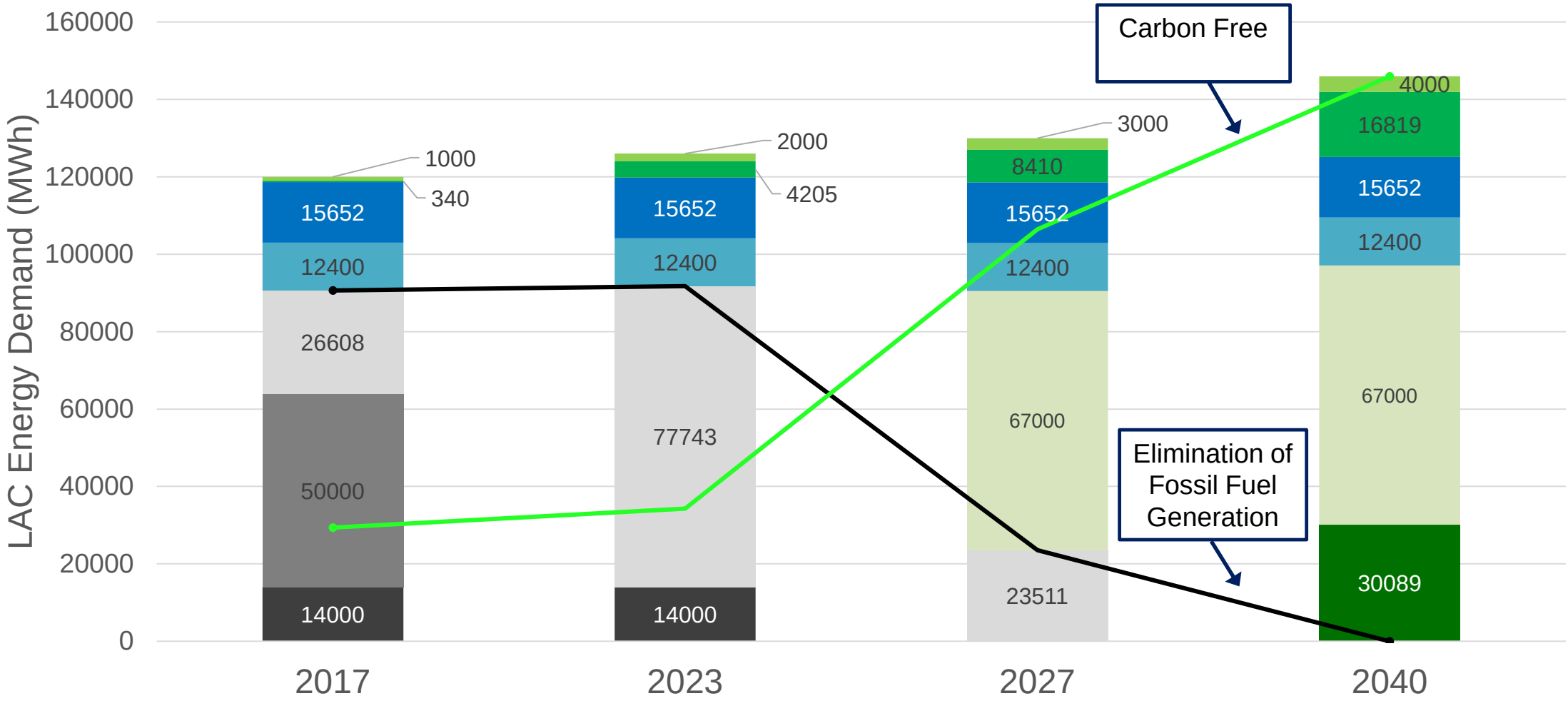
- The current market outlook does not reward building portfolios with excess capacity above load that would be sold into the market.
- A phased approach to purchasing some share of its needs in the market and add smaller and incremental capacity resources on a n as needed basis provides overall lower cost benefits of LAC and preserves the flexibility in the face of future uncertainties.

Why Nuclear Power?

- Carbon free power generation
- 95% capacity factor
- Dispatchable
- Marketable Resource

With more and more renewable energy generation resources on the grid, we believe the greater the need for clean base load power during periods of intermittency.

Power Generation Diversified Portfolio Option



Note: An ECA with LANL beyond 2025 will likely have a power pool arrangement that is significantly different from the current ECA.

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High Level Cost Breakdown

Budget & Plan of Finance (Section 601) **Los Alamos:** *Fully Subscribed (8 MW) 1.3333%*

Estimated Costs to Completion of Development:

	100% Gross Cost	Los Alamos Net of Cost Share	Start	Finish
Through March 2018	$ 4,596,969	$ 148,927	April 2017	**March 2018**
Licensing Period - 1st Phase (Maximum)	$ 6,000,000	$ 80,000	April 2018	**March 2019**
Licensing Period - 1st Phase (Remaining)	$ 83,499,764	$ 877,908	April 2019	**May 2020**
Licensing Period - 2nd Phase (Preliminary)	$ 496,303,067	$ 6,617,374	June 2020	**June 2023**
	$ 587,329,857	$ 7,651,181	April 2017	June 2023

(ii) Acquisition & Construction Preliminary Estimated Costs:

	Preliminary 100% Gross Cost	Preliminary Los Alamos Net of Cost Share	Start	Finish
	$ 4,237,666,633	$ 56,912,174	July 2023	Nov 2027

NOTE: Dates shown in red are all decision points by BPU and CC

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First-Of-A-Kind Risk Management

- Phased approach with off ramps
- DOE and NuScale cost share
- NuScale relationships with DOE & NRC
- DOE/UAMPS negotiating lease of first two modules

Avoiding the pitfalls of Nuclear Power Plant Construction

- Known Issues:
  1. Percentage of Engineering Design Complete Before Committing to Construction
     - AP1000 Engineering Design Percentage Complete=Low double digits
     - UAMPS will require > 85% engineering design complete before committing to construction
     - Constructability of Design:
       - » NuScale/Fluor working with potential vendors now to daylight potential constructability issues
  2. Owner's Engineering Reviews
     - AP1000 utility owners did not have external experts review AP1000 designs
     - UAMPS will have an external owner's engineer review NuScale/Fluor designs during the cost estimating process laid out in the EPC Development Agreement
  3. Integrated Project Schedule
     - AP1000 EPC Consortium (Westinghouse & CB & I) did not have an integrated projected schedule to coordinate their respective scopes of work
     - UAMPS will have an experienced nuclear EPC Contractor in Fluor that will have an integrated project schedule with NuScale
  4. Owner's Project Management
     - AP1000 utility owners did not have adequate owner's project management to address schedule/cost overrun issues
     - UAMPS plans to have in house and external owner's project management if there a decision to proceed to construction

Engineering, Procurement, and Construction Contracts

- Step up provision upon participant default
  - Capped at 25%; No Participant can have an Entitlement Share greater than 25% of the Project
  - No participant defaults in the history of UAMPS' projects (since 1980)
- Cost impacts of construction delays
  - Accounted for in predetermined schedule delay penalties caused by EPC Contractor in Final EPC Contract
- Fluor Corporation Parental Guarantee
  - Will apply to NuScale's reimbursement obligations if there is a failure of the Economic Competitiveness Test under the EPC Development Agreement (DA)
  - Parental Guarantees will be in final EPC Contract to cover Fluor Power and NuScale Power's contractual obligations
- Transition from EPC DA to Final EPC Contract
  - Price Target of $65/MWh (2017$) and Economic Competitiveness Test will go away upon Fluor/NuScale delivering a Class I cost estimate that is acceptable to UAMPS
  - UAMPS will have to satisfy itself that final EPC terms ensure an LCOE of less than or equal to the Price Target
    - UAMPS will utilize owner's engineer and Energy Northwest as the potential operator to assist in this evaluation

Key Takeaways

- In approving the Power Sales Contract, LAC is only committing until the maximum cap on the Budget and Plan of Finance is increased above the $6M cap (anticipated to occur in Q1 2019)
  - While under the $6M cap, the UAMPS participants have the right to decide as the Project Management Committee to terminate further CFPP development and receive a 100% reimbursement of UAMPS' out of pocket costs associated with the $6M budget
  - Prior to amending the $6M cap, additional cost share and/or additional subscription in the project will need to be secured. Monthly progress updates on subscription and cost share will be provided to the Project Management Committee.
  - Each Participant will have an option to withdraw from the Project, upon the Project Management Committee amending the Budget and Plan of Finance deciding to increase the $6M max cap
  - If LAC exercises this right, their maximum exposure would be $80,000. It could be less assuming that another entity picks up its cost share responsibility, which is reasonable to assume given that the project is moving forward. Otherwise, the project is not moving forward and the participants will recoup 100% of the cost share of the $6M budget.
- Thru March of 2018, gross expenditures in developing the CFPP are approximately $4.5M; UAMPS Participants' in the CFPP net out of pocket exposure to this $4.5M after cost sharing from DOE and NuScale has been less than $1.1M [LAC commitment approx. $30k]
  - UAMPS Project Management Committee is prudently managing the expenditure of the Project and will not seek an amendment to the $6M budget through the end of the March of 2019 until it is prudent to do so upon there being additional cost share and/or subscription
- The $4.2B includes interest of $583 M using a conservative interest calculation.

Key Takeaways

- UAMPS on behalf of their members will continue to mitigate the risks
- UAMPS will continue to seek cost sharing and plant subscription
- By March 2019, we expect more information will be available to make a more informed decision on continuing Licensing Phase 1
- LAC will have more clarity on a post 2025 Electric Coordination Agreement
- LAC will update to the IRP prior to all critical decisions on generation resources