

# Rancho Viejo Solar + Storage Project



*Accelerating Santa Fe's clean energy transition with locally-sourced, dispatchable solar power!*

## Pre-Application Neighborhood Meeting

August 22, 2024 presented by AES

115 MWdc / 96 MWac / 192 MWh  
Solar + Battery Energy Storage System (BESS)

2 miles east of Hwy 14. Santa Fe County,  
New Mexico



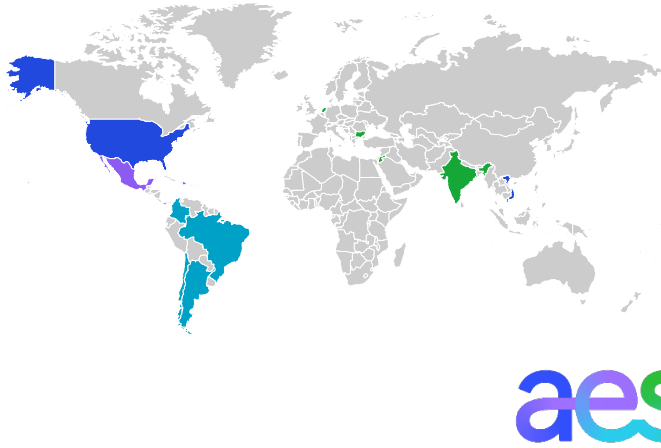
# Presentation Agenda

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- The AES Corporation / AES Clean Energy
- Project Location
- Project Overview
  - Updates for Revised CUP Application
  - Solar Photovoltaic Modules
  - Battery Storage Design and Safety
- Project Diligence
  - Visual Simulations
  - Noise Study
- Conditional Use Permit Process Overview
- Estimate Project Timeline
- Economic Benefits
- Environmental Benefits

# The AES Corporation



## 34.9 GW

Gross MW in operation\*

\* 54% renewables

## 12.6 GW

Renewable generation  
under construction or with  
signed PPAs

## \$12.7 billion

Total 2023 revenues

## \$45 billion

Total assets  
owned & managed

4 Continents

13 Countries

4 Market-oriented  
strategic business units

6 Utility companies

## 22 million

Number of people served by  
energy we generate annually in  
countries where we operate

## 9,600 people

Our global workforce

Recognized for our  
commitment to  
sustainability



# AES' US Renewables business overview



1,400+ People

550 Projects

26 States

7.2 GW

Operating clean energy resources

51 GW

Clean energy projects in development



Fluence Energy, our joint venture with Siemens, was recognized in 2023 as the #1 Global Provider of Battery-Based Storage Systems by S&P Global Commodity Insights, reflecting AES' global leadership in energy storage.

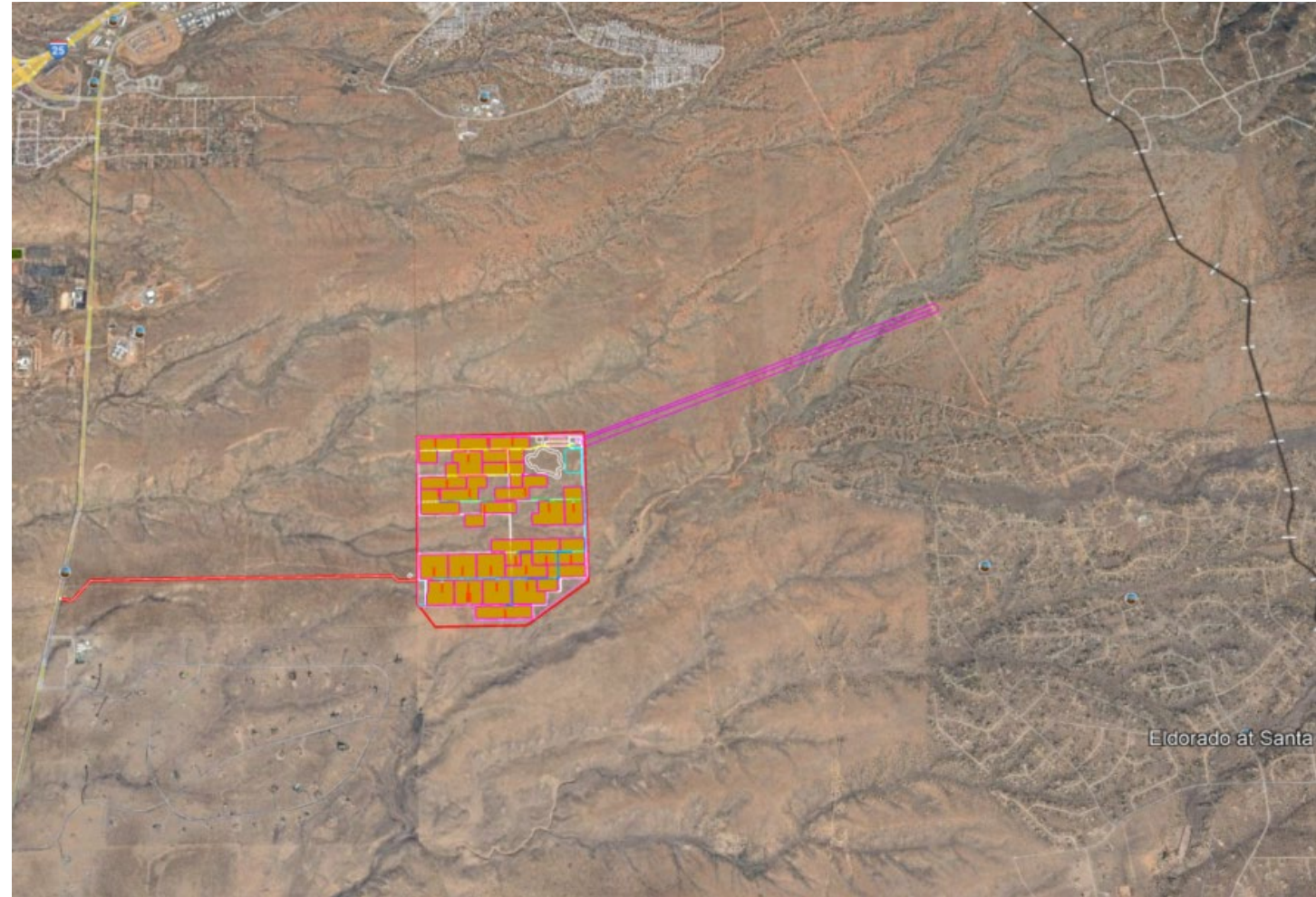
Recognized for our commitment to sustainability



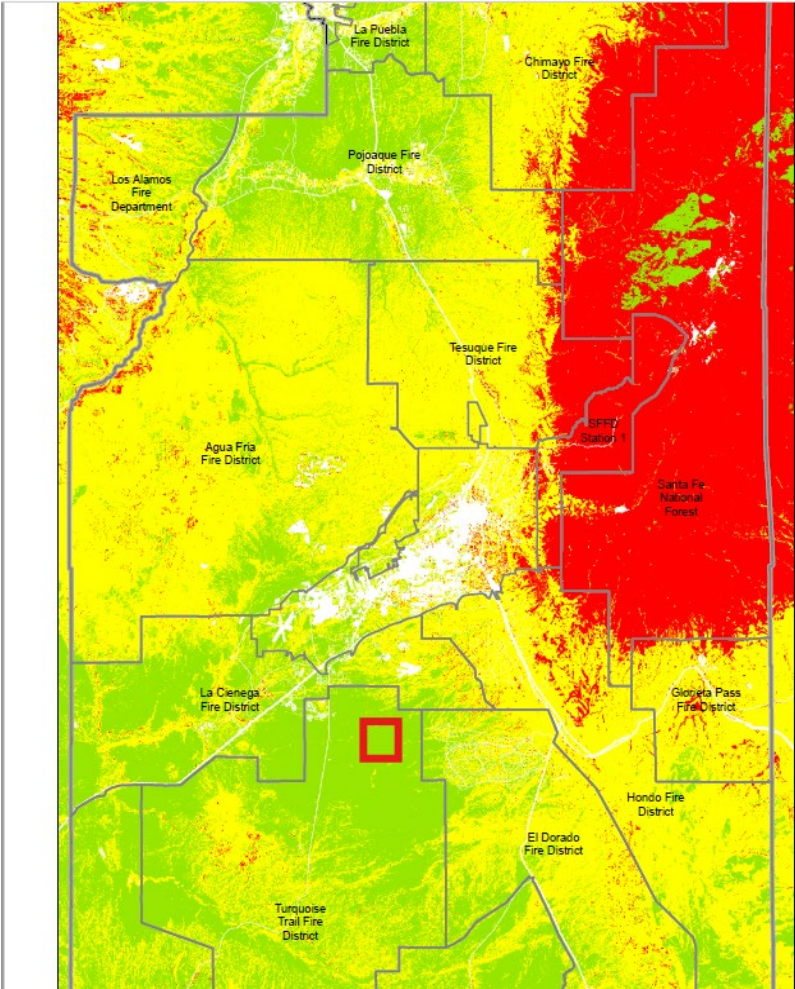
We are proud to be recognized by BloombergNEF for the past three years as one of the top two Sellers of Clean Energy to Corporations Through PPAs, reflecting our leadership in co-creating innovative energy solutions with our partners.

# Project Location - Summary

- 3 miles south from Santa Fe
- 2 miles east of Hwy 14
- 1.3-1.5 miles west of El Dorado neighborhood
- 1/3 mile from nearest residence in San Marcos
- BESS sited 1.5 miles from both San Marcos and El Dorado neighborhoods
- 680 fenced acres for project
- Located on private property, within a larger 8,225-acre tract providing substantial buffer between surroundings



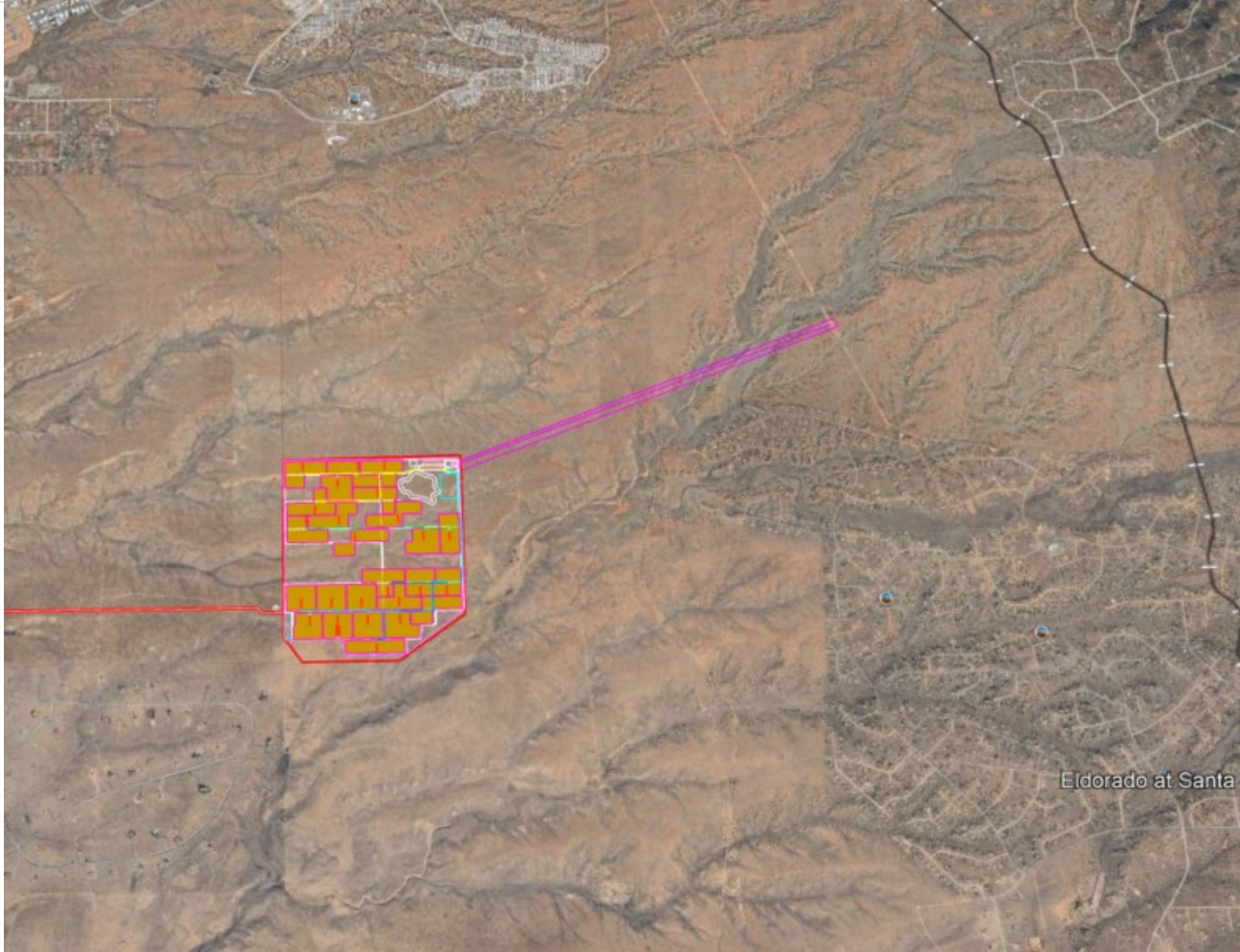
# Project Location – Lowest Wildfire Risk



**Santa Fe County  
Wildland Urban Interface  
Areas**

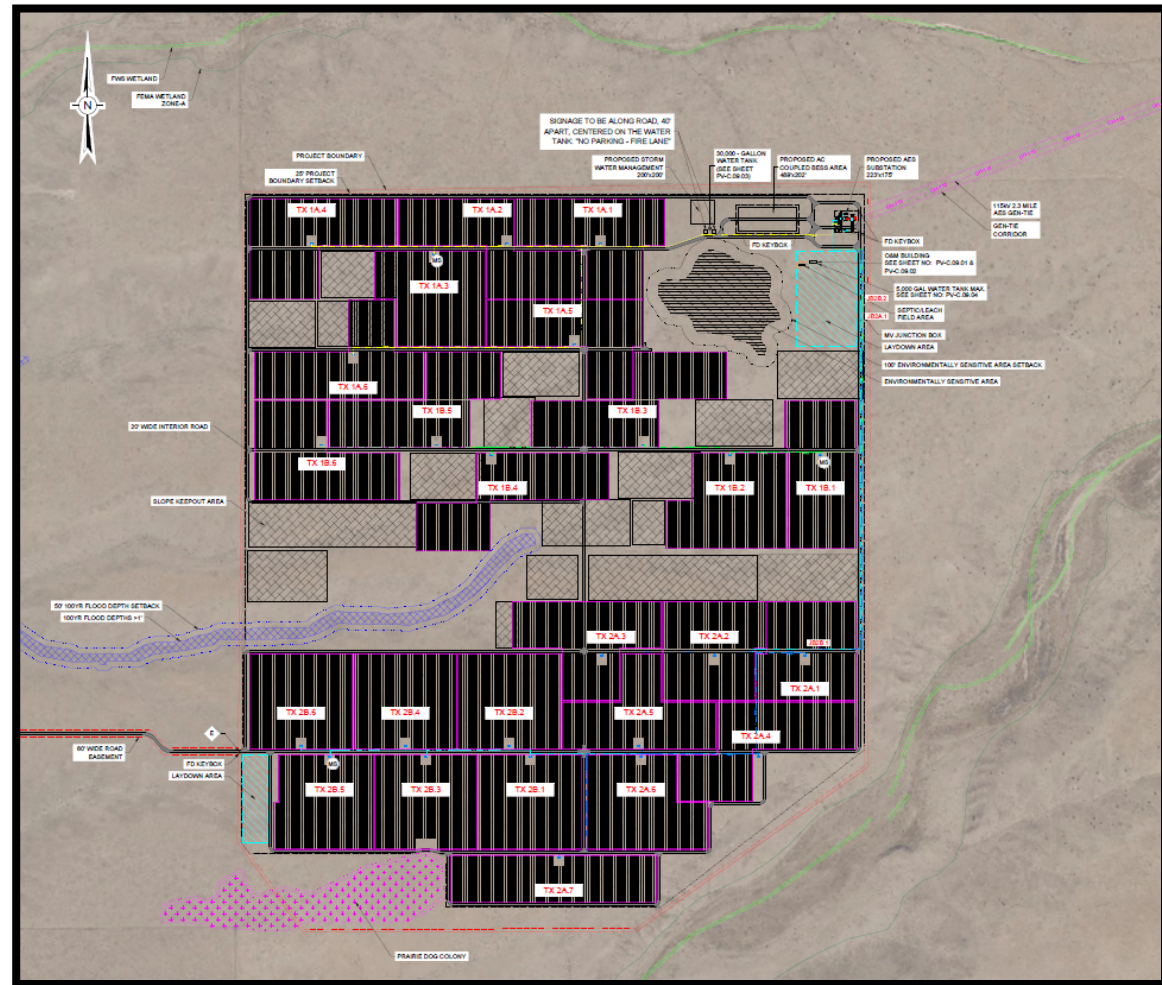
- Extreme
- High
- Moderate
- Not Classified
- County Boundary
- Fire Districts

The source data consists of the vegetation classification from the U.S. Forest Service 2014 Landfire Mapping. The classifications have been aggregated and grouped into categories appropriate for the Santa Fe County region. Fire hazard severity levels were then determined based upon these categories.



Eldorado at Santa

# Project Overview



## Technical Specifications

- 115 MW DC solar photovoltaic source
- 96 MW AC output
- 48 MW / 192 MWh battery storage (4 hours)

## Utility-Scale Project

- Feed into PNM transmission grid
- 268 GWh of clean energy, equivalent of entire annual residential load of Santa Fe
- Fully power Santa Fe at times of max output
- 100% renewable energy goal by 2045

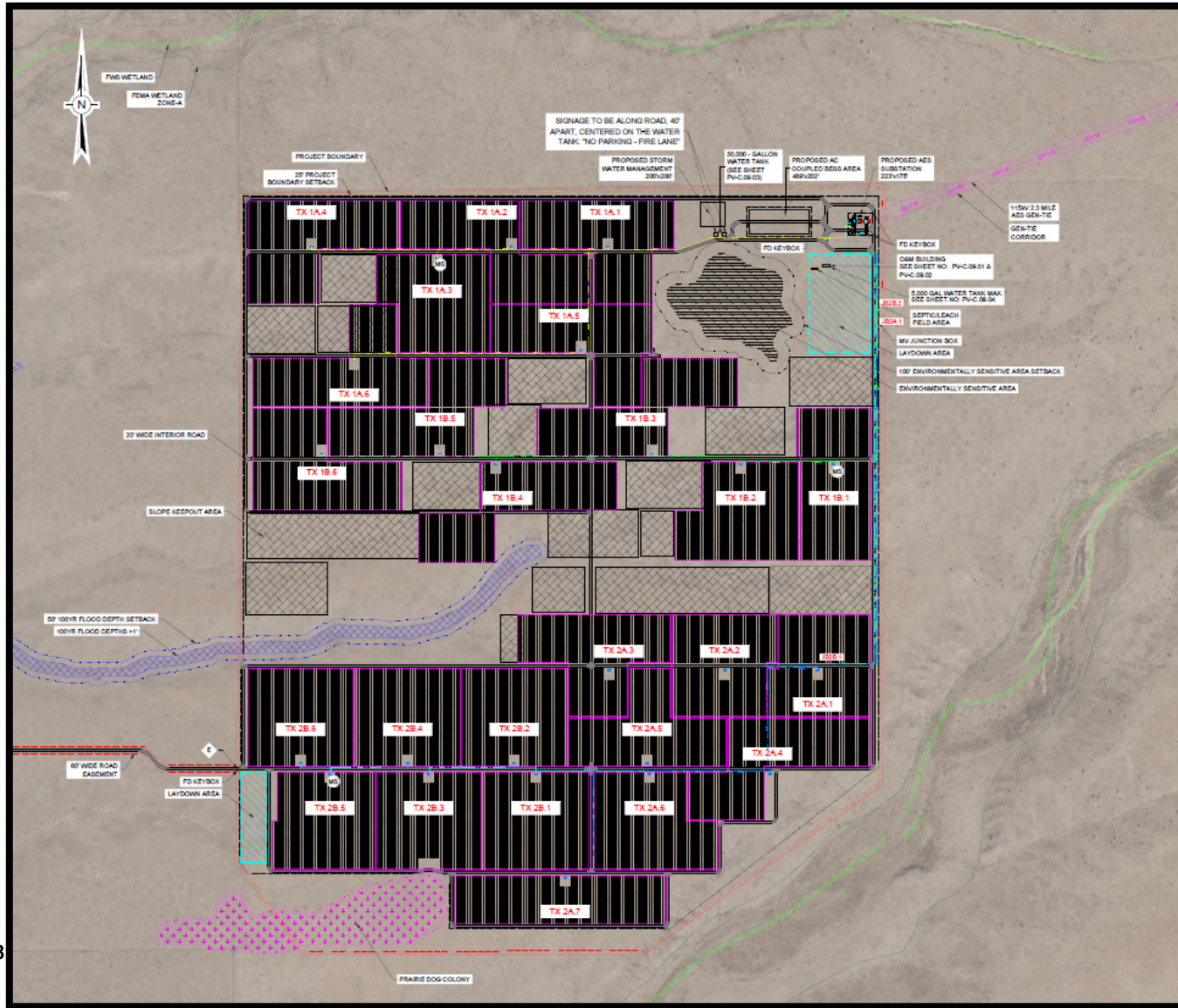
## Temporary Use

- 35-year asset life
- Decommissioning and Restoration

## Construction and Operation

- Year-long construction process
- Remote & on-site operation with limited site traffic
- Low impact - minimal noise, water, lighting

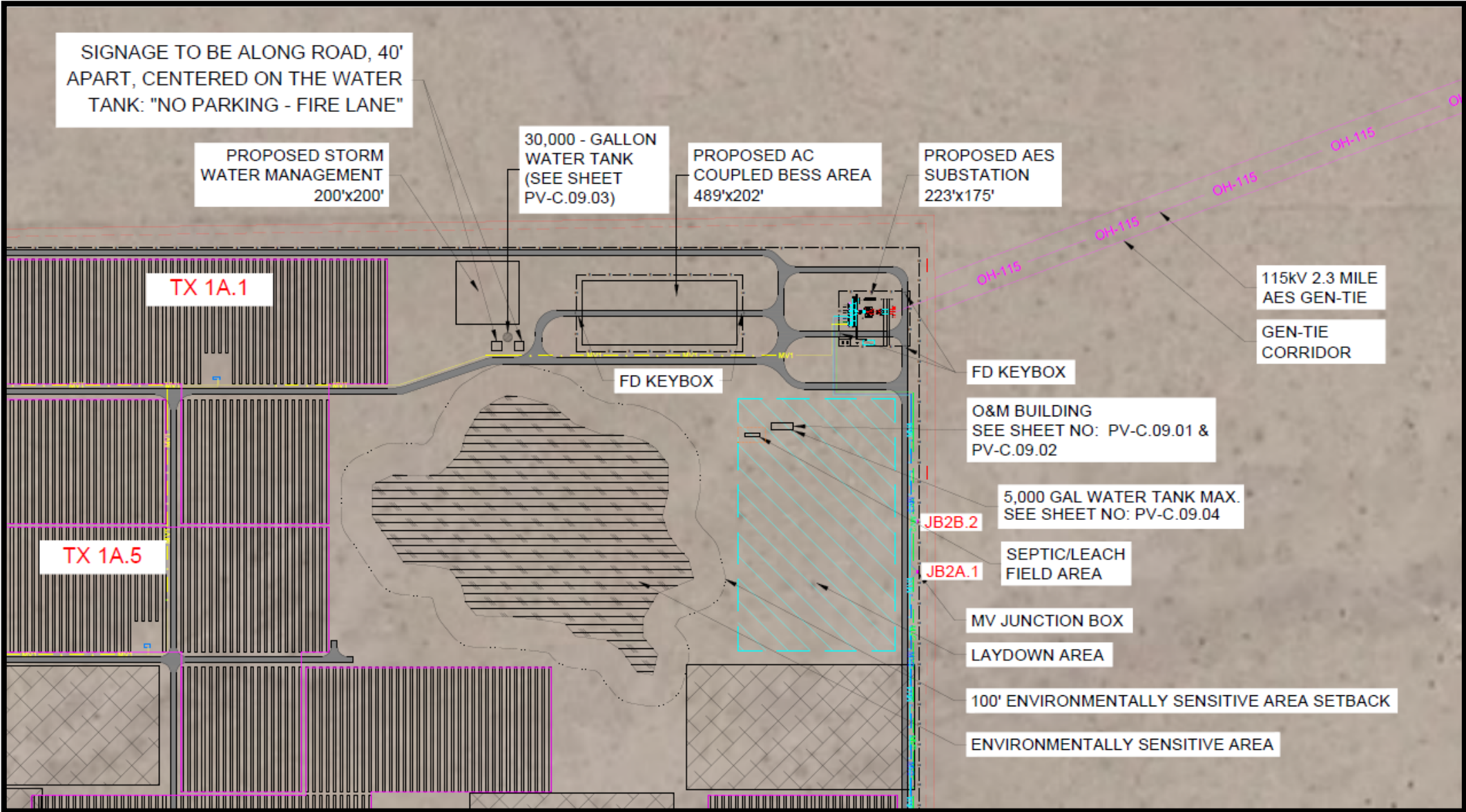
# Project Overview – Site Plan Updates



- **Removed array north of San Marcos**
- **Max panel height reduced to 8'**
  - Previously specified 12'
- **Perimeter access road**
  - Consultation with SFCFD
- **Water storage tank – 30,000 gallon**
  - 2021 IFC Chapter 5, Fire Service Features, Section 507, Water Supply
- **O&M building – 1400 sq ft**
  - IFC Chapter 12, Energy Systems, Section 1207.1.6.1, Fire mitigation personnel.
- **Monopole vs. H-frame gen-tie**



# Project Overview – Site Plan Updates



# Project Overview - Solar Photovoltaic Modules



## Structure Dimensions

- ~8' max height at full 52° tilt in early morning/late evening
- 5' 4" clearance at central rack and at flat tilt, or stow mode.
- 14' 6" aisles between modules / 22' post to post
- Currently specified with New Mexico-built racking & trackers

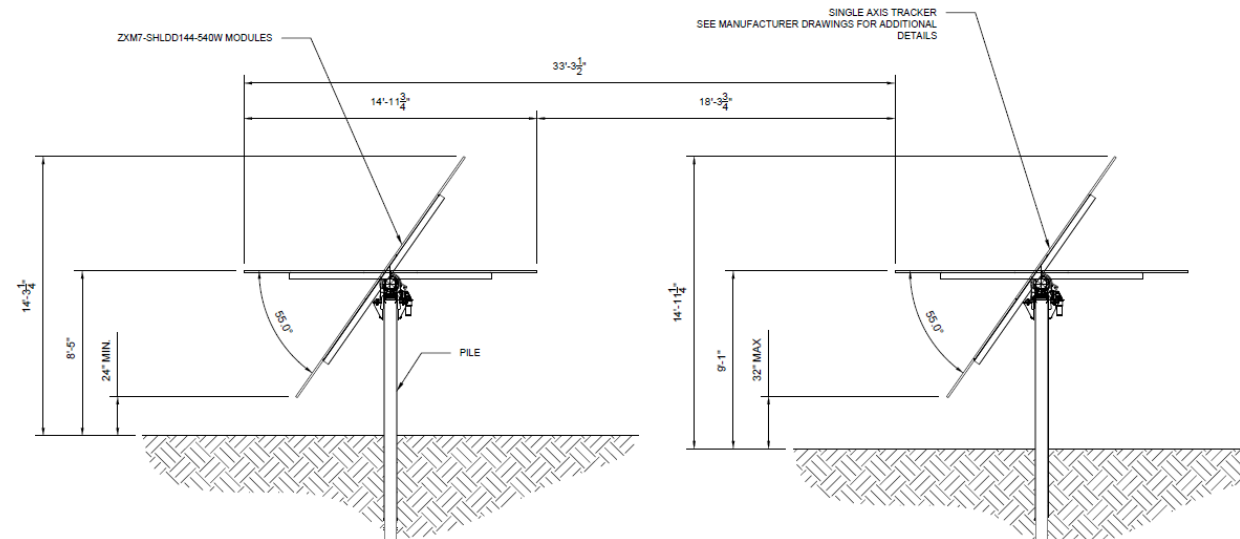


Image representative of tilt and function, clearances are not related to Rancho Viejo specifications

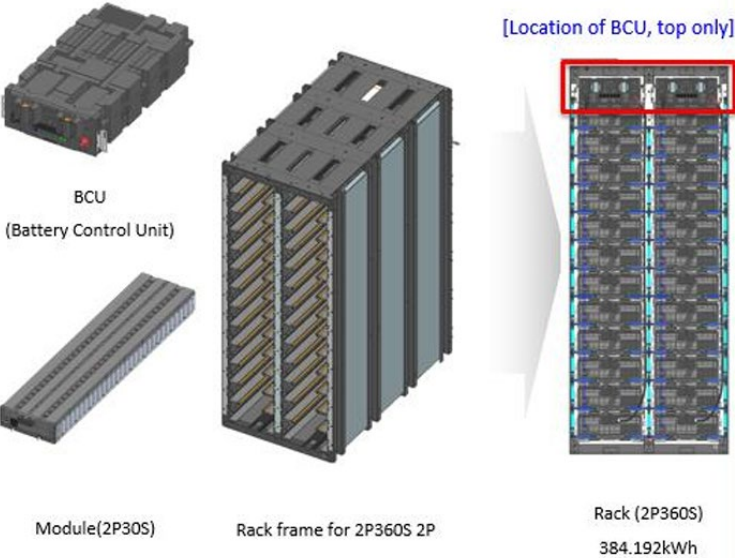
# Project Overview - Battery Storage System



Table 4: E5S BESS System Specification Summary	
ESS System Manufacturer:	AES
ESS Model #:	AES Spec CEN-E5S
ESS Electrical Ratings:	8,068 kWh
ESS Max Voltage:	1494 Vdc
ESS Enclosure Dimensions:	40'-0" (L) x 8'-0" (W) x 9'-6" (H)
ESS Layout / Construction:	Non-Occupiable, Non-Walk-in, Non-Combustible 252 Modules per enclosure



Representative image from earlier containerized BESS solution



# Project Overview - Battery Storage System

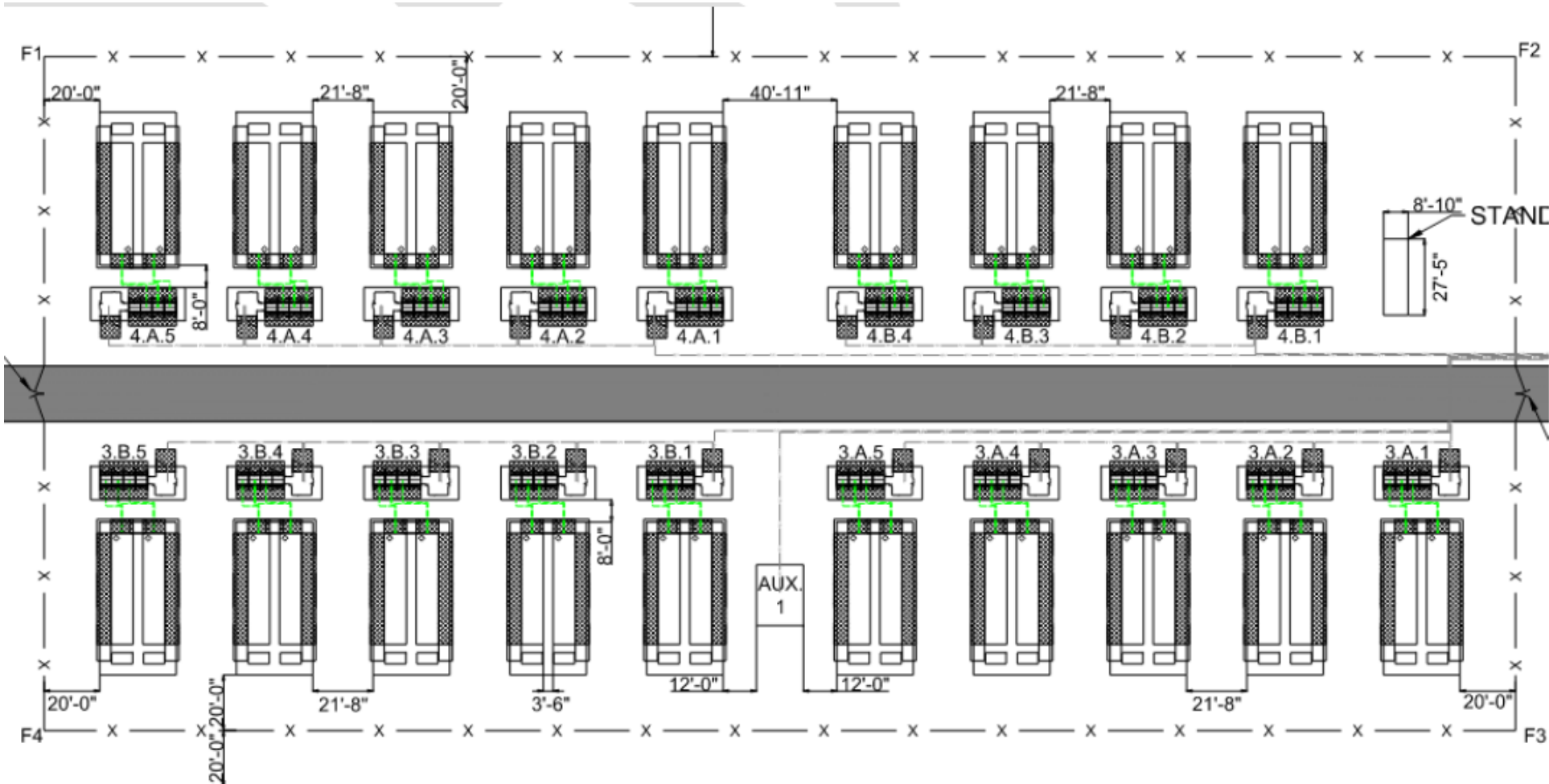
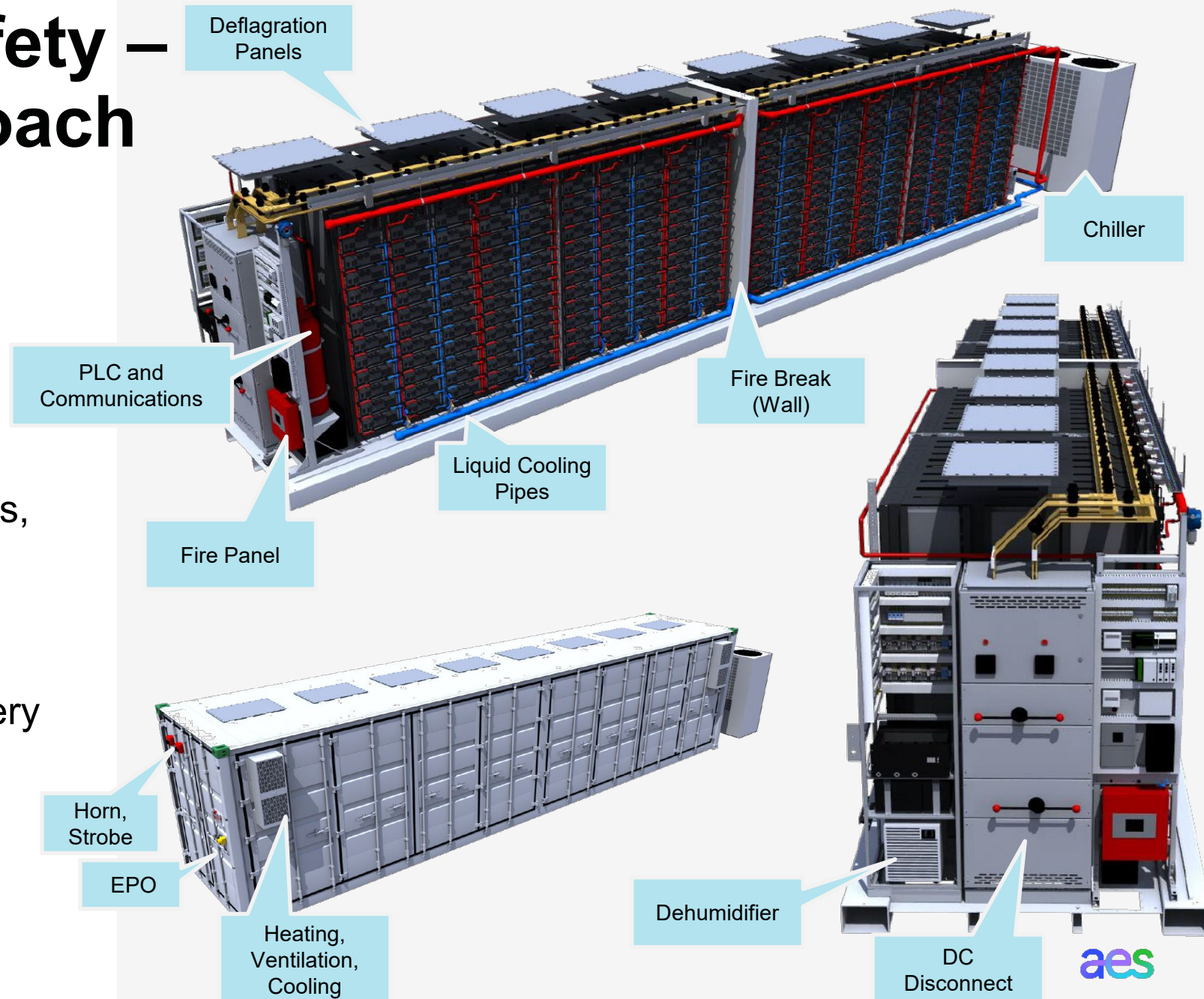


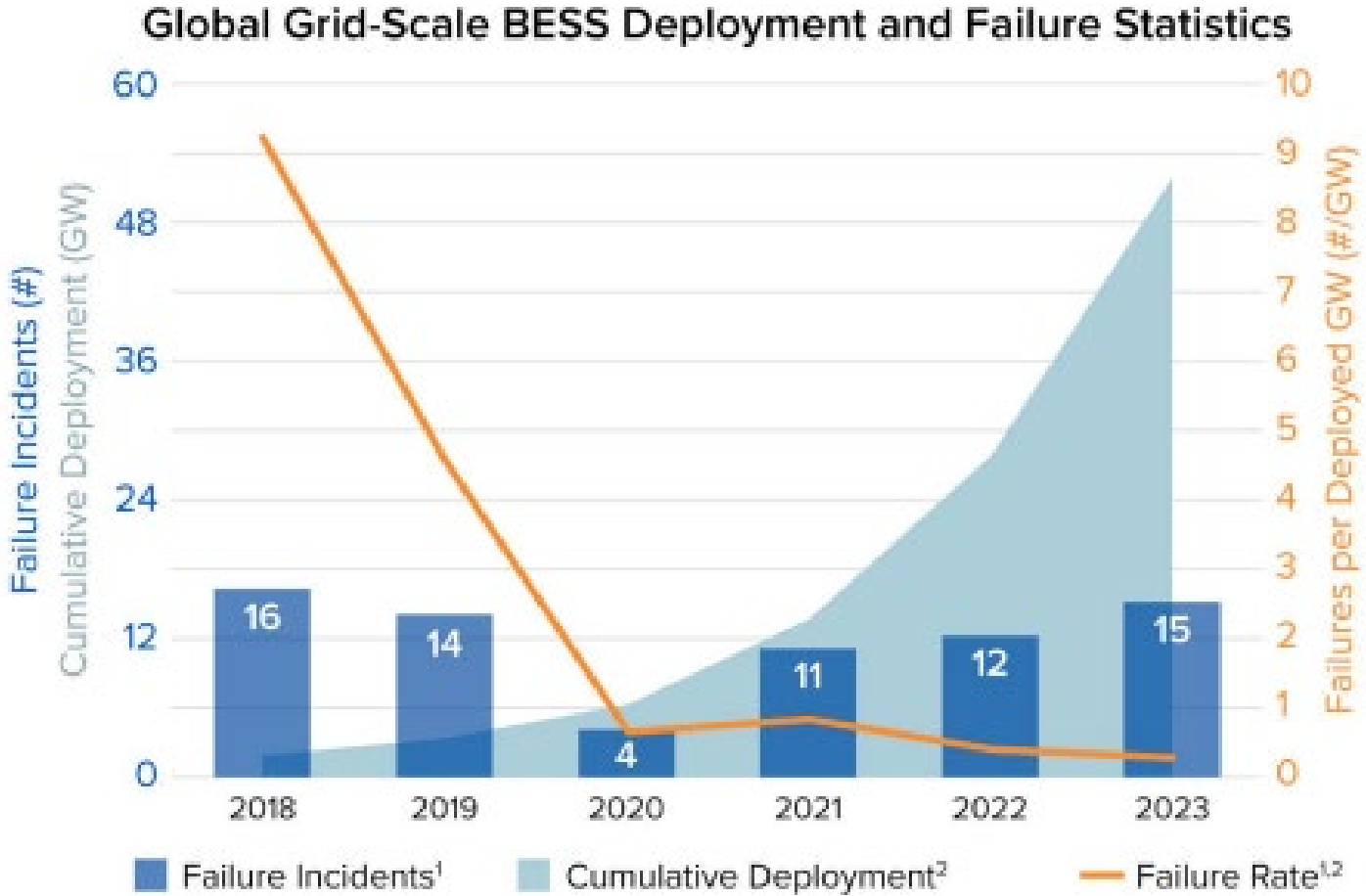
Figure 1 - Rancho Viejo BESS Site Plan

# Battery Storage Safety – A Multi Layer Approach

- 40' shipping container design basis
- Up to 8 MWh per enclosure
- Liquid cooled with external chiller
- Direct injection fire suppressant at module level
- Active monitoring of air, coolant and cell temperatures, smoke, cell off-gas, voltage, and current. All tied to auto-shutdown, and alarm features
- NFPA 855, 68/69 compliant
- Isolated, fire rated partitions for battery and electrical compartments
- Factory-listed to UL9540 & UL1973
  - Test results indicate successful suppression of thermal runaway



# Battery Storage Safety – Incidents in Decline



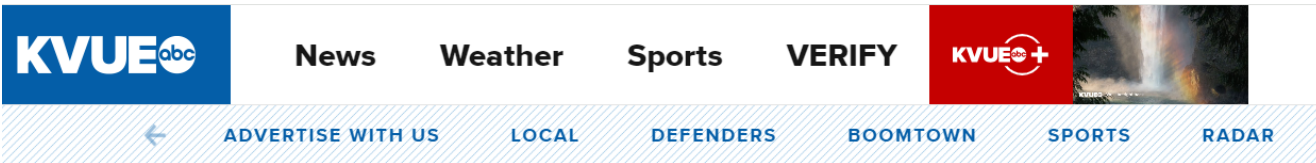
- 2023 Installed BESS capacity globally: **+50 GW**
- 2023 Installed BESS capacity in USA: **16 GW**
- 2024 BESS capacity will double to **30 GW**
- AES is a **global leader in BESS**
  - Safety is AES' #1 priority and company value
  - Pioneer of technology for grid storage
  - Operator of BESS for more than 15 years
  - 871 MW of BESS in operation
  - +700MW of BESS construction in 2024
  - Majority of AES' new renewable projects include battery storage

Sources: (1) EPRI Failure Incident Database, (2) Wood Mackenzie. Data as of 12/31/23.

Figure 1. Global Grid-Scale BESS Deployment and Failure Statistics



# Battery Storage Safety – In Growing Demand



## ERCOT, experts credit renewables, battery storage with meeting near-record power demand

As temperatures soar, ERCOT credits new solar, wind and battery storage for helping meet the state's power demand.

## In Texas, Batteries are Keeping the Lights On and Saving Residents Money



During times of both typical and extreme weather, battery storage systems are proving essential to the notoriously fossil-fuel reliant Texas grid. In one instance, when certain power plants were undergoing maintenance and temperatures rose into the night, two gigawatts of battery storage was deployed to the grid, narrowly avoiding potential brownouts for the 26 million Texas utility customers, while also reducing utility costs. Earlier this year, battery storage deployment at strategic times, during a wave of freezing temperatures, saved customers \$750 million by providing essential grid services and allowing power generated by gas power plants to meet customer demand, all without increasing prices.

# Battery Storage Safety – In Growing Demand



## ‘A game changer’: How giant batteries are making California’s power grid stronger, and reducing the risk of blackouts during heat waves

The same batteries in cell phones are cranking out more electricity than nuclear power, allowing solar to be used at night

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## Study suggests a big role for grid battery storage as Illinois shutter its coal power plants

*Transmission and renewables aren’t being built quickly enough to allow fossil fuel plants to close by state deadline, experts argue. Storage appears to be the most realistic path, a new analysis finds.*

 by Kari Lydersen  
August 22, 2024





# Battery Storage Safety – In Growing Demand

📌 Solar Batteries, Solar Energy 📌 Renewable Energy Australia, solar battery, solar battery storage, solar power

## Solar Batteries to the Rescue: How Australia is Storing Solar Power to Meet Growing Demand



IN FOCUS [Israel-Hamas war](#) [Ukraine](#) [US Democratic Party](#)

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BUSINESS

## New energy storage facilities in high demand

Klaus Deuse  
02/18/2021

Wind and solar farms do not generate enough electricity at all times and in all weather conditions. Germany's energy transition hinges on the storage of power from renewables — and batteries come to the rescue.

# Project Diligence



## Site Studies Performed

- **ALTA and topographical survey**
- **Aquatic Resources Inventory Report** – gen-tie to span crossing of jurisdictional feature
- **Biological Survey Report** – no federal/state T&E species, prairie dog/burrowing owl avoided
- **Phase I Environmental Site Assessment** - no REC, CREC, & HREC
- **Hydrologic and Hydraulic Study** - minimal flood hazard for solar project development
- **Cultural Resources Pedestrian Survey** – sensitive resources avoided
- **Site Thresholds Analysis** – additional traffic impact studies are not warranted
- **Visual Impact Assessment** – would not unduly impair visual resources
- **Appraisal Solar Impact Study** – no anticipated impacts to values; Matched Pair Analysis done to Uniform Standards of Appraisal Practice by Appraisal Institute



# Project Diligence



## Site Studies Performed

- **Environmental Impact Report** – no significant resource issues
- **Noise Technical Report** – Operational noise would not be perceived by a human observer
- **Geotechnical Investigation Report** – Completed to inform project design
- **Decommissioning Plan** – Prepared in accordance with the 2021 IFC; Section 1207.2.3 of the Santa Fe Fire Code; and the applicable sections of the Santa Fe County SLDC
- **Preliminary Hazard Mitigation Analysis** – Prepared in accordance with NFPA 855, Standard for the Installation of Energy Storage Systems and IFC
- **First Responder Mitigation Guidelines** – Developed to provide BESS response guidance, emergency planning and training to first responders and AES BESS personnel and contractors
- **Pre-Incident Plan** – Identifies fire protection, fire alarm and safety systems, special conditions and hazards, and response and staging information

**AES RANCHO VIEJO 96 MWAC/115.2 MWDC SOLAR & 48 MWAC BATTERY ENERGY STORAGE SYSTEM (BESS) PRE-INCIDENT PLAN (4152 NM 14, Santa Fe, NM 87508) 35.5415, -106.0106**

Santa Fe County FD  
Review Date: \_\_\_\_\_  
By: \_\_\_\_\_

FACILITY: Rancho Viejo BESS	BUILT: In Progress	DATE: July 2024
24 Hr Emergency Contact: SLC ROCC - 855-679-3553	#Units: 38 CENs	Contents: Lithium-Ion Battery ES Array

<b>FIRE PROTECTION, FIRE ALARM &amp; SAFETY SYSTEMS</b> • Battery Management System • Movable Suppression (Monitored 24/7 SLC ROCC) • Fire Detection • Gas Detection (H2 & CO)		<b>SPECIAL CONDITIONS AND HAZARDS</b> • STOP: (Maintain 150 ft) Emergency Responders DO NOT MAKE ENTRY into the AREA or ENCLOSURE without Prior BESS & PIP Training & BESS ESCORT • LITHIUM-ION BATTERIES & HIGH VOLTAGE... • EMERGENCY Battery Cutoff (FOR AES USE ONLY) is located at the BESS Enclosure. • CAUTION: Overhead High Voltage Lines. • CAUTION: Sample BESS Area LEL Before Entry; Battery Off Gases can provide an explosive atmosphere. • CAUTION: After power shutoff (Stranded Energy still Exists) • CAUTION: Bulging & Heating of the Batteries, White Smoke & Hissing are signs of impending Failure. • CAUTION: DO NOT come in contact with batteries/frames. • Utilize SCGAs, Thermal Imaging/Gas Detection for initial entry & throughout the entire operation. • Rescue Ops, utilize WATER Fog Pattern @ a 10 degree angle @ 5-8 ft min distance, DO NOT use Class D Fire Extinguisher. • Enclosure is ONE Fire Area: Lithium-Ion Battery Arrays in Open Racks throughout Each Enclosure. • Stranded Enclosure Do not perform SALVAGE Operations.	
<b>CONSTRUCTION INFORMATION</b> Type: Metal Height: 9' 5ft Length: 40ft Width: 8ft Enclosure Design: *AES Spec* CEN Unit Samsung SD-BESS Modules Occupant Load: Unmanned 29K Gallon Tank File Flow: N/A		<b>RESPONSE AND STAGING INFORMATION</b> • FIRST ALARM: Stage at Main Entry and await AES / REPI • NOTE: Water Tender Needed for all water. Exposure Protection, and Defensive Posture Only. • UNLESS Rescue is needed! • NOTE: If horn / strobe of a Container is alarming wait 6 hrs before approaching with AES Personnel escort, then evaluate. If heat or gas are elevated, wait another 4 hrs.	

24/7 Emergency Notification Phone  
SLC ROCC 855-679-3553

**COFFMAN ENGINEERS**

**Draft Preliminary HMA Report**  
Rancho Viejo Solar Utility BESS

August 13, 2024  
Revision A

# Visual Simulation – View from Hwy 14

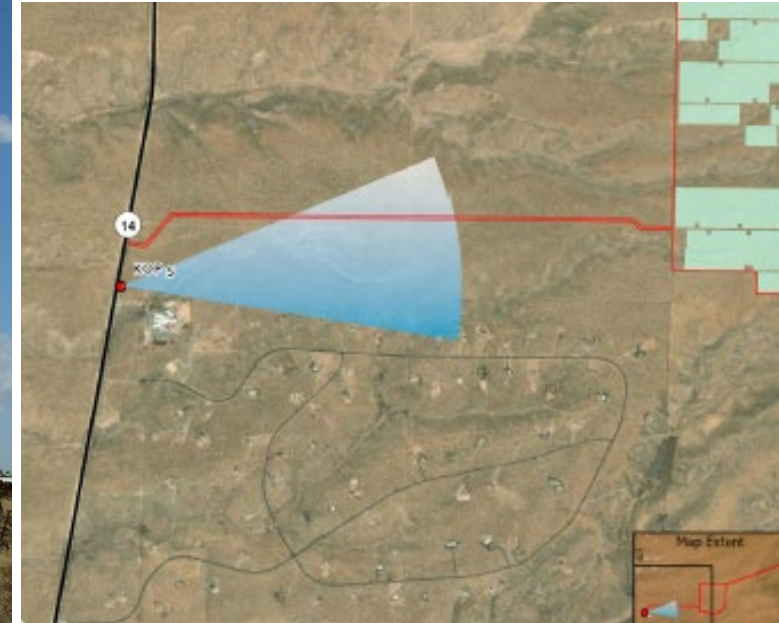
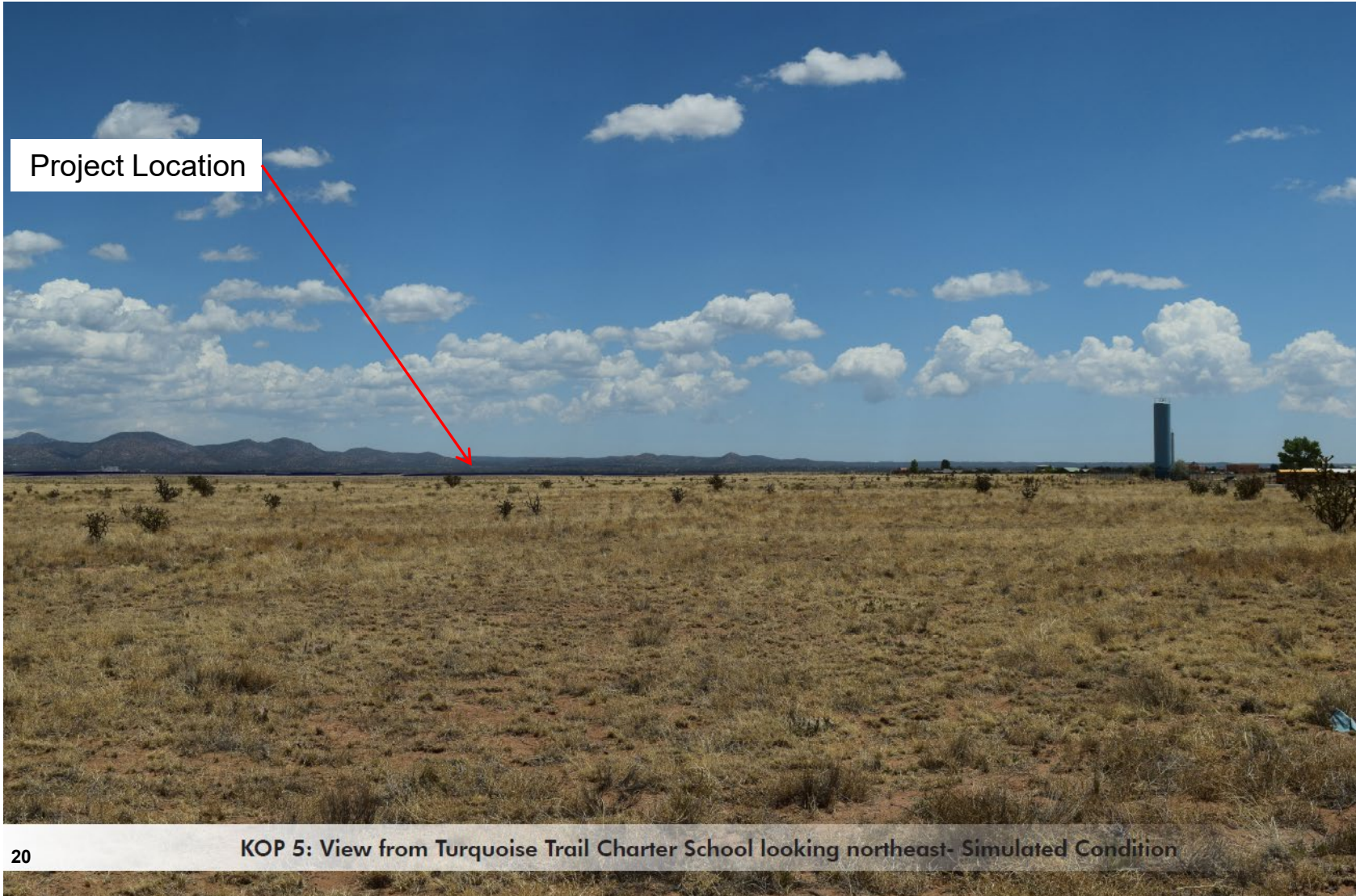


Photo capture location

# Visual Simulation - Camerada Loop (H-Frame)

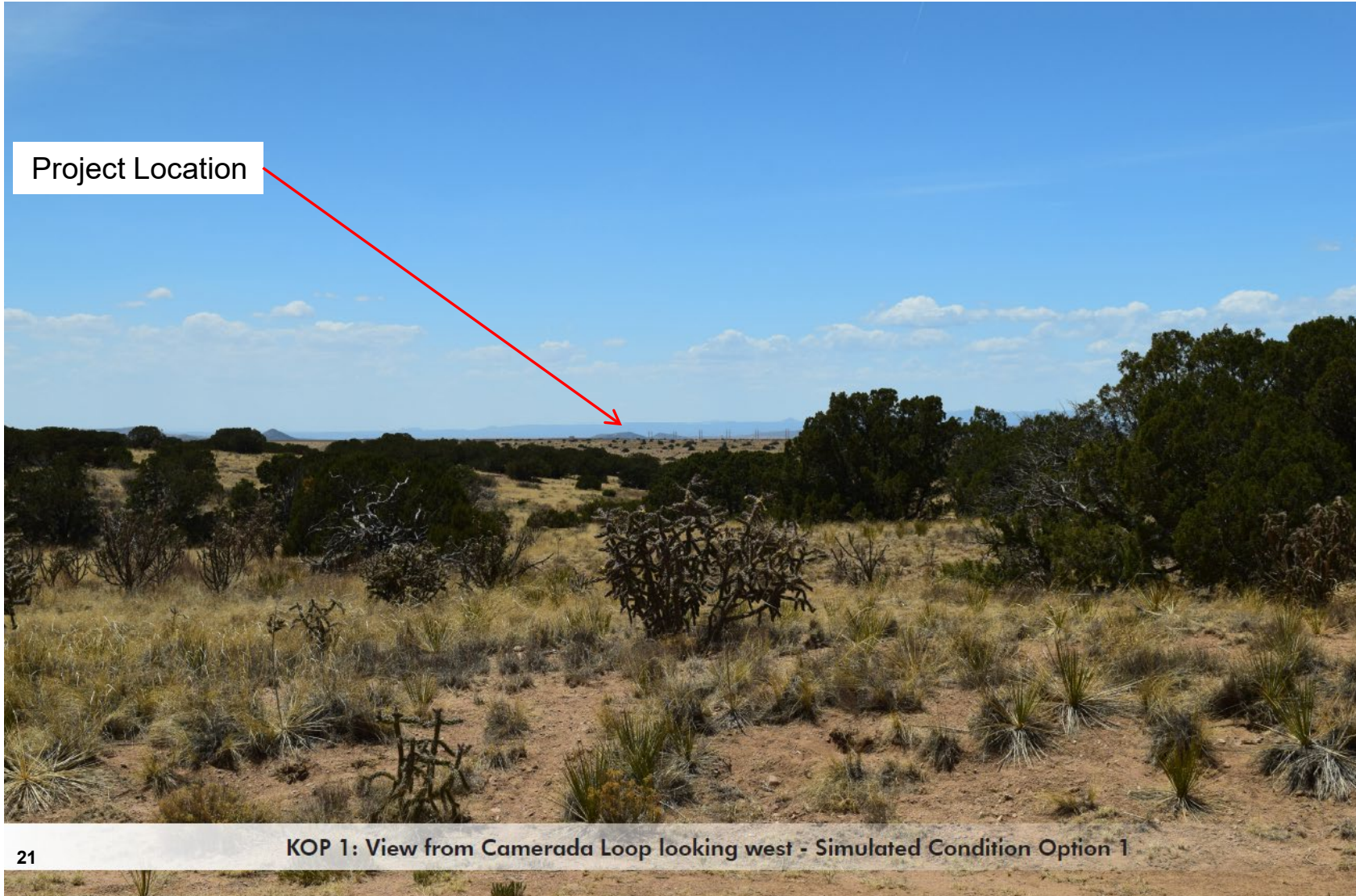
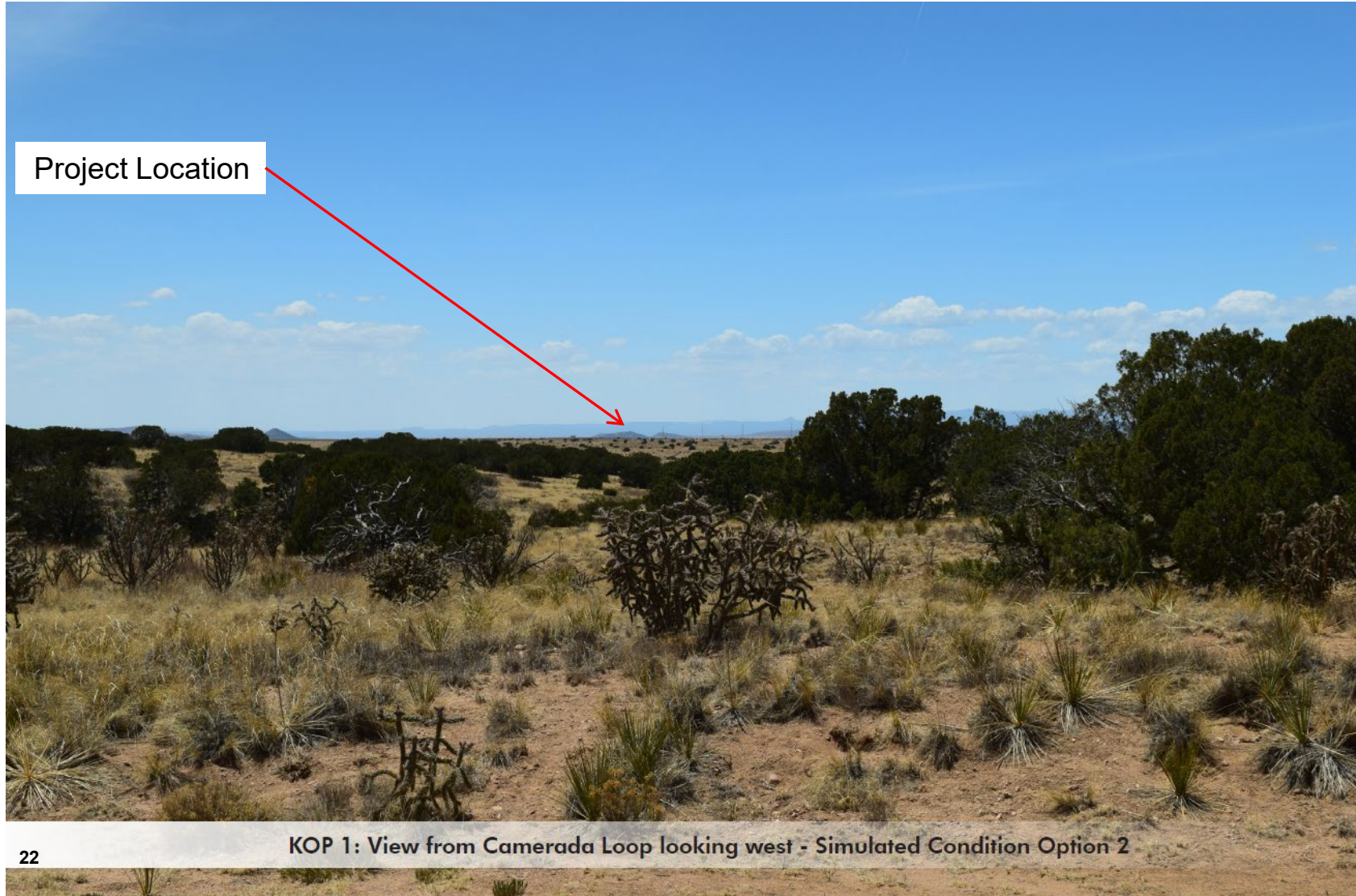


Photo capture location

H-Frames structures up to 50 feet in height with structure spans ranging from 250 feet to 350 feet.

# Visual Simulation – View from Camerada Loop (Monopole)



Project Location

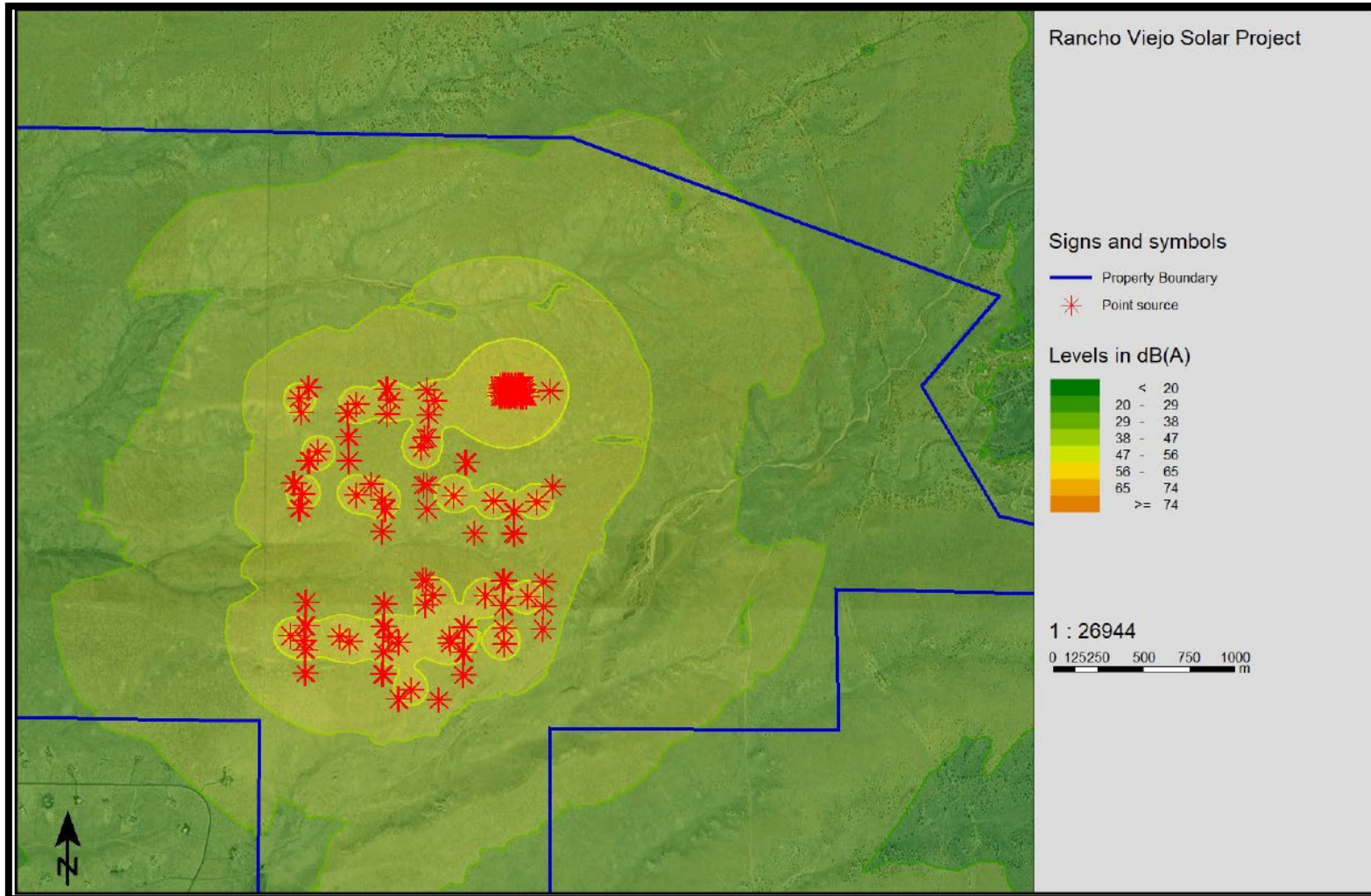
KOP 1: View from Camerada Loop looking west - Simulated Condition Option 2



Photo capture location

Monopole structures up to 70 feet in height with structure spans ranging from 250 feet to 450 feet.

# Noise Technical Study



- Detailed operation-related noise modeling completed using SoundPlan
- Noise level at the closest property boundary of 48.3 dBA during daytime hours and 43.5 dBA during nighttime hours
- Calculated noise levels emitted by the project would be below Santa Fe County Ordinance No. 2016-9 Chapter 7 – Sustainable Design Standards
  - Daytime 55 dBA, or 10 dBA above ambient
  - Nighttime : 45 dBA, or 5 dBA above ambient

# Conditional Use Permit – Review Process

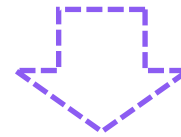
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- Technical Advisory Committee Meeting – November 24, 2021
- **Pre-Application Neighborhood Meeting** – August 22, 2024
- CUP Update Application Submitted – On or before August 30, 2024
- County Review, including Referral and Third-Party Review
- **Hearing Officer Meeting** – December 12, 2024 (tentative)
- **Planning Commission Meeting** – January 16, 2025 (tentative)
- Planning Commission issuance of Development Order, approving with conditions (or denying application) with written findings
- Appeals Period (30 working days)
- Appeal of Planning Commission shall be placed on the docket of the Board of County Commissioners



# Estimated Project Timeline

## Project Bid, Design, & Permitting



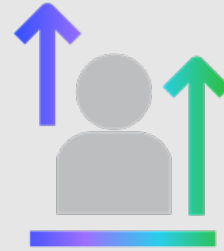
## Build

## Operate

2021	2022	2023	2024	2025	2026-2028	2028 – 2063
<ul style="list-style-type: none"> <li>TAC meeting</li> <li>Interconnection studies commence</li> </ul>	<ul style="list-style-type: none"> <li>Initial site studies commence</li> <li>10% design complete</li> </ul>	<ul style="list-style-type: none"> <li>Initial CUP application submitted</li> <li>Site studies continue</li> <li>30% design complete</li> </ul>	<ul style="list-style-type: none"> <li>Interconnection Agmt issued</li> <li>Site studies conclude</li> <li>Revised CUP application submitted</li> <li>Hearing Officer Meeting</li> </ul>	<ul style="list-style-type: none"> <li>PNM RFP submission</li> <li>Target PPA /ESA contracting</li> <li>Planning Commission Hearing</li> <li>Target permit CUP approval</li> </ul>	<ul style="list-style-type: none"> <li>100% design complete</li> <li>Contract EPC</li> <li>Initiate Construction in Q4 '26/1H '27</li> <li>Conclude construction/interconnection in 2028</li> </ul>	<ul style="list-style-type: none"> <li>Operate for 35 years</li> <li>Repower or decommission project</li> <li>Restore land</li> </ul>

## Benefits: Economic

Market-competitive supply of clean energy at a long-term fixed cost to PNM ratepayers



**~200 construction jobs**  
(direct)

**~Contributions to local services** (accommodation, restaurants, professional services)

**>\$200 million** capital investment

**~\$28 million** in labor and wages

**~\$5 million** in wages/material  
within Santa Fe county

**~>\$18M** in NM mfg output

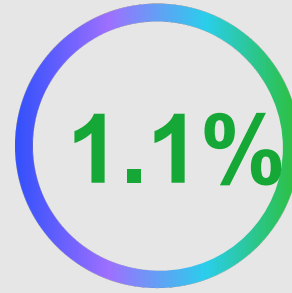
**~>\$10 million** in property taxes

**~\$5.9 million** in est. GRT tax



## Benefits: Environmental

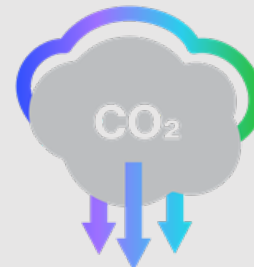
Low impact development that diversifies and strengthens grid resiliency in Santa Fe county



Serve ~**1.1%** of all of New Mexico's load in support of its goal to procure 100% renewable energy by 2045



Renewable power for equivalent of **37,042** homes' annual electricity use



Avoid emissions equivalent of ~**42,364** gasoline powered cars annually

# Thank you!

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The sun sets on the horizon, but Rancho Viejo Solar will keep the lights on for Santa Fe into the night

Questions?

Contact us:

**Email: [RanchoViejoSolar@aes.com](mailto:RanchoViejoSolar@aes.com)**

**Web: [www.aes.com](http://www.aes.com)**