



# Rail-Based Gravity Storage - Technology & Engineering Summary

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Russ Weed, Chief Development Officer

**DOE Long-Duration Energy Storage Workshop**

Mechanical and Gravity Storage Panel

March 9-10, 2021





# Product Requirements

Technology

Engineering

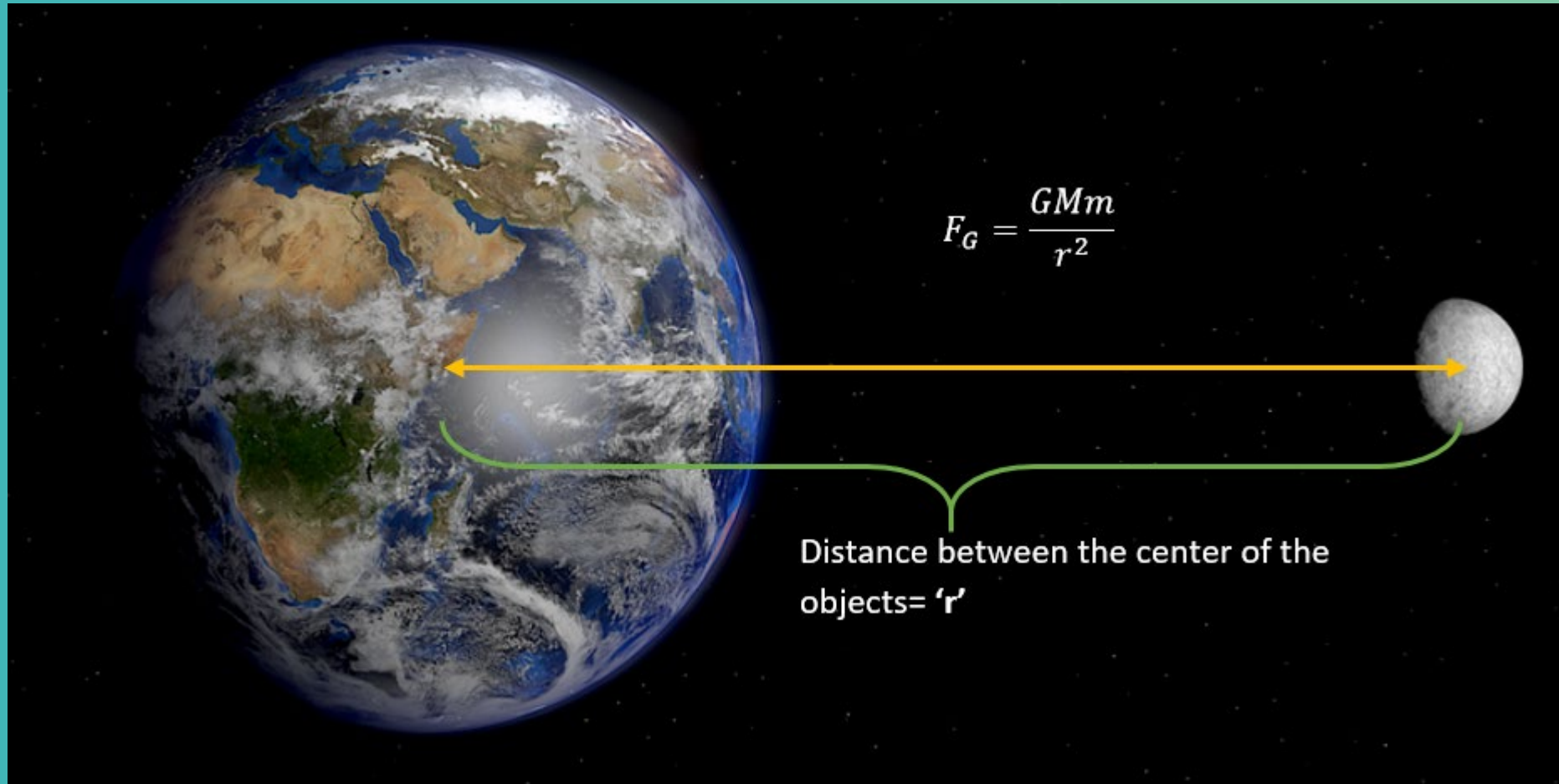
Manufacturing

Services

Finance

People

# Storage Technology: Gravity



$$g = 9.81 \text{ m/s}^2$$

Gravity as the “Active Species”

# The Power of Gravity as a Technology

**250 kWh  
Energy  
Per Mass**

**662,000 lbs**

**1000 ft elevation gain**

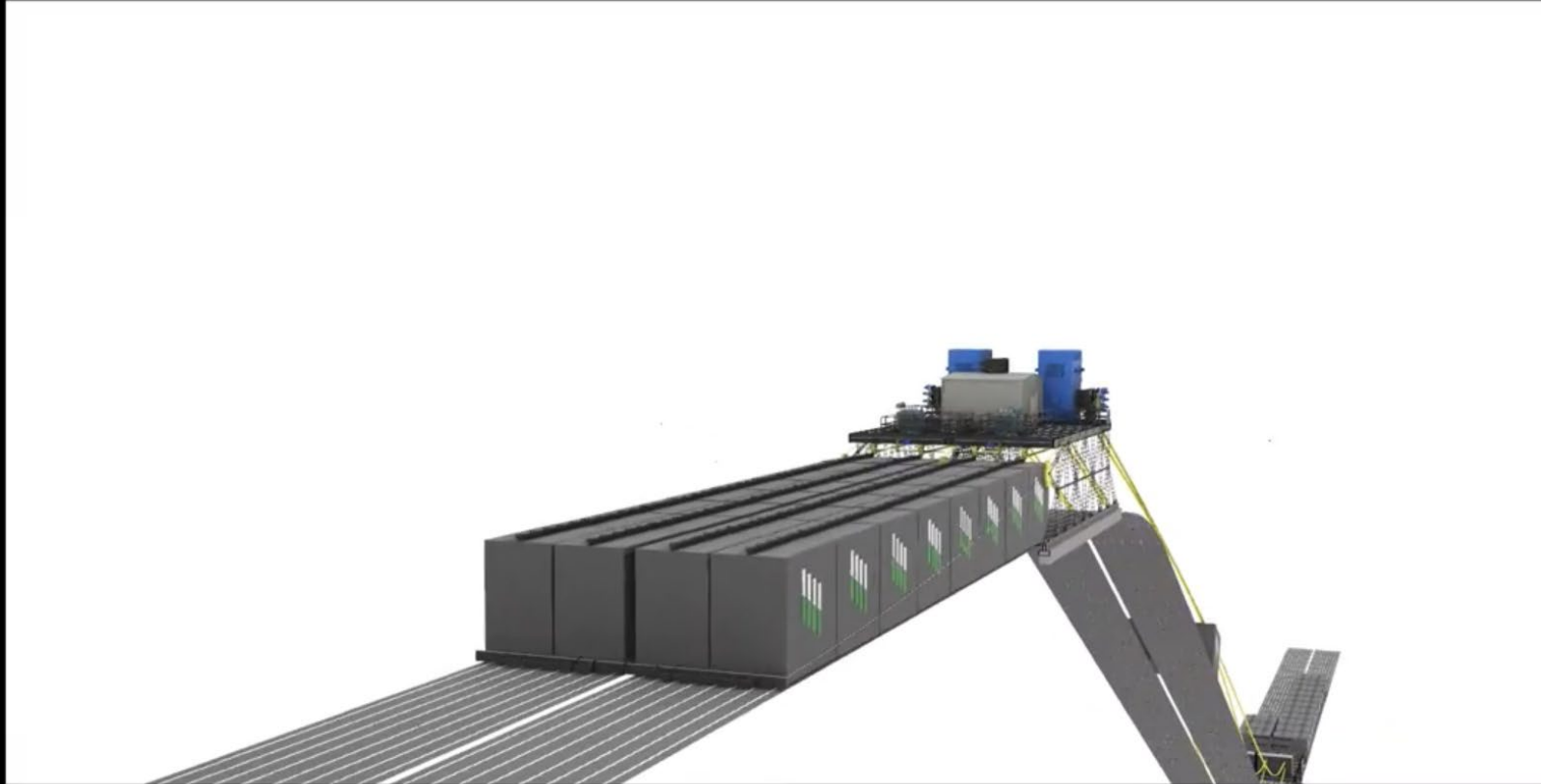
**1kWh = 3,600,000J**

# Specifically, ARES Rail-Based Gravity Storage

## KEY COMPONENTS:

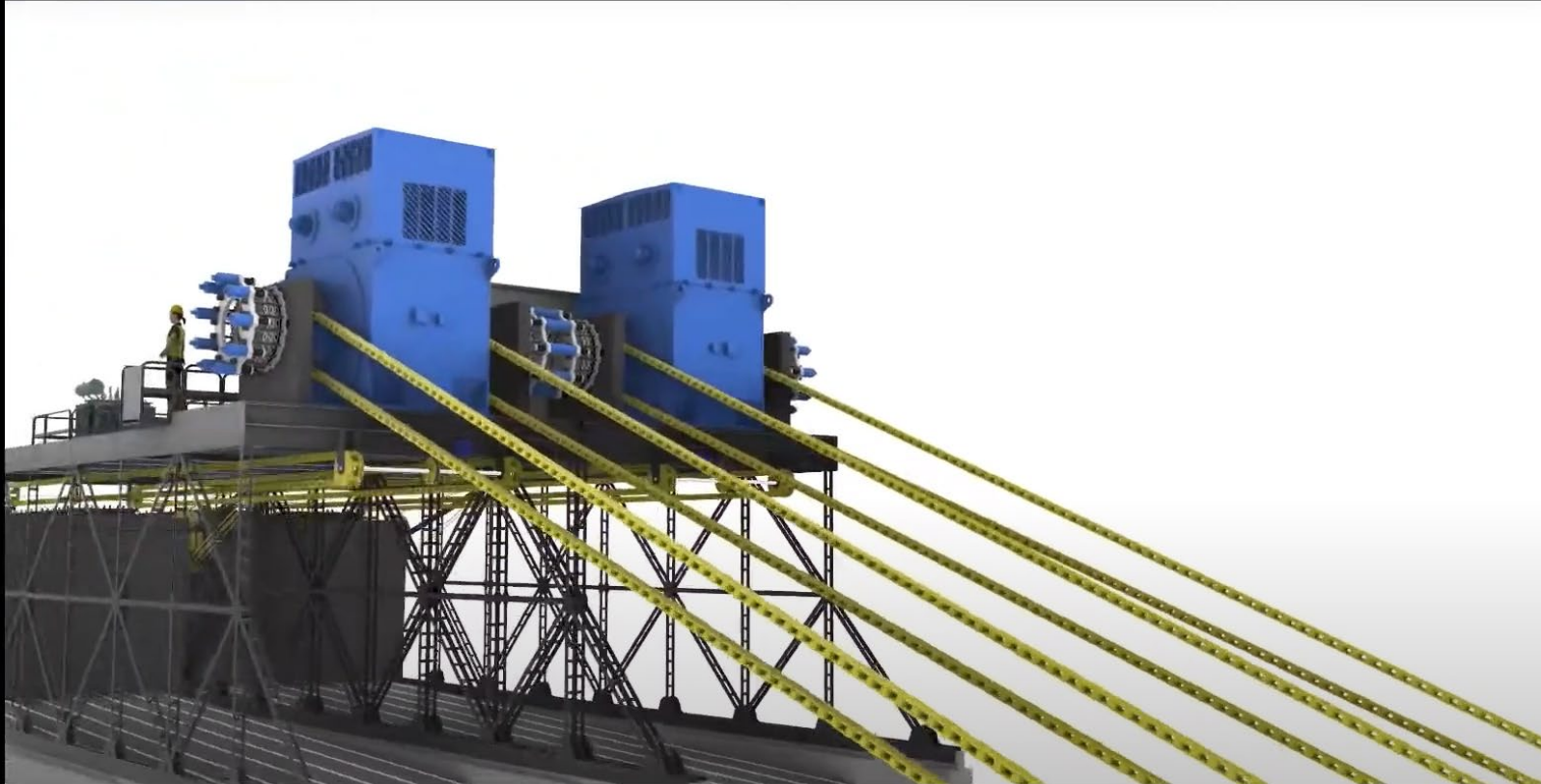
- Rail tracks (with Made in US steel)
- Mass cars (with local content)
- Fixed motor-generators (high efficiency)
- Chain-driven (as distinguished from cable)
- High-slope (high twenties degree angle)

# Engineering Design of ARES Rail-Based Gravity Storage



# Engineering Design of ARES Rail-Based Gravity Storage

Feb 9 ARES GravityLine Animation

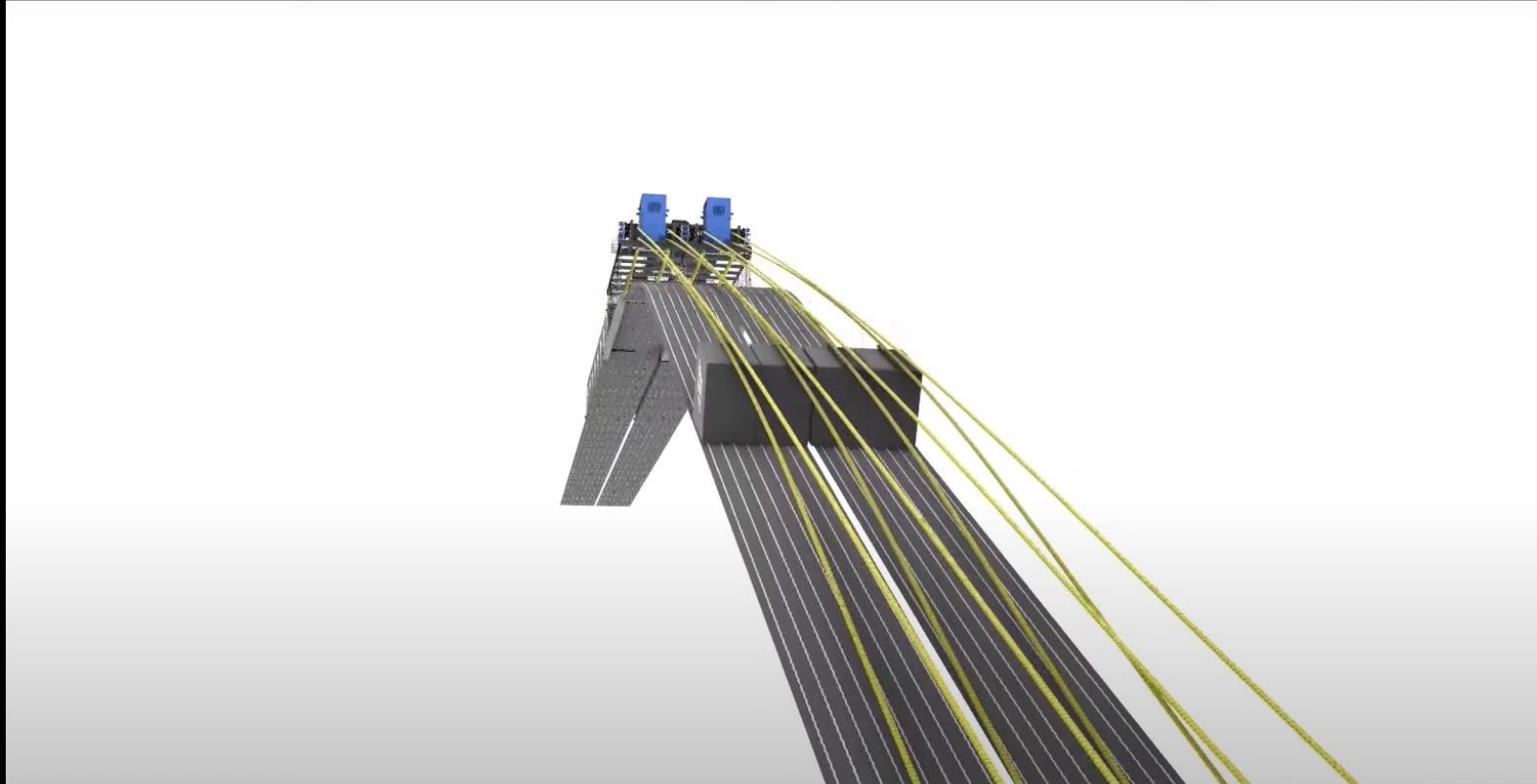


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# Engineering Design of ARES Rail-Based Gravity Storage

Feb 9 ARES GravityLine Animation



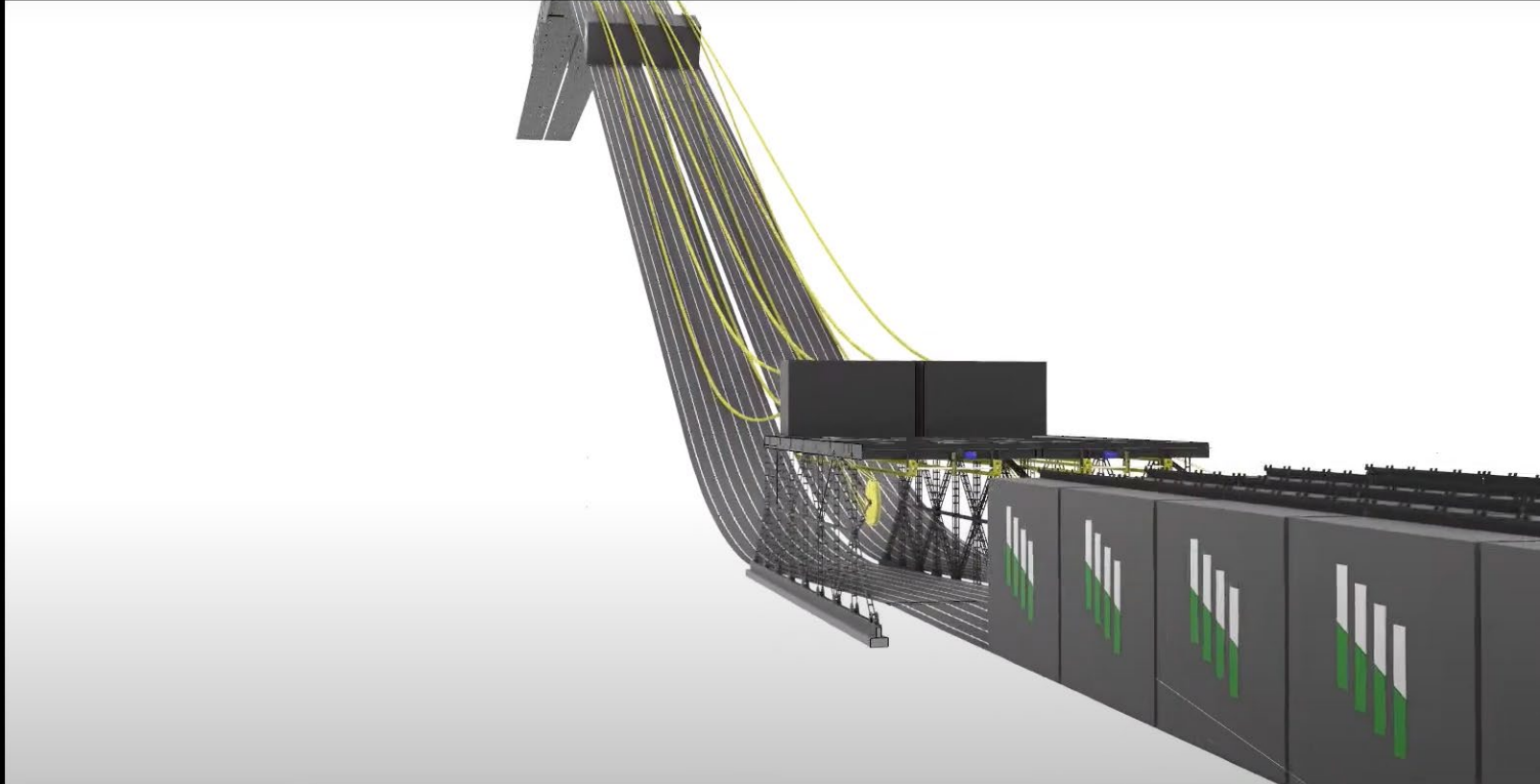
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# Engineering Design of ARES Rail-Based Gravity Storage

Feb 9 ARES GravityLine Animation

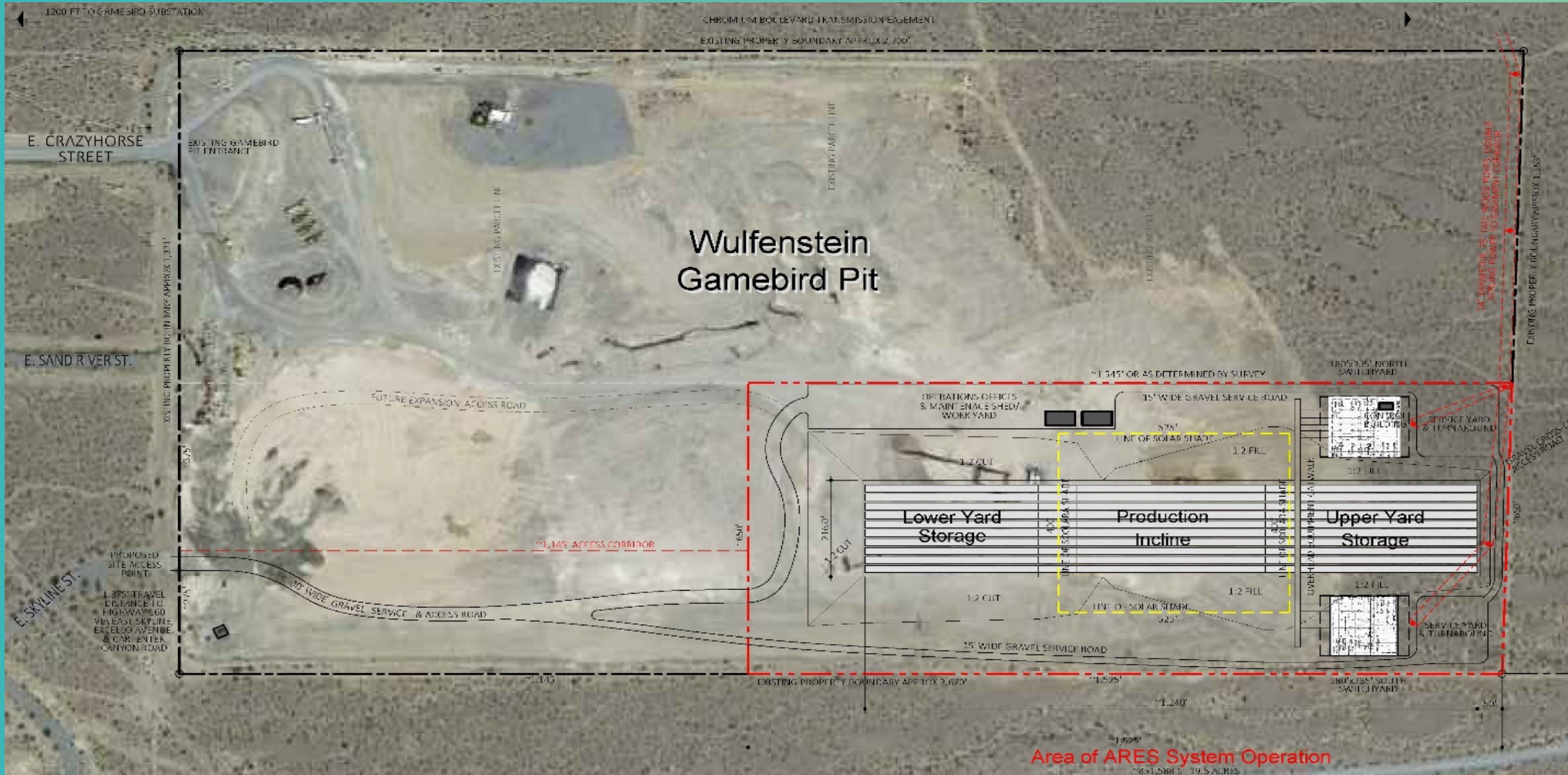


Play (k)

1:00 / 1:09

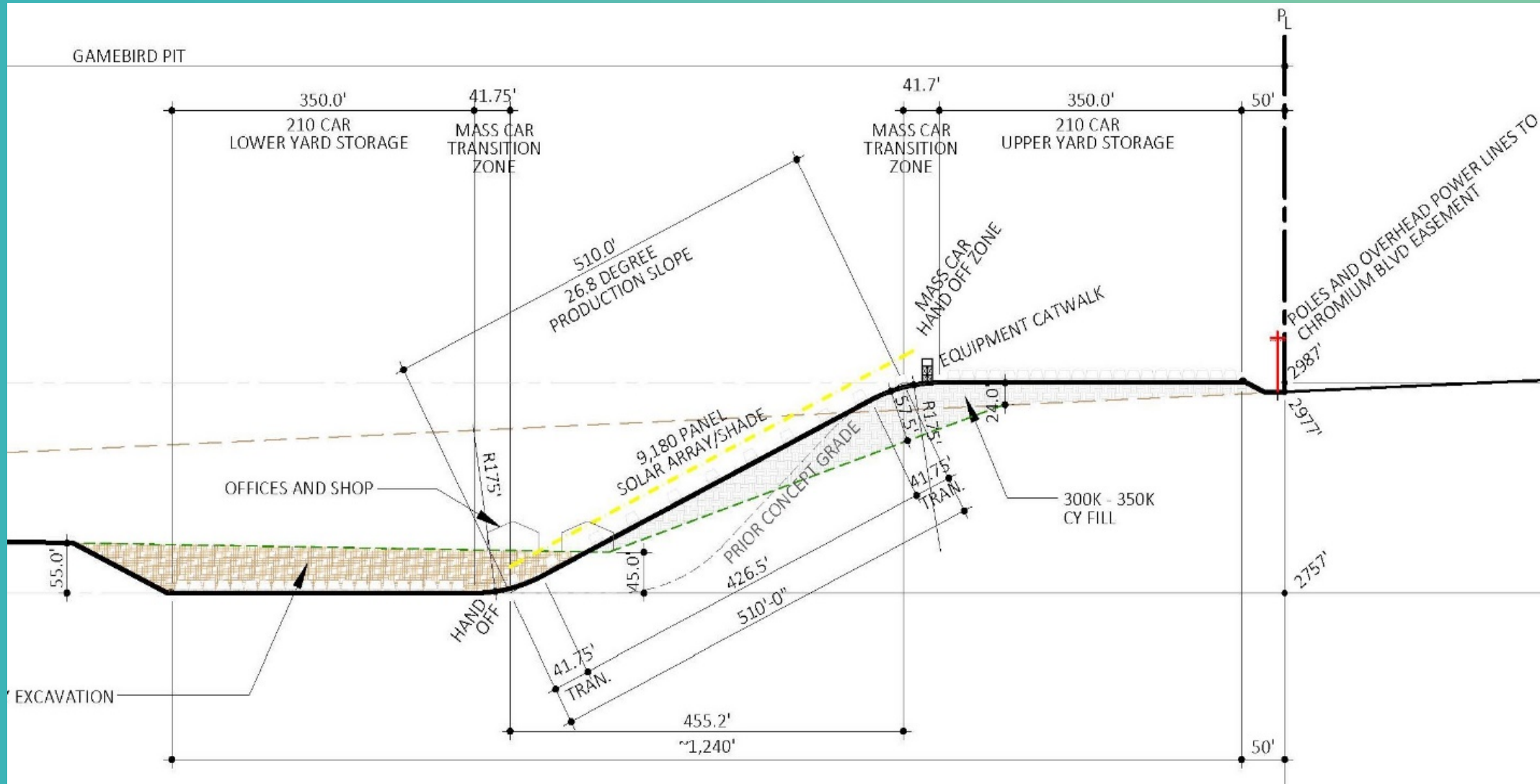


# ARES Nevada 50MW Project



# Gamebird Pit, Pahrump, Nye County, Nevada

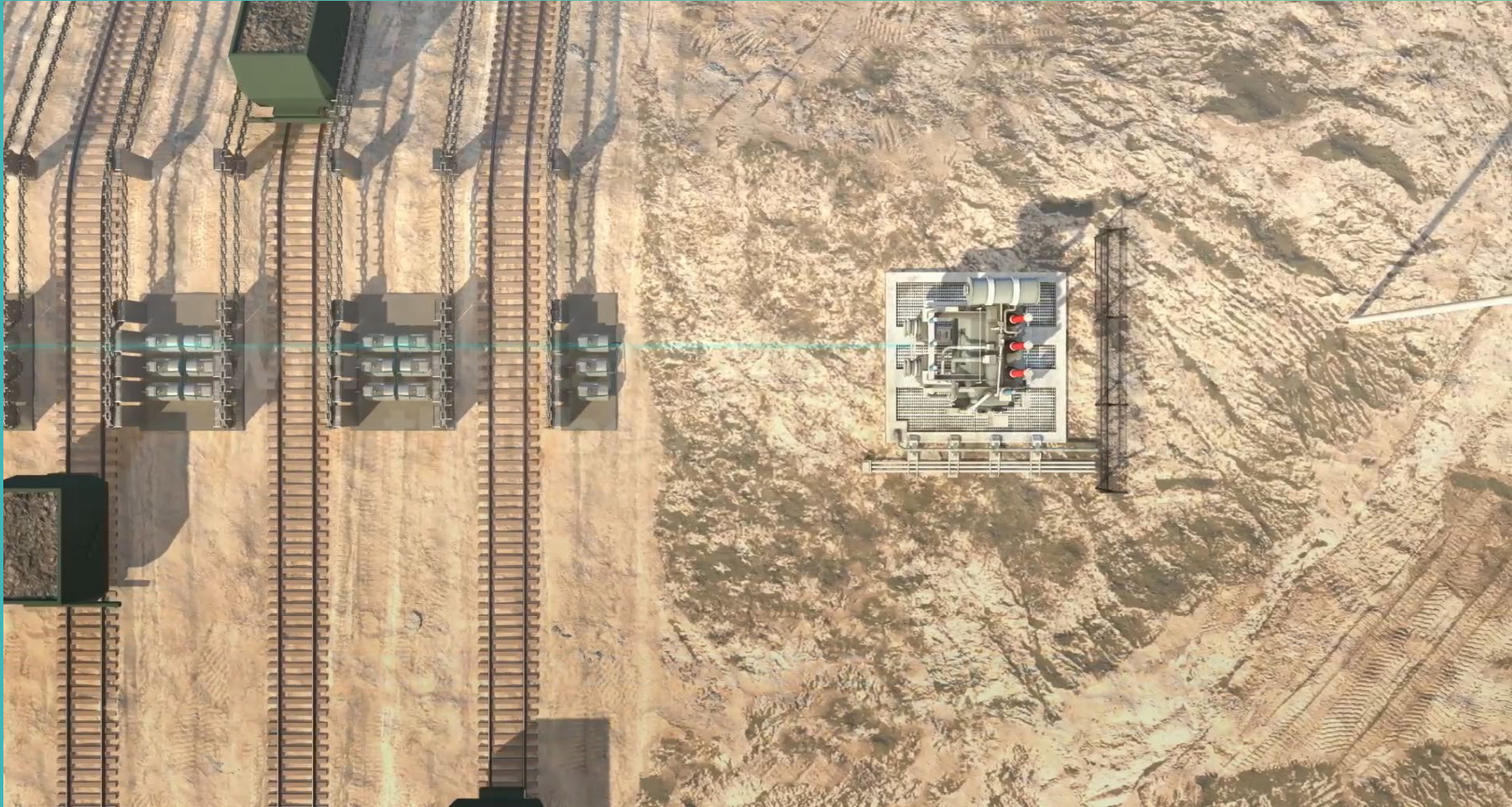
# ARES Nevada 50MW Project



Gamebird Pit, Pahrump, Nye County, Nevada



# ARES Nevada 50MW Project



Real Inertia at Gamebird Pit, Pahrump, Nye County, Nevada

# Thank you,

To Dr. Imre Gyuk, Babu Chalamala, Vince Sprinkle, Dan Borneo, Erik Spoerke, Michael Starke, and the DOE, Sandia, PNNL, and Oak Ridge teams



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