



**Kiewit**

# **SYSTEM INTEGRATION/EPC CONSIDERATION WITH GEOTHERMAL PROJECTS**

*Geothermal Energy Machinery And Systems Workshop*

# AGENDA

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Kiewit Overview

Why Geothermal Power

Factors in Project Execution





# KIEWIT OVERVIEW

## LEADER IN SAFETY

TRIR **0.16**

Energy Group

## 2022 EARNED REVENUE

**\$13.7 B**

\$10.6 billion yearly average  
over the past 10 years

## KIEWIT-OWNED EQUIPMENT

**26,000** UNITS

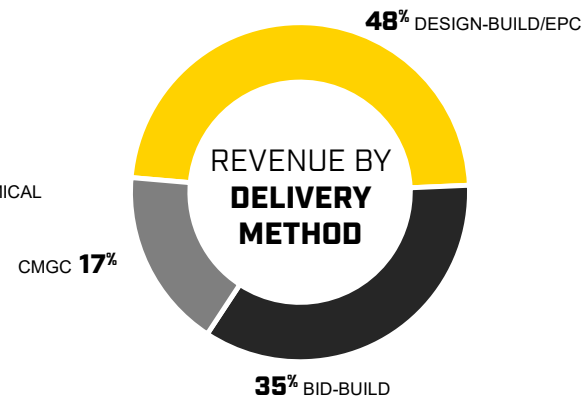
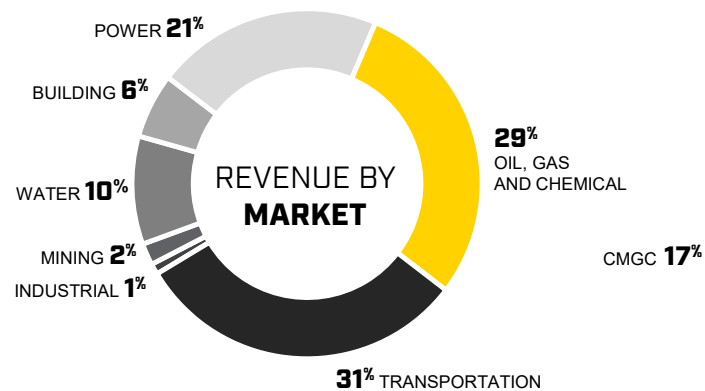
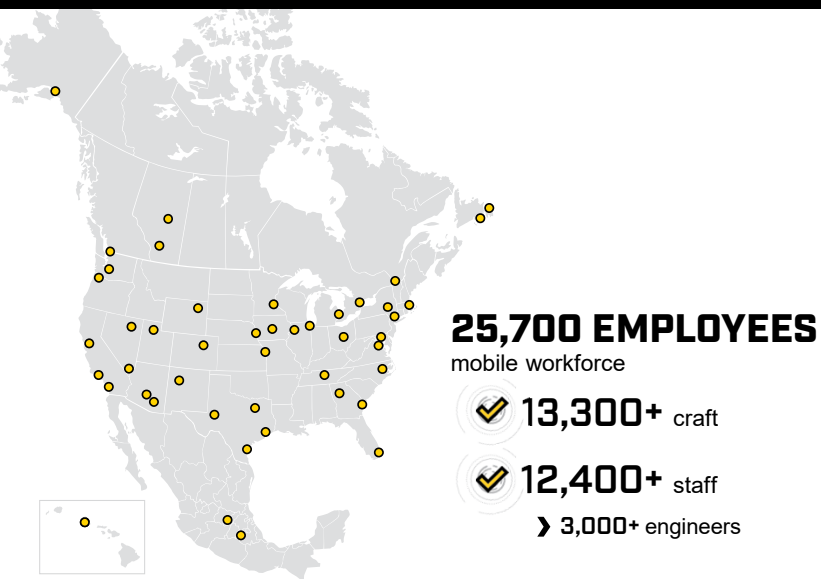
Totaling \$3.4 billion in value

## DIRECT-HIRE MANHOURS

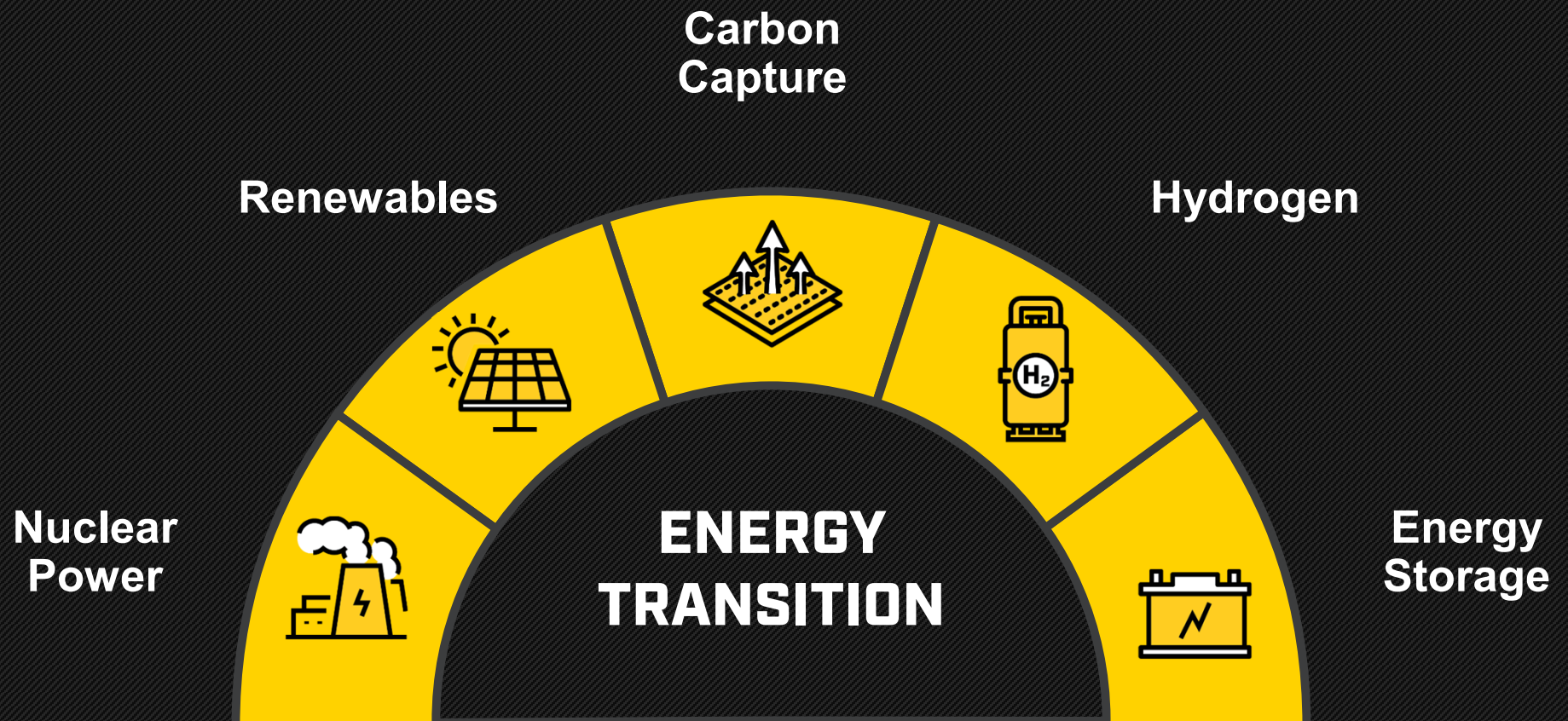
**55M+**

ANNUALLY

Providing significant safety, quality and  
schedule advantages to our projects



# ELEMENTS OF THE ENERGY TRANSITION





# PROJECT READINESS



**OWNERSHIP /  
INVESTORS**



**OFFTAKE &  
INTERCONNECT  
AVAILABILITY**

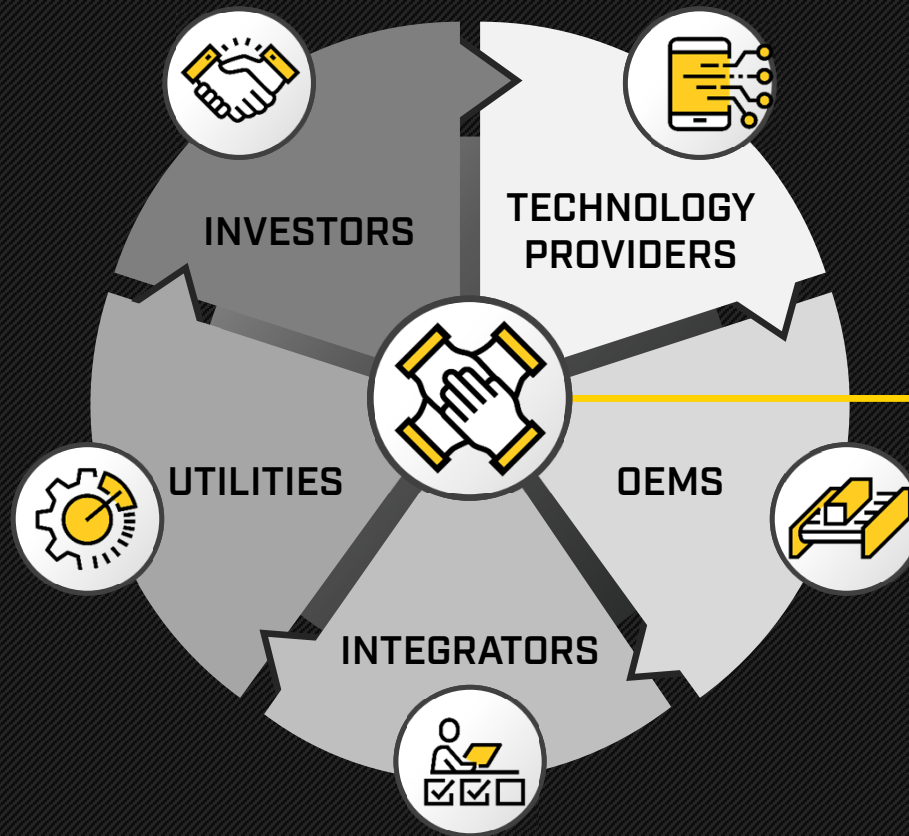


**PERMITTING AND  
REGULATORY STATUS**



**ENGINEERING  
STUDIES & ESTIMATES**

# PARTNERS / COLLABORATION





# RISKS AND OPPORTUNITIES



**PROJECT  
EXECUTION PLAN**



**CONSTRUCTABILITY  
INPUT**



**GEOTECHNICAL  
INFORMATION**



**CLIENT & SUPPLIER  
COORDINATION**

## SUPPLY CHAIN LEAD TIMES

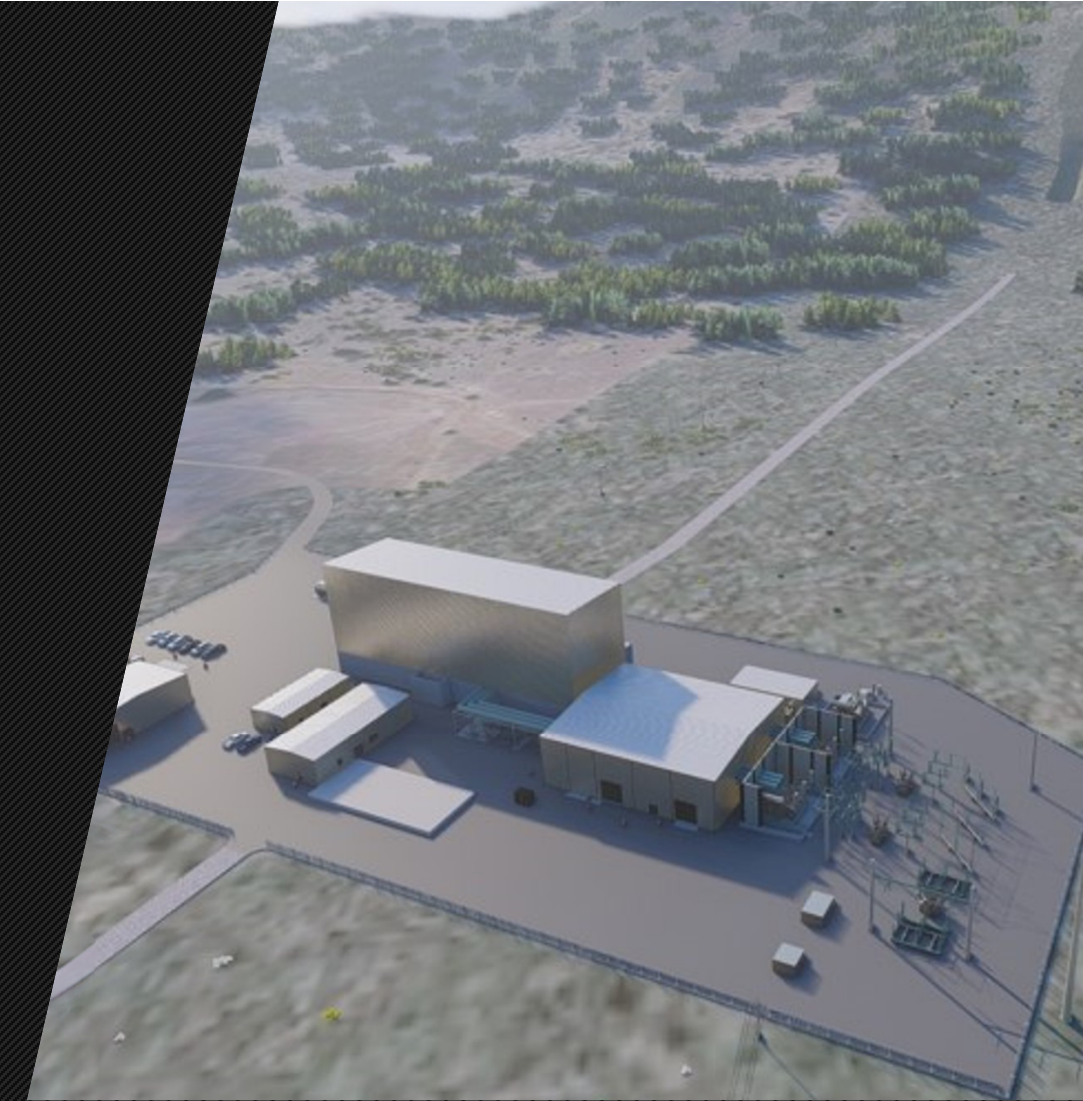
|                      | CURRENT LEAD TIME | PREVIOUS LEAD TIME |
|----------------------|-------------------|--------------------|
| LARGE TRANSFORMERS:  | 32 - 36 months    | 12 months          |
| HV CIRCUIT BREAKERS: | 120 - 160 weeks   | 10 - 40 weeks      |
| MV SWITCHGEAR        | 50 - 80 weeks     | 20 - 40 weeks      |
| ENCLOSURES:          | 100+ weeks        | 30 – 50 weeks      |



# REGULATORY

## ENVIRONMENTAL

- **Air permit (“Permit to Construct”) for projects with emission sources**
  - Minor source – 3 months to prepare, 6 months to approve
  - Major source – 5 months to prepare, 12 months to approve
    - Lack of staff may extend approval times in some jurisdictions (18 to 24 months)
- **Threatened & endangered species clearances (bugs & bunnies), wetlands**
- **FAA clearance**
- **NEPA if applicable**
  - One year+ for environmental assessment and FONSI
  - Federal checkerboard of land ownership in West makes NEPA review more likely
- **Environmental justice concerns**
  - Can persuade a regulator to block a project



# REGULATORY

## STATE

- **Certificate of Convenience & Necessity**

- Often required for utilities for owned resources or PPA's
- May be required in some states for non-utility projects
- Procedural schedule varies – assume 12 months from date application is filed

- **California Energy Commission Permit**

- Plants 50MW or greater
- Assembly Bill 205 allows special path for renewable energy and energy storage projects
- Must have PLA and demonstrate economic benefit
- CEC is required to approve projects within 270 days of accepting the application as complete
- Sunset June 2029

## LOCAL

- **Zoning**

- 3 – 6 months including community outreach
- Compliance with regulations does not ensure a successful outcome
- Reports of increasing public resistance to renewables projects







## **TRANSMISSION RIGHT OF WAY**

- **ROW ACQUISITION OFTEN TAKE LONGER THAN PLANNED.**
- **COST OFTEN HIGHER THAN BUDGET.**
- **BEWARE THAT SOMEONE ON THE ROUTE MAY HOLD YOU HOSTAGE.**
- **EMINENT DOMAIN DOESN'T SAVE MONEY OR TIME.**

# ?

## CAN EXISTING NETWORKS HANDLE THE ADDITIONAL LOAD

POWER-INTERCONNECTION QUEUES CAN TAKE *YEARS*

- Feasibility, system impact and facility studies
- Study fees are significant
- Site control must be demonstrated
- Network upgrades may be required – cost allocation by the RTO
- No one gets preferential treatment
- If queue durations are reduced, all projects should benefit

# POWER DELIVERY





# FINAL THOUGHTS

**OEM equipment sizing is critical to project success**

**Electrical equipment purchase is driving project schedules**

**Geography and location play a large role in projects in many different ways**





# ***THANK YOU!***

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