NREL Off-Road Decarbonization Panel
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# CUSTOMER PROFILE

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MINING

Customers are typically located near the end of transmission lines to support on-site mining equipment.

These sites likely have variable drives that are sensitive to power quality issues and have a high cost for electrical infrastructure deployment.

Vehicles are heavy-duty with severe duty cycles due to operating requirements and charging demands would require significant infrastructure deployment/investment.

Opportunity to support reliability and load shaving via on-site generation.
MINING- UTILITY TECHNICAL PERSPECTIVE

Utility Considerations:

High Demand – Distribution/Transmission Voltage

End of line – Capacity and Protection

Charging requires coordinating charging location with capacity to deliver energy.

Managed charging will follow mining ops strategy

Can energy density from renewables meet electrification requirements?
Construction

Site requirements dictate equipment size and level of electric service. Many locations may not have immediate electrical service and rely on temporary services or generators for on-site power.

Job sites can vary widely, which means that both equipment and services require flexibility.

Preferred on-site energy leverages Diesel or CNG that can be used for on-site generation as well as equipment. These sites typically do not have sensitive 3 phase equipment meaning that power quality does not significant operations.

Opportunity for products to provide easily-deployed, scalable 3 phase service.
Construction- Utility technical Perspective

Utility Considerations

High electrical demand early in construction timeline

Distribution availability on site? Overhead/Underground
  o Temporary Primary
  o Temporary Secondary

Capacity/Protection

Charging requires coordinating charging location with location of energy delivery mechanism

Can energy density from renewables meet electrification requirements?

How can we co-locate renewables with charging needs?
Forestry/Agriculture

Locations are remote and can vary from single wire to no service at all

These vehicles are particularly challenging for electrification because charging support requires the greatest level of investment per/kw. These vehicles likely have limited charging availability due to insufficient capacity or lack of close electrical service.

Lack of energy density for solar or other on-site renewables would limit ability for electrification.
Forestry/Agriculture

Utility Considerations:

Distribution available on site?
  • Primary
  • Secondary

Capacity / Protection

Charging requires coordinating charging location with location of energy delivery mechanism

Can energy density from renewables meet electrification requirements?
QUESTIONS FOR THE AUDIENCE

1. Given the limited energy density of on-site renewables, would customers prefer to purchase Renewable Energy Credits as an alternative to on-site renewables?

1. What technologies are you exploring to reduce your operation’s carbon footprint? What is the impact on electrical requirements?