



# CAT<sup>®</sup> HYBRID MICROGRID SOLUTIONS

Integrating Renewable Energy

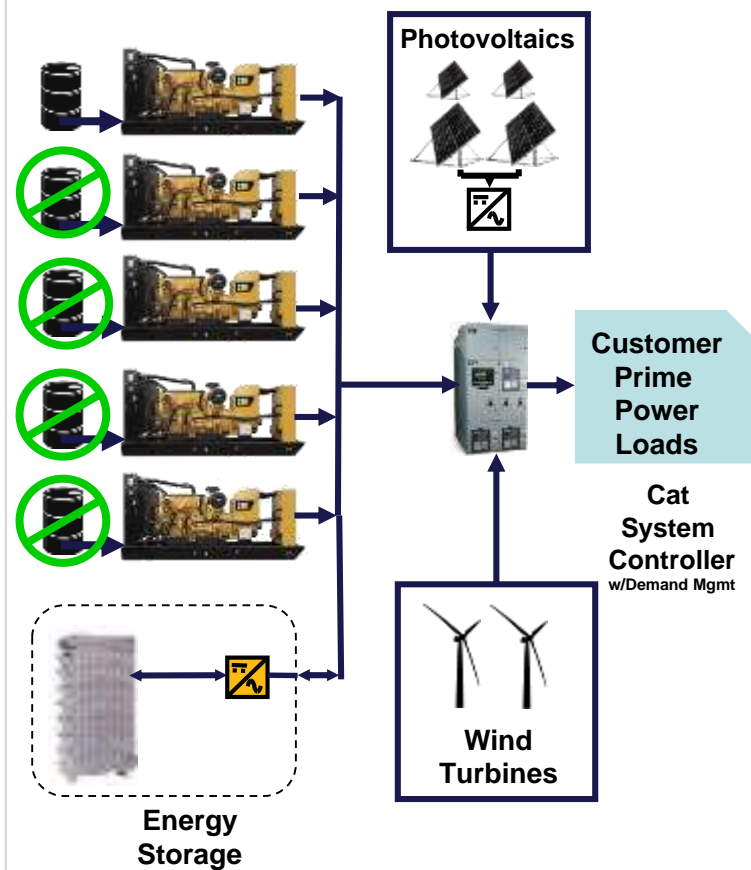
# Why is now the time for... Hybrid Microgrids?

## Agenda

- What is a hybrid microgrid?
- Cat technology
- Applications
- Benefits



# What is a Hybrid Microgrid?



## Hybrid Microgrids are

Combining Traditional & New Energy Technologies

Objective = lower operating cost

- Fuel consumption can be reduced 10% - 80%+
- Combinations can achieve lowest life-cycle costs

### Capture the Benefits of Each:

- **Generator Sets:** reliable and fully dispatchable
- **Solar and wind:** Lower cost (free) energy source
- **Energy Storage:** Stabilization, time-shifting, high-penetration

# Why Remote Hybrid Microgrids Now?

- Advances in:
  - Solar PV
  - Energy Storage
  - System Controls & Power Conditioning
  - Connected Load Side Management

**→ *Reduced LCOE***







Remote monitoring



Genset  
CAT



Solar panels and racking



Energy storage



Controls  
CAT



# Applications

- Regional Power



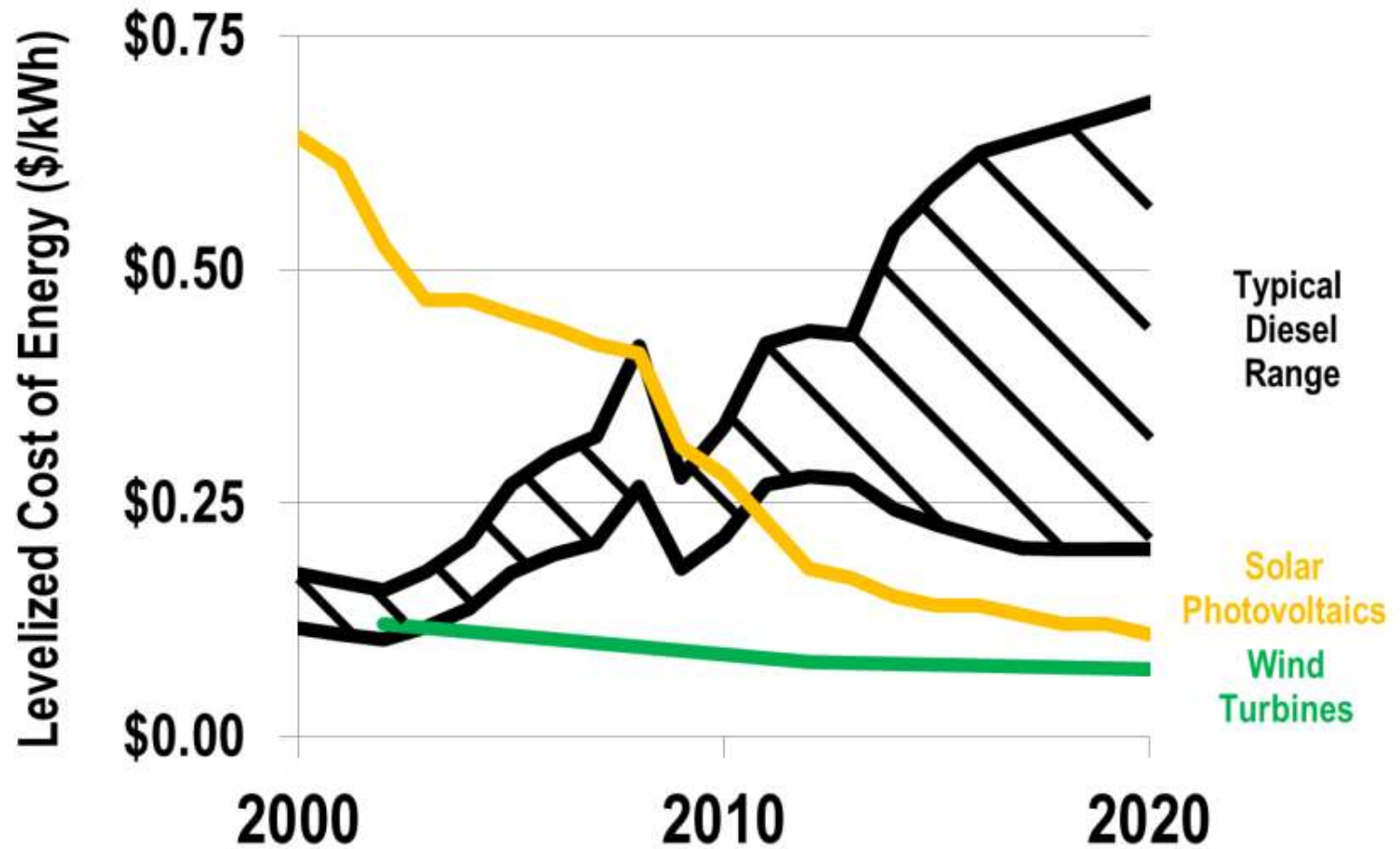
- Commercial / Industrial Power



- Island Power



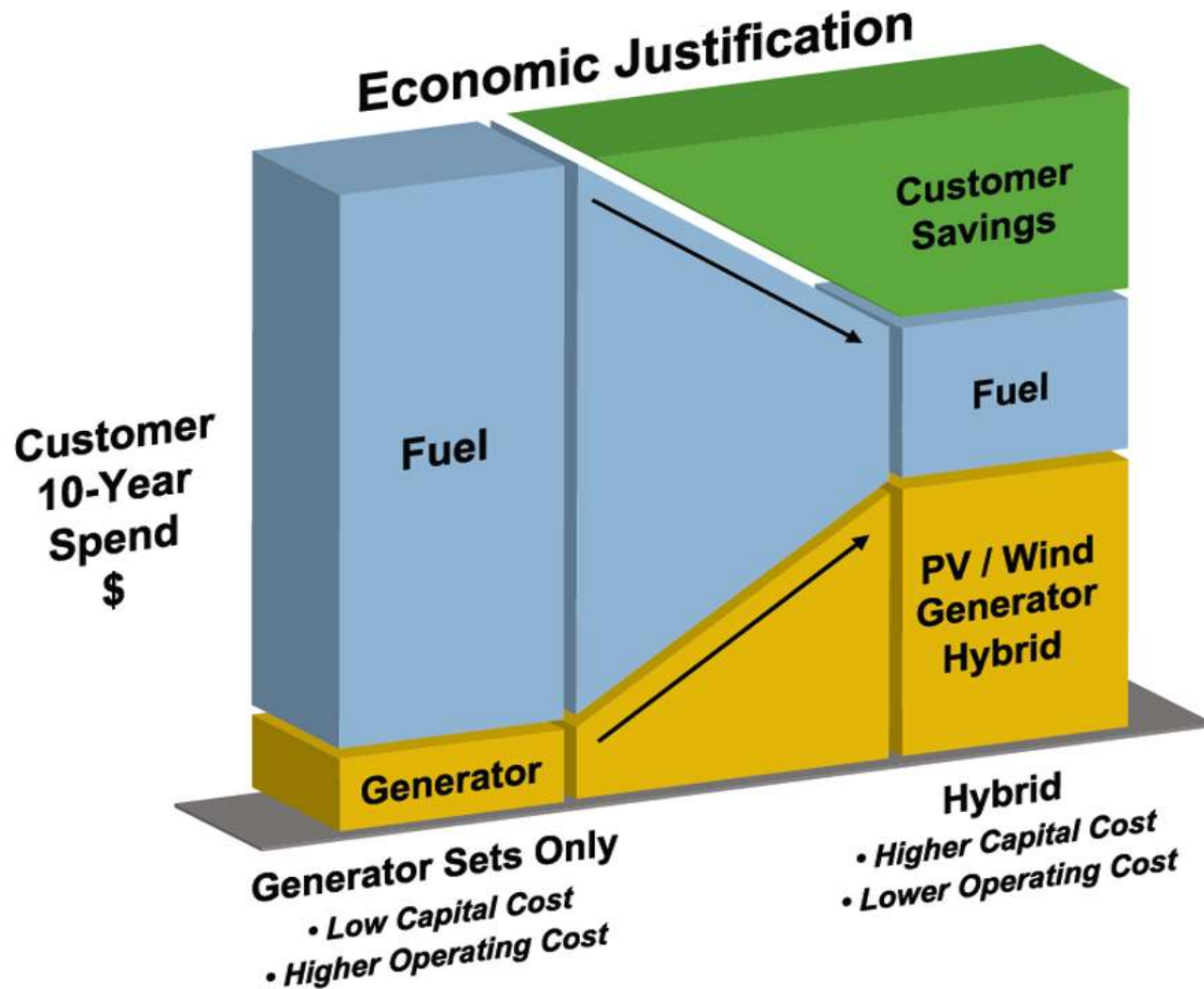
# Solar and Wind Life-Cycle Costs: Below Diesel



Sources: IEA, Lawrence Berkeley National Labs, NREL, EIA , Clean Edge, Caterpillar



# Hybrid Microgrid – Economics





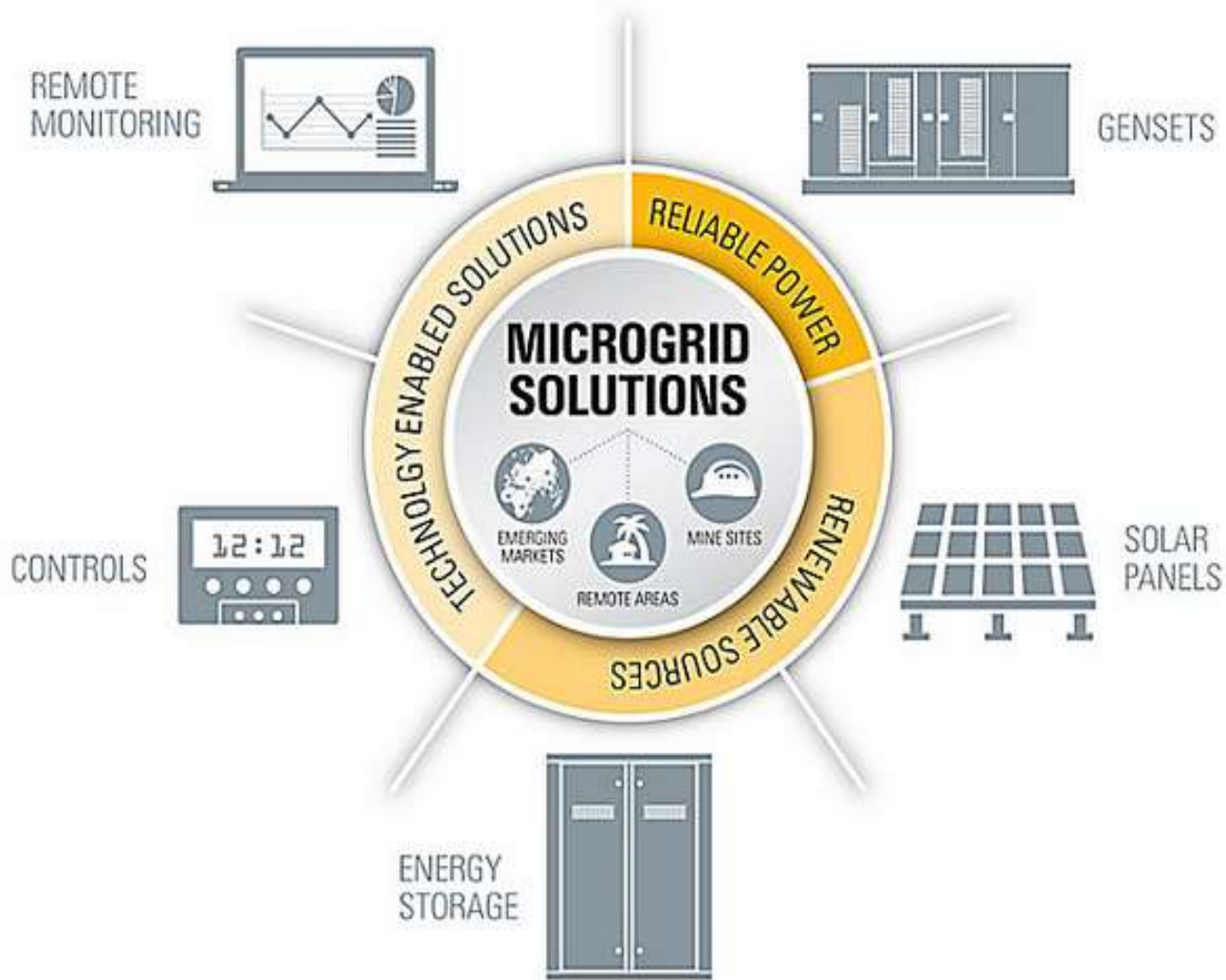


**191  
Dealers**

**141,300  
Employees**

**\$18.9B  
Net Worth**

# Powering Sustainable Progress. Everywhere. All the time.



## Questions?

# Video