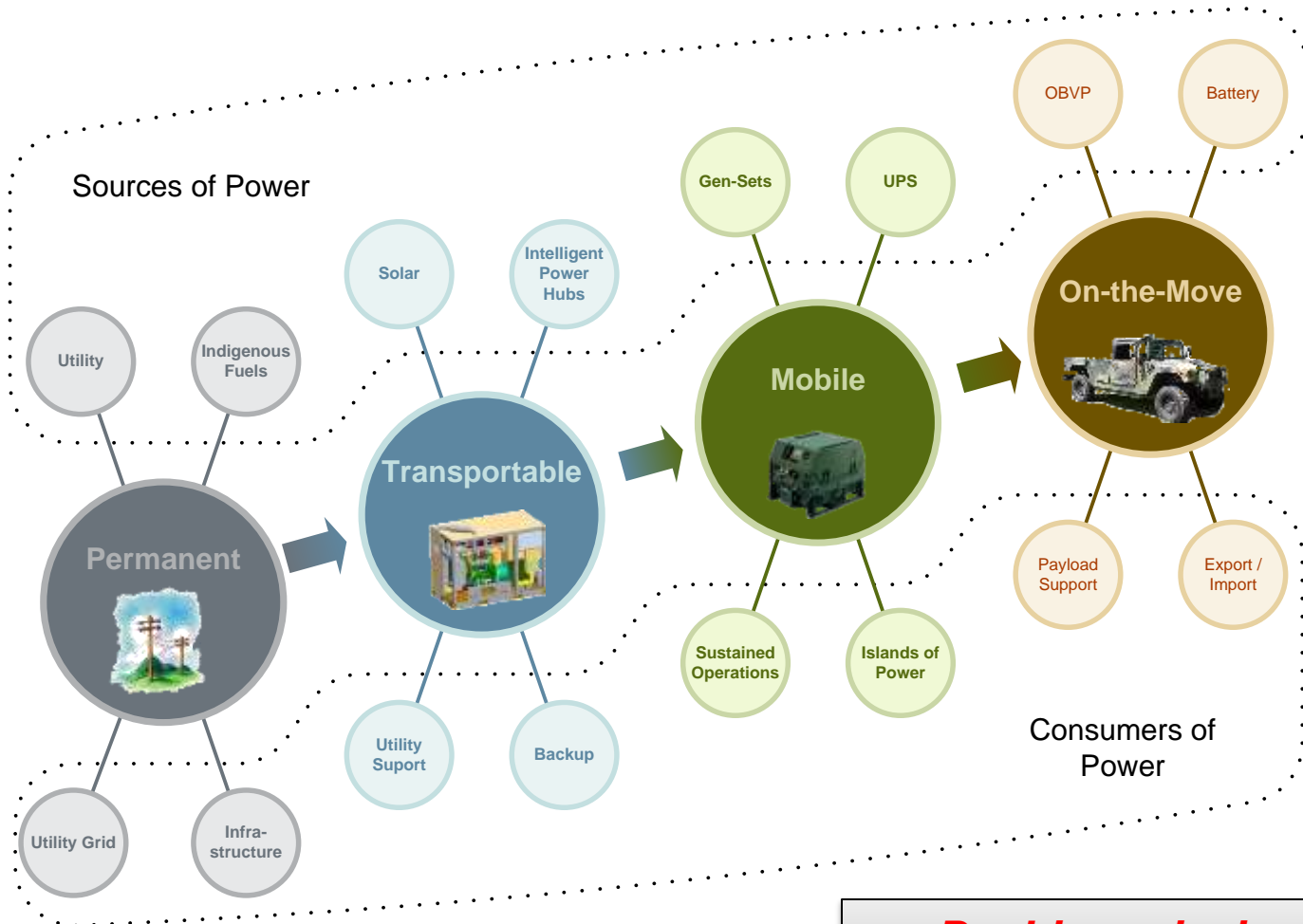




# Integrating Power Plants into Powertrains

2011 Joint Service Power Expo  
05 May 2011

# Battlefield Power



***Pushing mission power forward to the warfighter***

# On-Board Vehicle Power (OBVP)

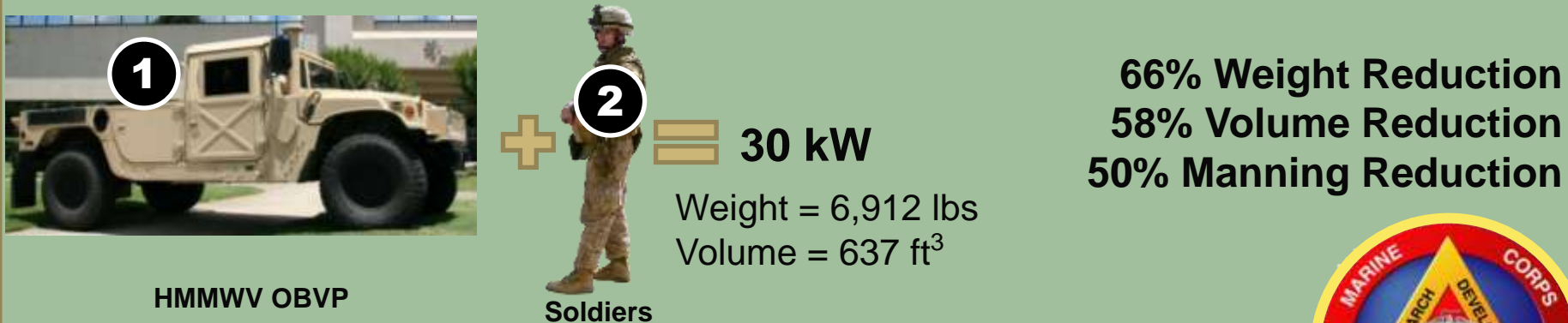
## New Capability at Reduced Logistics Costs



### Existing Configuration to Deliver 30 kW with HMMWV Class Vehicle



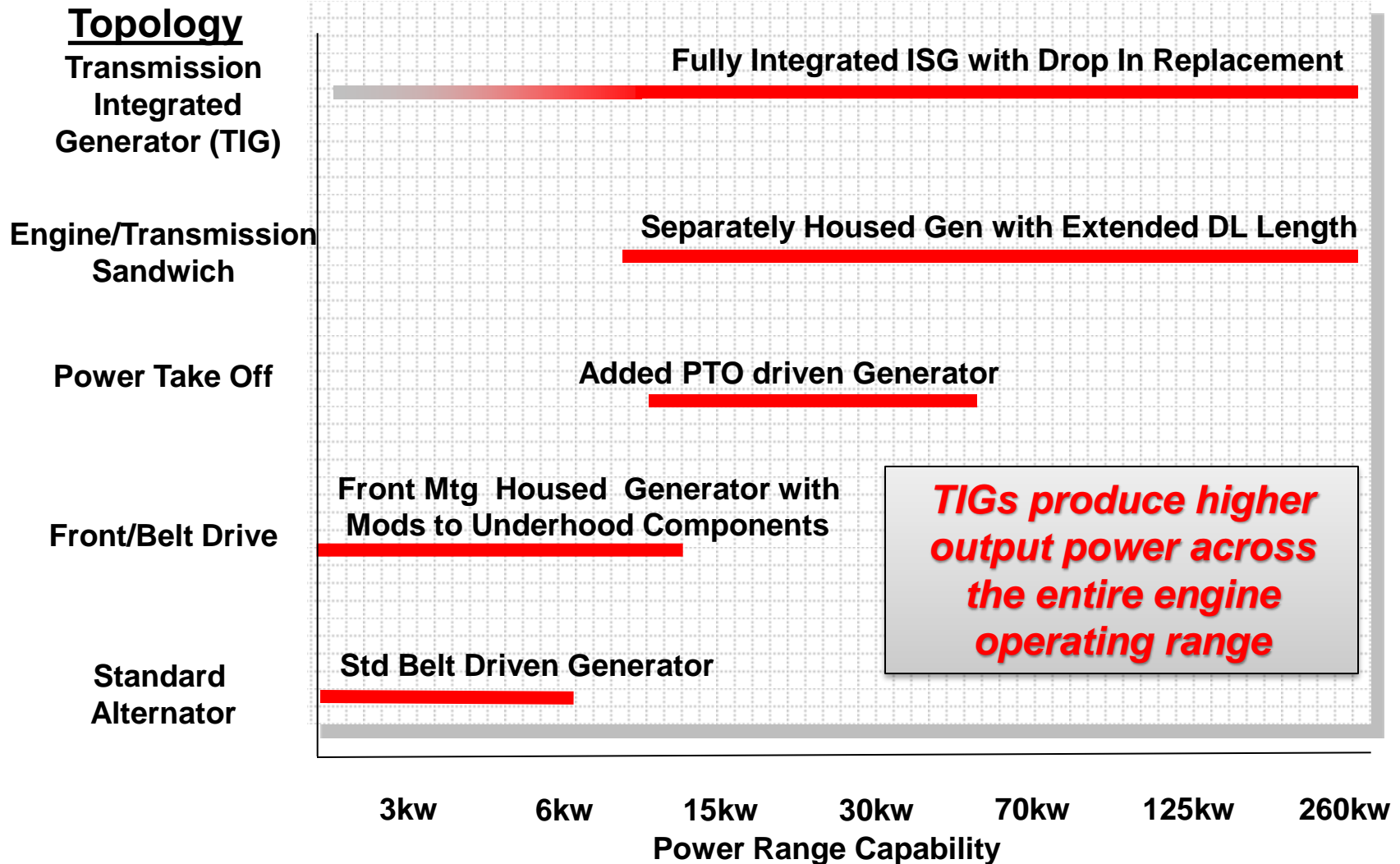
### USMC OBVP Equipped HMMWV Configuration Delivers 30 kW



Significant logistics savings achieved using HMMWV OBVP Technology.  
Program transitioned to MCSC PM Expeditionary Power Systems.



# Vehicle Power Solution Approaches



# Transmission Integral Generators

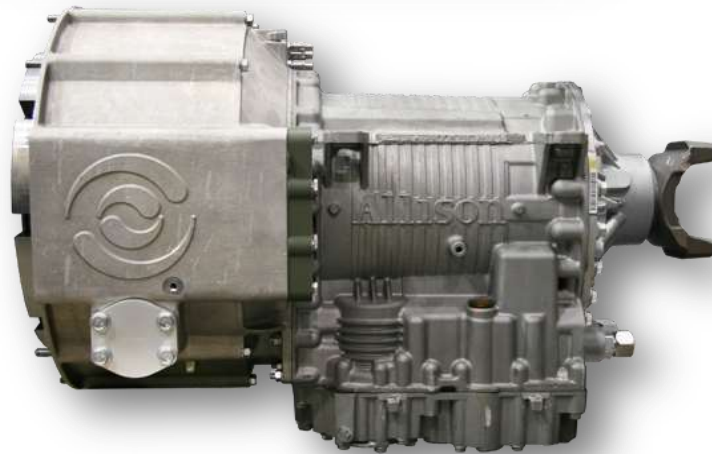
*The Basis of the DRS OBVP System*



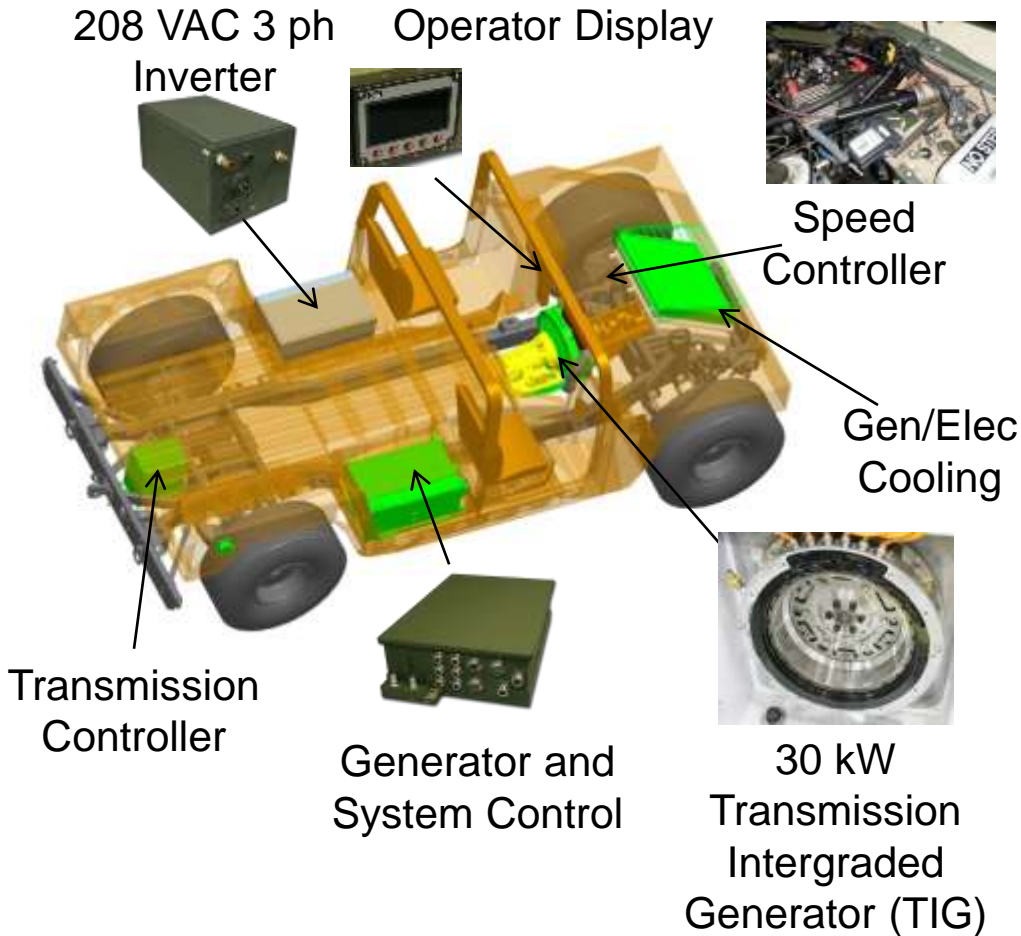
GTP 4L80



ATI 3200MSG



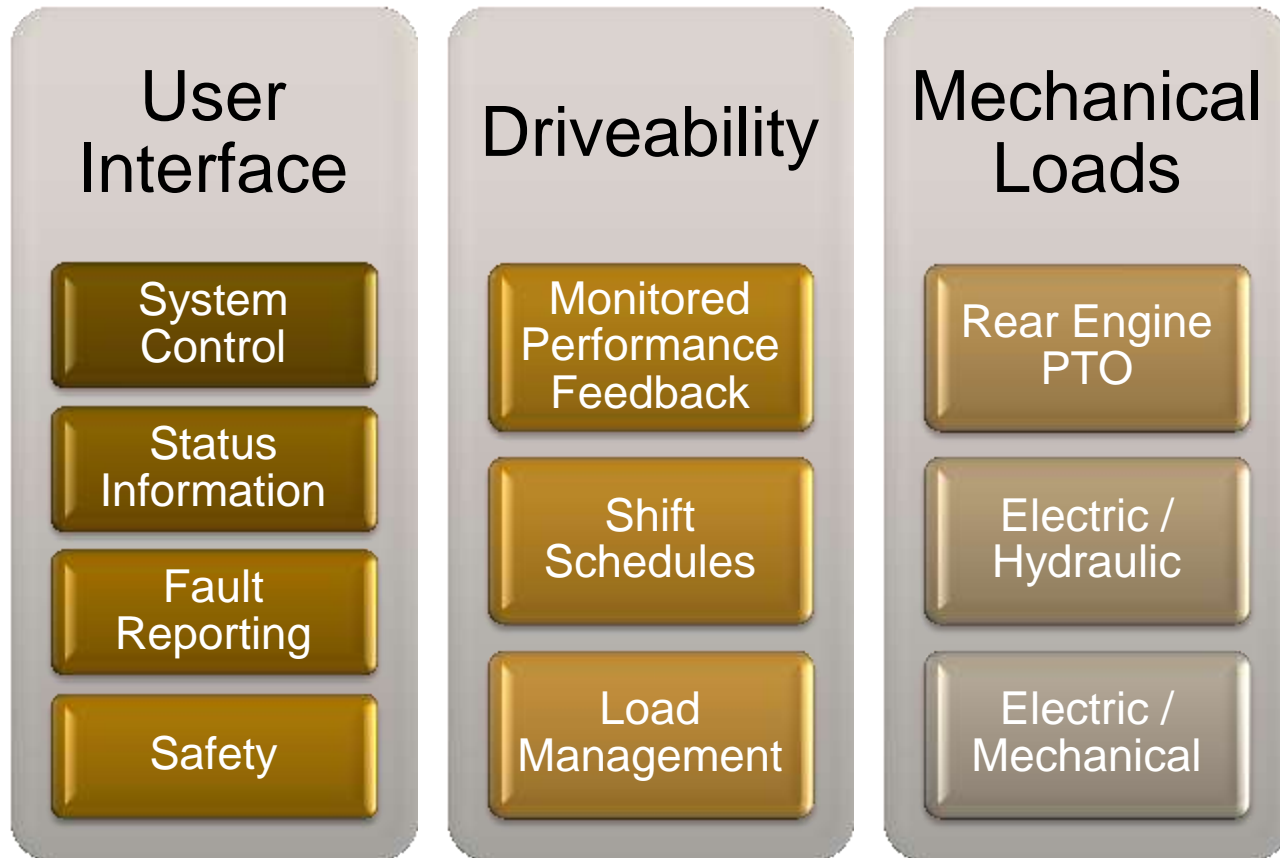
# Meeting the Needs



- **30 K-Watts exportable power continuous – for stationary Ops**
- 10 K-W power-**on-the-move**
- Transmission Embedded PM Generator
- **No Increase in driveline length**
- **No belts / pulleys / bearings / shafts / seals / mounts**
- **No additional periodic maintenance**
- Active Generator Controller
- Power Conditioning Modules:
  - **120/208 VAC / 28 VDC**
  - **Single and three phase**

**OBVP Equipped HMMWV's have been successfully tested at APG and used in field trials by both Navy and SOCOM**

# Integration Challenges





## Functions

System control

Status information

Fault reporting and corrective actions

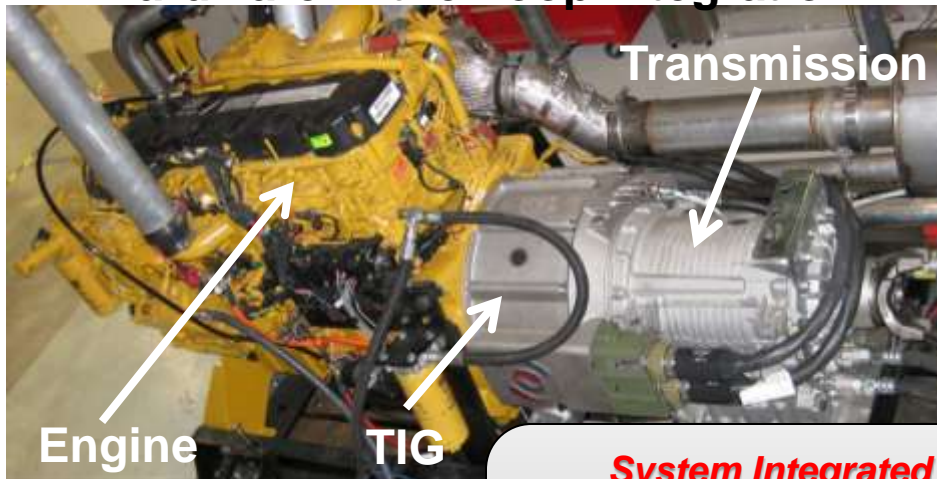
Safety / E-Stop

The Operator's focus on system operation is defined by the User Interface

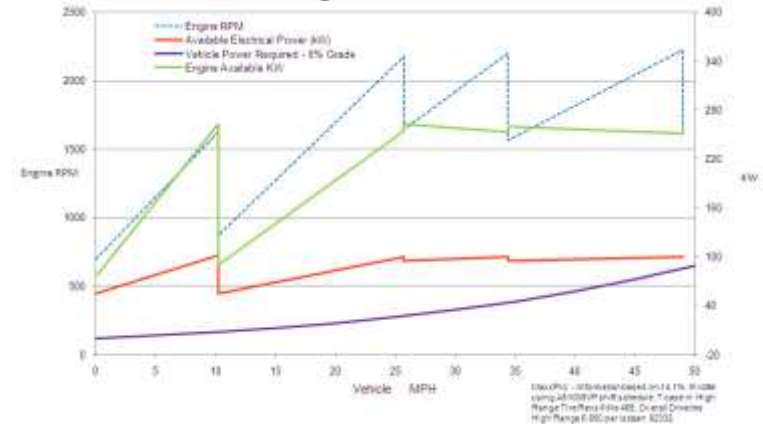


# Optimized for Driveability

## Hardware in the Loop Integration

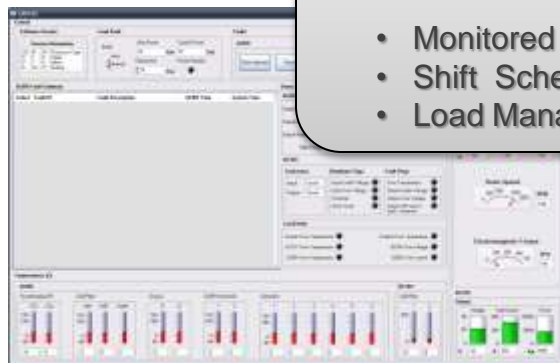


## Modeling & Simulation

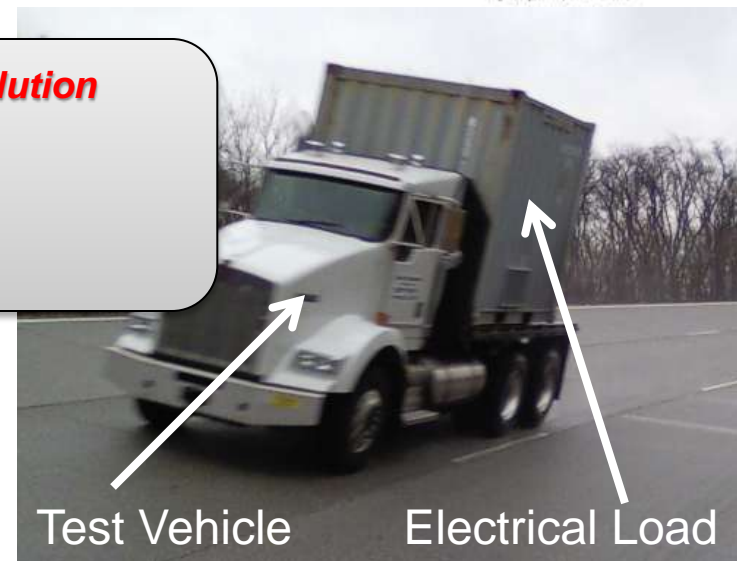


### **System Integrated OBVP Solution Optimizes Driveability**

- Monitored Performance Feedback
- Shift Schedules
- Load Management



## Data Acquisition & Control



## On-Vehicle Evaluation

# Mechanical Loads

Rear Engine PTO



Electric / Hydraulic



Electric / Mechanical



**Options are available to replace mechanical systems and transmission based PTO**

- Total system integration of an OBVP solution provides optimized driveability
- Options are readily available to address mechanical systems and the transmission PTO
- The OBVP User Interface defines the operator's interaction with the system
- TIG based OBVP systems can meet the needs to fight today's fight and tomorrow's

# THANK YOU!



## **CONTACT INFORMATION**

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