WELCOME FROM DOE

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BACKGROUND & KICKOFF

Dr. Michael Weismiller
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Energy Efficient Fluid-Power Systems for Off-Road Vehicles
Research Needs Workshop
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Department of Energy, Vehicle Technologies Office
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The Vehicle Technologies Office (VTO) aims to:

- increase domestic energy **security**
- reduce operating **cost** for consumers & businesses
- improve global **competitiveness** of US Industries

**By supporting R&D in...**

- **Fuel Diversification**
  - Domestic, Diverse, Alternative, Clean Fuels

- **Vehicle Efficiency**
  - Energy Efficient Vehicle Technologies

- **Mobility Systems**
  - Energy Efficient Transport Systems
Vehicle Technology Office - Approach

Portfolio Approach

Public / Private Partnerships

Target Driven With Ambitious Goals

Fuel Economy (LDV) +50%

Weight - 25%

55% Heavy Duty Truck BTE

Costs: Battery = ICE

Academia and Intergovernmental
Energy Use of Fluid-Power Systems

Light Duty cars and trucks (15.2 quads) (54.5%)

Heavy Duty trucks (5.8 quads) (20.9%)

Off-Road (2.1 quads) (7.6%)

Total Transportation Sector in 2016 = 27.8 quads

Generated from ORNL Transportation Energy Data Book, Edition 35, Table 2.8
Energy Use by Fluid Power


December 2012

Prepared by
Lonnie J. Love, Oak Ridge National Laboratory
Eric Lanke, National Fluid Power Association
Pete Alles, National Fluid Power Association

“...mobile hydraulic systems use 0.36-1.26 quads of energy.”

NREL workshop team has updated study.
Legislative and Policy Drivers

FY17 Energy and Water Development and Related Agencies Appropriations

Conference Report:
Within available funds for Fuel and Lubricant Technologies, the agreement provides up to $5,000,000 to support improving the energy efficiency of fluid power systems for commercial off-road vehicles.

FY18 HEWD Mark-up Report:
The Committee notes that the commercial off-road vehicle sector, including industrial, mining, and farm equipment, consumes over two quads of energy per year. The Department is encouraged to consider activities that promote technologies to reduce the energy consumption of commercial off-road vehicles and provides up to $10,000,000 to support this effort.

FY18 SEWD Report:
The Committee recognizes that the commercial off-road vehicle sector, including industrial, mining, and farm equipment, consumes over 2 Quads of energy per year and directs the Department to continue activities to reduce the energy consumption of commercial off-road vehicles. The Committee recommends $5,000,000 to continue improving the energy efficiency of fluid power systems for commercial off-road vehicles.
Legislative and Policy Drivers

Administration Guidance

OMB Memo on Research and Development Priorities, 2/5 are relevant

“American Energy Dominance -

... Agencies should invest in **early-stage**, innovative technologies that show promise in harnessing American energy resources safely and efficiently. Federally-funded energy R&D should continue to reflect an **increased reliance on the private sector to fund later-stage research, development, and commercialization of energy technologies.**

“American Prosperity -

Federal investment in R&D plays an important supporting role in America’s economic growth. Properly executed, it can lead to tremendous job creation in new businesses and industries.... **Working in tandem, the Government and the private sector can promote the nation’s economic growth** through innovation, and create new products and services for the American people. “
Workshop Objectives

What are we looking for today?

• Ideas that can lead to projects that will advance the science base underlying increased efficiency in off-road vehicles.
• Specific focus on fluid power, but other needs of off-road vehicles are welcome.

What are we not looking for today?

• Product development
• Deployment activities

How do we plan to execute this activity?

• Multiple projects, balancing competitively-awarded, cost-shared cooperative agreements and projects at DOE National Labs
Thank You

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https://energy.gov/eere/vehicles/vehicle-technologies-office