
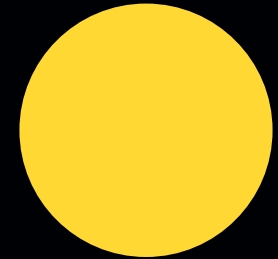
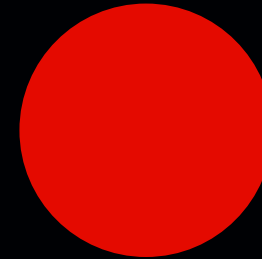
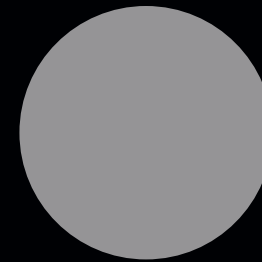




**The Role of  
Utilities, ESCOs and  
Financers in the  
Transportation  
Revolution**



ACEEE  
Finance Forum

# Vermont Energy Investment Corporation

- Energy Efficiency Utility
  - State of Vermont
  - Washington DC
  - Parts of Ohio
- Commons Energy
  - Public Purpose Energy Services Company
- Transportation Efficiency

# Transportation

- 29% of all energy use
- 27% of greenhouse gas emissions
- On average 8% of household expenditures
  - 15% if you are low income







Figure 1. Converging forces transforming the future evolution of automotive transportation and mobility



### Maturing powertrain technologies



**Battery and fuel-cell electric vehicles** offer higher energy efficiency, lower emissions, greater energy diversity, and new vehicle designs



### Lightweight materials



**Stronger and lighter materials** are reducing vehicle weight without sacrificing passenger safety



### Rapid advances in connected vehicles



New vehicles are being outfitted with **vehicle-to-infrastructure (V2I), vehicle-to-vehicle (V2V), and communications technologies**, so every car can know precisely where every other car is on the road



### Shifts in mobility preferences



Younger generations are leading the way toward **pay-per-use mobility** in place of owning a car; nearly 50% of Gen Y consumers like using a smartphone app for transport and already plan travel so they can multitask



### Emergence of autonomous vehicles



**Autonomous-drive technology** is no longer a case of science fiction; the question is **when and how** will it become more **mainstream and widely adopted?**

Opportunity:  
Electric Transit Buses

# U.S. Transit Fleet

- 70,000 heavy duty buses in the U.S.
  - 60% diesel
  - 0.1% electric
- 19.4 million miles annually
  - 30,000 – 80,000 miles per bus/year
- \$6.5 million annually in diesel consumption
  - Based on average 4.5 mpg
  - Equates to 2.5 million gallons of diesel



# Why Electrify Public Transit

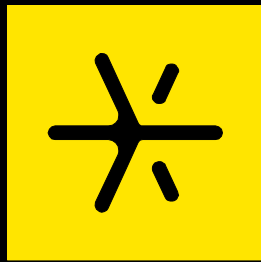
- Impact
  - High mileage, low fuel economy
- Technology
  - Proven, available, advancing
- Equity
  - Public transportation disproportionately serves people with low incomes

# Biggest Barriers

- Capital Cost of Vehicle
- Technology / Duty Cycle (Range)

# Opportunity

- More efficient vehicles
- Lower fuel costs
- More stable fuel costs
- Lower maintenance costs
- Longer useful life (vehicle)
- More interior space (more passengers)
- Reduce/eliminate consumption of fossil fuels
- Reduce GHG emissions
- Grid stabilization



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