

# • Financing the Transition: Unlocking Capital to Electrify Truck and Bus Fleets

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Finding the ways that work





- **Leveraging Public Capital and Engaging Private Capital:**

Financing Tools and Non-Financial Supports to Animate the Electrification of Medium-Duty and Heavy-Duty Fleets

# The electrification of MHDV fleets is essential to address climate change, support environmental justice and jumpstart the post-COVID economic recovery

## What?

The electrification of heavy duty fleets is crucial for climate action, boosts economic recovery and supports environmental justice



The electrification of MHDV fleets can **support environmental justice** by reducing harmful emissions in industry-intensive, overburdened communities



Transportation currently makes up almost a **third of U.S. GHG emissions** while medium- and heavy-duty vehicles make up over a quarter of sector emissions



Investments in green technologies have a greater stimulus effect than brown sectors – and clean transportation has larger **job creation potential** among green investments

## How?

Public actors can support fleet transitions by focusing on the broad set of barriers that create costs and risks - not just upfront costs



The current state of the market suggests a **clear need for support** to enable the electrification of MHDV fleets



**Enhance and expand upon traditional approaches** which focus on upfront costs to include identifying all barriers to fleet electrification – hard and soft costs, risks, uncertainties and frictions – and the tools to mitigate, eliminate or shift market risks



**Enact progressive policies** to enable emerging and innovative financing tools and non-financial supports

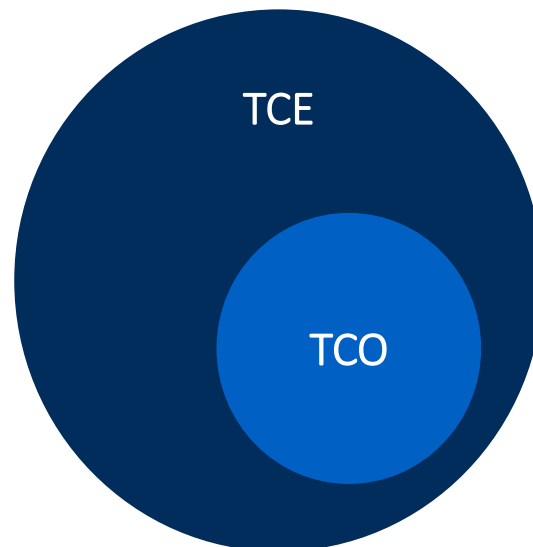
## To unlock scalable, replicable MHDV electrification, policy and finance need to acknowledge, understand and address the Total Cost of Electrification (TCE)

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Public finance needs to look beyond the traditional vehicle Total Cost of Ownership (TCO) and address the wider set of challenges embodied in Total Cost of Electrification (TCE)

In an attempt to make electric vehicles more cost competitive with their internal combustion counterparts, traditional policy and financing approaches have focused on bringing down one component of TCO – upfront capital costs – through vehicle subsidies, incentives or vouchers

The TCE framework provides a comprehensive and granular lens to understand and assess fleets, identifying and capturing the broader range of costs, risks, uncertainties and frictions, expanding upon and enhancing the more traditional TCO framework



# To unlock a transition to electric MHDV fleets at scale, financing approaches need to acknowledge, understand and address the Total Cost of Electrification

Fleet Investment Barriers	<h2>Hard costs</h2> <p>Costs from investment in new assets and fixed infrastructure</p>	<h2>Soft costs</h2> <p>Costs from additional activities and processes needed to switch to electric MHDVs</p>	<h2>Risks &amp; uncertainties</h2> <p>Costs from uncertainties that make financing more expensive or make electric MHDVs appear less cost-competitive</p>	<h2>Frictions</h2> <p>Limitations that increase the psychological or practical costs of switching to electric MHDVs</p>
Priority Barriers	<ul style="list-style-type: none"> <li>• High up-front vehicle capital cost</li> <li>• High up-front and replacement battery costs</li> <li>• Technical infrastructure costs, including chargers and system upgrades</li> </ul>	<ul style="list-style-type: none"> <li>• Changes to business operations (including routes and schedules)</li> <li>• Permitting and approvals</li> <li>• Practicalities of switching to new maintenance logistics</li> <li>• Knock-on effects of missed charging events</li> </ul>	<ul style="list-style-type: none"> <li>• Uncertain residual value of vehicles and batteries</li> <li>• Uncertain future capital costs and total lifetime cost</li> <li>• Uncertain battery technology performance and battery life</li> <li>• Uncertain maintenance costs</li> <li>• Uncertain fuel cost savings</li> <li>• Uncertain evolution of incentives and policy standards</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of capacity to plan and implement fleet-wide switches over to EVs</li> <li>• Lack of capacity to use new financing approaches</li> <li>• Inertia in procurement and contracting processes</li> </ul>

## Public and private market interventions to support electric MHDV fleet investment can take the form of financing tools and non-financial supports

<i>Financing tools</i>	<b>Capital instruments</b>	Financing instruments that increase access to capital or other resources and/or reduce the cost of capital
	<b>Risk reduction instruments</b>	Financing supports that reduce exposure to risk or uncertainty
	<b>Cost smoothing instruments</b>	Financing tools that reduce and smooth upfront costs and/or recurrent costs
<i>Non-financial supports</i>	<b>Technical support</b>	Support for technical management of electric MHDVs and technical assistance for financing approaches
	<b>Policy action</b>	Policy measures to enable financing and encourage fleet transitions

# A range of financing tools can be used to target high-priority TCE barriers – though non-financial supports are also needed to enable investment

Fleet Investment Barriers	Hard costs	Soft costs	Risks & uncertainties	Frictions
	Costs from investment in new assets and fixed infrastructure	Costs from additional activities and processes needed to switch to electric MHDVs	Costs from uncertainties that make financing more expensive or make electric MHDVs appear less cost competitive	Limitations that increase the psychological or practical cost of switching to electric MHDVs
TCE Financing & Policy Toolkit	Public-backed “soft” loans	Operational expenditure grants	Asset residual value guarantees	Non-financial grants (e.g. in-kind support)
	Interest rate incentives	Performance guarantees	Political risk guarantees	Policy reform for new approaches
	Equity investments	Operational leasing	Financial risk guarantees	Technical assistance for using financing
	Financial grants	‘Wet’ leasing	Building secondary markets for vehicles & batteries	Guidance on financing compliance with regulations
	Commercial bonds	Lease-purchase agreements	Battery health programs	Mandates for fleet transitions
	Green bonds	On-bill financing		
	Municipal bonds			
	Aggregation / Warehousing			

**Legend**

<i>Financing tools</i>	<i>Capital instruments</i>	<i>Risk reduction instruments</i>	<i>Cost smoothing instruments</i>
<i>Non-financial supports</i>	<i>Technical support</i>	<i>Policy action</i>	

## Three principles for creative public investment in medium-duty and heavy-duty truck and bus fleet electrification

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1

### **Deploy public money where it is needed the most and where it will have the most impact**

Use public money where it is still needed and where it will have most impact – but use it carefully  
For example, use capital grants only for early technology development or small fleets with no access to other capital, and decreasing public support through interest rate support and guarantees as technology matures and as fleets become larger and/or more profitable

2

### **Actively enable private investment and financing options**

Help enable private financing tools and instruments, for example by working with OEMs on leasing models, or working with fleets, utilities and OEMs on on-bill financing  
Re-assess policies already on the books to make sure that they pro-actively enable private capital engagement

3

### **Target the full set of barriers to relevant to electric fleet transitions – including costs, uncertainties, risks and frictions**

Recognize, assess and address all the barriers for fleet transitions  
Look beyond financing tools to target all these barriers, including through policy action and non-financial supports, including technical support



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