

Which fleets to prioritize for electrification? A total cost of ownership analysis on Pasig LGU fleets

Pasig Specific Training on E-mobility



Which fleets to prioritize for electrification?

- Introduction
- Scope
- Methodology
- Assumptions
- Preliminary Outcomes
- Key Takeaways

Guidance Area: Transport electrification

Introduction

Section 16 Mandated EV Share

- Government units should have 5% EV fleet share as prescribed by the CREVI

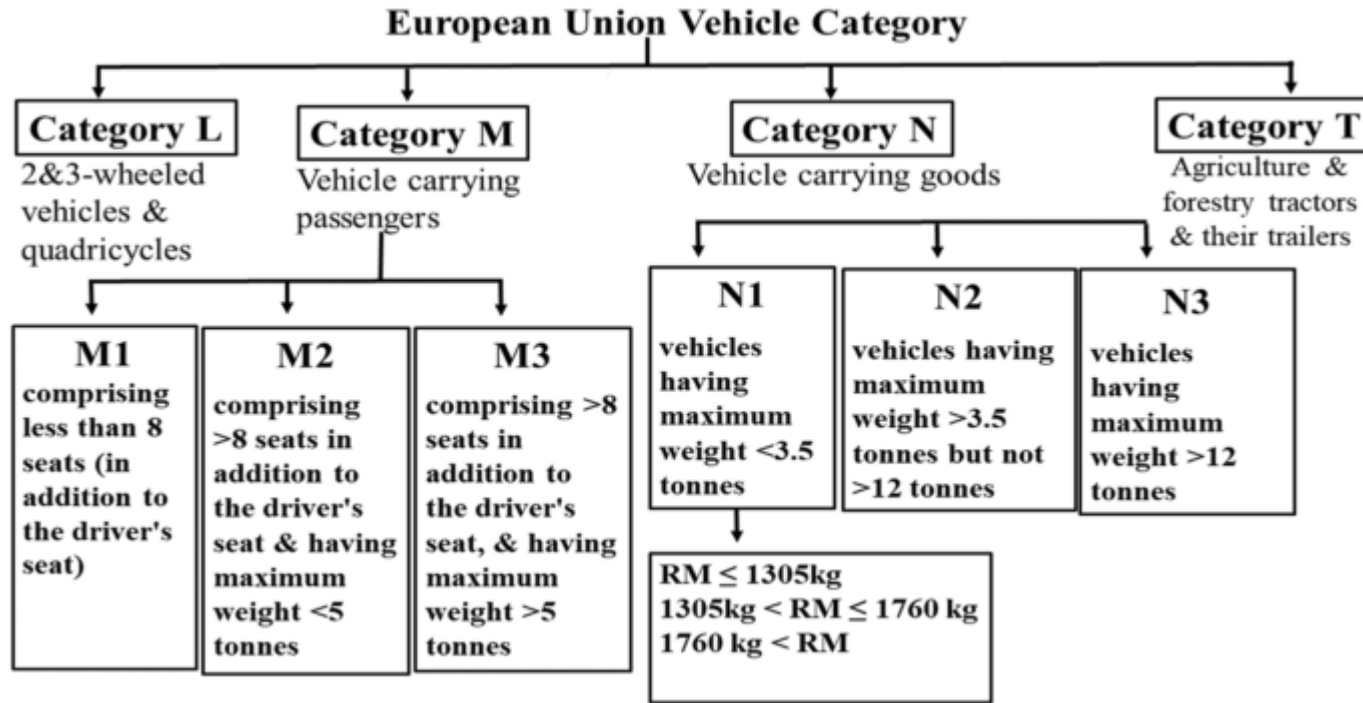


image from: <https://link.springer.com/article/10.1007/s12647-022-00555-4>

DEMAND GENERATION AND INDUSTRY DEVELOPMENT

SEC. 16. Mandatory EV Share in Corporate and Government Fleets. – The following entities shall ensure that at least five percent (5%) of their fleet, whether owned or leased, shall be EVs within the time frame indicated in the CREVI:

(a) Industrial and commercial companies such as cargo logistics companies, food delivery companies, tour agencies, hotels, power utilities, and water utilities;

(b) Public transport operators, including minibuses, buses, jeepneys, vans, tricycles, taxis, and transport network vehicle services; and

(c) LGUs, NGAs, and GOCCs: *Provided*, That the electrification of government fleets shall be considered as a government energy efficiency project under Republic Act No. 11285, otherwise known as the “Energy Efficiency and Conservation Act”.

The CREVI shall provide a timeline for the gradual increase of such percentage until the entire fleet of the covered entities will all be EVs. In the implementation of this provision, the availability and sufficiency of energy supply and EV charging stations as well as other conditions affecting the optimal utilization of EVs shall be taken into consideration.

Section 17 Dedicated Parking Slots for EVs

- Parking slots should have 5% allocated for EV parking
- 1 in 20 parking slots should be for EVs.

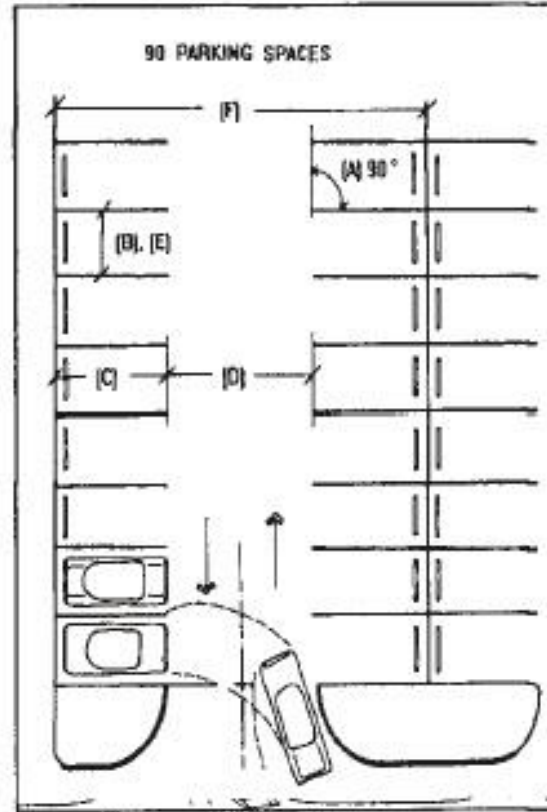


Image from:
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**DOTr is in charge of specifications for charging station dimensions*



Charging station in a dedicated parking slot

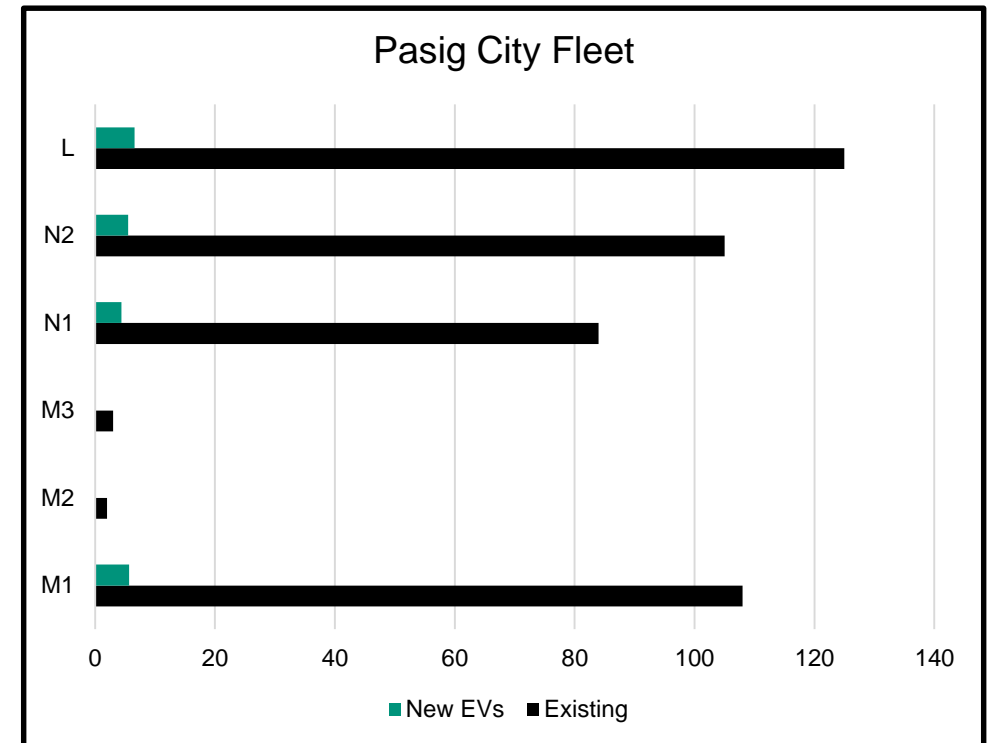
Scope, Methodology and Assumptions

Scoping

- Vehicle Inventory – City of Pasig
- Period – 2022
- Vehicle Disaggregation – By EU Classification*

Table 1. Vehicle classification for Pasig City Fleet

Vehicle classification	Special Purpose Vehicles (Outside of scope)
Light vehicles: <ul style="list-style-type: none"> • Motorcycles (MC) • Tricycles (TC) 	<ul style="list-style-type: none"> • Ambulances • Fire trucks • Dump trucks • Garbage compactor trucks • Marine vehicles • Other special purpose vehicles
Passenger vehicles (M1, M2, and M3): <ul style="list-style-type: none"> • Buses • Minibuses • Passenger Cars (PC) • Sports Utility Vehicles (SUV) • Utility Vehicles (UV) 	
Commercial vehicles (N1): <ul style="list-style-type: none"> • Service Vans • Pickup Trucks 	
Commercial vehicles (N2): <ul style="list-style-type: none"> • Light Duty Trucks 	

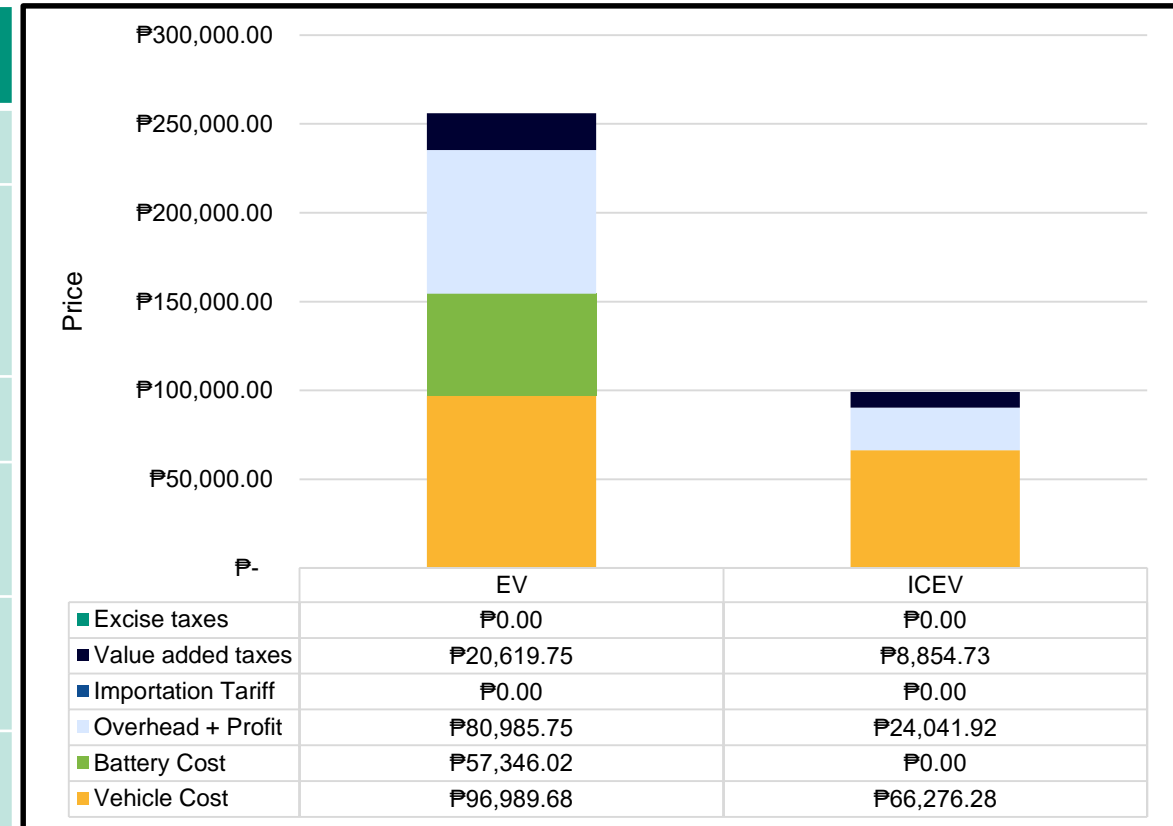


Pasig City Fleet Inventory as of October 2022.

Estimated Vehicle Cost

Table 2. Cost factors of vehicles

Factor	Description
VAT	12% of the sales value
Excise tax	Tax on the sale (not applicable to 2-wheelers and BEVs)
Dealer cut	Profit and overhead costs
Import tariff	Duty imposed on imported vehicles (0% for ASEAN)
Battery cost	Estimated contribution of batteries to total vehicle cost (40%)
Vehicle cost	Base vehicle cost from production



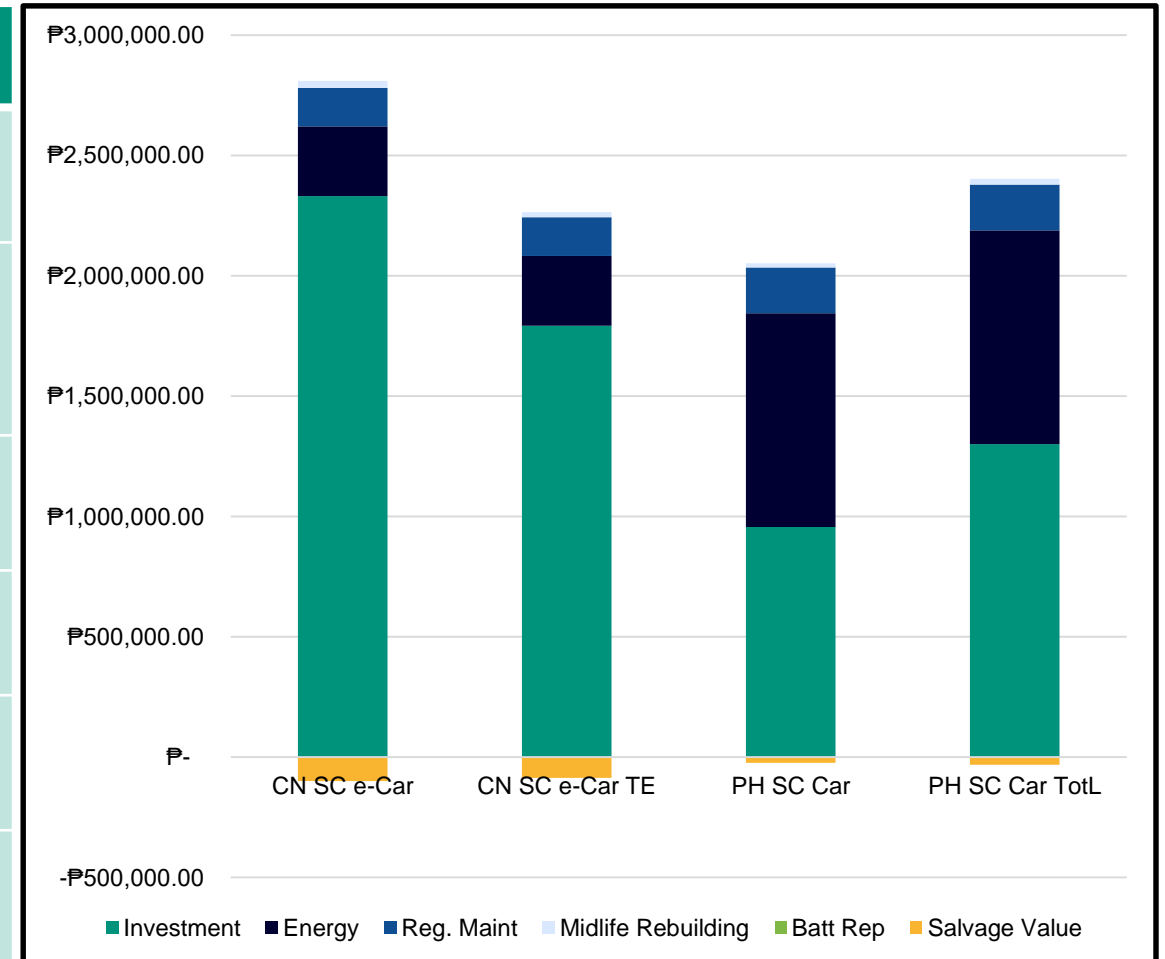
Cost breakdown for motorcycles

Methodology

Total Cost of Ownership

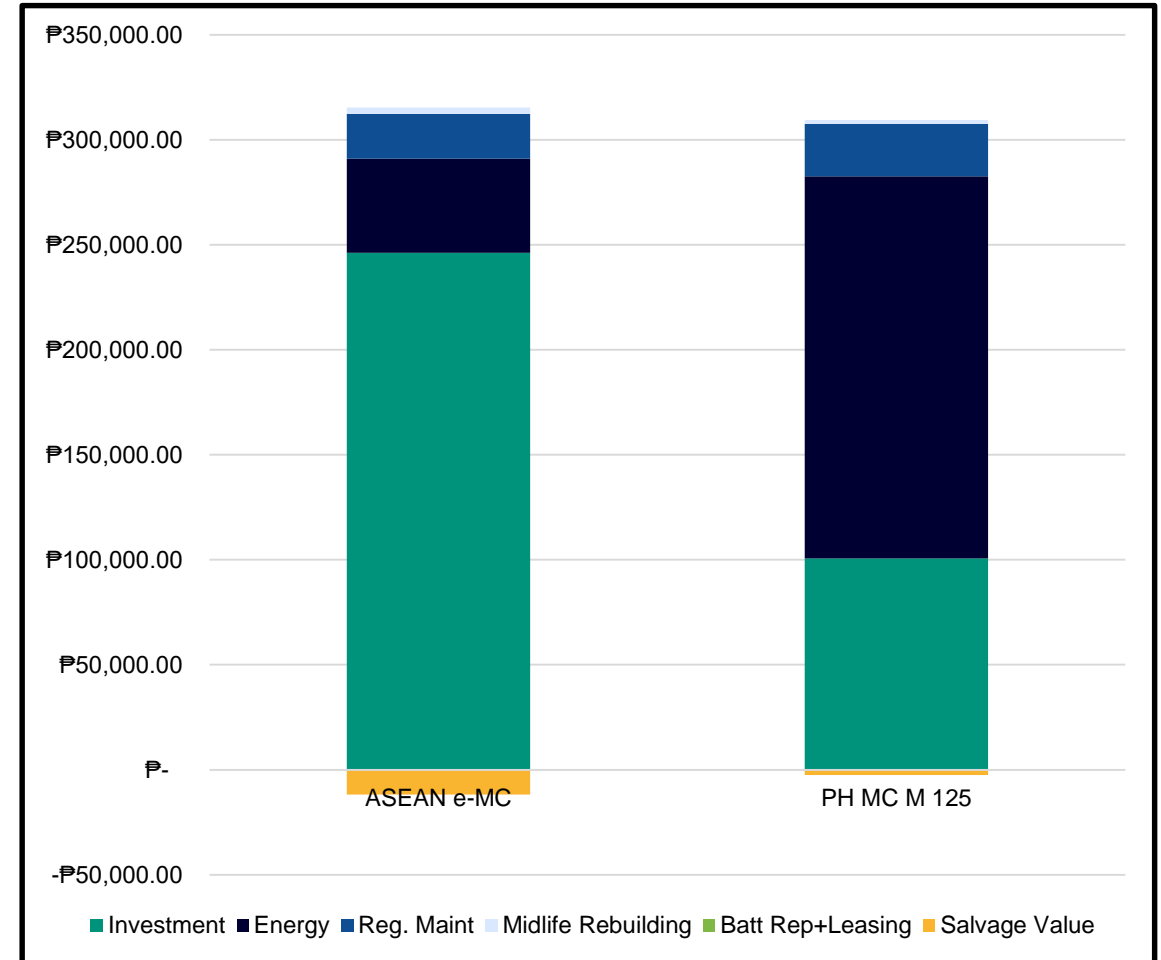
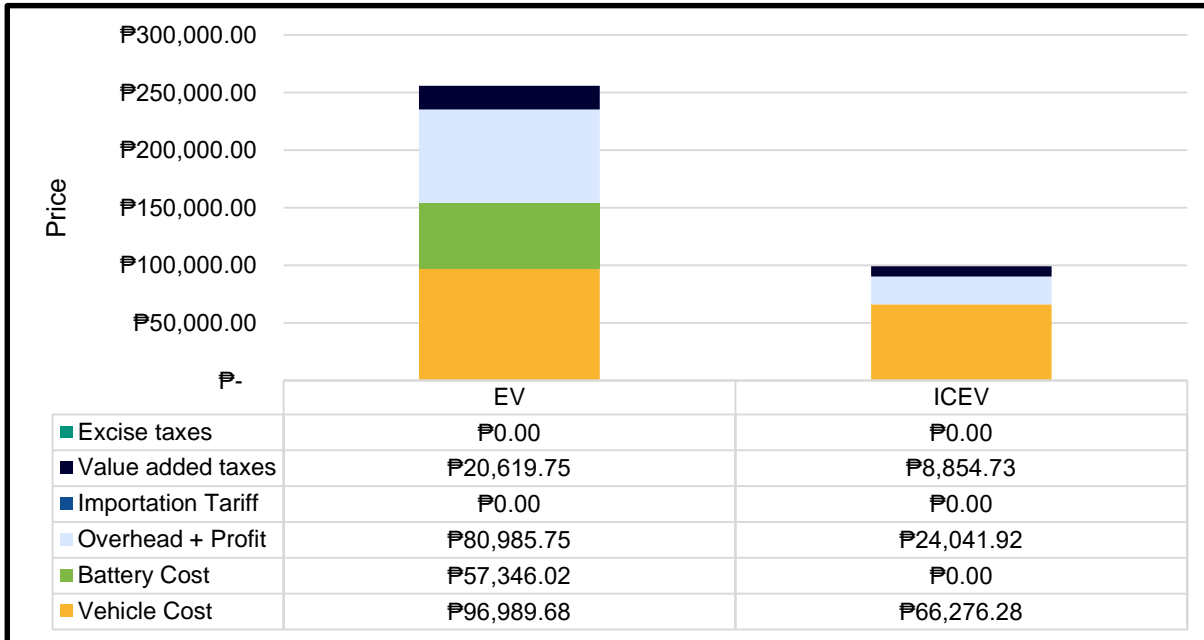
Table 2. Cost factors of ownership

Factor	Description
Vehicle procurement cost	Vehicle price + 30% buffer (bidding process)
Annual energy costs	Energy economy x daily VKT x number of days operation per year x cost of energy (electricity or fuel)
Annual maintenance costs	Parts and labor costs
Midlife rebuilding	Tune-up during vehicle midlife
Battery replacement cost	Replacement of battery after 3000 cycles
Salvage value	Residual value of vehicle

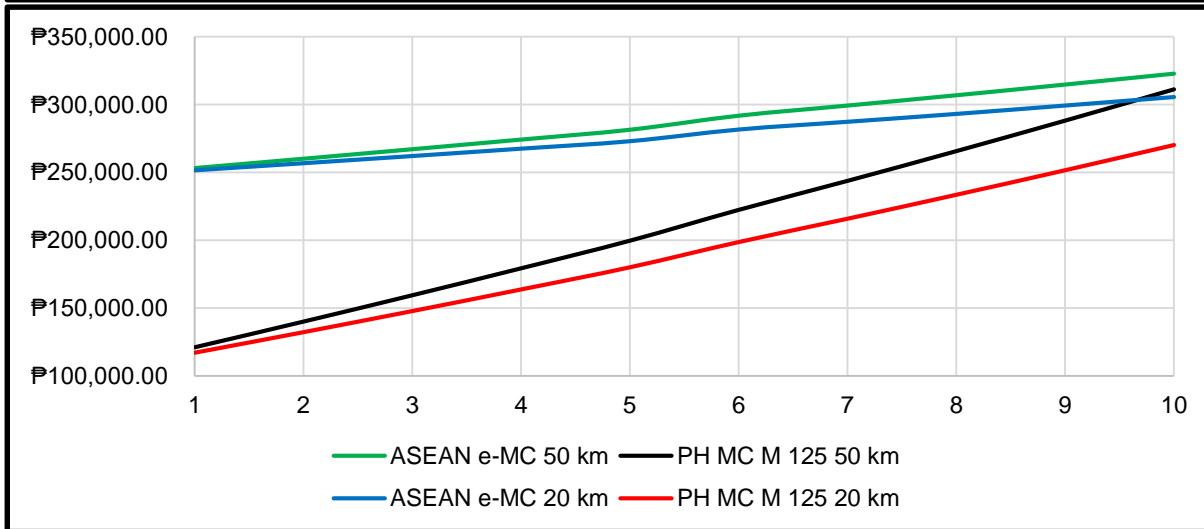


Total Cost of Ownership

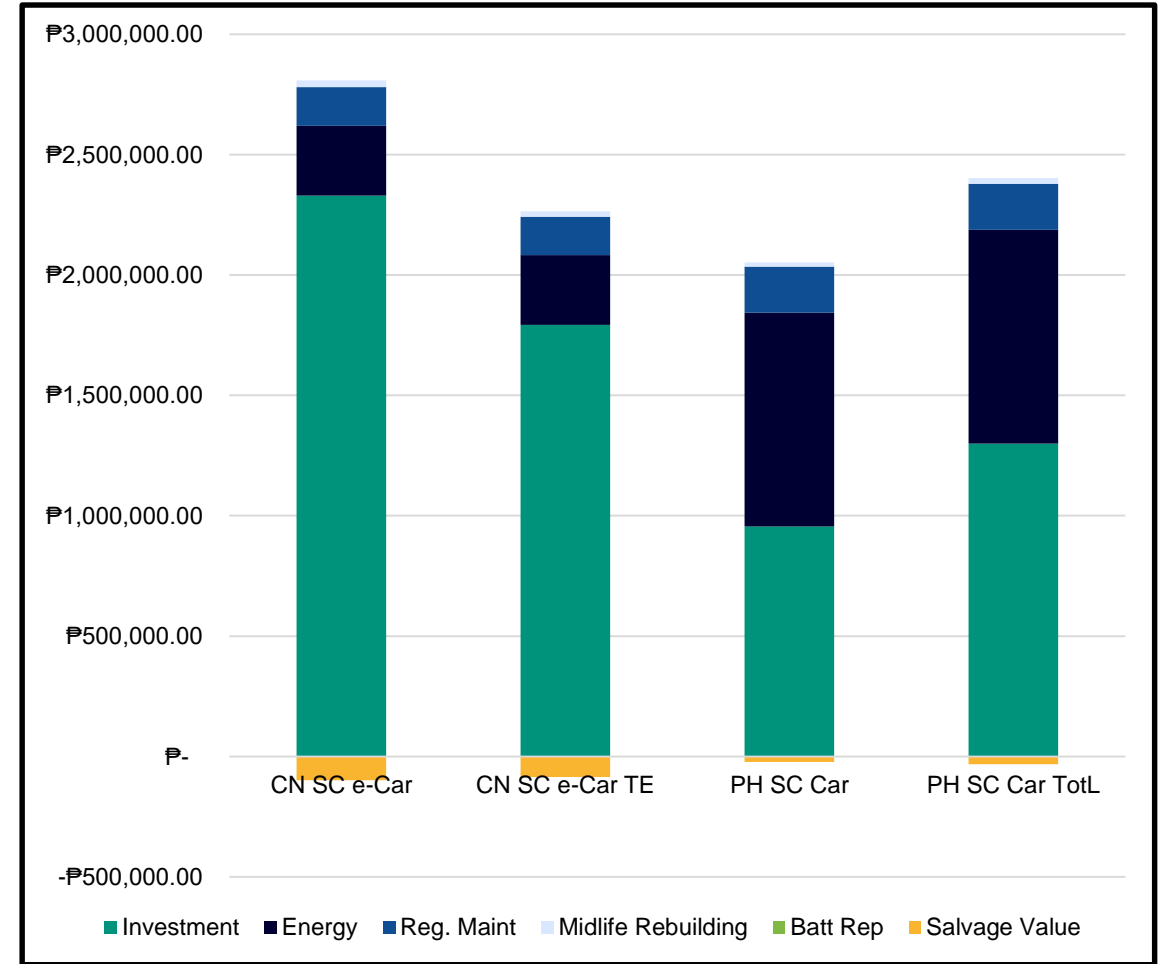
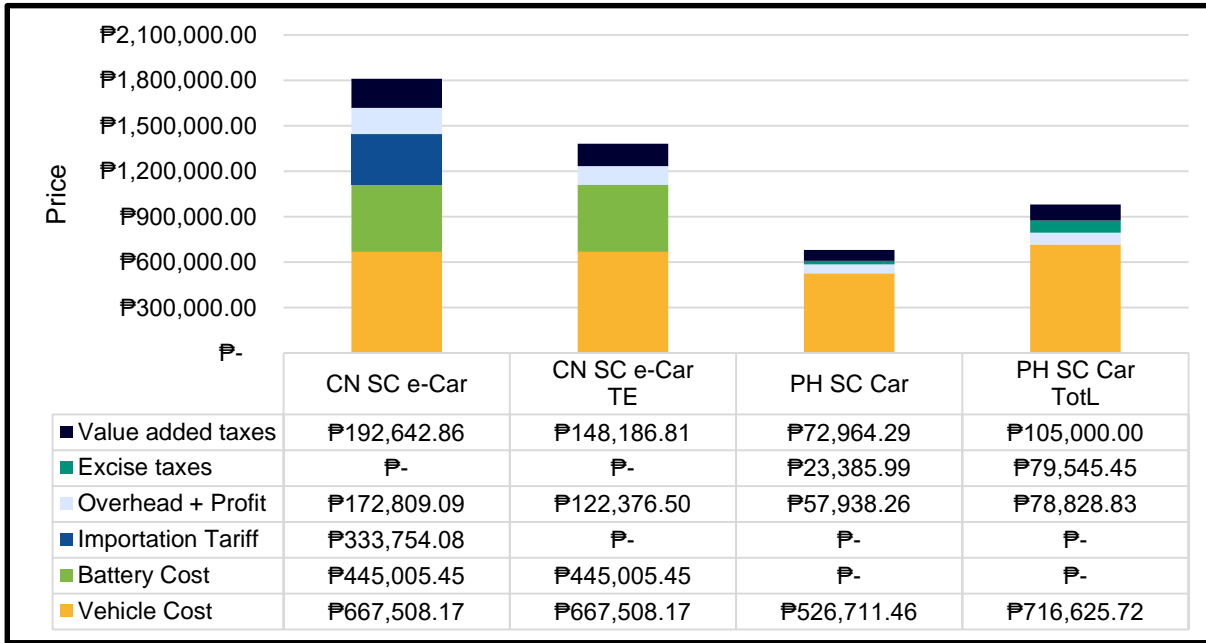
Total Cost of Ownership: Motorcycle



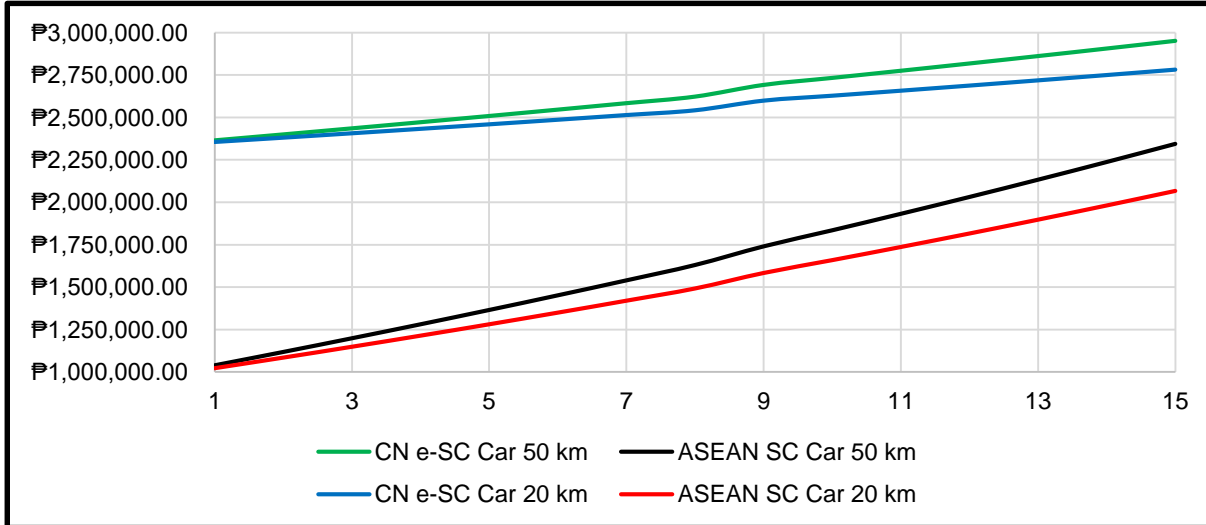
Total cost of ownership of a motorcycle at 50 daily VKT and 260 days/year



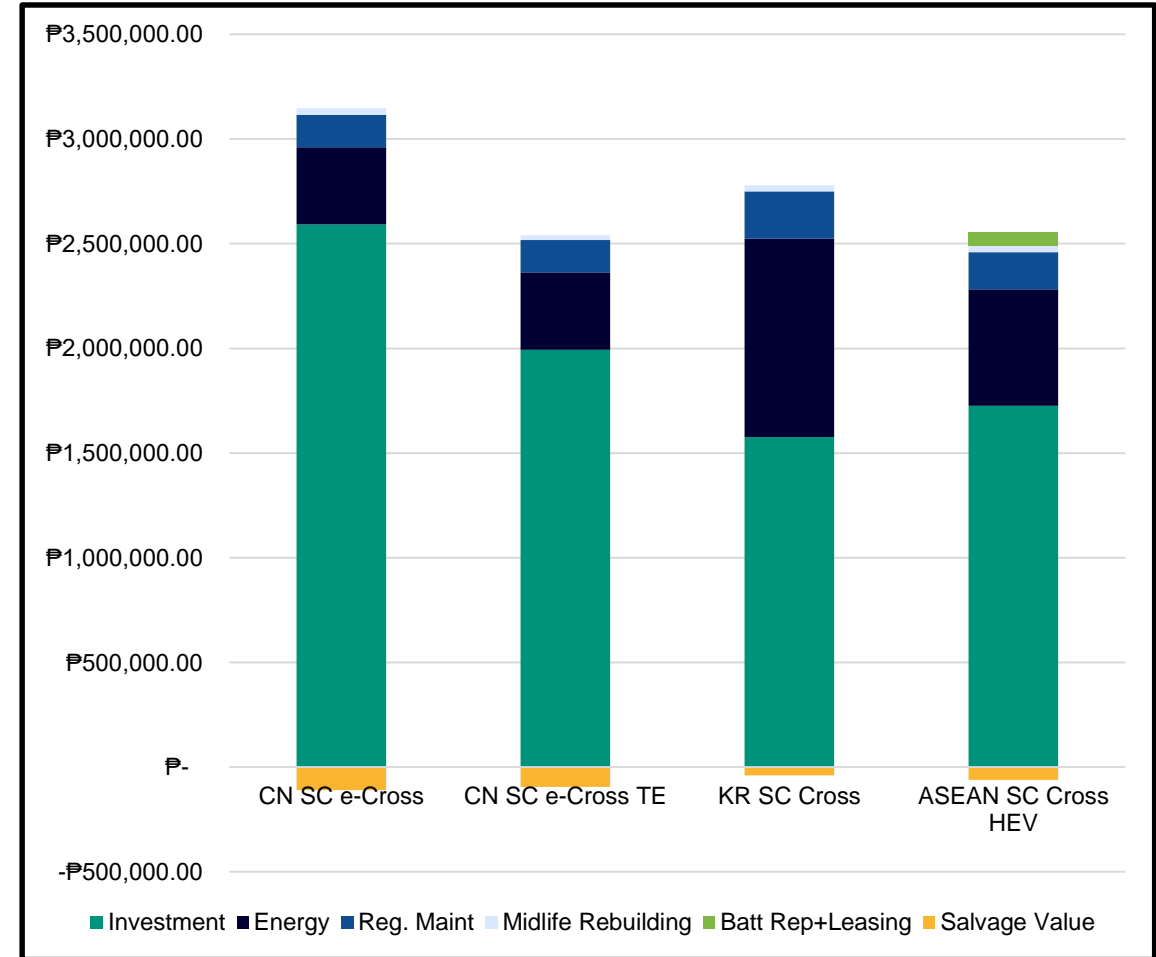
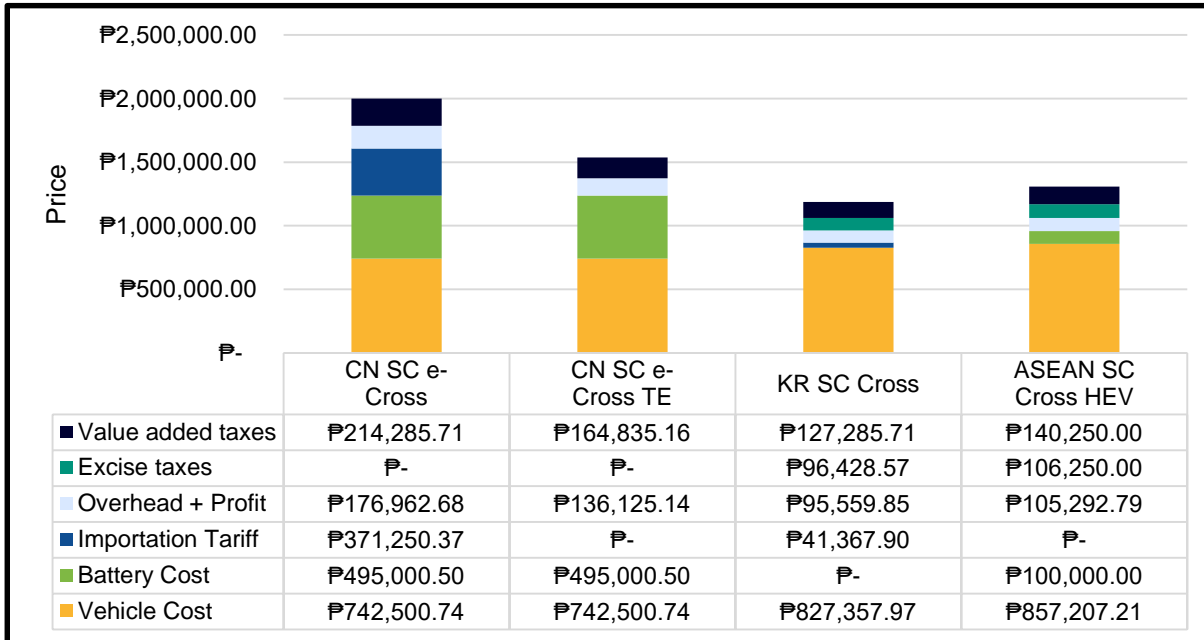
Total Cost of Ownership: Subcompact Car



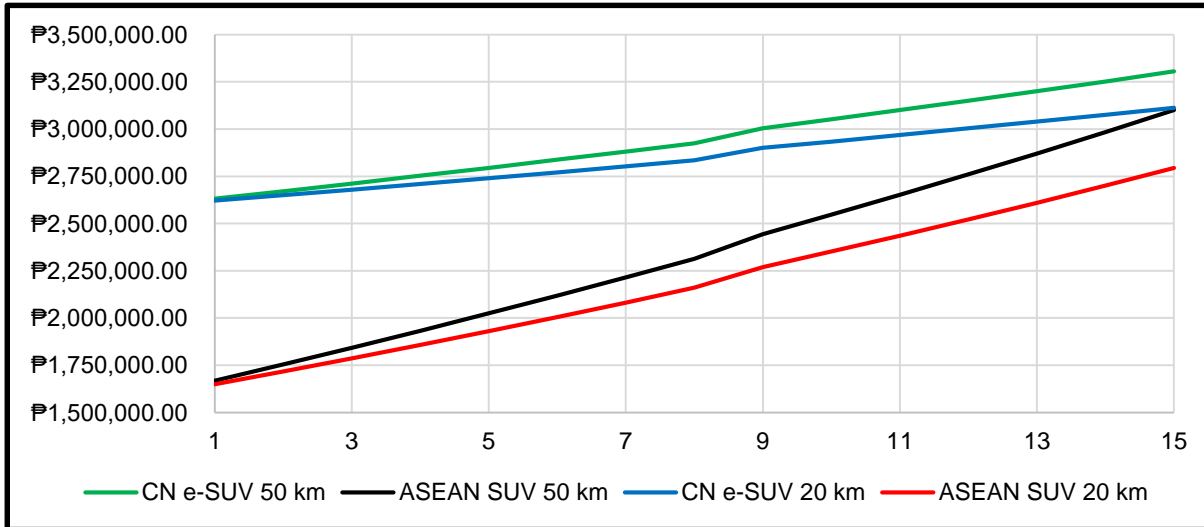
Total cost of ownership of a subcompact car at 50 daily VKT and 260 days/year



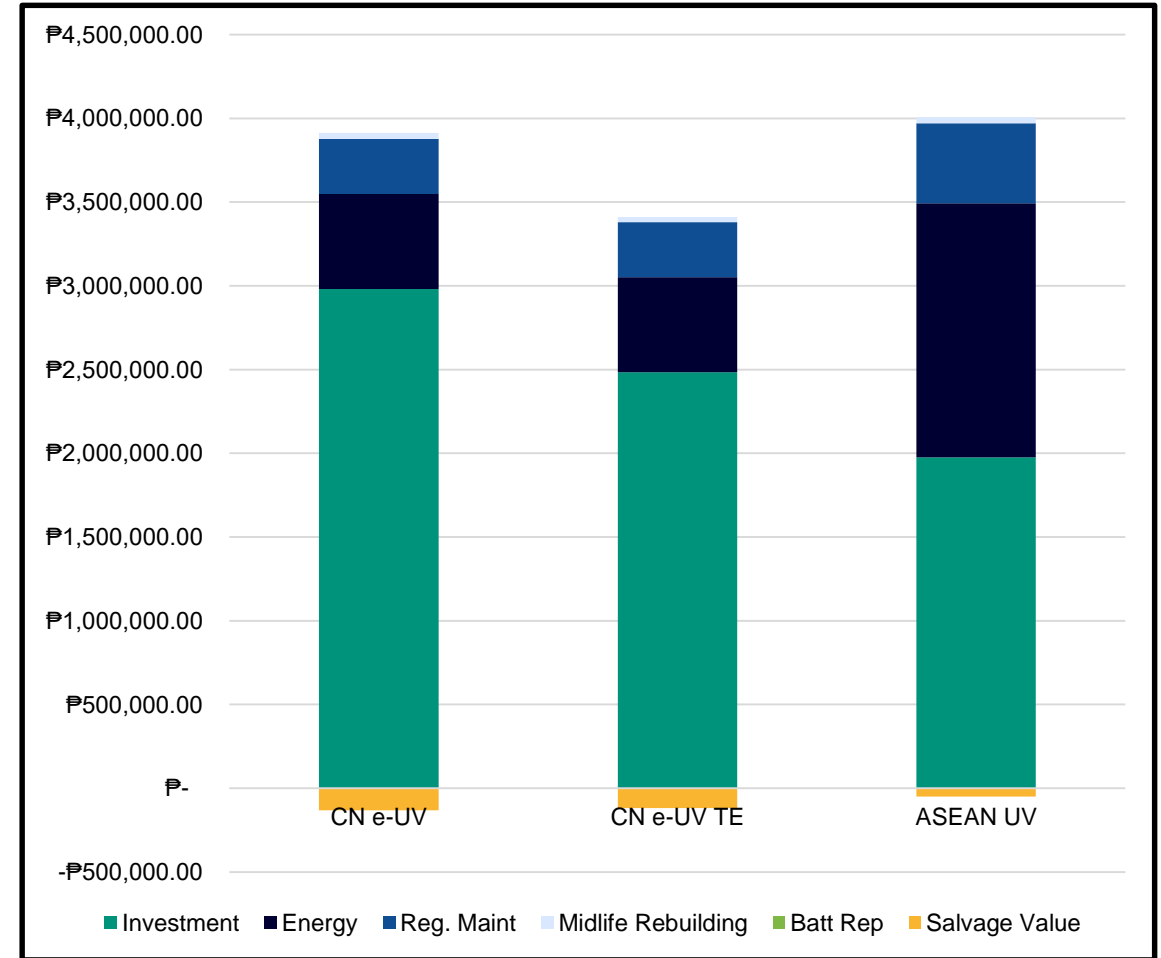
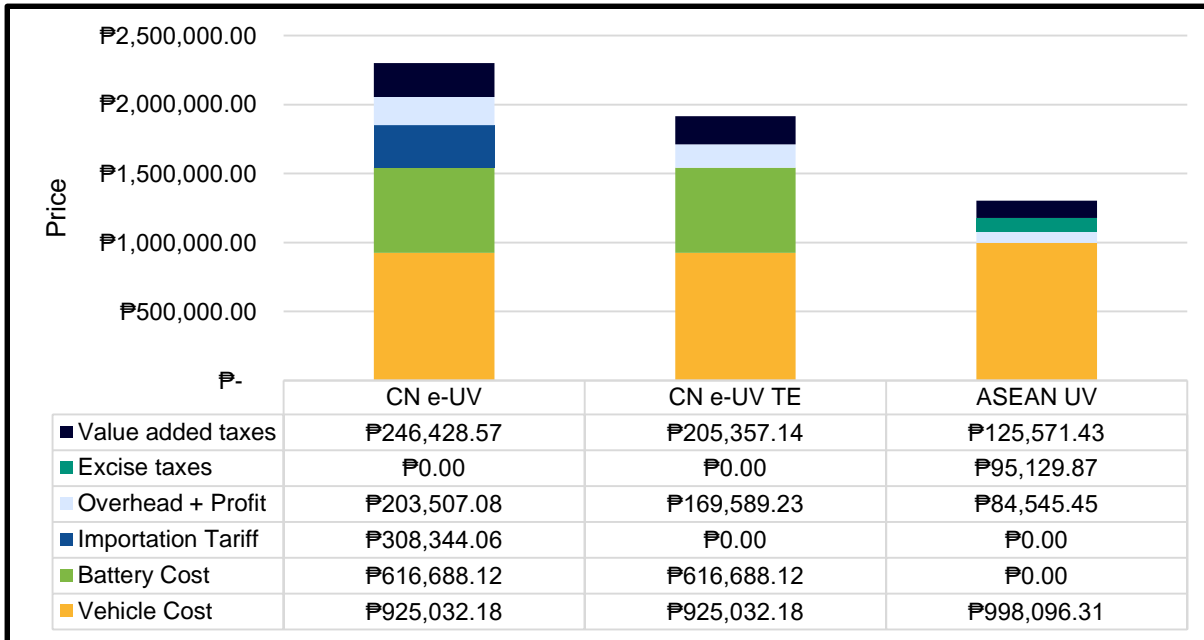
Total Cost of Ownership: Subcompact SUV



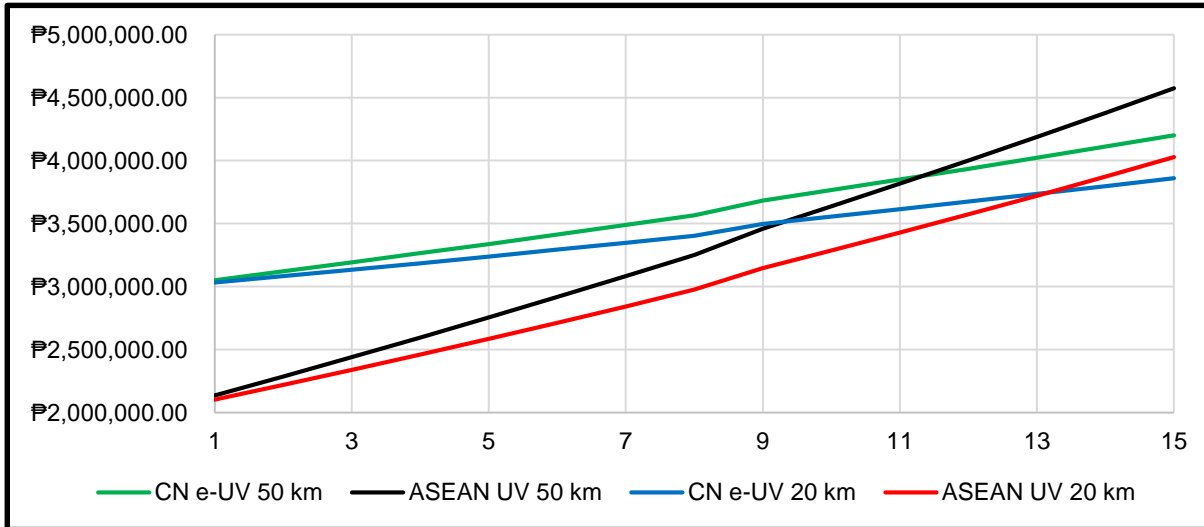
Total cost of ownership of a subcompact SUV at 50 daily VKT and 260 days/year



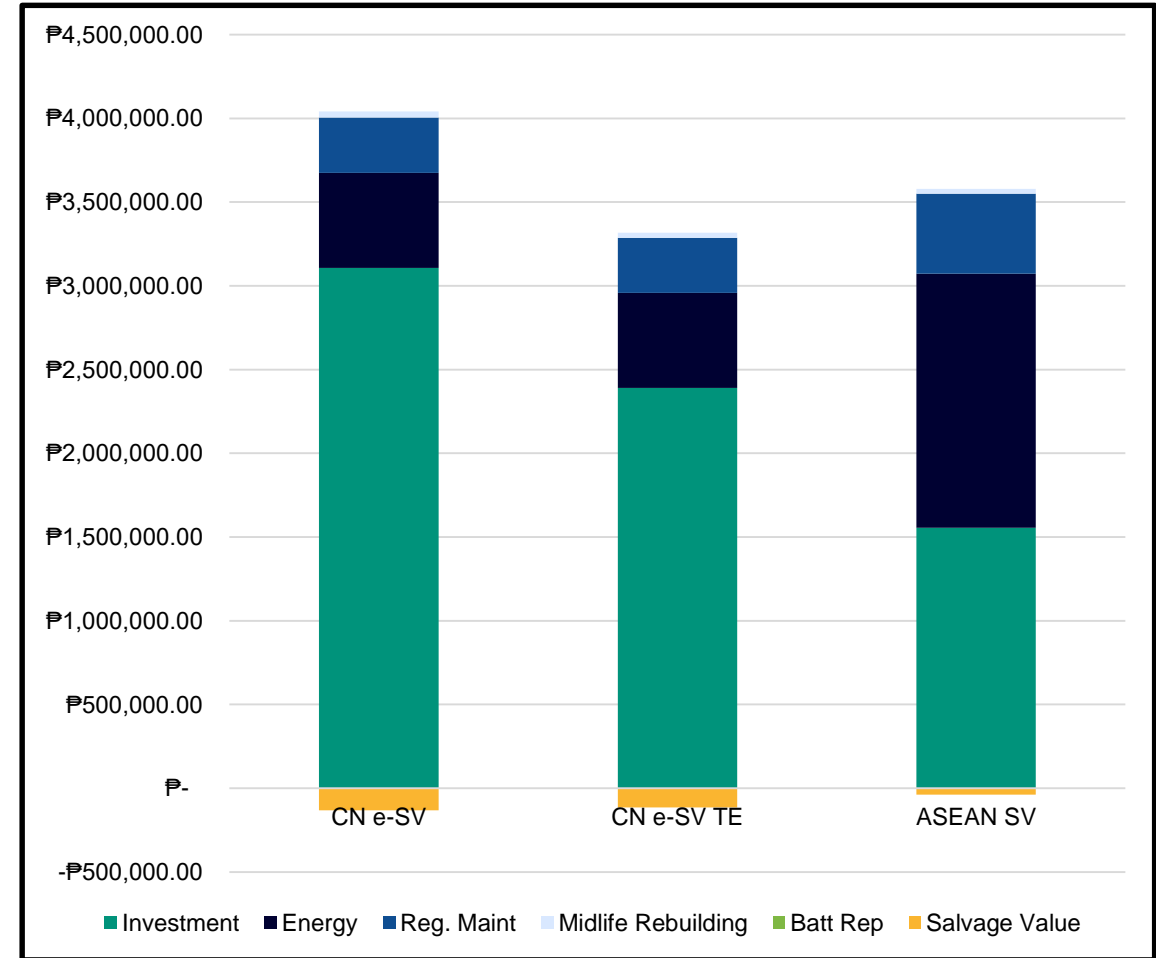
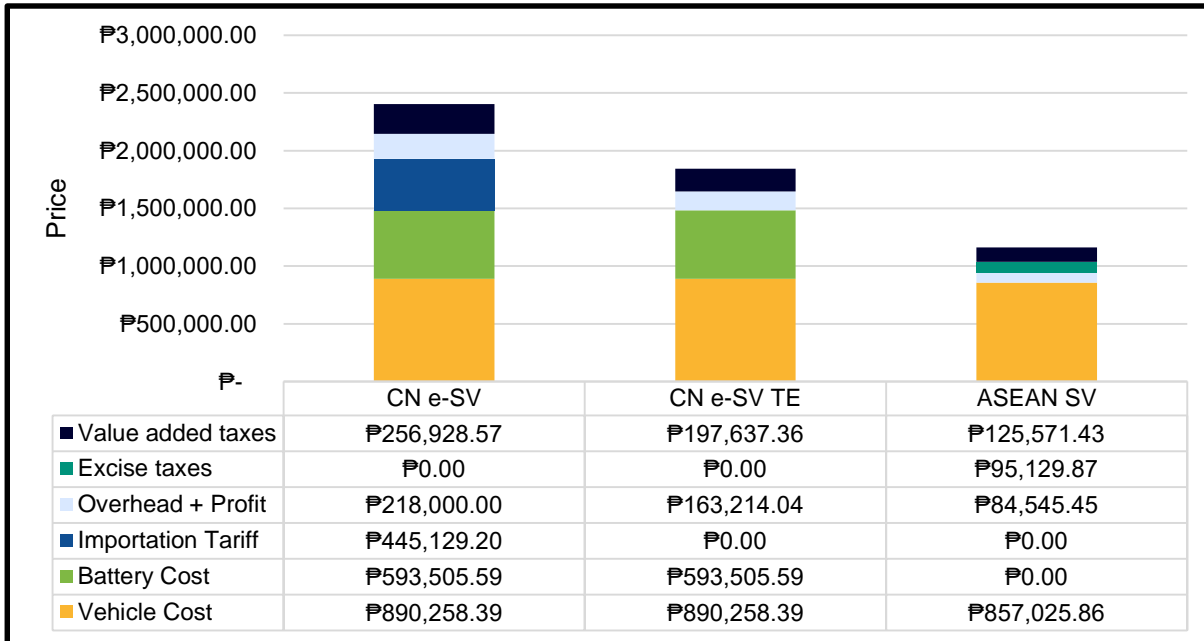
Total Cost of Ownership: UV



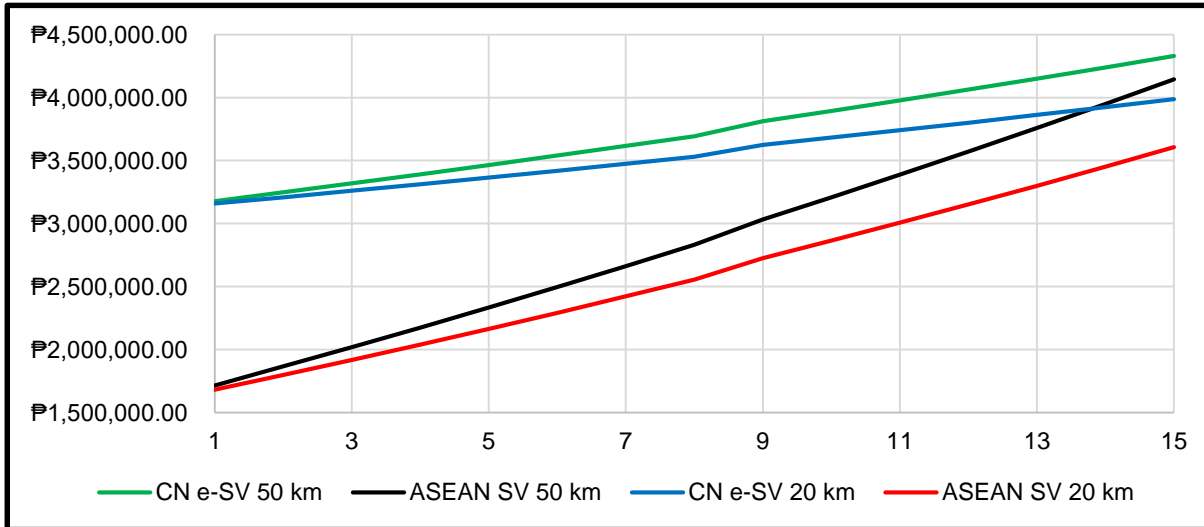
Total cost of ownership of a UV at 50 daily VKT and 260 days/year



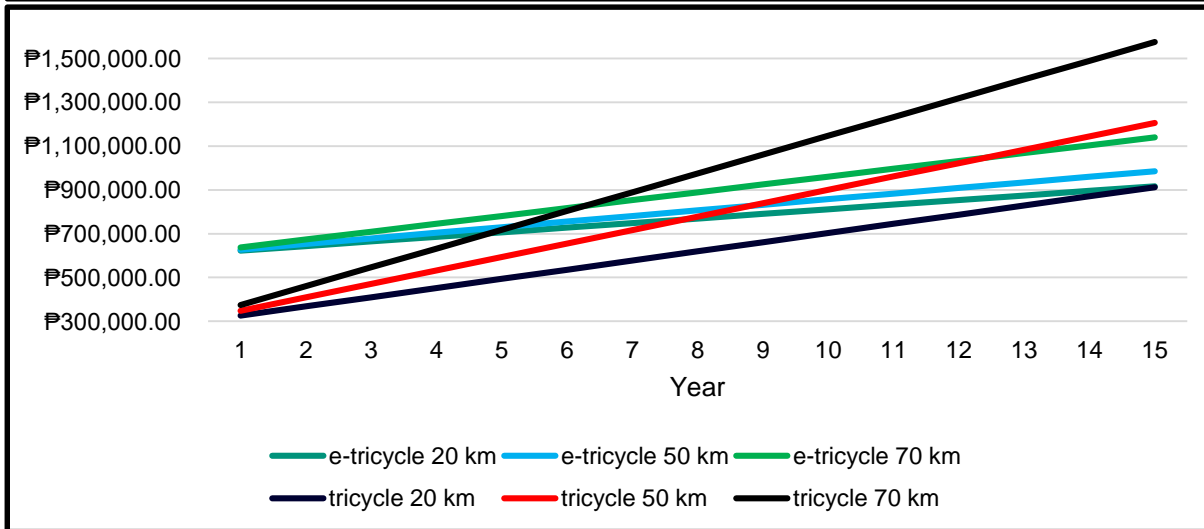
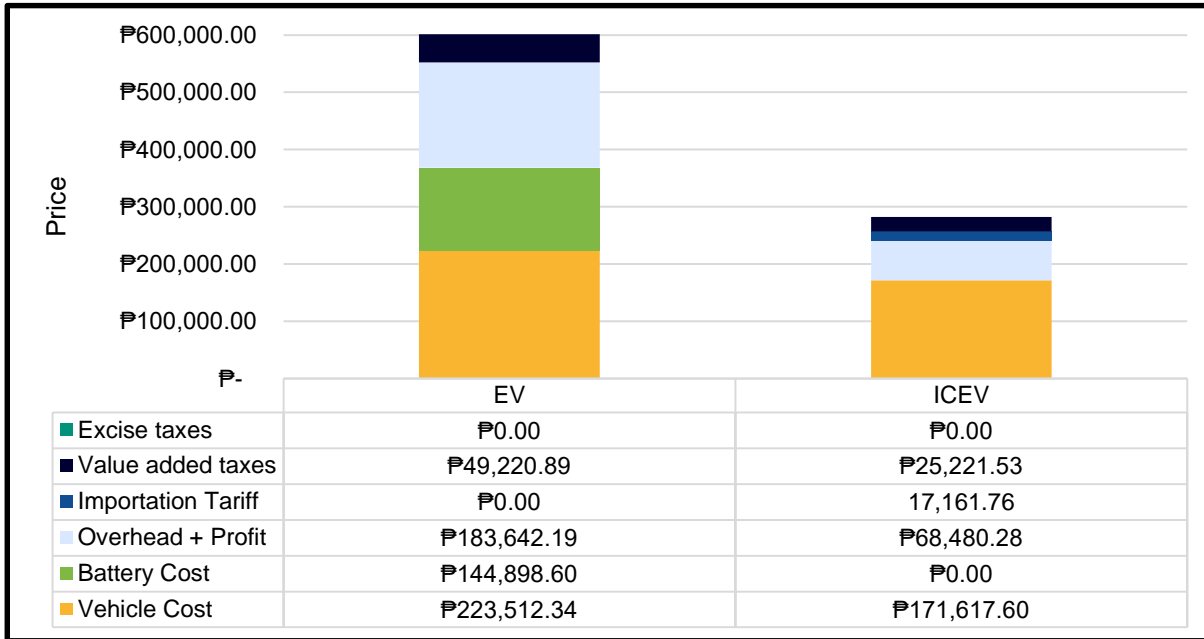
Total Cost of Ownership: Service Vans



Total cost of ownership of a SV at 50 daily VKT and 260 days/year



Total Cost of Ownership: Tricycle



Total cost of ownership of a tricycle at 50 daily VKT and 260 days/year

Key Takeaways

Key Takeaways



Total Cost of Ownership

- EVs are expensive.
- 50 km daily is usually insufficient to provide TCO parity of EVs with ICEVs.
- Need for vehicle sharing to improve savings from using EVs.
- Tricycles and 18-seater UVs are prime candidates for EV procurement.
- Low VKT can be supported by Mode 2 AC charging.

**Thank you for
listening!**