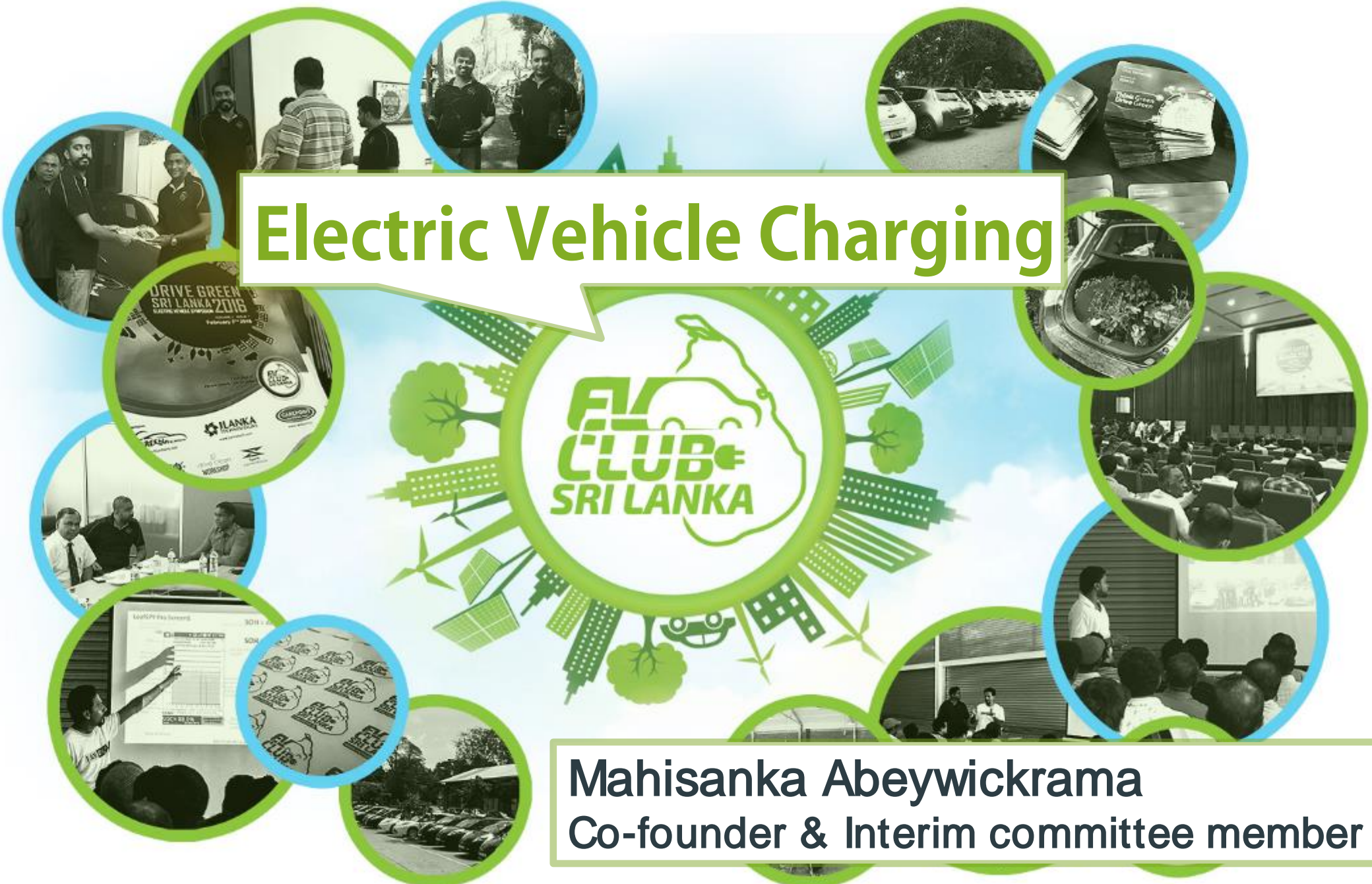


Electric Vehicle Charging



EV CLUB
SRI LANKA

Mahisanka Abeywickrama
Co-founder & Interim committee member





About EV Club

- ▶ Electric Vehicles Club Sri Lanka, “EV Club” formed in 2015
- ▶ To promote the use of environmentally friendly vehicles in the country and empower EV users with the required knowledge to gain confidence
- ▶ We have around 350 registered members in our Club.
- ▶ EV Club is the only organization currently in Sri Lanka that promotes & represents Electric Vehicle users & related service providers.
- ▶ We interact with the government and other private organizations on relevant issues faced by EV users and related services providers.



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Dialog with PUCSL

Public Utilities Commission of Sri Lanka

Date: 08th December, 2016

Highlights:

- Proposal prepared by EVClub was submitted to PUCL concern.
- We prepared this proposal based on our members' inputs, results of surveys we conducted
- Feedback from several individuals and organizations who invested on Electric Vehicle charging stations also considered when preparing this proposal



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What Sri Lanka wants to do with Electric Vehicles ???

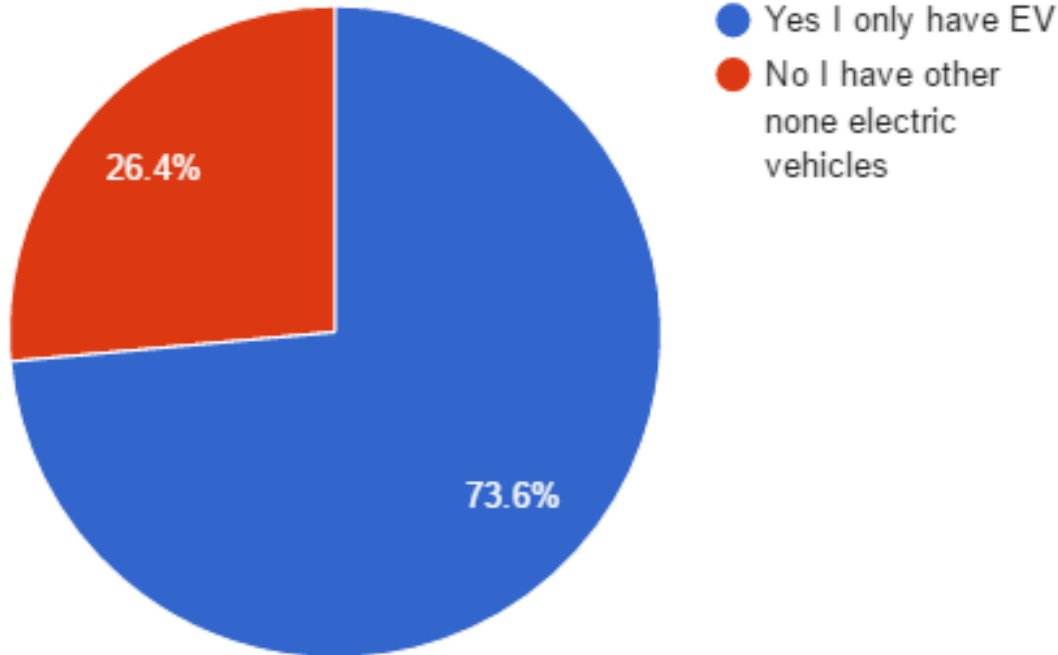
- ▶ Encourage to use for primary transportations ?
- ▶ Just to allow to use it as secondary or for leisure ?
- ▶ Are we planning move % of fuel usage to Electric vehicles ?



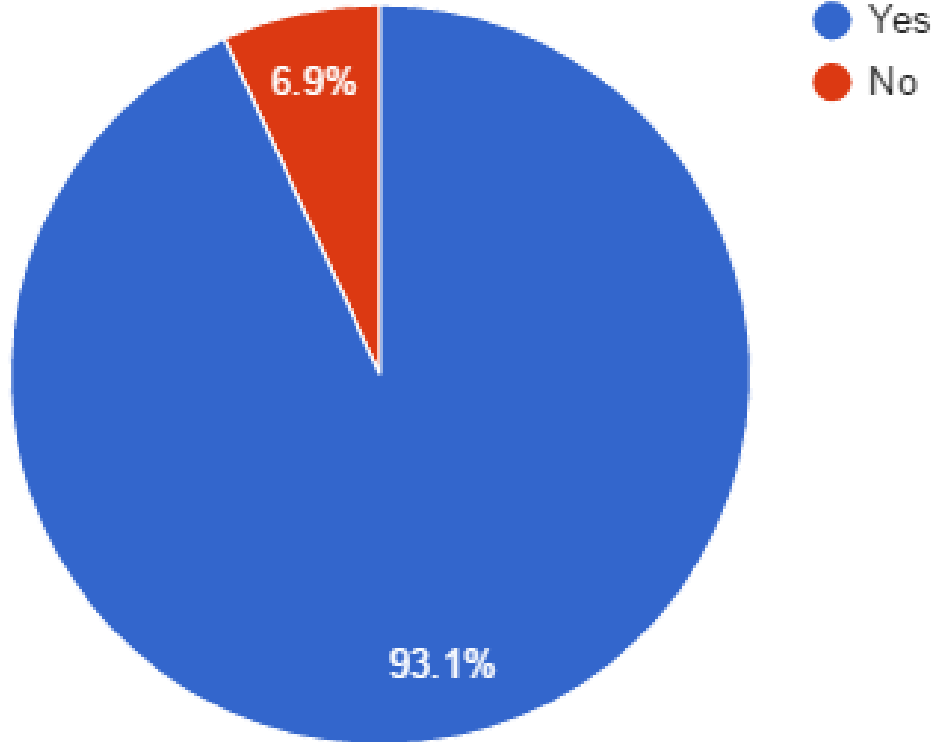
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Present situation

Is EV your Only vehicle

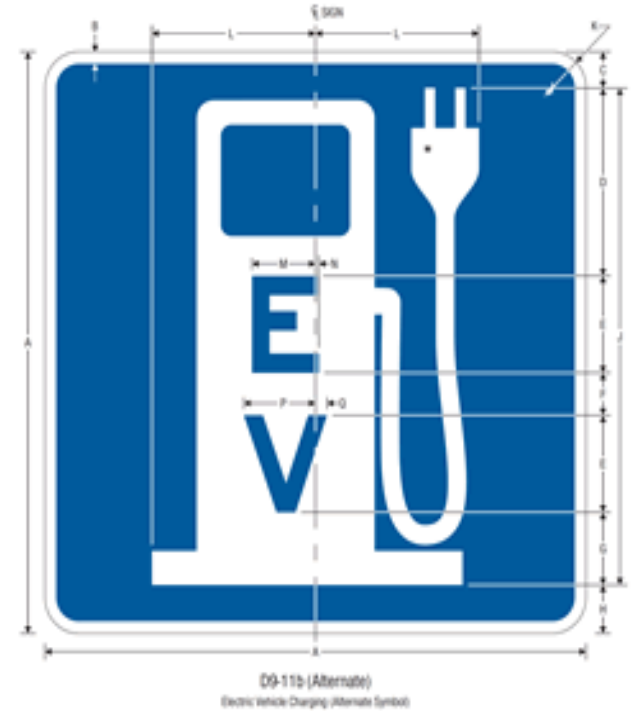


Will You buy EV as your next vehicle ?



Charging Stations - Consumer Views

- ▶ Improper billing methods - Bill per minutes instead of kWh
- ▶ No Standard selling prices, Prices are not displayed
- ▶ Working hours not displayed and closing without notice in advance
- ▶ No alternative charging method provided if charger is not working - At least 15A power outlet should provide
- ▶ No accountability or insurance if any damages to cars while charging
- ▶ Standard sign boards required
- ▶ Secondary kWh meter required to verify billed amount is correct
- ▶ Most of L2 charging stations have high prices
- ▶ Planned power cuts (even in cities) should announce - central location to retrieve information



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Charging Stations - Operator Issues

- ▶ Issues with getting Industrial tariff for charging stations - CEB / LECO refusing to change tariff or providing new connection under industrial category
- ▶ Allow to obtain new separate connection to charging station for same place (same address) which already having electricity connection for other businesses/ purposes
- ▶ Remove *Maximum Demand Charge* per month (LKR/kVA) for the I-2 & I-3 tariffs used for charging stations.
- ▶ Supply is inconsistency and voltage drop in some places



Tariff & New Connections

- ▶ Allow get separate connection under different tariff to same premises for EV Charging Stations (Hospitals, Hotels, Public & private car parks, super markets & Fuels Stations)
- ▶ Introduce new *Time of Use* tariff for charging stations as alternative for current I-1 tariff (less than or equal to 42 kVA) (Many DC fast charging stations are currently using 3 phase 60A connections)
- ▶ Allow domestic users to get separate connection with Time Of Use tariff for EV Charging purpose -
 - ▶ Main purpose is encourage users to charge vehicles at off peak,
 - ▶ Most of new EVSEs (Domestic L2 chargers) requires 30A or 60A single phase supply which we cant give supply from existing 30A single phase domestic connection



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Electric Vehicle Charging Station



**Get a charge
while you shop.**

Kohl's is pleased to provide this Electric Vehicle Charging Station free of charge while you shop.
Please see Customer Service if you need a remote access card.

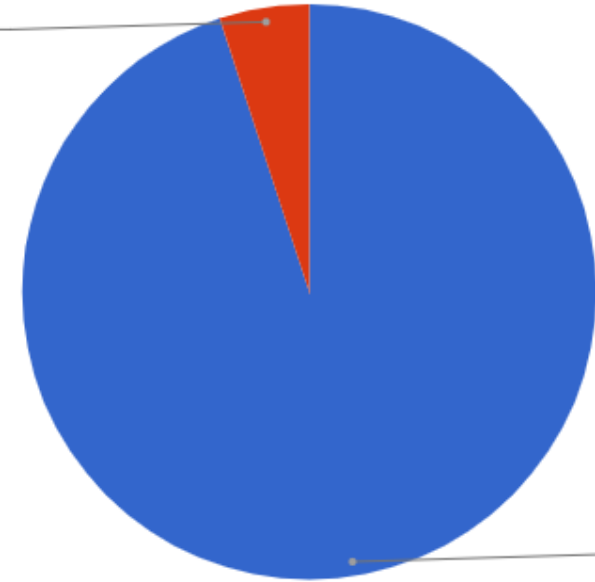
KOHL'SCares
Supporting the Environment

End User tariff and billing

- ▶ Define selling rates for DC fast charging stations and L2 charging station based on Time Of Use
- ▶ As consumers we like to have kWh based billing but it's ok add time based price (per minute charge or for time slots) on top of kWh price in order to manage long duration charging
- ▶ Avoid sell electricity at high prices for EVs which currently some places practice - Some places priced Rs 70/kWh providing only 15A power socket
- ▶ Introduce selling rates (or maximum profit margin for each time band and tariff) for each existing tariff categories (I-1, I-2m I-3, H-1, H-2, H-3, G-1, G-2, G-3)
 - ▶ This is very important as some other businesses like to provide this as additional service ie: Hotels, restaurants, super markets & Apartments
 - ▶ Allowing to sell electricity to electric vehicle will encourage them install charging stations with their business

What is the billing Method you prefer ?

Per Minute Billing
5.1%



Per Unit (KWH) Billing
94.9%



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Questions highlighted in PUCSL Consultation Paper

- ▶ Whether to use time of use or flat rate structure or allow both - **Time of use should promote to gain maximum benefits to national Grid**
- ▶ To which extent that the investments should be promoted, with respect to specific policy - **Investments with solar panels should promote as much as possible**
- ▶ Objectives of the government? - **We also like know about this**
- ▶ How to discriminate fast charging and normal charging to promote one over the other, and whether to have time-based (as opposed to kWh based) rates as an option? - **Both fast charging and normal charging (L2) stations required and prices should clear differ as investment for L2 charger is approximately 20 times or more lower than investment for fast charger.**
- ▶ How to discriminate EV charging networks from individual charging stations and whether to incentivize charging networks for additional services they offer? - **We don't see any requirement of discriminating individual stations from networks**
- ▶ Whether to regulate end user tariffs by PUCSL or to simply control pass through tariffs of charging station owners and allow price competition between charging station operators? - **PUCSL should implement proper standards and end user tariffs to make sure consumer protection and gain maximum benefit from EV for country by encouraging off-peak charging**





Changes in Vehicle Registration in Department of Motor Traffic Sri Lanka

- ▶ Should capture more information such as
 - ▶ Vehicle battery capacity
 - ▶ Battery type / chemistry
 - ▶ Motor Capacity (currently captured as engine capacity)
 - ▶ On-board charger capacity
 - ▶ DC fast charging interfaces type (ie: CHAdeMO)
 - ▶ AC slow fast charging interfaces type (ie: J1772)



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Fuel Stations

- ▶ Each fuel station should have reserved space for Electric Vehicle charging providing dedicated 15A power outlet
- ▶ This will eliminate the risk of travelling outstations for EV users in big way
- ▶ Once this implemented private companies or CEB/LECO can install either L2 or Fast charging stations in fuel stations



Challenges / Issues for EV

- ▶ Inadequate data on EV
- ▶ Insufficient charging facilities
- ▶ Insufficient knowledge on repair & maintenance
- ▶ Lack of proper Battery replacement mechanism
- ▶ Poor support from all sectors
- ▶ Misbelief of true value of EV to person & nation
- ▶ Frequent fluctuations on Import Tax on EV
- ▶ No government policy to promote EV or its facilities



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Summary of Current Activities to improve Benefits

1. Expand Fast charging network
2. Improve quality of charging services
3. Fully automated 24*7 charging services
4. Eco Destination Hotel project
5. Dedicated Public parking spaces with Charging facility
6. Revise present Time Based Tariff & provide as a separate Line
7. Battery replacement Solutions in Sri Lanka
8. Solar installations to Homes/ workplaces/ charging stations
9. Tax exemptions/vacations on all Solar & EV related industry



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Thank You
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