



Amendment to
Voluntary Registration Scheme for
Vehicle Maintenance
Consultation Paper



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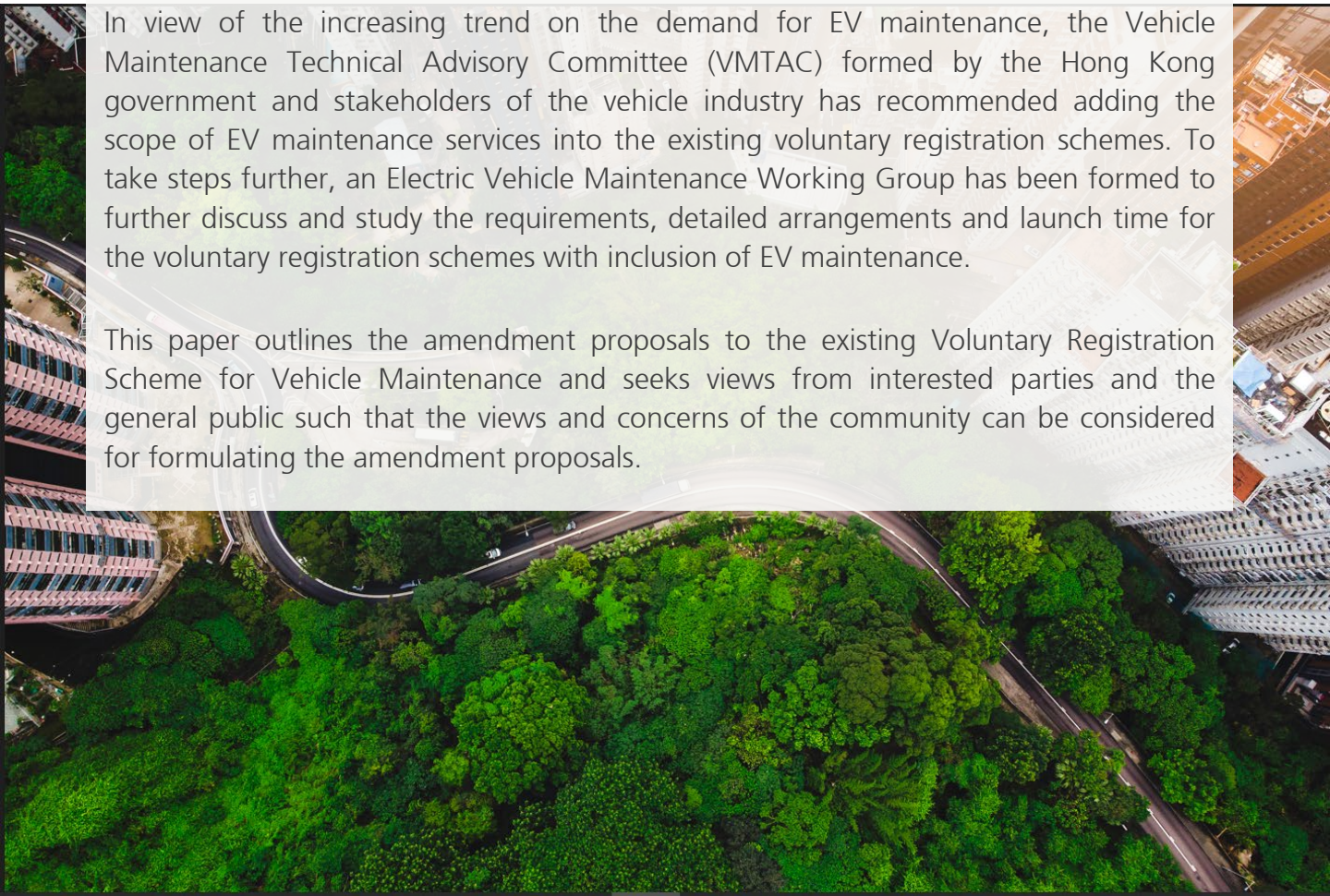
Chapter 1 - Background

In response to global climate change, electrification of transportation system has become a global trend. Currently, transportation makes up of about 20% of carbon emissions in Hong Kong. Thus, The Hong Kong government has announced the Hong Kong Roadmap on Popularisation of Electric Vehicles (EV Roadmap) and Hong Kong's Climate Action Plan 2050 in 2021, setting a goal to discontinue the new registration of conventional internal combustion engine private cars including plug-in and non-plug-in type hybrid vehicles by 2035 or earlier. The EV Roadmap will guide Hong Kong's future direction to attain zero vehicular emissions before 2050 and forges ahead the vision of "Zero Carbon Emissions", "Clean Air" and "Smart City". With the implementation of relevant policies, Electric Vehicle (EV) has already been gaining share in the market steadily and will eventually replace internal combustion engine private cars.

The Voluntary Registration Scheme for Vehicle Maintenance aims to enhance the standard of the vehicle maintenance trade. The EMSD has launched the Voluntary Registration Scheme for Vehicle Mechanics (VRSVM) and Voluntary Registration Scheme for Vehicle Maintenance Workshops (VRSVMW) in 2007 and 2015 respectively, helping the public to easily identify Registered Vehicle maintenance Mechanics (RVMs) and Registered Vehicle Maintenance Workshops (RVMWs) and at the same time enhances the professional image of the vehicle maintenance industry.

In view of the increasing trend on the demand for EV maintenance, the Vehicle Maintenance Technical Advisory Committee (VMTAC) formed by the Hong Kong government and stakeholders of the vehicle industry has recommended adding the scope of EV maintenance services into the existing voluntary registration schemes. To take steps further, an Electric Vehicle Maintenance Working Group has been formed to further discuss and study the requirements, detailed arrangements and launch time for the voluntary registration schemes with inclusion of EV maintenance.

This paper outlines the amendment proposals to the existing Voluntary Registration Scheme for Vehicle Maintenance and seeks views from interested parties and the general public such that the views and concerns of the community can be considered for formulating the amendment proposals.





Chapter 2

Voluntary Registration Scheme for Vehicle Maintenance

A. Voluntary Registration Scheme for Vehicle Mechanics (VRSVM)

The purpose of the registration scheme is to allow vehicle mechanics in possession of necessary qualification and/or experience in connection with vehicle maintenance to become a RVM registered under EMSD. A RVM should have adequate training and competence to carry out vehicle maintenance work within the ambit of the respective Registered Service Class or Classes. In addition, RVMs shall accept to follow a set of code of conduct and be monitored by a performance monitoring system. The scheme will facilitate the public to identify RVMs easily and will uplift the professional image of the vehicle maintenance trade.



Existing vehicle maintenance services can be categorized into the following Registered Service Class under the VRSVM

Registered Service Class	Coverage	Service Code
Mechanical	This covers the repairing and servicing of the chassis, vehicle engine, transmission system, brake system, steering system, air-conditioning system, lubrication oil system (including oil replacement), tyre work and basic electrical works. This service category excludes the repair and servicing work for the fuel system of Liquefied Petroleum Gas (LPG) vehicles.	M
Electrical	This covers the repairing and servicing of all electrical and electronic systems and including the air-conditioning system. Examples of electrical works include the installation, servicing, wiring, repair, diagnosis, testing and commissioning of electrical and electronic equipment.	E
Body	This covers the repairing and servicing of vehicle body repair (B1) and body painting (B2). This also covers some simple electrical work which is limited to the disconnection and reconnection of electrical equipment and devices.	B1 / B2
Specific	This covers the specific works of vehicle maintenance which cannot fully meet the whole coverage of works mentioned in the above M, E or B1/B2 Registered Service Class. There are seven classifications under Specific (S) services, which are as follows:- Motorcycle maintenance (S1), Tyre Work (S2), Battery work (S3), Lubrication work (S4), Car accessories work (S5), Air-conditioning work (S6) and Body building work (S7)	S1 - S7

Each registration and renewal application are valid for 3 years. For renewal application, an applicant shall possess at least 18 months in-service record for the relevant Registered Service Class and shall have at least 20 hours of continuing professional development record within the previous 3-year registration period.



B. Voluntary Registration Scheme for Vehicle Maintenance Workshops (VRSVMW)

Under the VRSVMW, the owner or person-in-charge of the vehicle maintenance workshop should operate their vehicle maintenance workshop in accordance with the contents stipulated in the Practice Guidelines for Vehicle Maintenance Workshops (VMW Practice Guidelines). The VMW Practice Guidelines sets a benchmark and standard for technical, environmental, safety, staff training, service and documentation requirements and aims to improve the service standards of the vehicle trade through self-regulation. RVMWs under the VRSVMW should display the registration certificate and identification signage in the workshop to indicate that the services of such workshop have reached relevant standards. On the other hand, RVMWs must accept the VRSVMW's complaint handling mechanism and its decisions.

A RVMW must comply with the following three basic requirements:

- (i) possession of a valid business registration;
- (ii) the vehicle working bay of the workshop has a fixed roof cover#; and
- (iii) employment of at least one RVM.

RVMWs can be divided into the following four types under the existing VRSVMW:

Type	Criteria
Type One	Being a Franchised Bus Company Workshop or Vehicle Dealer Workshop
Type Two	To have at least 5 vehicle mechanics and at least one of whom must be a valid RVM; all mechanics collectively shall possess at least 2 different major Registered Service Class; and the workshop shall have at least 5 vehicle working bays.
Type Three	To have at least one valid RVM and have at least one vehicle working bay#.
Type Four*	Situated at a residential building or a composite building with domestic parts.

Note# : The vehicle working bay must be large enough to accommodate the vehicle under maintenance. The vehicle working bay must not be less than 50m² for heavy vehicle; 20m² for light vehicle or private car; and 10m² for motorcycle.

Note* : Starting from 15 July 2018, new applications for Type Four RVMWs will not be considered.



Each registration and renewal application are valid for 3 years. RVMWs in compliance with the above qualifications and requirements may apply for renewal of their registrations. Where necessary, owners or person-in-charge of the Type One, Two, Three or Four RVMWs may request for alteration of the registered workshop type upon renewal applications with the exception of conversion from a Type One, Two or Three RVMW to a Type Four RVMW with effective from 15 July 2018. Existing Type Four RVMWs will be retained in the registration list subject to their continuing compliance with the registration renewal requirements.





Chapter 3

Proposed Amendments to the Voluntary Registration Scheme for Vehicle Maintenance

EVs have great risk of giving an electric shock if not operated or maintained properly compared with conventional internal combustion engine vehicles, which may lead to serious injuries or even death. To keep abreast of the latest EV technology and to reduce the risk of electric shock during the maintenance of EVs, the VMTAC has proposed amending the existing Voluntary Registration Scheme for Vehicle Maintenance for the inclusion of maintenance service scope, training and workshop requirements related with EV. The Guideline on EV maintenance will also be established for practitioners to follow and to ensure EVs can be maintained in a safe and effective manner.



1. Addition of EV Service Scope

In view of the existing Voluntary Registration Scheme for Vehicle Maintenance is only applicable for internal combustion engine vehicle maintenance, the VMTAC has suggested to add three Service Scope specifically for the maintenance of EV. All existing RVMs will retain their Registered Service Class for internal combustion engine vehicle maintenance.

The service scope and the abbreviation on vehicle maintenance are as follows:

- Internal Combustion Engine Vehicle (Code: IC).
- Electric Vehicle (Elementary) (Code: EVE).
- Electric Vehicle (Low Voltage) (Code: EVL).
- Electric Vehicle (High Voltage) (Code: EVH).

The definition of low voltage system and high voltage system for EVs are defined as follows, which are referenced from different international standards:

	Direct Current	Alternating Current
Low Voltage System	Not Exceeding 60V	Not exceeding 30V root mean square
High Voltage System	Exceeding 60V but not exceeding 1,500V	Exceeding 30V but not exceeding 1,000V root mean square



Existing RVMs can follow the below table for applying to include the respective Service Scope for EVs on top of their existing Registered Service Class for internal combustion engine vehicles:

Registered Service Class	Applicable EV Service Scope
Mechanical (M)	Electric Vehicle (Low Voltage) (EVL) or Electric Vehicle (High Voltage)(EVH)
Electrical (E)	Electric Vehicle (Low Voltage) (EVL) or Electric Vehicle (High Voltage)(EVH)
Body repair (B1)	Electric Vehicle (Low Voltage) (EVL) or Electric Vehicle (High Voltage)(EVH)
Body painting (B2)	Electric Vehicle (Low Voltage) (EVL) or Electric Vehicle (High Voltage)(EVH)
Motorcycle maintenance (S1)	Electric Vehicle (Low Voltage) (EVL) or Electric Vehicle (High Voltage)(EVH)
Tyre work (S2)	Electric Vehicle (Elementary)(EVE)
Battery work (S3)	Electric Vehicle (Elementary)(EVE)
Lubrication work (S4)	Electric Vehicle (Elementary)(EVE)
Car accessories work (S5)	Electric Vehicle (Elementary)(EVE)
Air conditioning work (S6)	Electric Vehicle (Elementary)(EVE)
Body building work (S7)	Electric Vehicle (Elementary)(EVE)



2. Allowed Works under Different EV Service Scope

A. Service Scope for Electric Vehicle (Elementary) (EVE)

- Allowed to perform relevant EV maintenance work within their registered service category.
- If the maintenance work requires "power-off" or "power-on" procedures, it must be carried out by registered mechanics who possess the EVL RVMs or EVH RVMs.

Note: RVMs within the scope of EVE maintenance services are not allowed to:

- Isolate the HV vehicle traction battery system ("power off"); and
- Restore the HV vehicle traction battery system ("power on"); and
- Diagnose, test, repair, dismantle, replace, or install components of the EV HV system or its interconnected components.

B. Service Scope for Electric Vehicle (Low Voltage) (EVL)

Allowed to perform relevant EV maintenance work within their registered service category while wearing appropriate PPE. This includes:

- Operating specific maintenance plugs or devices to isolate the HV vehicle traction battery system ("power-off").
- Operating specific maintenance plugs or devices to restore the HV vehicle traction battery system ("power-on").
- Diagnosing, testing, maintaining, disassembling, replacing, and installing EV low-voltage systems or components.
- In the case of effectively isolating the HV vehicle traction battery system, using a "one-to-one" method to dismantle, replace, and install the EV HV system or its associated components, but not for diagnosing, testing, or maintaining related components, except for obtaining diagnostic trouble codes (DTCs) using on-board diagnostics (OBD) systems.

Note: RVMs within the scope of EVL maintenance services are not allowed to:

- Diagnose, test, or repair the HV system or its interconnected components of the EV in a situation where effective isolation of the HV vehicle traction battery system is not possible ("live condition"); and
- Diagnose, test, repair, dismantle, replace, or install the entire fixed-position vehicle traction battery and its interconnected HV wires.

2. Allowed Works under Different EV Service Scope (con't)

C. Service Scope for Electric Vehicle (High Voltage) (EVH)

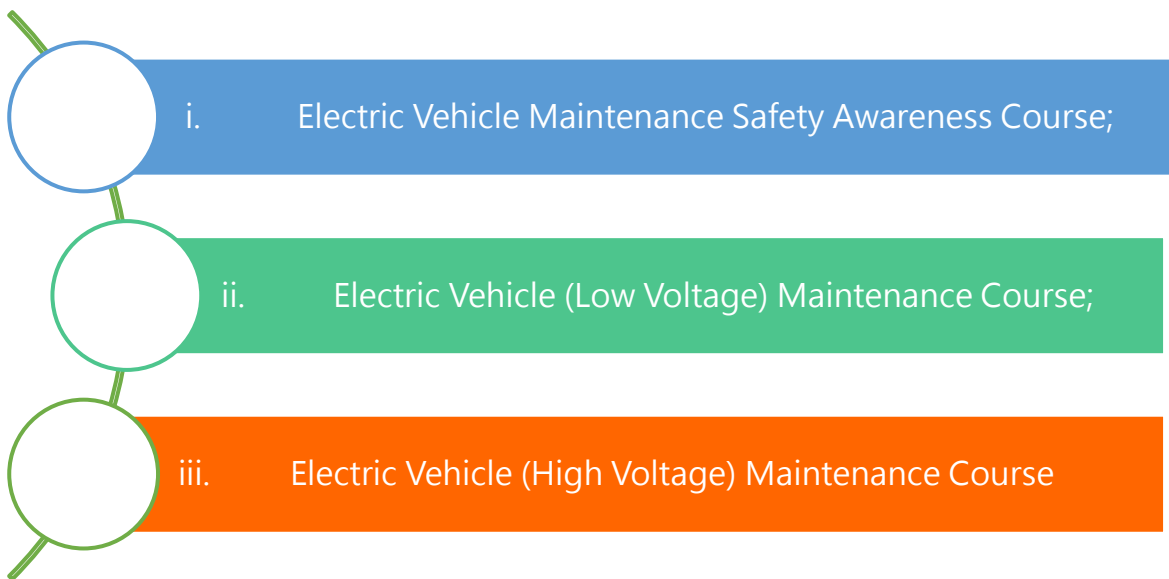
Allowed to perform relevant EV maintenance work within their registered service category while wearing appropriate personal safety protective equipment. This includes:

- Isolating the HV vehicle traction battery system ("power-off").
- Restoring the HV vehicle traction battery system ("power-on").
- Diagnosing, testing, maintaining, disassembling, replacing, and installing EV HV systems or their associated components when it is not possible to effectively isolate the HV vehicle traction battery system ("live work"),
- Using a "one-to-one" method to dismantle, replace, and install the entire fixed traction batteries (excluding internal disassembly and maintenance)
- Performing work within the scope of EVL RVMs maintenance services.



3. Electric Vehicle Maintenance Training

The proposed EV training programs will be conducted by appropriate training institutes or organizations and the design of training programs shall be endorsed by the VMTAC. Since vehicle maintenance works under different Registered Service Class will involve different low voltage and high voltage systems and in order to cater the three new proposed Service Scope for EVs, the VMTAC has proposed three corresponding levels of EV training programs, which have specific requirements on competency, minimum training time, training equipment, etc. in order to ensure practitioners, in particular for vehicle mechanics, to be equipped with the necessary knowledge and skills to become a RVM with EV service scope to carry out the maintenance work in a safe and effective manner. The three levels of EV training programs are listed below, from basic to advance level:



i. Electric Vehicle Maintenance Safety Awareness Course

This training program is suitable for all practitioners having work related with EV. RVMs with Registered Service Class of S2 to S7 may apply for inclusion of EVE Service Scope to provide Specific (S) services for EVs.



3. Electric Vehicle Maintenance Training (con't)

ii. Electric Vehicle (Low Voltage) Maintenance Course

This training program is suitable for RVMs with Registered Service Class of either Mechanical (M), Electrical (E), Body repair (B1), Body painting (B2) or Motorcycle maintenance (S1), which allows them to carry out the respective services for EVs under the requirements of EVL Service Scope.



iii. Electric Vehicle (High Voltage) Maintenance Course

This training program is suitable for

(i) Person who have completed Electric Vehicle (Low Voltage) Maintenance Course or

(ii) RVMs who have attained Service Scope for EVL,

which allows them to carry out the respective services for EVs under the requirements of EVH Service Scope.



The VMTAC has agreed training institutes or organizations to conduct pilot EV maintenance training programs after reviewing their applications for and a total of four relevant EV training programs (2 Elementary, 1 Low Voltage and 1 High Voltage) were launched on 10 March 2023. The pilot training programs allow vehicle mechanics to keep abreast of the latest EV technologies and be well prepared for the upcoming trend of EV. It is recommended that all practitioners or even anyone interested in EV to apply the Electric Vehicle Maintenance Safety Awareness Course to increase safety awareness and know better the risks associated with EV maintenance.



4. Registration and Renewal for RVM with inclusion of EV Service Scope

Existing RVMs can apply for inclusion of the applicable EV Service Scope to their Registered Service Class after completing the corresponding VMTAC endorsed Electric Vehicle Maintenance Safety Awareness Course, Electric Vehicle (Low Voltage) Maintenance Course or Electric Vehicle (High Voltage) Maintenance Course for performing vehicle maintenance works for EVs.

In addition, Registered Manufacturers or Manufacturers' Local Authorized Representative can recommend current RVMs who are capable of performing low voltage or high voltage works for EVs to apply for inclusion of the appropriate EV Service Scope to their Registered Service Class. Applicants shall need to provide manufacturers' certificate and training records in order to demonstrate that the applicant has achieved all the training criteria endorsed by the VMTAC, and the application shall be submitted to VMRU of EMSD for further processing and approval.

RVMs applying for the inclusion of EV Service Scope will not affect the validity period of the existing registration (i.e. the validity period of a newly issued RVM registration card after addition of EV Service Scope will remain the same). The registration and renewal requirements for existing Registered Service Class for IC shall remain the same but RVMs with EV Service Scope should take EV safety related trainings for continuous professional development and registration renewal purposes.



5. RVMWs with EV Service Scope

A. RVMW with EVE and EVL Service Scope

The vehicle trade generally believes that it is acceptable to provide maintenance works for Specific (S) services or low voltage systems of an EV in various types of RVMWs as long as the concerned RVMW has employed RVM(s) that are registered with the corresponding EVE or EVL Service Scope. The aforesaid view was further confirmed in the first round of trade consultation, and it was unanimously agreed that the relevant EV maintenance works can be carried out in existing vehicle maintenance workshops and there is no need to further establish registration requirements for vehicle maintenance workshops to carry out works for Specific (S) services or low voltage systems of EVs.

On the other side, the works involved in the EVH Service Scope is relatively high in safety risk and the works must be carried out by RVMs registered with EVH Service Scope. Moreover, the maintenance of such works shall only be carried out in RVMWs also registered with EVH Service Scope.

B. RVMW with EVH Service Scope

RVMWs registered with EVH Service Scope with must employ at least one RVM registered with EVH Service Scope, who should be present during business hours. The person in charge of the RVMW registered with EVH Service Scope should provide regular electrical safety training, for example the VMTAC approved EV Maintenance Safety Awareness Course, to all personnel who will come into close proximity with EVs, including but not limited to vehicle mechanics, apprentices, cleaners, etc.



B. RVMW with EVH Service Scope (con't)

If live-line work on EVs is inevitable, the working area of the concerned EV should be segregated into a "caution zone" and must be clearly identified with warning signs. Traffic cones, tape, barriers should be used where necessary for physical separation with other areas and it is also necessary to ensure sufficient space is reserved for rescue support in case of emergency.

When a RVM registered with EVH Service Scope performs live-line maintenance work on the high voltage system of an EV, another person with "rescue support capabilities" must be on standby to provide rescue at any time. The person providing rescue support needs to stay outside the "caution zone" and shall only enter the "caution zone" when necessary. The person providing rescue support shall also prevent other people other than the RVM carrying live-line maintenance works from entering the "caution zone".

In addition to meeting personnel requirements, RVMWs registered with EVH Service Scope must also provide personal protective equipment (PPE), first aid equipment (first aid kit, insulated rescue hook, automatic external defibrillator (AED)), firefighting equipment (fire hydrant / hose reel systems, fire extinguishers, fire-extinguishing blankets, appropriate site facilities (maintenance bays, caution isolation areas, rescue passages), emergency procedures (training procedures), handling and fire-extinguishing procedures for damaged high voltage batteries, etc. RVMWs registered with EVH Service Scope shall also commit that the Guideline on EV maintenance will be followed.

Only Type 1, Type 2, or Type 3 RVMWs can apply to become a RVMW registered with EVH Service Scope, which shall meet the requirements set out by the VMTAC for ensuring that the concerned RVMW is capable to perform high voltage system maintenance works for EVs. At the same time, the application for the concerned RVMW can only be deemed qualified after undergoing an on-site inspection carried out by a vehicle manufacturer or a qualified third-party certification agency followed by submission of report to demonstrate its capability.





Chapter 4

Proposed Implantation Arrangement

The amendments to the Voluntary Registration Scheme for Vehicle Maintenance and also the Guideline on EV maintenance is proposed to be trial launched in March 2024 and will be reviewed after six months (i.e., September 2024) for necessary amendments.

The Guideline on EV maintenance will also be updated from time to time with considerations of on one side to allow the vehicle industry to keep pace with the latest EV technology, improving the overall standard while on the other side to minimize the impact on them.



Response Form for Consultation

Please return the completed Response Form to the Electrical and Mechanical Services Department on or before 15 January 2024 by one of the following channels:

Mail : Vehicle Maintenance Registration Unit,
 Electrical and Mechanical Services Department,
 3 Kai Shing Street,
 Kowloon.

Email: vmr-consultation@emsd.gov.hk

Facsimile: (852) 3968 7646

This is a (optional)

- corporate response (representing the views of a group or an organization)
- individual response (representing the views of an individual)

Name and Organization: (optional)



Collection of Views

Question 1.

Do you agree to add the new service scope for EV maintenance under the existing VRSVM and VRSVMW?

Answer : Agree

Disagree, please specify the reason:

Comment :

Question 2.

Do you agree to categorize the EV Service Scope into three levels namely elementary, low voltage and high voltage and to formulate different scope of work under each level?

Answer : Agree

Disagree, please specify the reason:

Comment :

Collection of Views

Question 3.

Do you agree with the scope of work listed under each level of EV Service Scope?

Answer : Agree
 Disagree, please specify the reason:

Comment :

Question 4.

Do you agree to provide two pathways for RVMS to apply for inclusion of EV Service Scope to their registration, including:

1. Complete relevant training courses; or
2. Recommended by the Registered Manufacturers or Manufacturers' Local Authorized Representative

Answer : Agree
 Disagree, please specify the reason:

Comment :

Collection of Views

Question 5.

Do you agree with the arrangements and requirements for inclusion of EV Service Scope for RVMWs?

Answer : Agree
 Disagree, please specify the reason:

Comment :

Question 6.

Do you agree with the specific requirements for RVMW with EVH Service Scope, including requirements for personnel, area separation, personal protective equipment, first aid equipment, firefighting equipment, etc.?

Answer : Agree
 Disagree, please specify the reason:

Comment :

Other Views and Comments :

