DATA PLATFORM CONSTRUCTION AND APPLICATION OF ELECTRIC VEHICLES

November 17, 2023
Manila
Data Platform Construction and Application of Electric Vehicles

Sponsored by: National Big Data Alliance of New Energy Vehicles

Manila, Philippines
November 17, 2023
<table>
<thead>
<tr>
<th>FORMAT OF THE SESSION</th>
<th>SPEAKER</th>
</tr>
</thead>
</table>
| 11:15-11:25 Opening  
The Emcees/Moderator will do a short introduction as a background on the session. | Yan Hantao  
Researcher  
International Big Data Alliance of New Energy Vehicles  |
| 11:25-11:45 Innovative Applications of Networked Big Data Platform of NEVs           | Zhang Zhaosheng  
Associate Professor  
Beijing Institute of Technology  
Consultant Expert of International Big Data Alliance of New Energy Vehicles  |
| 11:45-12:00 Future Automobile - China's Solution and Path                            | Yan Jianlai  
Secretary-General for Specified Affairs  
China Society of Automotive Engineers  |
| 12:00-12:15 Current status and trend of electric vehicle industry development in the Philippines | Ferdinand I. Raquelsantos  
President of Philippine Parts Maker Association (PPMA)  
Chairman of electric-Vehicle Association of the Philippines (e-VAP)  |
| 12:15-12:30 Case sharing (Play the video to introduce the National Monitoring and Management Platform for NEVs) | Wang Shuo  
Assistant Professor  
Beijing Institute of Technology  |
| 12:30-12:40 Q&A                                                                  | All Panelists  |
| 12:40-12:45 Closing                                                               | Yan Hantao  
Researcher  
International Big Data Alliance of New Energy Vehicles  |
Data Platform Construction and Application of Electric Vehicles

Sponsored by: National Big Data Alliance of New Energy Vehicles

Manila, Philippines
November 17, 2023
Zhang Zhaosheng

Beijing Institute of Technology
Consultant Expert of International Big Data Alliance of New Energy Vehicles
Innovative Applications of Networked Big Data Platform of NEVs

Prof. Zhaosheng Zhang

Beijing Institute of Technology

November 17, 2023
Content

- Research Background and Ideas
- Platform Construction and Display
- Tech Innovation and Effectiveness
Low Carbon Development – an Arduous Task

- China's total carbon emissions rank 1st globally, with an average annual growth rate of about 3% over the past five years.
- China’s carbon emission intensity decreased by about 50% from 2005 to 2021 but is still 2-3 times higher than developed countries.
- Sustainable low-carbon energy transition is the basics, and energy saving and efficiency upgrading of the terminal sector is the main approach.

![Annual carbon emissions changes in major countries/regions around the world](image1)

![CO2 emissions per unit of GDP in major countries/regions worldwide](image2)

Source: Our world in Data, IEA, IMF
Carbon emissions in China's energy activities from 1990 to 2019

- In 2020, 2021, and 2022, China's transportation sector's carbon emissions were approximately 0.93, 1.07, and 1.18 billion tons, accounting for 12% of the country's total carbon emissions.
- In 2022, the carbon emissions of road traffic in China account for about 87% of the total carbon emissions of transportation sector.
- The carbon emissions of China's automotive industry have not yet been decoupled from economic growth, and in recent years, it has maintained an average annual growth rate of around 5%.

Source: Global Change Data Lab & Institute of Climate Change and Sustainable Development, Tsinghua University, ourworldindata.org; Tsinghua University Carbon Neutrality Research Institute’s “Global Near Real-Time Carbon Dioxide Emissions Report (2022-2023)"
In May 2014, President Xi Jinping’s visit to SAIC emphasized that NEVs are the way for China to move towards an automotive powerhouse. NEVs are hot and competitive around the world.

China make great achievement in NEV popularization:

- Production and sales of complete vehicles rank first worldwide
- The number of charging facilities ranks first in the world
- Power battery sales rank first globally

Overall Leading

NEVs have become a new Symbol of "Made in China" in transportation sector.
Intelligent and Connected reconstruction of the automotive ecosystem

New technology such as big data, AI, and 5G become innovative carriers. Transformation and upgrading happen in multiple technological fields, such as materials, manufacturing, and transportation services.

“Whoever holds the data holds the initiative”

- President Xi

Big data has become the core of the present and future digitized industry.
Industrial innovation and management change driven by big data have become an international consensus.
Content

1. Research Background and Ideas
2. Platform Construction and Display
3. Tech Innovation and Effectiveness
Construction of the National Monitoring And Management Platform For NEVs

Platform Construction

Electric bus supervision and dispatching platform during Beijing Olympics (Fleet Level)

Build: Beijing Monitoring and Management Platform for NEVs (First in China)

Build: Enterprise Platform (Million Level)

Host: National Monitoring and Management Platform for NEVs

Expand: National Monitoring and Management Platform for NEVs (10^8 Level)

Standards

2006

Enterprise Standard

2011

Provincial Standard (First in China)

2013

National Standard (First in the world)

2016

2022
- **Created** a nation-local-enterprise multilevel monitoring system
- **Building** the world's largest internet of vehicles

![National network of NEVs](image)

**Supervision for vehicle safety in promotion**

**Accounting guide for energy conservation and subsidies**
Status quo of the Platform – a Preview

- According to the statistics of the National Monitoring and Management Platform for NEVs, there are more than **16.82 million NEVs** connected by November 15th.
- Daily online rate over **70%**, real-time online rate near **30%**

**Function**
- **Macro grasp of the development of new energy vehicles**
- **Calculate carbon emissions by using vehicle operation data**
- **Monitor the safety of vehicle operation**
- **Find quality problems of new energy vehicles and give feedback**
Display the **market share change** of different types of NEVs annually

- The industry transforms from policy-driven to market-driven
- The market shows diversified structural characteristics
- Rich experience in promoting under all applications
The characteristics of vehicle activity, driving behavior, and trajectory of classified NEVs

- **Monthly statistics of online vehicles**
  - Online Units
  - Total Mileage of Online Vehicles
  - Workday
  - Weekend

- **Distribution of daily mileage**
  - Special Vehicle
  - Bus
  - Passenger Vehicle

- **Distribution of private cars on the road**

- **Statistical analysis of driving trajectory (Public domain vehicle)**

Source: National Monitoring and Management Platform for NEVs
Platform Display - Vehicle Charging Features (Beijing as e.g.)

- Characteristics of charging behaviors including **start time, start SOC, and heat distribution**

  - Different types of vehicles have different charging times
  - Driving and charging distribution
  - SOC distribution at the beginning of charging
  - Charging heat map in Beijing
The operation and charging characteristics of NEVs in the same city at different time periods.

**Comparison of Daily Mileage Distribution of Private NEVs at Different Time Periods in Beijing**

Distribution of private car mileage in November 2022:
- Mileage < 20km: 31.19%
- Mileage 20-40km: 24.81%
- Mileage 40-60km: 16.7%
- Mileage 60-80km: 10.19%
- Mileage > 80km: 17.11%

Distribution of private car mileage in August 2023:
- Mileage < 20km: 23.29%
- Mileage 20-40km: 22.89%
- Mileage 40-60km: 17.1%
- Mileage 60-80km: 11.37%
- Mileage > 80km: 25.35%

**Comparison of Daily Charging Characteristics of delivery NEVs at Different Time Periods in Beijing**

Total charging duration and charging capacity of logistics vehicles in March 2020:
- Total Charging Capacity
- Total Charging Duration

Total charging duration and capacity of logistics vehicles in August 2023:
- Total Charging Capacity
- Total Charging Duration

Source: National Monitoring and Management Platform for NEVs
The operation and charging characteristics of NEVs in different cities during the same time period.

Comparison of daily driving hours distribution of passenger NEVs in August 2023:

Comparison of the distribution of charging start times for new energy buses in August 2023:

Source: National Monitoring and Management Platform for NEVs
Content

- Research Background and Ideas
- Platform Construction and Display
- Tech Innovation and Effectiveness
Research Ideas for Innovative Application of Big Data

Big Data of Operation +

Product Quality
- Dynamic Evaluation
  - Vehicle Quality Evaluation
  - Vehicle Quality Inspection
  - Vehicle Quality Traceability

Operation Safety
- Coordinated Prevention and Control
  - Vehicle Risk Assessment
  - Vehicle-Road Collaborative Control
  - Vehicle-Pile Network Collaboration

Public Service
- multi-scenario depiction
  - Digital Asset Management
  - Behavioral Risk Management
  - Carbon Footprint Management

Core technology

Applications
- Product Access (MIIT)
- Vehicle Annual Inspection (MPS)
- Defect Recall (SAMR)
- Operational Safety (MIIT)
- Traffic Safety (MPS)
- Charging Optimization (NEA)
- Information Security (Multiple Ministries)
- Safety Precautions (MIIT, Winter Olympics)
- Quality and Efficiency Improvement (MIIT, MOT)

Effect
- Leading: Digital Evaluation Methods:
  - from Passive Disposal to Proactive Prevention and Control
- Reformation: Data-driven; Management Improvement; New Path
Innovative Applications (1) - Vehicle Quality Evaluation

- Overcame a technical challenge of multi-source data fusing and the normalization and quantification of characteristic parameters under both the conditions of full-volume operation and single-vehicle testing.
- Established China’s NEV evaluation procedure integrating “energy consumption, safety, and experience.”

Realized a significant leap in evaluation methods by big data analysis other than using laboratories and testing grounds as single means.
Propose a **long time scale data-driven** online evaluation method with multiple parameters
Form an "annual inspection" model of **online-offline** feature association and mutual verification

**Online evaluation system**

- **Evaluation system**
- **Evaluation method**

**Online+offline annual inspection platform (Chongqing)**

**Annual inspection efficiency improvement >85%**
- **Good** (60%) **Inspection Exemption**
- **Ordinary** (15%) **Annual Inspection**
- **Bad** (25%) **Maintenance**

**The first "online+offline" NEV annual inspection platform in China, providing an annual inspection plan for NEVs for "online tracking and warning, offline inspection and evaluation"**
Innovative Applications (3) - Vehicle Quality Traceability

- Build a database of potential defect characteristics of “Battery-Motor-ECU,” covering the entire range of vehicle models and their lifecycles
- A multiple regression model for recall prediction and early warning of defective automotive products with "Suspicion-Characterization-Confirmation"

Created a new defect management model for NEVs that involves “pre-discovery and proactive traceability”
Create a "value-rate-model" safety state perception and an early warning technology system for new energy vehicles.

Propose a warning strategy of "prediction through a union of independent models, improve accuracy by Cross comparison".

Risk evaluation technology services more than 90% of the country's total NEVs in-use, Achieve a breakthrough from fault alarm to safety risk warning for NEVs.
Built a safety risk scenario set of "vehicle type, region, season, mileage, operation status" for vehicle-road integration
Developed a NEV safety prevention and control platform with end-to-end cloud integration and human-vehicle-road collaboration

Zero accidents during the Beijing Winter Olympics
Zero accidents during Jiaxing Centennial Party Celebration

Dynamic real-time control of Vehicles
Innovative Applications (6) - Collaborative Safety between Vehicle & Pile

- Proposed a real-time identification method for vehicle-pile safety risks with vehicle history and real-time charging status data integrated
- Built a dynamic threshold library for the safe operational range of vehicles and a charging safety warning system

The risk identification method for vehicles and piles has been applied to the evaluation of charging station allocation, Successful applied vehicle-pile integration technology in the State Grid Electric Vehicle Service Company
Achieve breakthroughs in NEV aftermarket service technology driven by big data
Establish a dynamic calculation model for carbon emissions from the application end to the production end of NEVs at multiple time and space scales

Establish the world's largest NEV carbon asset platform and carbon accounting ecosystem

Global Release of “Carbon Accounting Platform of NEVs”- a major consulting achievement of the CAE in 2021, The carbon accounting and carbon credit technology for NEVs was first demonstrated in Jinan and other cities.
Summary

Quality Supervision
- Test and evaluation procedure fusion with multi-dimensional data
- A breakthrough in data-driven quality inspection and defect identification technology

Safety Control
- Proposed a "Value-Rate-Model" for safety control
- Constructed a "Vehicle-Road-Charging Post" safety system

Service Management
- Data-driven methodology for premium assessment, subsidy verification, and epidemic investigation
- Established the world's largest carbon asset ecosystem for NEVs

Subverted the traditional testing and evaluation methods centered on sampling
- Created a "product-operation-service" system for full-volume evaluation and monitoring
- Realized the collaborative application of multiple ministries and commissions

Utilizing the world's first "big data of vehicle operation", the "China solution" provides a reference for management innovation in the field of NEVs in Asia
Data Platform Construction and Application of Electric Vehicles

Sponsored by: National Big Data Alliance of New Energy Vehicles

Manila, Philippines
November 17, 2023
Yan Jianlai

Secretary-General for Specified Affairs
China Society of Automotive Engineers
Established in 1963
Current staff: 220
Total number of members: 100,000+
Core business:
——Auto Industry Science and Technology Think Tank
——Technology Promotion Organization

Introduction to China Society of Automotive Engineers
I. Current situation and development path of China's automobile industry

II. Future Development Goals of China's Automotive Industry
The global automotive market is in a period of deep adjustment

- Since 2020, affected by the chain effect of the COVID-19, the global automobile market has experienced a precipitous decline. From 2021, the market will slowly recover and enter a period of deep adjustment.
- China’s automobile industry slowly recovered, with production and sales of **27.02 million** and **26.82 million** units respectively in 2022, up **3.4%** and **2.1%** year on year.
The marketization path of China's new energy vehicles

- The sales volume and market penetration of China's new energy vehicles continue to increase, with sales volume reaching 6.89 million units (66%) and market penetration reaching 25.6% by 2022.
- In the next 10 years, new energy vehicles will gradually become the mainstream of automotive products, with a penetration rate expected to exceed 50%.

2009~2022年中国新能源汽车累计保有量及渗透率情况

单位：万辆

数据来源：中汽协
**China's fuel cell vehicle demonstration is accelerated, mainly focusing on medium and heavy commercial vehicles**

In 2022, the promotion and application scale of hydrogen fuel cell vehicles in China exceeded 5,000, with a total of nearly 13,000 vehicles, ranking third in the world. The number of hydrogen refueling stations in operation in China reached 245, ranking first in the world.

The promotion and application of fuel cell vehicles in China has formed five demonstration city clusters including Beijing-Tianjin-Hebei, Shanghai, Henan, Hebei, and Guangdong, with applications covering ports, mines, sanitation, urban construction, public transportation, intercity logistics, and other scenarios. Fuel cell vehicles have become an important choice for the green and low-carbon transformation of commercial vehicles.

![Graph showing 2016-2022 sales and cumulative sales of fuel cell vehicles in China](image)

- **2022 year-end and cumulative sales of fuel cell vehicles in China**
  - **South Korea**: 29,369 units
  - **United States**: 14,979 units
  - **China**: 12,682 units
  - **Japan**: 8,150 units
  - **Germany**: 2,135 units

**Data Source:** China Hydrogen Alliance Research Institute

- **2022 global main countries**
  - **South Korea**: 245 operation no hydrogen station
  - **China**: 168
  - **Japan**: 164
  - **Germany**: 96
  - **United States**: 54

**Data Source:** China Hydrogen Alliance Research Institute
China's intelligent driving technology has achieved large-scale application, and its penetration rate has accelerated

The market introduction of L2 intelligent connected vehicles is accelerating, and the penetration rate is rapidly increasing. In 2022, the market penetration rate of new energy passenger vehicles with partial assisted driving functions of PA level (L2 level) reached 46%, an increase of 16 percentage points year-on-year, significantly higher than the 32% penetration rate of traditional fuel vehicles. Some mass-produced intelligent new energy vehicles have been equipped with V2X technology.

The key technologies and products of L4 intelligent driving have made continuous progress, and high-level autonomous driving has been demonstrated and applied in specific areas. Products such as multi-beam laser radar, millimeter-wave radar, autonomous driving computing platform and dedicated chips have made great progress.

<table>
<thead>
<tr>
<th>车型</th>
<th>2022年PA级销量</th>
<th>2022年PA级渗透率</th>
<th>渗透率同比增幅</th>
</tr>
</thead>
<tbody>
<tr>
<td>传统燃油汽车</td>
<td>456万辆</td>
<td>32%</td>
<td>13个百分点</td>
</tr>
<tr>
<td>新能源汽车</td>
<td>239万辆</td>
<td>46%</td>
<td>16个百分点</td>
</tr>
</tbody>
</table>

搭载V2X技术的量产智能新能源汽车

上汽Marvel R 搭载5G-V2X

福特锐界 搭载C-V2X

广汽AION V 搭载5G-V2X

长城摩卡 搭载5G-V2X

更安全
更高效
更舒适
更节能

来源：中国智能网联汽车产业创新联盟
I. Current situation and development path of China's automobile industry

II. Future Development Goals of China's Automotive Industry
### Vision and Goals for the Development of the Automotive Industry - Technology Roadmap 2.0

**By 2035:**

- The annual sales volume of energy-saving cars and new energy vehicles accounts for 50% each, and the automotive industry realizes the transformation of electrification.
- The number of hydrogen fuel cell vehicles has reached about 1 million, and commercial vehicles have achieved hydrogen power transformation.
- Various types of networked highly autonomous vehicles are widely operated in China, and China's intelligent networked vehicle solution is deeply integrated with smart energy, intelligent transportation, and smart cities.

---

**2025年**

<table>
<thead>
<tr>
<th>乘用车</th>
<th>乘用车（含新能源）新车油耗达到4.6L/100km（WLTC）</th>
</tr>
</thead>
<tbody>
<tr>
<td>商用车</td>
<td>货车油耗较2019年降低8%以上</td>
</tr>
<tr>
<td></td>
<td>客车油耗较2019年降低10%以上</td>
</tr>
<tr>
<td>节能汽车</td>
<td>传统能源乘用车新车平均油耗5.6L/100km（WLTC）</td>
</tr>
<tr>
<td></td>
<td>混动新车占传统能源乘用车的50%以上</td>
</tr>
<tr>
<td>新能源汽车</td>
<td>新能源汽车占总销量20%左右</td>
</tr>
<tr>
<td>碑</td>
<td>氢燃料电池汽车保有量达到10万辆左右</td>
</tr>
<tr>
<td>智能网联汽车</td>
<td>PA/CA级智能网联汽车占汽车年销量的50%以上，HA级汽车开始进入市场，C-V2X终端新车装备率达50%</td>
</tr>
</tbody>
</table>

**2030年**

<table>
<thead>
<tr>
<th>乘用车</th>
<th>乘用车（含新能源）新车油耗达到3.2L/100km（WLTC）</th>
</tr>
</thead>
<tbody>
<tr>
<td>商用车</td>
<td>货车油耗较2019年降低10%以上</td>
</tr>
<tr>
<td></td>
<td>客车油耗较2019年降低15%以上</td>
</tr>
<tr>
<td>节能汽车</td>
<td>传统能源乘用车新车平均油耗4.8L/100km（WLTC）</td>
</tr>
<tr>
<td></td>
<td>混动新车占传统能源乘用车的75%以上</td>
</tr>
<tr>
<td>新能源汽车</td>
<td>新能源汽车占总销量40%左右</td>
</tr>
<tr>
<td>碑</td>
<td>氢燃料电池汽车保有量达到100万辆左右</td>
</tr>
<tr>
<td>智能网联汽车</td>
<td>PA/CA级智能网联汽车占汽车年销量的70%，HA级超过20%，C-V2X终端装配基本普及</td>
</tr>
</tbody>
</table>

**2035年**

<table>
<thead>
<tr>
<th>乘用车</th>
<th>乘用车（含新能源）新车油耗达到2.0L/100km（WLTC）</th>
</tr>
</thead>
<tbody>
<tr>
<td>商用车</td>
<td>货车油耗较2019年降低15%以上</td>
</tr>
<tr>
<td></td>
<td>客车油耗较2019年降低20%以上</td>
</tr>
<tr>
<td>节能汽车</td>
<td>传统能源乘用车新车平均油耗4L/100km（WLTC）</td>
</tr>
<tr>
<td></td>
<td>混动新车占传统能源乘用车的100%</td>
</tr>
<tr>
<td>新能源汽车</td>
<td>新能源汽车成为主流（占总销量50%以上）</td>
</tr>
<tr>
<td>碑</td>
<td>氢燃料电池汽车保有量达到100万辆左右</td>
</tr>
<tr>
<td>智能网联汽车</td>
<td>各类网联式高度自动驾驶车辆广泛运行于中国广大的地区，中国方案智能网联汽车与智慧城市、智能交通、智慧城市深度融合</td>
</tr>
</tbody>
</table>
Objective Description - Technology Roadmap 2.0

Research will be conducted around the overall industry and nine sub-technological fields, including energy-saving cars, pure electric and plug-in hybrid cars, fuel cell cars, intelligent networked cars, power batteries, electric drive assemblies, charging infrastructure, lightweight, intelligent manufacturing, and key equipment, to develop a "1+9" technology roadmap.

<table>
<thead>
<tr>
<th>轻量化</th>
<th>能源部件</th>
<th>动力电池</th>
<th>动力系统</th>
<th>电机部件</th>
<th>电机系统</th>
<th>电系统</th>
<th>电控系统</th>
<th>电控系统与复杂系统</th>
<th>云平台大数据</th>
</tr>
</thead>
<tbody>
<tr>
<td>轻量化设计</td>
<td>正极材料</td>
<td>驱动电机</td>
<td>充电安全</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>轻量化材料</td>
<td>负极材料</td>
<td>电机控制器</td>
<td>电能互动</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>轻量化工艺</td>
<td>电解液</td>
<td>变/减速器</td>
<td>云平台大数据</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Forecast of China's automobile industry development

Future policy expectations

I. Market target: about 35-40 million vehicles
II. The technical route is aimed at low carbon and adheres to the diversified energy route (revised in 2024, version 3.0 of the roadmap);
III. We will unswervingly implement the "China Plan" with the development of intelligent electric vehicles as the core;
Note: smart vehicle, intelligent road, cloud for timely service, reliable network, accurate map + safe operation. "Vehicle, road, cloud, network, map" five-in-one + safety;
IV. It is expected that relevant policies for the marketization and promotion of intelligent connected vehicles will be introduced within the year;
V. More supportive policies will be introduced in the future.

Ten leading technologies that will be focused on in the next 3-5 years

01. 高安全、高比能全固态锂电池
02. 基于驾舱融合的智能计算芯片
03. 车路云一体化融合控制系统
04. 零碳内燃机
05. 驱动电机用新型软磁材料
06. 智能网联汽车场景库
07. 智能电动车用电子机械式线控制动
08. 基于规则+学习的融合型决策算法
09. 智能驾驶操作系统
10. 高温质子交换膜（HT-PEM）燃料电池
Thank you for listening.

It is our wish to share China's automobile development experience with friendly countries under the framework of the "Belt and Road" initiative.

November 17, 2023
Manila
Data Platform Construction and Application of Electric Vehicles

Sponsored by: National Big Data Alliance of New Energy Vehicles

Manila, Philippines
November 17, 2023
Ferdinand I. Raquelsantos

President
Philippine Parts Maker Association (PPMA)
Chairman Emeritus
Electric Vehicle Association of the Philippines (EVAP)
Electric Vehicles in the Philippines: A Comprehensive Overview

Ferdi Raquelsantos
Chairman Emeritus

17 November 2023
The Electric Vehicle Association of the Philippines

• Established in 2008 and one of the very first EV industry associations in Southeast Asia.

• Spearheaded the creation of the Asian Federation of Electric Vehicle Associations (AFEVA), which comprises of members from the Philippines (EVAP), Thailand (EVAT), Indonesia (PERIKLINDO), Singapore (EVAS) and Malaysia (EVAM).

• EVAP has 76 members, which comprises of EV and EVSE manufacturers, research universities, importers and distributors.

• Recently organized its 11th consecutive annual EV show (October 2023).

• EVAP envisions a nation wherein the use of electric vehicles is highly promoted, encouraged and supported by its government and the society in order to develop a transportation landscape that is one with the environment ecologically and economically.

• EVAP's mission:
  • To educate
  • To accelerate
  • To partner
Activities: Electric Vehicle Owners Society (EVOS) Monthly Meet-up and Support to Launching of New EV Charging Stations
Overview of the Philippine Automotive Industry and EV Support Program

369
Firms engaged in assembly and parts manufacturing

80,501
Employment

Source: Estimated figures from statistics from the Philippine Statistics Authority

A. Motor Vehicle Development Program
   • 1% or 0% duty-free importation of parts/components

B. TRAIN Law
   • EVs - exempted from excise tax;
   • Hybrid - 50% reduction of applicable excise tax

C. EV Industry Development Act (EVIDA)
   • CREATE incentives
   • Non-fiscal incentives
   • EV Industrial Strategy
   • Comprehensive Roadmap on EV Industry (CREVI)

Executive Order no. 12
MFN Temporary Tariff Reduction to 0%
Key Features of the EV Industry Development Act (EVIDA Law)

Mandatory EV Share in Corporate and Government Fleets:
• Ensure at least 5% of the fleet shall be EVs.
• CREVI to provide the mandatory percentage share.

Dedicated Parking Slots for EVs in Private and Public Buildings and Establishments:
• Designated dedicated parking slots to be exclusive for EVs and shall be installed with an EVCS.
• Required construction or installation of EVCS in gasoline stations.

Fiscal and Non-Fiscal Incentives:
• Priority processing of registration of EVs.
• Exemption from the number-coding traffic schemes.
• Expeditious processing of application for franchise to operate (for public transport EVs).
• Availment of training programs.
What is the CREVI?

BAU Scenario

**COMPREHENSIVE ROADMAP FOR THE ELECTRIC VEHICLE INDUSTRY CAREVI**

**Vision**
To electrify a diverse range of vehicles and establish a domestic EV industry with strong export potential, with the aim of building a sustainable future, where new electric vehicles and the required infrastructure are locally robust with reduced environmental impact.

**SHORT TERM (2023-2028)**
- **EV and EVCS Targets**
  - 311,700 Electric Vehicles
  - 7,300 EV Charging Stations
- **Cars**
  - 81,500 HEV
  - 13,600 PHEV
  - 13,600 BEV
- **Tricycle**
  - 37,500 BEV
- **Motorcycle**
  - 104,900 BEV
- **Bus**
  - 600 BEV

**MEDIUM TERM (2029-2034)**
- **EV and EVCS Targets**
  - 580,600 Electric Vehicles
  - 14,000 EV Charging Stations
- **Cars**
  - 49,000 HEV
  - 24,600 PHEV
  - 123,000 BEV
- **Tricycle**
  - 71,000 BEV
- **Motorcycle**
  - 311,800 BEV
- **Bus**
  - 1,200 BEV

**LONG TERM (2035-2040)**
- **EV and EVCS Targets**
  - 852,100 Electric Vehicles
  - 20,400 EV Charging Stations
- **Cars**
  - 36,600 HEV
  - 36,600 PHEV
  - 219,400 BEV
- **Tricycle**
  - 103,400 BEV
- **Motorcycle**
  - 464,400 BEV
- **Bus**
  - 1,800 BEV
Currently Available EV Units in the Philippine Market
Currently Available EV Units in the Philippine Market (2023 New Models)

Lotus

Hongqi E-HS9

BYD Atto 3

Foton Tornado

Eclimo E-trike

Eclimo E-bike

Hatasu E-trike

Jetour Ice

Tojo FLEV

Range Rover Sport PHEV
Overview of the Philippine EV Market

New Registrations

<table>
<thead>
<tr>
<th>MV Type</th>
<th>Electric (2022)</th>
<th>Hybrid (2022)</th>
<th>TOTAL (2022)</th>
<th>Electric (Q1-Q2 2023)</th>
<th>Hybrid (Q1-Q2 2023)</th>
<th>TOTAL (Q1-Q2 2023)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CARS</td>
<td>87</td>
<td>5</td>
<td>92</td>
<td>79</td>
<td>423</td>
<td>502</td>
</tr>
<tr>
<td>SUV</td>
<td>91</td>
<td>161</td>
<td>252</td>
<td>128</td>
<td>949</td>
<td>1,077</td>
</tr>
<tr>
<td>UV</td>
<td>82</td>
<td>0</td>
<td>82</td>
<td>99</td>
<td>667</td>
<td>766</td>
</tr>
<tr>
<td>TRUCK</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>BUS</td>
<td>44</td>
<td>0</td>
<td>44</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>MOTORCYCLE</td>
<td>602</td>
<td>0</td>
<td>602</td>
<td>206</td>
<td>2</td>
<td>208</td>
</tr>
<tr>
<td>TOTAL</td>
<td>906</td>
<td>166</td>
<td>1,072</td>
<td>516</td>
<td>2,041</td>
<td>2,557</td>
</tr>
</tbody>
</table>

Source: Department of Energy
Ferdi Raquelsantos
Chairman Emeritus
ELECTRIC VEHICLE ASSOCIATION OF THE PHILIPPINES (EVAP)

17 November 2023
Data Platform Construction and Application of Electric Vehicles

Sponsored by: National Big Data Alliance of New Energy Vehicles

Manila, Philippines

November 17, 2023
Wang Shuo

Assistant Professor
Beijing Institute of Technology
Data Platform Construction and Application of Electric Vehicles

Sponsored by: National Big Data Alliance of New Energy Vehicles

Manila, Philippines
November 17, 2023
Data Platform Construction and Application of Electric Vehicles

Sponsored by: National Big Data Alliance of New Energy Vehicles

Manila, Philippines
November 17, 2023