

# **APEC Energy Working Group**

## **A short Introduction**

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# Contents

- 1. EWG and Key Activities**
- 2. Transport-related Activity**
- 3. Transport-related Energy Outlook**

# APEC Energy Working Group (EWG)



Launched in 1990, the EWG helps further APEC goals to facilitate energy-related-trade and investment and seeks to maximize the energy sector's contribution to the region's economic and social well-being, while mitigating the environmental effects of energy supply and use.

The EWG meets formally twice a year to discuss developments and progress on energy policy issues; 54 meetings to date.

# EWG and sub-fora

- Expert Group on Clean Fossil Energy (EGCFE)
- Expert Group on Energy Efficiency & Conservation (EGEEC)
- Expert Group on Energy Data & Analysis (EGEDA)
- Expert Group on New & Renewable Energy Technologies (EGNRET)
  - Low-Carbon Model Town Task Force (LCMTTF) (2010- )
  - Energy Resiliency Task Force (ERTF) (2015- )
  - Biofuels Task Force (BTF) (2005-2011)
  - Energy Trade and Investment Task Force (ETITF) (2009-2013)
- **Supported by two research bodies**
  - Asia Pacific Energy Research Centre (APEREC) (1996- )
  - Asia Pacific Sustainable Energy Center (APSEC) (2015- )

## Key Policy Goals and Initiatives/Activities

- Energy Intensity Reduction 45 % by 2035
- Renewable Energy Doubling by 2030
- Reform of Inefficient Fossil Fuel Subsidy
- Energy Security Initiative
  - Oil & Gas Security Initiative
  - Energy Resilience and Modernisation of Infrastructure
- Energy Smart Communities Initiative
  - Low Carbon Model Town
  - Knowledge Sharing Platform
- Green Energy Finance Initiative, LNG Trade Facilitation Initiative,...

## **42 projects on going in 2018**

- Reducing Energy Intensity Goal: 8 projects
- Renewable Energy Doubling Goal: 9 projects
- Community-base low carbon development: 4 projects
- Improving energy resiliency: 2 projects
- Improving oil & gas security: 2 project
- Clean use of fossil fuels: 5 projects
- Promoting energy trade & investment: 5 project
- Planning for longer-term energy future & Others: 7 projects

## **Peer Reviews**

- Peer Review on Energy Efficiency (PREE)
- Peer Review on Low Carbon Energy (PRLCE)
- Peer Review on Fossil Fuel Subsidy Reform
- Peer Review on Efficient Power (PREP)

## 2. Transport-related Activity

### The Electric Vehicle and Hydrogen Technology Policy Workshop

- 21 November 2017 (part of EWG54 meeting)
- Wellington, New Zealand
- 170 participants (EWG Representatives + non-members)

### ADENDA

- Electric Vehicle Trends and Potential Impact on Regional and National Energy systems
- Electric Vehicle Policy Best Practices: Case studies from APEC members (Australia, PR China, Japan, New Zealand, US)
- International Trends in Hydrogen
- New Zealand Developments in Hydrogen

## Recent Transport-related activities

### Electromobility: Infrastructure and Workforce Development

- 1 & 2 February 2018
- Santiago, Chile

### ADENDA

- Overview of Electromobility, Public Policy and APEC Initiatives
- Human Capital and Gender
- Technology and Infrastructure
- Closed session – APEC Representatives
  - Experiences: challenges and opportunities associated with the deployment of electric vehicles
  - Discussion: Best practices and conclusions



## **EWG 13 2016A: Supporting the Development and Implementation of Low-Emission Development Strategies (LEDs) in Transport Sector**

**Workshop 1:** *Strengthening energy efficiency policies in the transport sector (Sept 2017, Lima)*

**Core topics:**

1. Linking energy efficiency policies in transport and ministerial-level commitments
2. Cross-sectoral articulation for the implementation of energy efficiency policies in transport
3. Measurement, Reporting and Verification (MRV) systems
4. Electro-mobility in the LAC region

**Potential future work:** Engagement through the LAC Electric Mobility Community of Practice (CoP), identification of barriers to adopting EV technology and strengthening fuel economy standards in the region.

**Workshop 2:** *Improving the efficiency of urban transport projects (Dec 2017, Ho Chi Minh City)*

**Core topics:**

1. Bus sector reforms and service-based contracting
2. Business models for buses and the electrification of the public transport fleet

**Potential future work:** Working with utilities for increased electric fleet deployment, partnering via Asia's Electric Mobility CoP, info exchange on adoption of electric bus fleets, lessons learned from Singapore and Chile

**Workshop 3:** *Moving towards sustainable, energy efficient urban mobility in emerging cities (May 2018, Singapore)*

**Core topics:** Establishing a *Community of Practice* to learn and disseminate knowledge on policy reform, finance tools and infrastructure to facilitate implementation of electric mobility within the region

1. Institutional frameworks towards sustainable, energy efficient urban transport
2. Sustainable urban land use and mobility planning
3. Financing mechanisms and funding for sustainable, energy efficient urban mobility
4. Learning from regional case studies and peer-to-peer knowledge exchange

# Low Emissions Development Strategies: Supporting the transition to energy efficient, electric transport systems (NEW 2018 EWG Proposal)

## Project Summary

- The infrastructure required for electric public vehicle deployment in APEC island communities can be a model system exemplifying the use of local renewable energy sources and an optimized local economy.
- This project proposes an *integrated* transport and energy approach to generate a roadmap for APEC economies addressing barriers and developing solutions for public transport systems transition to electric vehicles (EVs).
- The project will facilitate dialogue between local and regional stakeholders and seek to accelerate deployment by establishing a Community of Practice (CoP) for knowledge sharing, long-term growth and regional collaboration. A workshop will be held to enhance capacity building and deliver an *EV-Integrated Energy Solutions Roadmap* with identified pathways for future finance, policy and technical advances.
- This project builds upon findings from EWG 13 2016A and complements related work of the Automotive Dialogue and EWG 10 2017A.

# Implementing the APEC Electric Vehicles Roadmap Outcomes Work Plan (NEW 2018 Proposal from AD for EWG review)

## Project Summary

- In 2015, APEC endorsed the APEC Roadmap for Electric Vehicles, which aimed to facilitate the adoption and implementation of international standards pertaining to electric vehicles.
- The EV Roadmap was held as a series of workshops in 2016 and 2017. The workshops covered the background on EV operations in the APEC region and discussed standards relevant to their use in the APEC region.
- This proposed workshop will continue to address issues identified under the Roadmap including emergency response, recycling, interoperability, cybersecurity, personal data, and 2- and 3-wheeled vehicle related standards, but also look at EVs, connected vehicles, and future road mobility with a focus on addressing pertinent issues such as grid lock reduction to help lower emissions and reduce energy usage by 45% by 2035 in the APEC region.

# 3. Transport-related Energy Outlook

**APEC 7<sup>th</sup> Outlook preliminary results**

- Business-as-usual (BAU) scenario:

*The BAU scenario reflects current policies and trends within the APEC energy sector. In turn, it largely projects past trends into the future.*

- APEC Target (TGT) scenario:

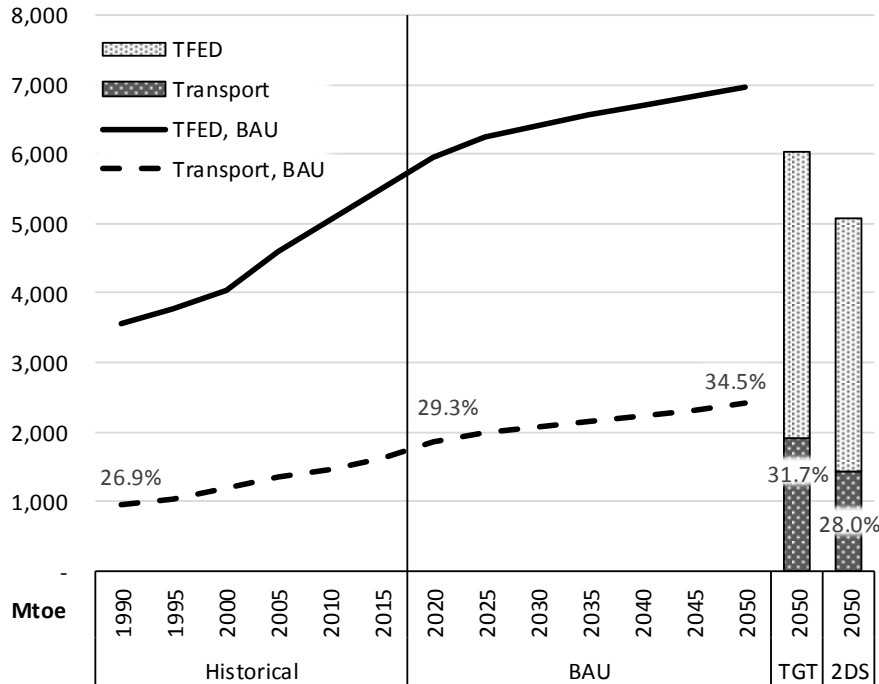
*The TGT scenario is driven by APEC's aspirational goals of reducing energy intensity while increasing the share of renewables.*

- 2 Degree Scenario (2DS):

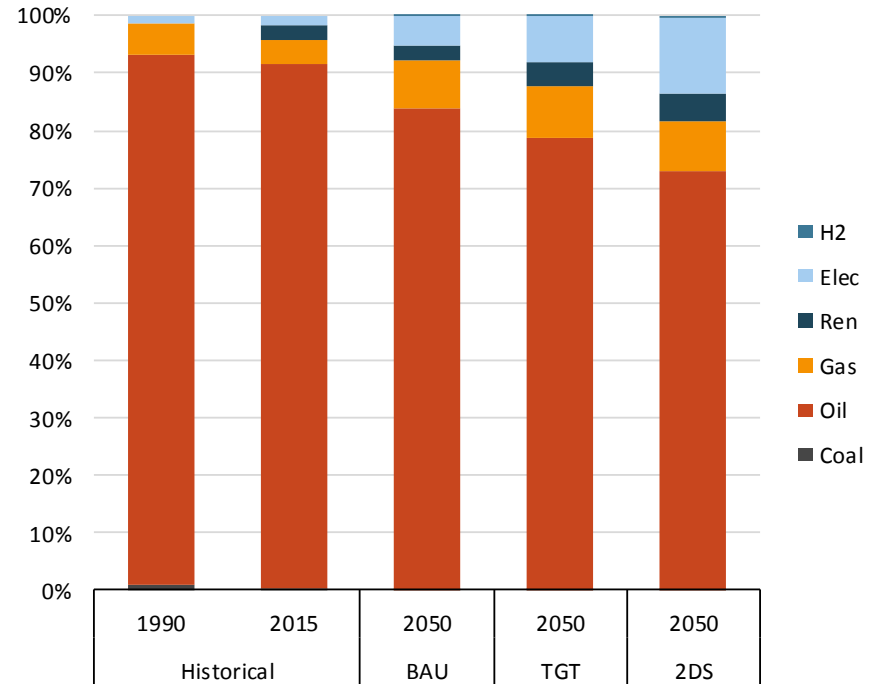
*The 2DS follows the carbon emissions reduction pathways included in the International Energy Agency's "Energy Technology Perspectives" publication.*

# Transportation: an important demand sector, dominated by oil

## Transport demand remains important



## Oil products remain the key transportation fuel



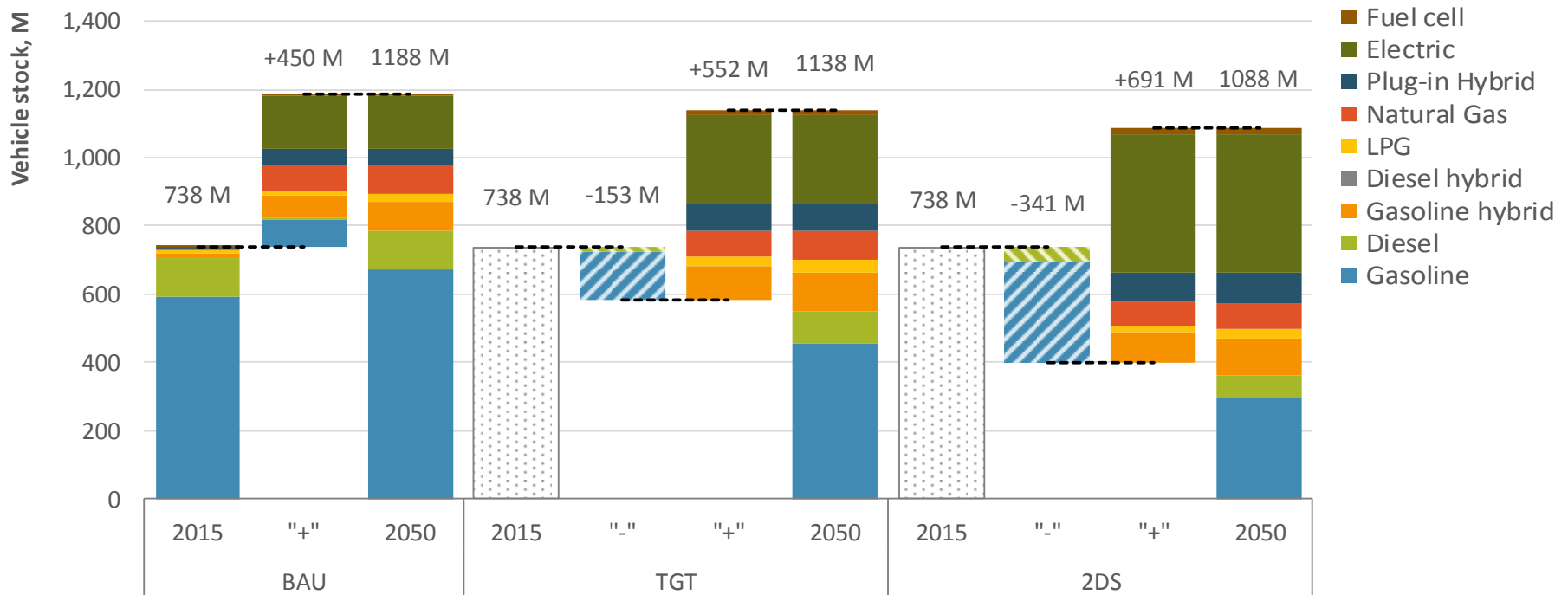
- Since 1990 the share of transport increased from 27% to 29% in 2015;
- By 2050, transport is projected to account for 28%-34.5% in all scenarios.

Source: IEA 2017, APERC 2018

- In 2050, electricity reaches 5%-13% of transportation demand;
- Over 85% of electricity demand for transport is projected to come from China and US

# Bright future for electric vehicles, uncertain for gasoline

## Vehicle Stock (except 2-wheelers) by powertrain technology, million vehicles

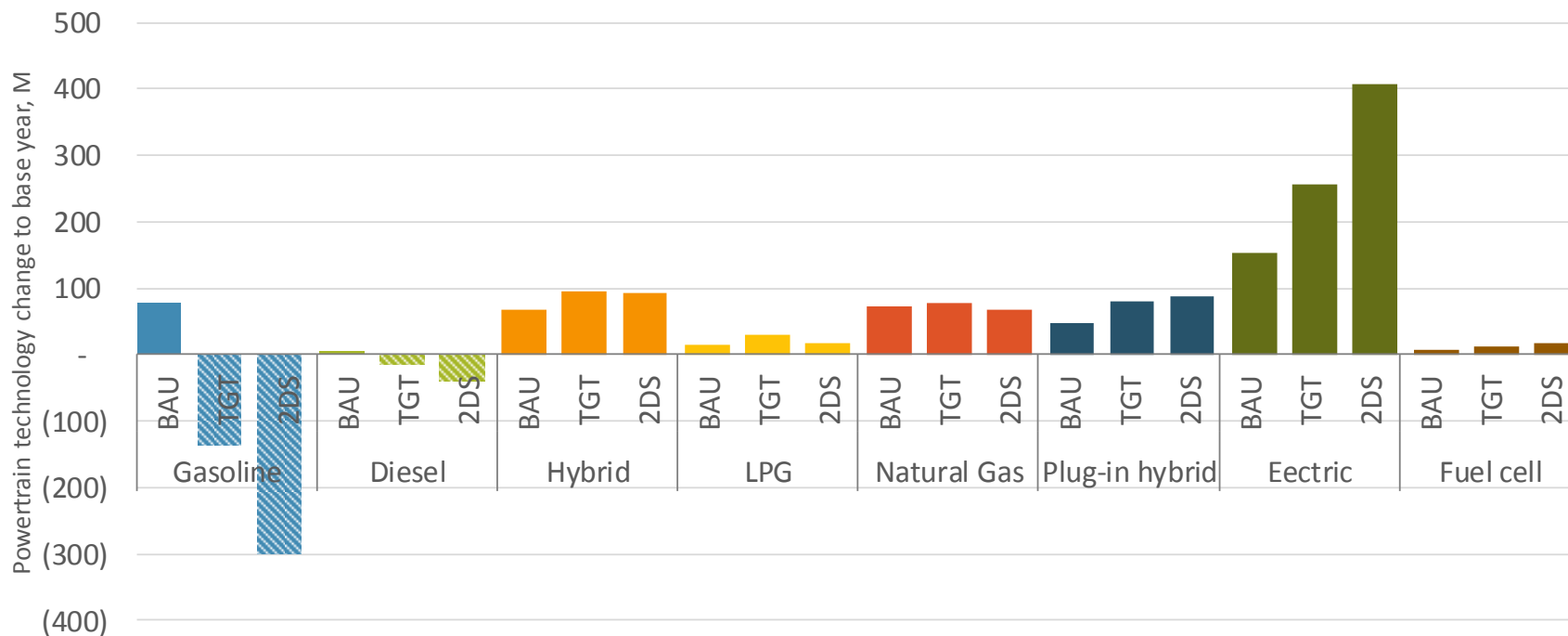


**Gasoline vehicle stock increases in the BAU, but significantly decreases in both the TGT and 2DS scenarios.**

Source: APERC analysis

# PHEVs and EVs provide largest additions

## Drivetrain technology stock change (2015-2050), millions



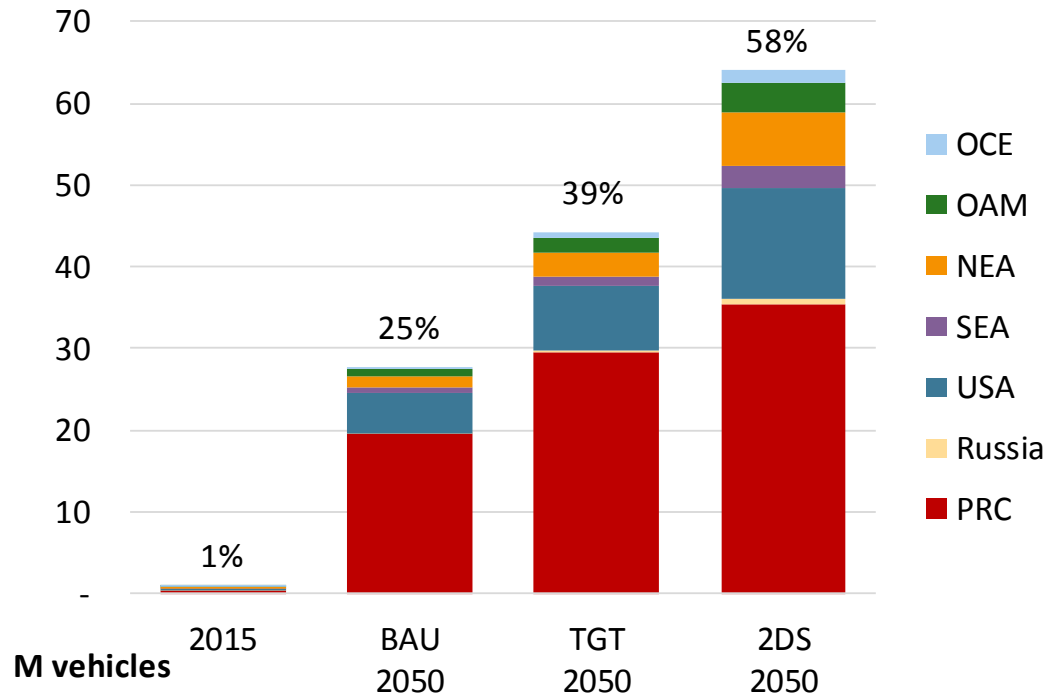
***PHEVs and BEVs have largest number of additions in all scenarios, reaching 17%-46% of total stock in 2050.***

Source: APERC analysis



# In 2050, APEC's Vehicles are More Diverse

## APEC's Regional plug-in hybrids, battery and fuel-cell EVs markets



- **EVs represent 25%-58% of vehicle market (excl. 2-wheelers) in 2050.**
- **China accounts for over 50% of this market in all scenarios**

Source: APERC analysis

Note: percentages indicate the share of total road vehicle market in that year for the scenario;

**PRC** = People's Republic of China, **USA** = United States of America, **NEA** = **Other north-east Asia** includes Hong Kong, China; Japan and Korea; **OCE** = **Oceania** includes Australia; New Zealand; Papua New Guinea; **SEA** = **South-East Asia** includes Brunei Darussalam; Indonesia; Malaysia; The Philippines; Thailand and Viet Nam; **OAM** = **Other Americas** include Canada; Chile; Mexico and Peru.

# APERC is estimating the effect of large EV fleets on energy systems

- APERC is quantifying the impact of scenarios on refueling infrastructure
  - *Preliminary analysis shows that high penetrations of BEVs and PHEVs could bring substantial refueling/charging infrastructure CAPEX savings in APEC*
- APERC is analyzing the effects of EV charging on the electricity system
  - *Internal work is underway to quantify the impacts of EV charging on electricity daily load fluctuations,*
  - *Key purpose is to understand the value of demand response to a time-dependent EV charging price.*
- APERC and IEEJ are launching a joint project on challenges and barriers of BEV and FCEV deployment, which would quantify the:
  - *CO<sub>2</sub> reduction for the whole energy chain,*
  - *impact of demand response and vehicle-to-grid (V2G),*
  - *impacts on the electricity and fuels supply system.*

Note: **IEEJ** is the Institute of Energy Economics, Japan

