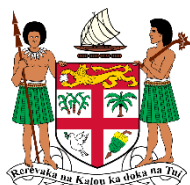


Fiji: An Analysis of the Power Sector Infrastructure Requirements on Electric Vehicles for Viti Levu

Final Report
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Abbreviations and Acronyms

AC	Alternating Current
AS:NZ	Australia New Zealand Technical Standards
BAU	Business as Usual
BEB	Battery-Electric-Bus
CCS	Combined Charging System Connector Type
DC	Direct Current
DCFC	Direct Current Fast Electric Chargers
EFL	Energy Fiji Ltd
EV	Electric Vehicles (Referring to Battery Electric Vehicles and not Plug-in Hybrid Electric Vehicles)
FJD	Fijian Dollars
GWh	Gigawatt-hours – Major unit of electricity typically used for annual magnitude scale
HTS	Household Travel Survey (2015) – Fiji
ICE	Internal Combustion Engine (Generally Petrol or Diesel powered)
JICA	Japanese International Cooperation Agency
Km	Kilometres
kV	Kilovolt – Unit of grid voltage
kW	Kilowatts – unit of power transfer, generally smallest magnitude used in this study
kWh	Kilowatt hour, unit of energy
LDV	Leyland DAF Vans
LEDS	Fiji Low Emissions Development Strategy 2018 – 2050
LTA	Land Transport Authority of Fiji
MoIT	Fiji Ministry of Infrastructure and Transport
MVA	Mega-Volt-Amperes (Primary unit of power transfer used for transformers and generators)
MW	Megawatts – Major unit of power transfer used in this study
NDC Roadmap	Fiji Nationally Determined Contribution Implementation Roadmap 2017-2030
NZ	New Zealand
PHEVs	Plug-in Hybrid Electric Vehicles (Not a focus on this analysis)
SM	Smart Meter
SoC	Battery State-of-Charge
TOU	Time-of-use (Electricity Tariffs varying throughout a daily and weekly cycle to encourage demand management)
USD	United States Dollars
USP	The University of the South Pacific
V2G	Vehicle-to-grid technology, a novel technology to use vehicle batteries as grid storage
VAC	Volts alternating current

Executive Summary

Introduction

This study develops a localized analysis of the effects of Electric Vehicle (EV) adoption on the electricity grid on Viti Levu Island in Fiji. It generates costed recommendations for development of infrastructure and other related changes to facilitate the levels of EV adoption defined in the Fiji Low Emissions Development Strategy 2018-2050 (LEDS) scenarios. The LEDS projects EV uptake in four scenarios of varying intensity as follows:

1. Scenario 1 - Unconditional Business as Usual - EVs 20% of new cars in 2030, 20% of light fleet by 2050
2. Scenario 2 - Conditional Business as Usual - EVs 70% of new cars in 2030, 100% of light fleet by 2050
3. Scenario 3 - High Ambition - EVs 80% of new cars in 2030, 100% of light fleet by 2050
4. Scenario 4 - Very High Ambition - EVs 100% of new cars in 2030, 100% of light fleet by 2050

Utilizing a Fijian government study on household transport patterns, academic studies on the Fiji grid/renewable energy potential and data sources such as the Fiji Census 2017, the Land Transport Authority audit 2015 and the household expenditure survey, two distinct areas of analysis were undertaken:

1. Transport Patterns Baseline and EV fleet allocation
2. Electrical Infrastructure uptake effects, required upgrades and costing

Transport Patterns

Vehicle categories as established in the LEDS were used to sort electric vehicles primarily by engine/charger requirements to establish different user profiles. These categories consisted of Light Cars, Buses, Taxis and Trucks (Light/Heavy). Average kilometres travelled for each category by province, as well as baseline fleet numbers were calculated, in order to be converted to hourly kWh energy requirement in the later electrical infrastructure analysis.

Light Vehicles

The 2015 Viti Levu light vehicle fleet of approximately 52,000 had a higher proportion of vehicles present in Ba (43% of the fleet), as well as clustered around the Suva area (22% in Naitasiri and 19% in Rewa). The provinces within commuting distance of Suva have high daily distances travelled (Serua – 50kms/day, Naitasiri 60kms/day and Tailevu 56km/day). The Viti Levu Electric Light Vehicle fleet is projected to increase to approximately 170,000 by 2050 under Scenario 4.

预览已结束，完整报告链接和二维码如下：

https://www.yunbaogao.cn/report/index/report?reportId=5_635

