

BSc(Hons) IN INFORMATION SYSTEMS WITH BUSINESS MANAGEMENT

Final Project Report

Green Pay

Commercialising vehicle-to-grid (V2G) technology to reduce the
adverse effects of rising electricity demand in Sri Lanka

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Abstract

Sri Lanka is a developing nation that is highly dependent on imported fossil fuels to fulfil its energy needs. Due to this high reliance, the country is accumulating colossal losses of foreign exchange when importing these fuels. The state-owned utility provider Ceylon Electricity Board (CEB), who holds the sole authority to distribute electricity within the country, uses these fuels for the electricity generation process. However, due to this high reliance on expensive fuels and electricity buy-outs, the CEB have faced many issues in recent years.

Although there are many issues currently faced by the electro-power industry in Sri Lanka, the author has identified three main problems namely the high electricity production cost, incapability of utilizing renewable power sources to fulfil the peak demand and unstable electricity provision to the consumers. The objective of the project was to develop a business framework and formulate an information system (IT) solution that will aid in reducing the adverse effects of rising peak electricity demand in Sri Lanka through integrating and commercialising the vehicle-to-grid technology.

An overall understanding of the project was obtained through a comprehensive literature review. Necessary requirements were gathered by Qualitative (interviews, focus group discussions and observations) and Quantitative (questionnaire to electric-vehicle users) data collection methods. Functional and non-functional requirements were identified to develop the IT solution.

The main focus of the proposed solution ‘Green Pay’ is targeted to utilize renewable power sources to fulfil the peak electricity demand. However, the author believes that it will indirectly contribute to reduce the electricity production cost and to ensure a stable provision of electricity to the consumer. With the completion of the prototype, an evaluation was carried out in three levels, user evaluation, expert evaluation and self-evaluation. Finally the conclusions recommendations were discussed.

Keywords- electricity power industry, electric vehicles, solar photo voltaic, vehicle-to-grid technology, grid stability, peak shaving and valley filling, revenue generation.