**[*Electricity tariff cost reflectivity and time of use tariff in java-bali system*]**

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## Overview

Electricity tariff in Indonesia, including in Java-Bali region, is set using volumetric charge or price per kWh electricity that are used by the customers. Even though there are several tariff classification for different groups of customers (residential, commercial, industry, social), most of the tariffs are charged with flat tariff scheme with only medium voltage of commercial and industry customers that are charged with dual time tariff which have different electricity price for peak and off peak time. On the other hand, cost of providing electricity in Java-Bali which mainly contributed by the operating cost of generators, is changing over 24-hour period due to changing mix of generators that supply the Java-Bali system over that period. This paper evaluate how currently applied electricity tariff reflects the cost of generating electricity in Java-Bali region and evaluate the time of use tariff scheme that are more appropriate to be implemented.

## Methods

To evaluate the cost reflectivity of electricity tariff in Indonesia, three parameters are being analyzed: load profile of the system and each customer segment, cost component of producing electricity, and tariff profile for each customer segment. Load profile for the Java-Bali system and each customer segment was obtained from the automatic meter reading data. These are used to determine how each customer segment contribute to system peak load. Cost structure of producing electricity is used to evaluate the the portion of fix and variable component of electricity production cost in Java-Bali system. The variable cost is then obtained using the generator dispatch and generator operational cost data. Both load profile and cost structure are then evaluated against the tariff incurred to each of customer segment in Java-Bali system. Cost reflectivity is then evaluated and simple more appropriate time of use tariff is then proposed.

## Results

From load profile evaluation we noticed that Java-Bali system has two peak load occurrence, daytime peak and evening peak. Comparing this with per-segment customer load profile, we can see that the daytime peak is mainly caused by commercial and industrial customer while evening peak load is mainly caused by residential load. The profile of electricity production cost also conform with the occurrence of peak load, although not significantly different between the cost of production at peak load time and off-peak load time. Comparing electricity tariff and cost of electricity production, both simple flat-tariff scheme and peak/off-peak tariff scheme shows poor cost reflectivity with different time for overprice and under-price. The proposed simple time of use tariff can provide better cost reflectivity compared to existing electricity tariff that applied in Java-Bali system.

## Conclusions

From this study we can conclude that current electricity tariffs that are implemented in the Java-Bali region, both simple flat tariff scheme and peak/off-peak time tariff, poorly reflects the cost of electricity production. Residential customer which contribute to the increase of electricity production cost at evening peak time need to be considered to apply time of use tariff scheme, rather than currently applied simple flat tariff. Implementing the proposed simple time of use tariff can provide a more cost reflectivity and thus give customer incentive to shift their electricity usage that can drive down electricity production cost at peak time period. Further study on tariff with different scenario of load consumption of customers and behind the meter generation is still need to be conducted to provide a more cost reflective, fair and just tariff for all the customers.

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