DOMINATE APPROACH OF MW – MILE METHOD FOR COST

ALLOCATION OF DEREGULATED POWER SYSTEM

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ABSTRACT

This proposal introduces the methodology to determine the transmission cost or pricing among users in power systems based on topological analysis of power flows in transmission. The cost allocation is concerned by treating transmission company (*transco*) as a separate business of transporting energy from any generator (*genco*) to any area supplier (*discos*). The cost allocations are calculated based on the MW-mile dominant approach. The methodology proposed is capable to determine the network usage by any load and generator by accumulating all the costs of each load/generator that obtained from every line flow. The dominant approach comprises of two types of cost allocations namely extended dominant and extended absolute methods. The load flows are an important part of power system used to estimate the costs of transmission. The cost allocation is important and beneficial to the agents in making investment decision in relation to the power transfer. The proposed method also is able to analyze the cost allocation of power systems both normal operating conditions and also with various powers transfer condition. Comparative study has been carried out on the IEEE 9 Reliable Test System (RTS) of 9 bus and 24 bus to verify the effectiveness of the methods in allocating the cost of each bus.

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CHAPTER 1

INTRODUCTION

1.1   Introduction.

In recent years, electric power industry is undergoing many fundamentals changes due to the process of industrial reform. Several countries have already implemented or are moving toward a free market based electric supply industry. In the deregulated of the power industry is in search of robust market structures that will enable deregulation reach its goal of a more efficient system while keeping service reliability levels high. The goal of deregulation is to encourage lower electricity rates by structuring an orderly transition to competitive bulk power markets. However, experience has also shown that a measured transition from regulated to competitive markets is essential. The efficient transmission lines are very important to modern power systems because power generation is usually done at large electric generating stations. Transmission system also important in the deregulated markets, as facilitator of generator competition, allowing generators to allocate their production consumer centers and allowing consumer to benefit from that competitive environment.

With this changed toward more competition, customers would have choices to purchase energy and services from different suppliers. Therefore, for this reason, transmission cost allocation is an important issue to be considered. Cost allocations are a method to determine the cost services provided to users of that service. It does not determine the price of the service, but rather determines what the service costs to provide. It is important to determine the cost allocation of the services provided by the transmission provider, in order to determine a justifiable fee/tax/charge for that service. There is several transmission cost allocation methodologies, which have been used such as postage stamp and contract path [1,3]. Since these methods are based on averaging approach, they are not efficient to reflect the true signals according to economic aspect. Therefore, methods based on the proportion of individual impact on the transmission system have been proposed such as the MW-mile methodology [2].

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