
COST OF SERVICE PROCEDURES

for Public Power Systems

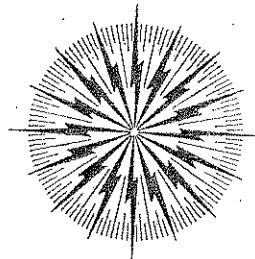
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A Cost Allocation Manual

featuring
average annual cost-of-service
techniques and an introduction to
marginal costing and the impact
of the National Energy Act

by

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Date: 16 NOVEMBRE 2005
Pièces n°: RÉGIE-1

1. Demand only.
2. Energy only.
3. Plant factor.
4. Classification of waterway, dams and reservoirs as energy, remainder as demand.
5. Fixed-variable.
6. Cost causation.

Of the concepts listed above, classification of production plant to all demand or all energy does not frequently occur in present day cost of service application. It has been said that the fixed-variable classification concept is the most widely used where all fixed costs are classified as demand related and all variable costs as energy related. This method has a disadvantage for hydroelectric systems, as variable costs are virtually nil for hydroelectric plants.

A newer concept called "cost causation" has recently been developed in which the cost of production is classified to demand and energy on the basis of causes underlying the construction and operation of production plants on the power system. For example, the facilities constructed to meet peak demand requirements of the power system would be classified to demand, those which meet energy requirements would be classified to energy and those which provide both capacity and energy would be distributed to the two functions.

Classification of Transmission Plant

Transmission plant represents facilities designed to move bulk power supply in large amounts to a series of substation facilities where the power is broken down into smaller amounts for distribution to ultimate users. Various sizes of transmission plant exist in power systems (69 KV, 115 KV, 230 KV, etc.). Transmission facilities are sized on the basis of capacity required to serve maximum system demand. Therefore, transmission plant has traditionally been classified as all demand related.

In recent years, it has been recognized that a base portion of transmission plant serves the average demand requirements of customers. On this basis, transmission plant can be assigned to both demand and energy in accordance with the classification of production plant to demand and energy.

Transmission plant investment in Exhibit IX-1 of \$4,325,000 has been classified all demand related. In the case example it is assigned to the system input level, as the facilities provide bulk power used by all classes of service.

ELECTRIC UTILITY COST ALLOCATION MANUAL

January, 1992



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1992

II. METHODS OF ALLOCATING TRANSMISSION PLANT

A utility keeps track of its transmission plant costs in a manner suitable for ratemaking purposes in order to charge customers a cost-based rate for providing them with transmission services. These costs may be rolled-in or subfunctionalized to effect the appropriate assignment of costs based on the contribution of each customer group to the applicable plant cost category.

Costs are assigned using one of two general principles: (1) allocation; or (2) direct assignment. Allocation is an indirect method of cost assignment under which customer cost responsibilities are usually measured in terms of usages, e.g., KW, KWH or KVA. The premise of cost allocation is that the cost of providing transmission service to a customer is proportional to the demand that customer imposes on the system or its components. There are several methods discussed below to calculate these relationships. Direct assignment, as its name implies, rests on the premise that, insofar as facilities are used exclusively by a customer, the costs of those facilities can be imposed directly on that customer.

After transmission costs are separated into appropriate demand or energy allocation categories, it is necessary to then select a method of assigning cost allocation responsibility to various customers. In general, customers are allocated a portion of the fully distributed (embedded) cost of the transmission system on a basis similar to the way production costs are allocated. The reason for this is that the transmission system is essentially considered to be an extension of the production system, where the planning and operation of one is inexorably linked to the other. Thus, the major factors that drive production costs, it is argued, tend to drive transmission costs as well.

On the other hand, the transmission system is designed to reliably and economically deliver bulk power supply throughout the system, even under adverse operating conditions. In transmission contingency planning, the keystone to reliability is redundancy which translates, in effect, to capacity being built in excess of that which is minimally required to deliver load. The redundant character of the transmission system then gives rise to the theory that its capacity is separable into two functional components: (1) an energy-delivery system component, allocable on an energy basis; and (2) a reliability component, allocable on the basis of some demand or capacity measurement. This particular approach, however, is not in common usage.

Customer transmission cost responsibility in the cost of service is expressed in terms of allocation ratios. These ratios are usually developed on the basis of customer demands to the sum of all demands deemed to be imposed on the total system or subsystem. Thus, the demand of the customer is included in both the numerator and denominator of the allocation factor and the customer is accordingly allocated a portion of the total costs. Since firm power loads are the highest order of electric service, all fixed costs are deemed incurred to provide such service. Conversely, non-firm service