

Thapanee Promnarai 2011: Optimal Selection of Maintenance Activities for PEA Electric Power Distribution Systems. Master of Engineering (Electrical Engineering), Major Field: Electrical Engineering, Department of Electrical Engineering. Thesis Advisor: Assistant Professor Dulpichet Rerkpreedapong, Ph.D. 85 pages.

This thesis proposes an optimal selection of preventive and corrective maintenance activities for PEA electric power distribution systems to improve reliability and decrease customer outage costs of the 12 PEA regions by considering the relationship between budgets and total customer-minute of interruptions, and also budgets and the customer outage costs. In this research, the list of maintenance activities to be optimally selected is resulted by the reliability centered maintenance (RCM) method. Next, the reliability improvement opportunity (RIO) and a decrease in customer outage costs are assessed for each maintenance activity. The minimax algorithm is then used to find the optimal selection of maintenance activities and budgets allocated to all regions in order to maximize the reliability or minimize the outage costs as specified by an objective function subject to a given budget.

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