More TECHNICAL BRIEFS

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tion automatically in response to fringe changes should be investigated if the fringe load variations limit the maximum scheduled power transfer on the ties to neighboring areas, or if the rate of change of generation in response to sustained load changes approaches the rate of change of the fringe load variations. If it is necessary to control automatically in response to fringe load changes, it is highly desirable from an operating standpoint that the percentage of fringe action assigned to the regulating stations and units be adjustable independently of the percentage of the sustained control action assigned to these stations and units. *AIEE Paper No. 53-147.*

Electric Distribution and Control for Lighting Systems. *By W H Kahler, Westinghouse Electric Corp and R N Bell, E I du Pont de Nemours & Co.*

Higher illumination levels and new lighting sources make it necessary to re-examine possible methods of power distribution and control for lighting loads. As a result of the higher lighting density and versatile lighting sources, the designer must now exercise a considerable amount of engineering judgment in planning a distribution system. New design techniques make it possible to provide maximum convenience and reliability at minimum cost and with a minimum use of critical materials. Some of the requirements of the different lighting sources and modern trends in power distribution and control for lighting loads are discussed and analyzed.

Conclusions are reached that the investment in the distribution system for supplying lighting loads can be considerably reduced by installing a combined power and lighting arrangement in which the lights are supplied directly from the 460-v supply. The reluctance of many individuals to go to voltages higher than 120 for lighting, plus the failure of most distribution engineers to recognize the inherently lower cost and copper savings in this type of system, is apparently responsible for the 460-v supply to lighting load not being more widely used.

The line to neutral connection of the lights on 460-v systems appears to be the most practical method at the present time. Connecting the lights line to line on either 460-v delta or a 460-v grounded wye system is feasible and offers the advantage of slightly lower cost branch circuits from the panel board. However, line-to-line connections of lights make it necessary to use either 2- or 3-pole breakers in the lighting

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