

that no Georgia energy can enter the FPL lines and that no FPL energy can flow as far north as Georgia.

As ably explained by the examiner, the power flow studies prepared by staff all rest on the concept that there is a commingling of energy from different sources at a bus with the result that the energy which flows away from such bus is so fully commingled as to consist of energy which has entered such bus both from interstate and intrastate sources. Staff recognizes that energy flows to and from a bus as three-phase alternating current, and staff treats a bus as a point, or a tank, or a reservoir where all the energy supplied to the bus is commingled. The studies prepared by FPL, on the other hand, treat the bus as having physical dimensions, and replace each three-phase alternating current bus structure by a single conductor bus. FPL uses the point-to-point tracing principles of direct current circuits with static power sources and with steady state power flows. This steady state method treats the power flow through the bus as constant in value and direction, on the basis that balanced three-phase power under steady state conditions is constant in value and direction from instant to instant. Although FPL's method may lend itself to a theoretical showing of energy flow which may demonstrate that energy will flow from a certain source to a certain load,⁴ this method does not fully or accurately reflect the actual operation of a bus, and it does not show the physical reality of a three-phase electric power system as satisfactorily as does staff's concept. Certainly, FPL's method is of no value in demonstrating a negative, namely, that energy will not flow through a bus to a certain specific transmission line. Yet, FPL's reliance on this method in this proceeding seeks to prove just such a negative.

The examiner correctly found that staff's commingled method reflected the physical reality of the bus better than did FPL's steady state or systems studies method. The essential soundness of the commingled method has long been recognized and approved. See *Pennsylvania Water & Power Co. v. Federal Power Commission*, 343 U.S. 414 (1952); *Wisconsin-Michigan Power Co. v. Federal Power Commission*, 197 F. 2d 472 (CA7, 1952), *cert. denied*, 345 U.S. 934 (1953). Our adoption of the examiner's holding on this point certainly is consistent with our repeated approval of the commingled method in recent jurisdictional proceedings where we have found a need for precise methods in analyzing power flows on highly complex systems involving a multiplicity of interconnections. See our opinions in *Indiana & Michigan and Arkansas*, cited at page 6, *supra*.⁵

Consideration has been given to FPL's assertion that because of the unique peninsular nature of its service area it planned its system to be self-sufficient, and that it possesses sufficient generating capacity of its own to meet its loads without any dependence upon the spinning reserves or emergency power of other Florida or out-of-state systems. We do not find this assertion persuasive. The fact that FPL could operate as a self-sufficient utility is not controlling because FPL simply does not operate its system in that manner. The record in this proceeding makes it plain that FPL receives substantial benefits from its participation in the Florida Pool in the coordination of spinning reserves, the arrangement of plant maintenance schedules, and the assurance of reliability of frequency control and from both the Florida Pool and ISG in the form of automatic assistance in the case of emergencies. As we stated in our opinion in *Indiana & Michigan Electric Company*, *supra*, it is the system's actual mode of operation, not how the system could operate that is important. Moreover, the particular operating pattern actually used by FPL is consistent with sound operating practices and with the principles enunciated in the Commission's National Power Survey issued in December 1964 in which all segments of the electric power industry participated fully and cooperatively.

We have also considered FPL's contention that it receives virtually no benefits from its membership in ISG with respect to emergency assistance because of its assertion that the Florida peninsula would be electrically isolated from the states to the north in the event of an outage of approximately 100 mw or greater. This contention minimizes the fact that ISG aid to FPL is available as emer-

⁴ The steady state method was used to establish the fact of such a flow in *City of Colton, California v. Southern California Edison Company*, Opinion No. 346, 26 FPC 223, 234 (1961), *affirmed sub nom Federal Power Commission v. Southern California Edison Company*, 376 U.S. 205 (1964), reversing 310 F. 2d 784 (CA9). FPL's reliance on staff's use of the steady state method in *Colton*, however, is misplaced. As the Commission pointed out in its opinion in that case, the result reached by staff's technique would have been the same had staff there treated the bus as a point under the commingling concept.

⁵ In view of the above showing of substantial flows of interstate energy to and from FPL's system, it is clear that FPL owns facilities which do not come within the purview of the exemptions to the Commission's jurisdiction set forth in Section 201(b) of the Act.