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Blackout of Interconnected Electric Power Companies:
Recovery and Prevention Measures

The electric power industry has recently commenced a technological development of great significance involving a system of interconnections among power companies, making their power available to each other on a day-to-day basis and as a means of emergency supply. While the purpose for interconnection among power companies is to provide supplemental power should any company’s generation become deficient, the interconnected system can spread local power failures by drawing power away from companies otherwise able to supply their own loads. Thus the power failure in northeastern United States on November 9, 1965, the most serious system disruption to date, magnified a simple line disconnection into a blackout affecting some 30 million people in eight states for as long as thirteen hours. At least three interconnected power systems have experienced crippling blackouts in the last few years, giving some indication of the great threat of power system disruption. It has been said that only the unusual coolness of the summer of 1967 prevented more and even larger system blackouts.

The potential personal and industrial damage arising from such a power failure is staggering, and estimates place losses from the November 9, 1965, blackout in excess of $100 million.

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5. *Time*, Nov. 19, 1965, at 36, 42. This estimate is probably very conservative. The reported industrial loss included 300,000 loaves of bread which spoiled during baking operations, 350 Chevrolet engines ruined when a high speed drill froze while boring, and 1,700 Dunlop tires destroyed in the curing process. *Id.* In addition, the deaths of three people have been attributed to the power failure. N.Y. Times, Nov. 16, 1965, at 58, col. 4. A more distant ramification was reflected in the sharp increase in births nine months later. N.Y. Times, Aug. 10, 1966, at 1, col. 2.
A metropolis finding itself without power at the rush hour faces great problems—for example, the New York City Transit Authority was forced to recruit people from the streets to rescue patrons stranded in subway cars, one man lit a candle and accidentally ignited his apartment, and some 200 airplanes approaching Kennedy Airport were saved from disaster by a bright moon.

While the question of liability for injuries arising from the disruption of an interconnected power system has not yet been litigated, the common law and statutory duties of power companies to provide safe and adequate service apparently offer a basis upon which blackout victims could recover their losses from the interconnected power companies. Existing cases allow recovery for injuries resulting from a single power company's negligent breach of these duties, so it would seem that the negligent planning of an interconnected power system, resulting in a system blackout, would also be grounds for recovery. In certain situations, recovery from interconnected power companies could also be predicated upon express or implied contract theory. Patrons of public service organizations might claim recovery for their blackout injuries on the grounds of negligent failure by the public service company to maintain emergency auxiliary power supplies. It is the purpose of this Note to evaluate these various theories of recovery and the possible defenses to them. Since the public has a strong interest in reliable power supply, and since federal regulation would probably offer a more desirable means of regulating power company practices in this area than would personal recovery by injured customers, it will be argued that the regulatory provisions of the Federal Power Act should be strengthened according to the provisions of the proposed Federal Power Reliability Act.

I. BACKGROUND

The interconnected power system is built upon a network of control areas, which may consist of either groups of power companies or a single company or part of a company. Normally, each control area is expected to be self-sufficient, with its generation capability balanced against its customer power usage.

6. See note 50 infra.
7. See note 49 infra.
8. See note 107 infra.
9. Control areas are geographically defined by surrounding power lines known as boundary ties, which also connect the area with surrounding areas. Brand at 70.
The interconnected network of control areas, constituting a power pool, plans as a unit for day-to-day operational efficiencies and for emergency generation and transmission needs. The geographic grid arrangement offers great economic advantage by allowing power companies to utilize natural resources more fully in supplying power, and to separate generating facilities from metropolitan centers. The emergency power supply offered by a power pool to member utilities is reliable only when the system as a whole has a surplus generating capacity and a set of interconnecting lines sufficient to supply any control area which fails to supply its own load.

The power failure which disrupted the Canada-United States Eastern Interconnection (CANUSE) on the evening of November 9, 1965, well illustrates the danger of an insufficiently interconnected power pool. This Northeast blackout apparently involved no mechanical failure, sabotage, or inclement weather or...
other natural calamity. Because of the bright moon and the cooperative efforts of many of the people involved, the number of serious accidents and injuries incurred was minimized.  

The Northeast blackout was precipitated by the disconnection of one of five 230-kilovolt capacity transmission lines connecting Sir Adam Beck Plant No. Two on the Canadian side of Niagara Falls with Toronto. Personnel operating the Ontario power system, being uninformed of the load limit set for these lines, allowed the current flow to reach the set limit, and a circuit breaker disconnected the line, redistributing the flow to the other four lines, which disconnected in turn within 2.7 seconds. The initial result of the separation of Beck from its primary load was a massive surge of power south into New York State. This surge of power activated circuit breakers which

however. FPC at 6-8. In cases involving blackouts caused by defective equipment, customers of the power companies affected should be allowed recovery from the manufacturer or seller of the defective equipment on the theory of products liability. See Goldberg v. Kollsman Instrument Corp., 12 N.Y.2d 432, 240 N.Y.S.2d 592, 191 N.E.2d 81 (1963); Prosser, Fall of the Citadel (Strict Liability to the Consumer), 50 Minn. L. Rev. 791 (1966).

14. Time, Nov. 19, 1965, at 36, 41. Further complication was avoided when great numbers of people volunteered to direct the rush hour traffic. Id.

15. Brand at 81, 82; FPC at 4-8. In 1963, each of these five lines had been equipped with a protective backup relay (circuit breaker) to open the line in case of failure of the primary relay on each line at Beck and to detect faults further north in the Ontario Hydro system. In order to detect such faults, it was necessary to set the backup relays at 375 megawatts, which was considerably below the load-carrying capacity of the lines. The flow on these lines had gradually increased since 1963, until under the influence of the high seasonal load it approached the set limit. Brand at 82; FPC at 6-8.

16. Brand at 82; FPC at 8. In view of the steadily increasing load upon this transmission network, it would seem that the failure to inform Hydro Ontario system operators of the line limits was a negligent omission. Since the heavy load on these lines resulted partly from efforts by the system operators to compensate for generation deficiencies in Ontario by drawing power from the United States, FPC at 7-8, had those operators been aware of the load limit settings, they could have taken other compensatory measures and the outage could have been prevented.

17. FPC at 22.

18. Brand at 82; FPC at 9. Although there is a conflict as to the size of the power surge into New York State, it was apparently at least 1500 megawatts. This surge of power raised the generator output of upstate New York far above the load on the generators. Since an operating generator can convert water or steam energy into electric energy only in amounts required to supply the current load, the result of a sudden decrease in load (or increase in generation) is an increase in the rotation rate of the generators' turbines, thereby increasing the frequency of the electric power produced. Brand at 88; see N.Y. Times,
opened several lines, including the 345 kilovolt network serving New York City and all lines connecting CANUSE with the Pennsylvania-New Jersey-Maryland Interconnection (PJM). The total effect of these openings was to create an isolated, though still interconnected, area consisting of greater New York City plus Connecticut, Rhode Island, Massachusetts, and Vermont. This area, which had been importing power at the time of the disturbance, was now left to its own generation capacity. One by one, the overloaded generators were forced to shut down. Meanwhile, the generators near Niagara Falls became separated from their primary load, rose in frequency, and were forced to shut down, engulfing the entire area in darkness.

II. FORESEEABILITY AND THE PLANNING FUNCTION

It is clear that the Northeast blackout was in fact unforeseen by the power companies. However, it seems equally clear in retrospect that a blackout of great extent could have been predicted by a formula accounting for generating capacity and load of each control area, strength of boundary ties within the system and between CANUSE and PJM, level of circuit breaker settings, and speed of utilization of reserve generating capacity.

Nov. 12, 1965, at 36, col. 2. Because the generators in an interconnected grid are normally electrically interlocked at the same frequency, Brand at 66, when one generator suddenly goes out of phase the system as a whole loses its transient stability. When such a disturbance occurs, the system will remain integrated only if it can survive the transient instability long enough for the governors of the erratic generators to bring those generators back into phase. Brand at 66-67; FPC at 63-65. The CANUSE system failed this test on November 9, 1965.

19. For a map of the lines involved, showing chronological order of disconnections, see FPC at 22 exhibit I-L. The two lines transmitting the power surge into New York State remained closed only because they were equipped with time relays and the current did not exceed the set limit long enough to trip these lines open. FPC at 12.

20. The combined area had been importing 540 megawatts of power from upstate New York generators prior to the disturbance. FPC at 12. This large isolated area was not able to activate its reserve “spinning” capacity (capacity on the line but not generating power) rapidly enough to supply the deficit. Id. The overloading of the steam generators caused a reduction in the frequency of the current produced, thus further restricting the output of the pumps required for steam generation, a process known as the cascade effect. Id.; see Brand at 84.

21. It was unanticipated that all five lines from the Beck plant to Toronto should open at the same time, creating the massive power surge into New York State. FPC at 9. Niagara Mohawk Vice President Pratt termed the breakdown the “most unlikely thing to happen.” N.Y. TIMES, Nov. 20, 1965, at 55, col. 1.

22. Cf. Brand at 85-88. Brand discusses the effects of decentralized planning at various levels of power generation and transmission.
In assessing the liability of power companies for power failures occurring within the context of an interconnected power grid, the first potential basis of liability would be the fact of having been tied into a power pool. Assuming the pool arrangement to have surplus generating capacity plus boundary ties sufficient in capacity to support the load of any control area which was forced to draw from the remainder of the pool, it would seem that the risk taken by a utility in joining the pool was statistically justified\(^2\) by virtue of the safeguard afforded the power company should it lose its individual generating capacity. The advantages of the grid arrangement for insuring a constant supply of power have been widely recognized,\(^2\) and it appears that the proper measure for prevention of major power failures is stronger interconnection rather than isolation of power companies.

While it would seem unreasonable to hold a power company liable on the mere fact of interconnection, liability might be based upon faulty planning of the pool, resulting in inadequate boundary ties and generation capacity. In the case of the Northeast blackout, it has been estimated that higher capacity boundary ties probably would have prevented the disconnection of CANUSE from PJM as well as the breaking up of CANUSE into isolated areas.\(^2\) CANUSE reserve generation facilities, which were of sufficient capacity to supply the deficit, consisted of steam output, which could not be put into operation quickly.

\(^23\) There is no available evidence on the number of grid disturbances and local power failures for which power pools make compensation, but the ratio of such disturbances to system blackouts apparently becomes very large as the level of system integration increases. See note 24 infra.


\(^25\) Brand at 83; FPC at 9. For example, if the 345 kilovolt network from the Niagara Falls area to New York City had been of sufficient capacity to absorb the initial surge of power, Consolidated Edison control area in New York City would not have been isolated from the generators near Niagara Falls. This would have prevented the overloading of Consolidated Edison and perhaps minimized the overgeneration near Niagara Falls long enough for the Niagara Falls generators to readjust. Although the basic network supplying New York City opened, Consolidated Edison might still have been served had the boundary ties with PJM been sufficient first to absorb the surplus on the CANUSE system and then to supply the deficit of isolated Consolidated Edison. Brand at 83–34.
enough to save the system.\textsuperscript{26}

The customer's claim based upon alleged negligent planning of the power pool will require a demonstration that the faulty planning was the proximate cause of the power failure and that a blackout of such extent was foreseeable at the time of planning. A blackout becomes an inevitable consequence\textsuperscript{27} for consumers in a power grid which is planned inadequately to supply member power companies forced to draw power from the pool. In the absence of external causative factors, when the grid system fails to absorb the sort of disturbance it was designed to protect power companies from, it would seem reasonable to assume that the planning of the pool was the proximate cause of the extension of the power failure throughout the system.

III. LIABILITY OF INTERCONNECTED POWER COMPANIES

Common law has imposed a duty on public utilities to render adequate and safe service.\textsuperscript{28} When an electric power company undertakes to supply a customer with current, the company has an enforceable obligation to provide adequate and continuous service. Recovery against power companies for failure to provide constant and adequate service has been allowed in tort actions on negligence theory\textsuperscript{29} and in actions for breach of an express or implied promise to provide electric service.\textsuperscript{30} In the context of the interconnected power pool, it would seem that the possibilities of recovery would be increased as the power failure became attributable to the actions of a large number of power companies. This is true because of the greater number of viable theories of recovery and total number of defendants.

Although electric power companies are under a duty of rea-
sonable care, they are not held to be guarantors of an adequate or constant supply of service. It has been argued that a public utility should not be held to be an insurer of its service unless it is first given the opportunity to refuse to enter into such a contract or to adjust its rates upward to reflect the added burden.

It has also been held that power companies are bound to exercise a very high degree of care in providing safe service as opposed to the duty of reasonable care to keep a constant supply. However, the high duty of care may apparently be invoked in a rather wide set of circumstances. In Southwestern Public Service Company v. Artesia Alfalfa Growers' Association the power company was held liable for the value of electric motors burned out by the irregular and excessive flow of power allowed through its worn out capacitator. This case would apparently support a claim against a power pool which maintained facilities causing a dangerously high or low voltage power supply in time of system disturbance.

In Brockman v. Smithson Springs Water Company, the Public Utilities Commission of California recognized the duty of public utilities to serve all customers within their service area to the reasonable limit of their facilities. The Commission ruled that defendant, a water company, must provide for the reasonable demands of all consumers within its certified service area by maintaining a storage reserve of 300,000 gallons before it would be allowed to extend service to consumers beyond that area. The Commission characterized the duty as a basic rule of public utility law. A reasonable inference from Brockman is that an electric utility could be held liable to its customers for power failures caused by customers of other utilities drawing power from the service area.

31. Bromer v. Florida Power & Light Co., 45 So. 2d 658 (Fla. 1950); Annot., 4 A.L.R.3d 594 (1965); Note, supra note 28. Since power companies are under only a reasonable duty to provide constant and adequate service, there is no absolute liability for power failures.

32. 45 So. 2d at 660. Power companies seldom have an opportunity not to serve a consumer within their service areas. Note, supra note 28, at 321; See note 35 infra.


A. Recovery on Negligence Theory

The test of negligence in a case where an interconnected power pool is disrupted by a blackout would be whether the power company, in planning the pool, exercised the ordinary care of reasonably prudent electrical engineers planning emergency power supplies.\(^{36}\) Although it would be difficult to say that the failure of CANUSE planners to contemplate the specific phenomena of the Northeast blackout constitutes substandard conduct, Federal Power Commission (FPC) criticisms of the CANUSE and PJM arrangements at least indicate that the facts are such as to raise a jury question of negligence.\(^ {37}\)

Curry v. Norwood Electric Light and Power Company\(^ {38}\) offers some support for a finding of negligence. In that case, plaintiff-proprietor was forced to remit the price of tickets to his theater when defendant failed to supply sufficient power to show a movie. Defendant's water-powered generator was unable to supply the load when a paper mill upstream shut down, lessening the amount of water below its dam. Defendant's auxiliary steam generator could not be put into operation quickly enough to supply the deficit. Arguing that this combination of events was foreseeable and should have been prepared for, the court upheld a jury finding of negligence. Curry would thus support the proposition that failure of a power company to plan an adequate emergency power supply may constitute actionable negligence.

In actions based upon the negligent failure of power companies to provide constant and adequate service, the courts have been inconsistent in allocating the burden of proof. The Tenth Circuit has required the customer to plead and prove negligence on the part of the power company,\(^ {39}\) while the Court


\(^{37}\) Compare FPC at 2 with note 93 infra. On the other hand, the power failure which struck PJM on June 5, 1967 could have been prevented had system operators properly switched generation in relation to transmission capacity so as to prevent overloading of lines, or had they followed instructions to prepare emergency load shedding plans. FPC, Report on the Pennsylvania-New Jersey-Maryland Interconnection Power Failure, June 5, 1967 at 1, 6, 68 (1968). These planning irregularities would seem to constitute the sort of substandard conduct required for recovery on negligence theory in power failure cases.

\(^{38}\) 125 Misc. 279, 211 N.Y.S. 441 (St. Lawrence County Ct. 1925).

\(^{39}\) Monolith Portland Midwest Co. v. Western Pub. Serv. Co., 142 F.2d 857 (10th Cir. 1944); accord, Bromer v. Florida Power & Light Co., 45 So. 2d 658 (Fla. 1950).
of Appeals of Kentucky has placed upon the power company the burden of proving itself free from negligence when the customer brings forth some evidence of company negligence.\textsuperscript{40} In a case where the customer relied upon the power company’s admission of a system overload as evidence of negligence,\textsuperscript{41} the Supreme Court of Errors of Connecticut looked to the power company to bring forth evidence on both negligence and causation. Holding that an overload is not per se evidence of negligence, the court stated that the theory of res ipsa loquitur would be inapplicable in such a case, though the customer would prevail if he could prove that it was “more probable than not” that the company’s fault was the proximate cause of the power failure.\textsuperscript{42}

Placing the burden of proof on the power company seems justified. The question of allocation of burden of proof could be very important to the disposition of actions where the issues of negligence and causation were sharply contested, as they might well be in cases involving the disruption of an insufficiently interconnected power pool. One reason for placing the burden of proof upon the power company would be that the evidence of causation is much more readily available to it than to the customer, and the company would be more conversant with the operations and facilities of its system.\textsuperscript{43} It would also seem consistent with the high degree of care required of public utilities to place upon the power company the burden of justifying its nonexecution of that duty. Presumably a customer injured as a result of a power failure occurring within the context of an inadequately integrated power pool would likely prevail on the issues of negligence and causation if he could shift to the power company the burden of proving it had exercised due care.

In appropriate cases, the customer might claim recovery by imputing to his power company the negligence of an intercon-

\textsuperscript{40} Kentucky Power Co. v. Kilbourn, 307 S.W.2d 9 (Ky. 1957); see Dunning v. Kentucky Util. Co., 270 Ky. 44, 109 S.W.2d 6 (1937).


\textsuperscript{42} Id. at 20, 156 A.2d at 518. Prosser lists as an essential condition for the application of the doctrine of res ipsa loquitur that “the event must be of a kind which ordinarily does not occur in the absence of someone’s negligence.” W. Prosser, Torts 218 (3d ed. 1964). Electric lines could become overloaded in the absence of human negligence. See note 54 infra.

\textsuperscript{43} The difficulty of tracing a grid blackout back to its source is described in FPC at 17-18. The highly technical vocabulary required to explain a major blackout fully will at best be very difficult for one not trained in electronics to comprehend.
nected power company and its agents or employees. Under this theory, the customer would have to demonstrate that the pool arrangement constituted either a partnership or a joint adventure. Factors indicating a joint adventure would include a single undertaking, involving business purposes and activity, with participants having a community of interests and bearing fiduciary relationships to one another. In the case where a group of power companies, acting autonomously, buy and sell small amounts of power among themselves, the arrangement might take on the aspect of a mere on-going business transaction. As planning becomes more centralized, however, and the level of interconnection increases to the point where the power companies become supplemental to each other in providing emergency supply, the companies' individual activities and responsibilities take on a joint aspect. Since there is vicarious liability for joint adventurers, each power company should then be liable for the torts of every other utility in the grid arrangement.

In the integrated power pool situation, it would seem reasonable to limit the principle of vicarious tort liability to cases of negligence committed within the scope and purposes of the power pool, and which either was known or should have been known by the power company to whom the negligence is sought to be imputed. If the company to be charged with the negligence knew that the power pool was being operated negligently, then that company could have exercised whatever control was available to it in preventing such negligence, or it could in some cases have quit the power pool. Failure by the company to take such action would offer a conceptual basis for imputing fault to it, and tort recovery might be appropriate. In the distinguish-

45. CRANE, supra note 44 at 160-63; see Beck v. Cagle, 46 Cal. App. 2d 152, 115 P.2d 613 (1941).
46. Proving the power pool to be a partnership would presumably be even more difficult. Partners are commonly said to be agents of one another, having full right to control the business. CRANE, supra, note 44 at 159-60. A partnership may, though it typically does not, involve a single undertaking. The joint adventure is typically not the principal or sole undertaking of the participants, as the partnership would be. Id. Since the same tort rules apply to both entities, it should not matter which was proven to exist.
47. Keiswetter v. Rubenstein, 235 Mich. 36, 209 N.W. 154 (1926); CRANE, supra note 44, at 163-63; W. PROSSER, TORTS 488, 489 (3d ed. 1964). Customers basing claims upon the Northeast blackout might allege such negligence as the failure to inform HYDRO Ontario systems operators of backup relay settings. See note 16 supra.
able case where interconnection of power companies is forced by the FPC, and there is no privity of interest indicating joint adventure, it would seem inappropriate to impute the negligence of a power company to the other companies.

As a limitation upon tort recovery under present law, the customer alleging a blackout injury will have to prove his injury to have been the proximate result of the defendant power company's negligence, whether the alleged negligence be imputed or actual. Shortly after the Northeast blackout, actions were commenced against Consolidated Edison of New York City by a customer seeking to recover damages resulting when a candle he lit during the blackout set fire to his apartment, and by the New York City Transit Authority seeking to recover, inter alia, the overtime wages paid to men recruited from off the streets to rescue patrons from stranded subway cars. The fire damage action, involving such intervening factors as the location of combustible materials in plaintiff's apartment and the degree of care exercised by plaintiff, is but a tenuous result of the power company's negligence, and recovery should be denied. By contrast, the necessity of rescuing stranded passengers was a direct and immediate consequence of the power failure, so the expenses involved would seem to be a sufficiently proximate result of the power failure to justify recovery. The issue of foreseeability should be resolved against the utility which was otherwise liable for negligent planning since it would seem inconsistent for the power company to justify its faulty planning on the grounds that it could not have foreseen the consequences thereof.

A possible reason for denying tort recovery against interconnected power companies is that tort law is not an appropriate legal measure in this situation. In the Northeast blackout, for example, where industrial and personal damages exceeded $100 million, it might be unreasonable to place the entire loss upon fifteen power companies who failed to anticipate a combination of events which would disrupt the entire system. As a policy consideration, miscalculation by the power companies, in

48. See note 91 infra.
51. W. Prosser, Torts 321, 427 (3d ed. 1964). Plaintiff's intervening acts, being unforeseeable to the power company, "insulate" the power company from liability for injuries arising in the power failure.
the absence of evidence of bad faith, is hardly so culpable an oversight that the power companies should be penalized with the full risk of loss. While it is desirable that power companies constantly exercise a high degree of care in maintaining an emergency power pool, it is perhaps impossible to construct a large scale power pool which would be absolutely invulnerable to disturbances within the system. Full recovery in cases like the the Northeast blackout could impose a severe penalty for a minor degree of fault, though a prospective judgment might be justifiable on the ground that it would give the power companies an opportunity to increase their level of precaution and to raise their prices as an insurance technique.

There are several possible defenses to tort recovery. Electric power companies have been relieved of liability for power failures caused by an “act of God,” or other factors reasonably unforeseeable and beyond their control. It has been held that in order to excuse negligence on the part of the power company, the alleged act of God must have been so extraordinary as to be beyond human foresight, and its effect must be such that reasonable prudence and diligence would not have prevented the harm. The courts have refused to relieve power companies of liability because of an act of God where any human negligence or lack of foresight is also demonstrated. It seems questionable whether the courts will adhere to these high theoretical standards of “act of God” to which they lend lip service, however, since they have been willing to relieve power companies for blackouts caused by foreseeable hurricanes striking Tallahassee, Florida, and by sleetstorms from which the power

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53. Since a fully reliable power pool requires not merely good, but virtually perfect service, FPC at 1, it would seem that power failures might result from conduct by interconnected power companies which was not sufficiently culpable to be judged negligence. But see Priest, Utility Service Outages and Interruptions: The “Big Blackout,” Pub. Utl. Fort., Aug. 17, 1967, at 19, 22, where it is claimed that power pool systems can be designed to ride out disturbances such as that involved in the Northeast blackout, and system survival need not depend upon the shedding of a part of the load.


57. Florida Power Corp. v. City of Tallahassee, 154 Fla. 638, 18 So. 2d 671 (1944).
company subsequently protected itself by rerouting its lines. In a case like the Northeast blackout, involving the disruption of a power grid having inadequate interconnections and generation capacity, the resulting power failure is apparently attributable to an act of man rather than an "act of God." However, in the distinguishable case where the extension within the grid of an area power failure is made possible by an "act of God," such as lines destroyed by a storm, affected power companies should be relieved of liability.

A second possible defense to recovery in appropriate blackout situations would be municipal immunity. The courts have heretofore refused to relieve municipal utilities of liability for power failures, however. Where the power failure affects substantially all of the municipal utility's customers, on the other hand, as in the case of a power pool system blackout, it might be more practical and reasonable either to limit the utility's liability or to relieve it of liability altogether. Presumably the cost of full insurance protection against power failure damages for all customers of a municipal utility would be the same whether borne by the customers or by the utility, even though the municipal utility chooses to insure itself by spreading the loss over its tax base. By limiting recovery of customers to their respective insurance coverage, however, the major costs of adjusting could be decreased since loss claims could be registered directly with the insurance company. Furthermore, since customers have no control over major blackouts, individual insurance rates would presumably be based upon the extent of damage likely to be incurred in the blackout. Some businesses will be more severely injured than others by a power failure, and a few of these will be sufficiently affected to justify the expense of an auxiliary power supply. It would thus seem more equitable to allocate the cost of insurance protection in proportion to the risk involved, as an expense of doing business, rather than in proportion to the customer's municipal tax liability.

In view of the potential liability of interconnected power companies to their customers for power failures extended

58. Arkansas Power & Light Co. v. Abboud, 204 Ark. 808, 164 S.W. 2d 1000 (1942) (proof of subsequent repairs admitted as cause of subsequent outages).

within the grid arrangement, the companies may desire to restrict the blackout and limit their liability by selectively shedding some of their load and concentrating the power on the remainder in time of stress upon the system. Had Consolidated Edison been able at the crucial moments of the CANUSE disturbance to shed the industrial load which was capable of self-sustenance, vital boundary ties might have been saved and most of New York City might have remained lit. In analogous cases, it has been held that in time of short supply a gas utility may curtail service to its industrial customers, conserving fuel for domestic customers. It has also been recognized that public utilities have the right to contract in terms allowing them temporarily to curtail service to certain customers in time of emergency shortage of supply. It would seem that the electric power company would not be violating its common law and statutory duty by contracting with customers known to have an adequate and readily available auxiliary power supply to curtail service to them in time of emergency. Thus, the company could contractually limit the incidence of its liability respecting customers having auxiliary power supplies, and a properly planned program of emergency curtailment might prevent a power failure for the other customers, thereby precluding the company's liability to them.

The duty of public utilities to provide constant and adequate service has now been codified in many jurisdictions, but the defenses to recovery remain the same. In addition to its statutory duty of safe, adequate, and reasonable service, New York Public Service Law also forbids electric power companies granting any unreasonable advantage or disadvantage to any customer.

60. FPC at 14. The system might not have remained fully in tact, but at least the great majority of customers might have been served. See note 37 supra.
64. N.Y. PUb. SERv. LAW § 65(1) (McKinney 1967).
While it has been held that this provision is to be read in conjunction with a later provision, conferring upon the New York Public Service Commission the power to regulate public utilities, it would seem that this delegation of power was not meant to be exclusive, so that any unfair advantages created by power companies should be actionable in the absence of Commission procedures.

Presumably a customer residing in a jurisdiction with such a statute could argue that he or his locality was given an unfair disadvantage in the power pool arrangement because he or his locality would be left with less adequate power than other service areas in case of disruption of the system. Especially in the case of inadequately integrated grid arrangements, certain power companies may serve as a “hub,” with other service areas dependent upon the central company for their emergency supply. When such a system experiences inadequate generation, the service areas out on the “spokes” will draw power from the “hub” company. Regardless of the nature of the system disturbance, therefore, customers of the central company will have to yield power to the other areas, so the grid arrangement would constitute an unfair disadvantage for the “hub” area. A response to this argument might be that the statute does not contemplate the contingency of a system disruption, but rather forbids the giving of unfair disadvantages in present services or rates. In any event, if the statutory prohibition of unfair disadvantages is to be applied to the power companies’ planning function, it would seem that a company should be held liable for breach of its duty only if it could have reasonably foreseen that the grid arrangement created an unfair disadvantage for the customer or his service area.

B. RECOVERY ON IMPLIED OR EXPRESS CONTRACT THEORY

As an alternative to action for breach of the common law or statutory duty of a power company to provide constant and adequate electric service, appropriate blackout victims might seek recovery from their respective power companies for breach of the duty arising from an implied in fact contract to supply the customers’ electricity needs. The power company’s implied promise to serve is based upon its undertaking to serve a cus-

65. Id. § 65(3).
customer, knowing what his needs will be. Breach of the implied promise to supply electric service has been held actionable only where negligent or voluntary disruption of service by the power company can be demonstrated. Since negligent breach of the implied contract would apparently also give rise to tort recovery, the two theories serve essentially the same function at this point. An implied in fact contract can apparently be invoked only in rather limited circumstances, however, since the power company often will be unaware of the consumer's precise electric needs, or the company may have no choice whether to serve the consumer regardless of whether it is aware of those needs.

Another line of cases recognizes the customer's right to recover damages from the power company on the basis of the express contract to provide a certain quantum of electric service. The relatively small number of successful actions using this theory is perhaps indicative of drafting customs in the power industry. The customer bringing an action on the express contract may have difficulty proving that his damages are of the type contemplated by the parties when they contracted. The term in Consolidated Edison's customer contract disclaiming liability for power failures or irregularities caused by the ordinary negligence of its employees probably would not be upheld today, although it was authorized by a New York Public Commission ruling in 1938. Recent cases reject attempts by power


69. Bromer v. Florida Power & Light Co., 45 So. 2d 658 (Fla. 1950). Actions premised upon the implied in fact contract to provide constant and adequate electric service thus have characteristics of both tort and contract actions.

70. Lund v. Village of Princeton, 250 Minn. 472, 85 N.W.2d 197 (1957) (municipal utility's change of transformer reduced voltage of power supplied).

71. See note 26 supra.


73. Hippard is the only recent case found granting recovery on this theory.

74. See Hadley v. Baxendale, 9 Exch. 341 (1854); cf. UNIFORM COMMERCIAL CODE § 1-106(1); Robson v. United Pacific Insurance Co., 391 S.W.2d 885 (Mo. 1965); 17 Am. Jur. 2d Contracts 370 (1967).

75. N.Y. Times, Nov. 22, 1965, at 1, col. 4.

76. Re Liability Clauses in Rate Schedules of Gas and Electric Corporations, 26 P.U.R. (n.a.) 373 (1938).
companies to contract out of their tort liability, though a term disclaiming liability for power failures caused by labor strikes has been upheld. In view of the high duty of care imposed upon public utilities to provide safe service, it would be inconsistent to allow power companies to avoid this duty by contractual disclaimers.

In appropriate cases, customers of a power company which was unable to draw power from the interconnected companies in the power pool might seek to recover their blackout damages from the interconnected companies on the theory that the customers are third party beneficiaries of the emergency supply agreement underlying the power pool. The companies formed their agreement in contemplation of supplementing the supply of power to a member company’s customers in the event of disruption of that company’s power supply, and the injury to the customers is attributable to the nonperformance by the interconnected companies of their agreement. It is generally held that persons who are not parties to a contract may recover damages attributable to the breach of the contract under which one party undertook to satisfy the other party’s duty to such injured person, or undertook to confer a benefit upon a class of which such injured person is a member. Actions by third party beneficiaries have been allowed where the contract evidences a clear intent to benefit such third party directly, but not where the claimant would derive a mere incidental benefit from performance of the contract. It would seem that the intent of an emergency pooling agreement among interconnected power companies is to benefit each customer directly by satisfying his company’s con-


78. Kuhlman Plastics Co. v. Kansas City Power & Light Co., 400 S.W.2d 409 (Mo. 1966).


80. Tyler v. Dowell, Inc., 274 F.2d 890, 895 (10th Cir. 1960) (intention to benefit third party must be either express or manifestly implied); United States v. Seaboard Surety Co., 201 F. Supp. 630, 636 (N.D. Tex. 1961) (rebuttable presumption that the parties contract only for their own benefit); United States v. Aleutian Homes, Inc., 193 F. Supp. 571, 576 (D. Alaska 1961) (enforcement of a contract by a third party beneficiary allowed only if such enforcement was within the contemplation of the parties to the contract).
tractual obligation to him in the event that his company becomes unable to satisfy such duty. Interconnected companies who fail to discharge this contractual obligation should then be liable to the injured customer.

An alternative theory of recovery for affected customers might be action on quasi-contract for restitution of the amount by which interconnected service areas who drew power from the customer's power company were unjustly enriched.81 The emergency drawing of power from one area into another area is the purpose for which the power pool was established, so the recovery for this emergency transaction would normally be upon the express agreement underlying the power pool.82 In some situations, however, the emergency recipient cannot be said to be upon a contractual basis with the emergency supplier, so recovery for the benefit conferred must be based upon a contract implied in law. An example of this situation arose in the Northeast blackout when the generators near Niagara Falls were disconnected from their downstate load, and that load drew upon the Consolidated Edison generators in New York City. Though the power companies involved had a contractual basis for the exchange of power, the disconnection of lines had removed the Niagara Falls power companies from this emergency transaction, and their downstate customers were not on a contractual basis with Consolidated Edison. While the formal expenses of generating and transmitting this power fell upon Consolidated Edison, the great consequential losses of the emergency transaction fell upon customers of Consolidated Edison, who soon found themselves without power. Other situations involving the emergency supply of power without a formal contractual basis of exchange might arise more frequently should the FPC exercise its power to compel further interconnection of power companies.

The action for restitution of the value of the benefit conferred would have serious limitations, however. There is some authority denying restitution in the case of a benefit which

81. Restatement of Restitution § 1 (1937); 77 C.J.S. Restitution (1967).

82. It has generally been held that there is no quasi-contractual recovery of the quantum meruit, or value of the benefit conferred, where the transaction is governed by an express contract. E.g., National Trailer Convoy, Inc. v. United States, 345 F.2d 575 (Ct. Cl. 1965); Smith v. Stowell, 256 Iowa 165, 125 N.W.2d 795 (1964); Schimmelpfenning v. Gaedke, 223 Minn. 542, 27 N.W.2d 416 (1947); Durham Terrace, Inc. v. Hellertown Borough Authority, 394 Pa. 623, 148 A.2d 899 (1959). But see Power-Matics, Inc. v. Ligotti, 79 N.J. Super. 294, 191 A.2d 483 (1963).
cannot be returned to the party who bestowed it, although this anomalous case law would seem to be an inappropriate limitation for a theory of recovery premised upon a fictional contract.\(^8\) Conceptually, the action for restitution would be available to the company which supplied the emergency power, rather than to its customer, since the customers did not confer the benefit upon the emergency recipient, although the customers may have suffered as a result of the emergency transaction. Furthermore, in cases of nontortious receipt of a benefit, restitution is limited to the face value of the benefit conferred,\(^4\) or to the amount that might have been recovered under an express contract in this situation.\(^5\) Since the value of emergency power supply is based upon ordinary sales rates, as evidenced by existing emergency supply agreements,\(^6\) restitution would probably be limited to the market value of the power supplied.

### IV. LIABILITY OF PUBLIC SERVICE ORGANIZATIONS

As an alternative to recovery from the interconnected power companies, appropriate blackout victims might seek relief from hospitals, transportation companies, or other public service organizations on grounds of negligent failure to maintain an emergency source of power capable of supplying the deficit created by the companies' power failure. Since the common law and statutory duty to provide constant and adequate power applies only to power companies, claimants would presumably have to prove that the defendant public service company failed to exercise reasonable care in the service it set out to perform by not maintaining emergency generators. In cases arising from the Northeast blackout, the allegation of negligence would be supported by the trade custom among the great majority of Northeastern hospitals\(^7\) of maintaining emergency power supplies, and the practice of the Boston Transit Authority of maintaining its own primary power supply and merely looking to Boston Edison

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83. Montgomery v. City of Philadelphia, 391 Pa. 607, 140 A.2d 100 (1958). In actions for recovery of the value of a benefit conferred, it would seem inappropriate to grant recovery only if the benefit were of a type capable of being returned since the legal recovery is a substitute for such return of the benefit.


86. Brand at 76-30; FPC at 3-4.

87. FPC at 38; N.Y. TIMES, Nov. 11, 1965, at 40, col. 1-3, 5.
for emergency generation.\textsuperscript{88} The danger involved in operating a hospital without protection against power failure is readily foreseeable, and it is very fortunate that the five dozen babies delivered by candlelight in New York City reportedly arrived without incident.\textsuperscript{89}

The hospital or other public service organization called upon to justify its failure to provide an emergency power supply might respond that its omission—failure to provide a substitute source of power—was not the proximate cause of the injury. This defense seems to beg the controlling policy question of culpability, however, and should not bar recovery. Liability of the public service organization should turn upon whether, if both it and the power company were found negligent, it could claim indemnity from the power company.\textsuperscript{90} Factors discouraging indemnity in the blackout situation include the fact that the public service organization's fault occurred later in the causal chain and the fact that the two parties have breached relatively comparable duties of care. By its negligent omission, the public service organization failed to prevent the direct, foreseeable consequences of the power company's negligence, and the two should both be liable for injuries caused by the power failure. On the other hand, a very significant factor militating in favor of indemnification is the fact that the public service organization relied upon the power company's performance of its duty to provide the public service organization with power. In view of both the magnitude and probability of the risk involved, it would seem that this reliance would be unjustified in many cases, however, so the public service organization should be liable.

V. LIABILITY OF THE FEDERAL GOVERNMENT

Another party potentially liable for injuries caused by a

\textsuperscript{88} FPC at 37; \textit{N.Y. Times}, Nov. 18, 1965, at 46, col. 6.

\textsuperscript{89} \textit{Times}, Nov. 19, 1965, at 19, 41b. Perhaps even more risky were the very delicate corneal transplant and craniotomy performed by candlelight. \textit{Id.}

\textsuperscript{90} See Henrickson v. Minnesota Power & Light Co., 258 Minn. 368, 104 N.W.2d 843 (1960); Jacobs v. General Accident, Fire & Life Assurance Corp., 14 Wis. 2d 1, 109 N.W.2d (1961); W. Prosser, \textit{Torts}, 278-81 (3d ed. 1964). It has also been held that contributory negligence is a defense to a power company's liability. Milford Canning Co. v. Central Illinois Pub. Serv. Co., 39 Ill. App. 2d 258, 183 N.E.2d 397 (1963). The doctrine of last clear chance would seem to be inapplicable in this situation because when the hospital realized that its patient was endangered, the hospital would no longer have a chance to extricate the patient from the danger. See W. Prosser, \textit{Torts}, 439-40 (3d ed. 1964).
power failure occurring within the context of an insufficiently integrated power pool is the federal government. The Federal Power Act\textsuperscript{91} gives the FPC authority to divide the country into regional districts for coordination of power supply facilities, and to order\textsuperscript{92} interconnection of power companies when it finds such interconnection to be necessary or appropriate in the public interest. The facilities and practices of the power companies involved in the Northeast blackout were apparently fully known to the FPC, and yet the FPC did not intervene to strengthen the emergency supply arrangement.\textsuperscript{93} Liability of the federal government might thus be predicated upon the failure of the FPC to take steps to strengthen a power pool known to be inadequately integrated.\textsuperscript{94}

An action against the federal government in this context would probably fail, however, since the authority of the FPC to order interconnections is fully discretionary. The Federal Tort Claims Act specifically precludes actions against the federal government based upon the exercise of or failure to exercise a "... discretionary function or duty on the part of a federal agency... whether or not the discretion involved be abused.

\textsuperscript{91} Relevant provisions are contained in 16 U.S.C. §§ 824a (a), (b) (1966); see FPC v. Southern California Edison Co., 376 U.S. 205, (1964) (FPC has jurisdiction of all wholesale power sales in interstate commerce not expressly exempted by the Act); New England Power Co. v. FPC, 349 F.2d 258 (1st Cir. 1965) (FPC can force interconnections if requested to do so by any person selling or transmitting electric power). The FPC can order interconnection of power companies only if requested to do so by a "person" selling electric power in interstate commerce. 16 U.S.C. § 824a (b) (1966).

\textsuperscript{92} Enforcement provisions of the Act include: 16 U.S.C. § 825m (a) (1966) (action to enjoin violation); 16 U.S.C. § 825n (a) (1966) ($1,000 forfeiture for violation of an FPC order); 16 U.S.C. § 825o (a) (1966) (criminal fine of $5,000 or 2-year imprisonment, or both). The FPC could intervene to strengthen inadequately integrated power pools by ordering more high capacity interconnections of power companies.

\textsuperscript{93} In fact, the FPC went on record in 1964 as approving measures taken by CANUSE power companies. Newsweek, Nov. 22, 1965, at 27. But see note 37 supra.

\textsuperscript{94} See note 12 supra. Other than a duty based upon foreseeability of a system blackout, a duty of the FPC to intervene in the power pool arrangement might be based upon § 10(e) (A) of the Administrative Procedure Act, 5 U.S.C. § 1009(e) (A) (1968), which establishes jurisdiction to compel administrative agency action unlawfully withheld or unreasonably delayed. This section is prefaced by the condition that the agency action to be compelled may not be discretionary with the agency, however, and since the power of the FPC under the Federal Power Act to order interconnection of power companies is fully discretionary, this statutory duty is probably inapplicable to the FPC in the blackout situation.
The decision of the FPC not to intervene in the practices of the CANUSE system would seem to constitute the sort of administrative discretion exempted from action by the statute. No court would be likely to make the federal government an insurer for all of the damages attributable to an oversight by a regulatory agency in the performance of its discretionary duties. Thus, although there is a strong need for protection against power pool system blackouts, present law does not make adequate provision for requiring power companies to interconnect their facilities if they fail to do so of their own accord.

VI. THE PROPOSED FEDERAL POWER RELIABILITY ACT

Since the reliability of emergency power supplies is a matter of strong public interest, especially in light of the great potential injury arising from the disruption of interconnected power pool systems, and since an extremely high degree of care is required to plan and operate a fully reliable power pool, it would seem very appropriate for the federal government to increase its means of regulation of the electric power industry. The proposed Federal Power Reliability Act, a major step in this direction, would amend the existing Federal Power Act to establish a regulatory system to enhance the reliability and efficiency of interconnected power pools. The Act would establish regional councils, representing every power company in the region and including nonvoting FPC representatives. The councils would review existing facilities and propose further plans, which would be submitted to the FPC for approval. As an innovation of the

96. See Dalehite v. United States, 346 U.S. 15 (1953); Harris v. United States, 205 F.2d 765 (10th Cir. 1953); W. Prosser, Torts 999 (3d ed. 1964).
98. See notes 91 & 92 supra.
99. The purpose underlying the proposed regulatory structure is apparently to leave the planning function in the hands of power company representatives, while giving the FPC authority to modify and enforce those plans. Non-voting FPC representatives on the regional councils would thus expose company representatives to governmental and public interests without participating directly in the formulation of plans. Since the councils' proposals would be reviewable by the FPC anyway, this arrangement seems justifiable on the ground that it would elicit the views and desires of the affected power companies in a relatively free atmosphere. Under present Federal Power Act provisions, the FPC is not authorized to intervene in the planning function, and it can order stronger interconnections only after proper requests. See notes 91 & 92 supra.
The proposed Act, FPC approval would be accompanied by limited antitrust immunity for the power companies involved.

The proposed Act provides for six months' notice to state and local agencies of construction of extra-high-voltage (200,000+ volt) lines, allowing opportunity for interested persons to raise issues of land use. In case of emergency, however, the FPC would be empowered to authorize immediate construction. The Act would also extend federal powers of eminent domain to the power companies involved. The Act would increase the authority of the FPC under the Federal Power Act to require interconnections and energy exchanges between power companies where the public interest so required.

The Administration's version of the Act received the unanimous support of the FPC\footnote{Hearings on S. 1934 Before the Senate Comm. on Commerce, 90th Cong., 1st Sess., ser. 90-30, at 36 (1967).} and was co-sponsored in 1967 by nineteen Senators\footnote{Id.} and fourteen Representatives. In addition, a variant of the proposed Act was introduced in 1967 by Representative Moss\footnote{H.R. 12322, 90th Cong., 1st Sess. (1967). The principal changes in the Representative Moss' version of the Act are the inclusion of state agents in the regional councils on a voluntary basis, the elimination of FPC-authorized antitrust immunity, and the exclusion of national parks, monuments, battlefields, and historic sites from right-of-way grants to power companies. Cong. Rec. H10475, H10476 (daily ed. Aug. 14, 1967).} and another in 1968 by Senator Kennedy of Massachusetts and by Representative Ottinger.\footnote{S. 2889, 90th Cong., 2d Sess. (1968); H.R. 14971, 90th Cong., 2d Sess. (1968). The principal changes in the Kennedy-Ottinger version of the Act are the establishment of a "National Council on the Environment" to protect natural resources, the requirement that power companies report expenses, and the transference to the Justice Department of antitrust immunity grants. Cong. Rec. S610, S611 (daily ed. Jan. 30, 1968).} Thus, the prognosis for the proposed Act, or some version of it, appears very good at this point.

The proposed Act has been criticized\footnote{Hearings on S. 1934 Before the Senate Comm. on Commerce, 90th Cong., 1st Sess., ser. 90-30, at 125-81 (1967) (Memorandum of Lelan F. Sillin, Jr., Chief Executive Officer of Central Hudson Gas & Electric Corp.).} by a representative of power company management on the ground that the regulatory authority conferred on the FPC is so vague and uncertain as to constitute an unconstitutional delegation of legislative powers.\footnote{Sillin bases his argument upon Schechter v. United States, 295 U.S. 495 (1935) and Panama Refining Co. v. Ryan, 293 U.S. 388 (1935).} This criticism may have some validity in relation to the
power conferred upon the FPC to grant antitrust immunity, and it might prove advisable to place this immunization power in the organizations entrusted with antitrust prosecution, the Federal Trade Commission and the Justice Department. In view of the strong public interest in reliability of electric power supply, as well as the interstate structure of the power grid systems involved, it seems highly unlikely that the purely regulatory power conferred upon the FPC would be held to constitute an unconstitutional delegation of legislative powers.\footnote{106}

The proposed Act has been further criticized on the ground that the separation of planning authority from management responsibility would lead to inefficiency and poor service. This latter criticism, insofar as it may be verified in practice, embodies the very questionable value judgment that elimination of the risk of widespread power failures should not be procured at the expense of some operational inefficiency. The minimal inefficiency contemplated is a small price to be paid for preventing the staggering loss which might potentially arise from the disruption of inadequately integrated power pool systems. For example, some 200 airplanes home in on Kennedy Airport in New York from five to nine o'clock every evening, many of which were literally saved by the light of the moon on November 9, 1965.\footnote{107}

While the proposed Act does not establish any substantive regulation of bulk power supply, it would create a much needed vehicle for planning and regulation of interconnected power pools. Federally administered regional planning, as provided for in the proposed Act, would minimize the danger of serious blackouts while allowing power companies to retain initiative over operating procedures. On this basis, the proposed Act seems highly desirable.

\footnote{(1934). These cases are readily distinguishable in this context, however, on the basis of the previously recognized authority of the FPC and the defined standards of the Federal Power Act. See notes 91 & 92 supra; Fahey v. Mallonee, 332 U.S. 245, 250 (1947); Carter v. United States, 333 F.2d 354, 355-56 (10th Cir. 1964).} \footnote{106. For cases holding the basic framework of the Federal Power Act constitutional, see note 91 supra.} \footnote{107. Times, Nov. 19, 1965, at 41b. Kennedy Airport has since been equipped with emergency generators. Priest, Utility Service Outages and Interruptions: The "Big Blackout," Pub. UTILITY FORUM, Aug. 17, 1967, at 19, 20.