

P.U.C.O. No. 17
ELECTRIC DISTRIBUTION SERVICE
RULES AND REGULATIONS
EMERGENCY ELECTRICAL PROCEDURES

A. General

Emergency electrical procedures may be necessary if there is a shortage in the electric energy supply to meet the demands of Customers in the Company's electric Certified Territory. A shortage in electric energy supply can result from either a short-term capacity deficiency or a long-term energy deficiency. There are differences in nature between capacity and energy deficiencies and therefore, different and appropriate procedures shall be adopted for each category of deficiency.

1. Essential health and safety Customers are given special consideration in these procedures and shall, insofar as the situation permits and the Customers' identity is known, include each of the following types of Customers (and such other Customers or types of Customers which the Commission may subsequently identify).
 - a. "Hospitals" which shall be limited to institutions providing medical care to patients and where surgical procedures are performed.
 - b. "Governmental Defense Institutions" which shall be limited to those facilities essential to the National Defense.
 - c. "Governmental Detention Institutions" which shall be limited to those facilities used for the detention of persons.
 - d. "Fire Stations" which shall be limited to attended publicly owned facilities housing mobile fire fighting apparatus.
 - e. "Life Support Customers" use vital medical equipment such as a kidney dialysis machine or respirator, to sustain the life of a person and have properly identified themselves to the Company.
 - f. "Radio and Television Stations" which shall be limited to those facilities used for the transmittal of emergency messages and public information broadcasts relating to these procedures.

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- g. "Water Pumping Plants" which shall be limited to facilities essential to the supply of potable water to a community.
- h. "Sewage Plants" which shall be limited to facilities essential to the collection, treatment or disposal of a community's sewage.

Although these types of Customers will be given special relief from the manual load shedding provisions of this procedure, they are encouraged to install emergency generation equipment if continuity of service is essential. In case of Customers supplied from two utility sources, only one source will be given special consideration. Other Customers who, in their opinion, have critical equipment should install emergency battery or portable generating equipment.

The Company shall as soon as practical advise the Commission of the nature, time, and duration of all implemented emergency conditions and procedures which affect normal service to its Customers and as may be appropriate in accordance with the nature of the occurring anticipated emergency involving the Company's load, generation, transmission or distribution facilities.

B. Short-Term Capacity Shortages

As may be appropriate in accordance with the nature of the particular emergency, the Company shall initiate the following procedures:

1. Sudden or unanticipated short-term capacity shortages in the Company's area.

In the event of a sudden decline of frequency on the interconnected system or a sudden breakup which isolates all or parts of the Ohio area from other electric systems with which it is interconnected and which results in the area so isolated being deficient in electric generation with consequent rapid decline in frequency.

- a. Automatic load shedding will take place if the decline in frequency is of the magnitude such as to jeopardize the entire isolated area. If the frequency declines to 59.5Hz, the following steps, as outlined in East Central Area Reliability Council (ECAR) Document No. 3, dated June 16, 1998, will be initiated:

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At 59.5 Hz, under frequency relays will automatically shed approximately five percent (5%) of the Company's system load.

At 59.3 Hz, under frequency relays will automatically shed approximately five percent (5%) of the Company's system load.

At 59.1 Hz, under frequency relays will automatically shed approximately five percent (5%) of the Company's system load.

At 58.9 Hz, under frequency relays will automatically shed approximately five percent (5%) of the Company's system load.

At 58.7 Hz, under frequency relays will automatically shed approximately five percent (5%) of the Company's system load.

The amount of load shed at each step will be a nominal five percent (5%) of the system load prior to the beginning of the under frequency occurrence.

- (i) Service so interrupted shall be of selected distribution circuits and lines serving Customers throughout the area. Such interruptions shall be, where practical, for short periods of time.
 - (ii) Insofar as the situation permits, service interruptions shall be in accordance with priority classification, with interruptions to least essential loads occurring first; every reasonable effort will be made to provide continuous service to essential health and safety Customers.
- b. If necessary to curtail the decline in frequency in order to resynchronize the isolated area, the following steps will be taken in the appropriate order:
- (i) Service will be interrupted to controlled service loads and to loads rendered service under the Non-Firm Service Tariff Sheet No. G19.
 - (ii) Voltage will be reduced not more than five percent (5%).

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(iii) Manual load shedding of firm Customer loads will be instituted. Manual load shedding is typically performed at the distribution feeder level. The Company will make every effort to ensure that manual load shedding is performed in a manner that does not discriminate against any supplier or its customers.

2. Anticipated or predictable short-term capacity shortages.

In the event an emergency condition of short-term duration is anticipated or predicted which cannot be relieved by sources of generation within the interconnected area, the following steps will be taken at the appropriate time and in the order appropriate to the situation:

- a. These steps will be initiated when the Company is capacity deficient and the system frequency is lower than 60.0 Hz but before the frequency declines to 59.9 Hz.

All non-essential Company use will be curtailed.

Non-Firm deliveries of energy will be curtailed.

Service will be interrupted to any loads rendered under the Non-Firm Service Tariff Sheet No. G19.

A five percent (5%) voltage reduction will be initiated and the required notifications will be made to the appropriate agencies.

- b. In addition to Step (a), these steps will be initiated when the Company is capacity deficient and the system frequency is lower than 59.9 Hz but before the frequency declines to 59.8 Hz.

A public appeal will be made for a voluntary reduction of all non-essential load to all types of service and such appeal shall continue throughout duration of the emergency.

Direct contact of Customers with an electric demand of 500 kW or higher will be made requesting implementation of their voluntary reduction plan.

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As soon as possible, the Company will notify the Commission staff by telephone of the condition of the system and the steps taken.

- c. In addition to Steps (a) and (b), if the frequency declines to 59.5 Hz, the following steps, as outlined in ECAR Document No. 3, will be initiated:

At 59.5 Hz, under frequency relays will automatically shed approximately five percent (5%) of the Company's system load.

At 59.3 Hz, under frequency relays will automatically shed approximately five percent (5%) of the Company's system load.

At 59.1 Hz, under frequency relays will automatically shed approximately five percent (5%) of the Company's system load.

At 58.9 Hz, under frequency relays will automatically shed approximately five percent (5%) of the Company's system load.

At 58.7 Hz, under frequency relays will automatically shed approximately five percent (5%) of the Company's system load.

The amount of load shed at each step will be a nominal five percent (5%) of the system load prior to the beginning of the under frequency occurrence.

To arrest the decline in frequency, large blocks of load will be shed by opening transmission sources to selected areas.

At 58.2 Hz, generating units will be disconnected from the system to avoid turbine damage.

- d. If at any time during a capacity deficiency, an overload exists on a transmission facility that can be related to the deficiency, manual load shedding will be initiated immediately. Manual load shedding is typically performed at the distribution feeder level. The Company will make every effort to ensure that manual load shedding is performed in a manner that does not discriminate against any supplier or its customers.

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Curtailments that occur because of constraints on the Company's transmission system will result in a pro-rata reduction in load of all suppliers, including the Company's Standard Offer load.

C. Long-term Capacity or Fuel Shortages

The following actions shall be implemented until the Company determines that it may terminate any or all actions. The public shall be immediately advised through appropriate media sources of the implementation of these procedures.

1. Long-term capacity shortages

In the event of a shortage of generating supply that cannot be alleviated by the normal generation or purchase of additional supplies, the following steps will be taken at the appropriate time for the appropriate duration and in the sequence appropriate under the circumstances:

- a. Curtailment of loads served under Non-Firm Tariff Sheet No. G19.
- b. Utilization of supplemental firing at those generating plants where this can increase plant output and such use is authorized.
- c. Utilization of extra-load capability of generating units through overpressure and/or the removal of feedwater heaters, to the extent practicable.
- d. Curtailment of generating plant internal usage by limiting non-critical plant activities such as fuel unloading, shop maintenance, lighting and air conditioning.
- e. Curtailment of non-essential load throughout the Company's facilities.
- f. Reduce voltage not more than five percent (5%).
- g. Curtailment of short-term power deliveries to neighboring utilities.

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- h. Voluntary load curtailment by all Customers implemented as follows:
 - (i) Radio and television alert to the general public.
 - (ii) Direct contact of Customers with an electric demand of 500 kW or higher requesting that they implement their voluntary electric load curtailment plan.
 - (iii) Request, through mass communication media, for voluntary curtailment by all other Customers of a minimum of ten percent (10%) of their electric use.
 - (iv) Direct contact of all wholesale Customers, requesting that they reduce voluntarily their electric power receipts from the Company's system by a minimum of ten percent (10%).
- i. A long-term capacity shortage eventually results in a series of short-term capacity situations which will be handled by the plans previously described under Sections B.1 and B.2.

2. Long-term fuel shortages

Upon the commencement of a coal miners' strike, officially declared or otherwise, or other happening which could cause a long-term fuel shortage, the Company may vary from economic dispatch (optimum dispatch) in order to utilize generation from any plant to effectively manage the total fuel supply and shall notify the Commission that such action has been taken. The Company shall be granted emergency relief by the Commission from the applicable provisions of Rule 4901:1-11 of the Ohio Administrative Code.

The following is the Company's plan to provide for an electric energy reduction in the event of a severe fuel shortage. The Company will monitor fuel supplies and forecast usage on a daily basis and take appropriate action in three (3) steps when fuel supply to meet expected electric loads for the subsequent fifty (50), thirty-five (35), and twenty-five (25) day period is not available. Action will be implemented under each step of the plan until it is determined by the Company that any or all actions may be terminated. The public will be advised through appropriate media sources of the implementation of these procedures.

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- a. These steps will be initiated when the Company's fuel supplies have decreased to approximately fifty (50) days operation and a continued worsening trend is anticipated.
- (i) The Company shall notify the Commission of the fuel supply shortage.
 - (ii) The Company's non-essential use of energy will be reduced in any way that will not jeopardize essential operations. This includes, but is not limited to, curtailment of parking and area lighting, interior lighting--except lighting required for safety and security, and any other uses of energy both during and outside normal business hours.
 - (iii) The Company shall notify the general public of the fuel supply level through the issuing of periodic bulletins.
 - (iv) The Company may discontinue all short-term and economy sales to other utilities, and will consider emergency sales only when it will not jeopardize service to its Customers.
 - (v) The Company shall make public appeals through appropriate media asking all Customers to reduce use of electric energy because of the existing fuel shortage.
 - (vi) The Company shall make direct appeals for conservation to major commercial and industrial Customers asking them to implement their voluntary plan which includes curtailment of non-essential usage.
- b. These steps will be initiated when the Company's fuel supplies have decreased to approximately thirty-five (35) days operation and a continued worsening trend is anticipated.
- (i) Reduce voltage by five percent (5%) around the clock.

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- (ii) Make a continuous search for power from other utilities, especially those with nuclear generation.
 - (iii) The Company shall make direct contact of Customers with an electric demand of five hundred (500) kW or higher, requesting them to implement plan reducing electric consumption by thirty percent (30%) of the Customer's "monthly base period use". "Monthly base period use" is defined as the Customer's usage during the preceding twelve (12) month period. An adjustment may be made to reflect any increases or decreases of load in the most recent three (3) month period due to the installation or removal of equipment or a change in operating rate as computed in the formula in these Electric Distribution Service Rules and Regulations.
 - (iv) The Company shall request by mass communication media, voluntary curtailment by all other Customers a minimum of twenty-five percent (25%) of their electric use. These uses include lighting, air conditioning, heating, manufacturing processes, cooking, refrigeration, clothes washing and drying, and any other loads that can be curtailed. This will include a request to eliminate all non-essential energy consumption, (e.g., outdoor flood and advertising lighting, window displays), to reduce general lighting levels in stores and offices to minimum functional levels, and to reduce or eliminate parking lot lighting levels.
- c. These steps to be initiated when the Company's fuel supplies have decreased to approximately twenty-five (25) day supply and a continued working trend is anticipated.
- (i) The Company shall implement procedures for interruption of selected distribution circuits on a rotation basis as may be necessary or feasible, minimizing interruption to facilities which are essential to the public health and safety. The length of an interruption of any selected circuit should not exceed two (2) hours, and the total interruption should not exceed four (4) hours in any twenty-four (24) hour period.
 - (ii) Upon notification to the Commission, the Company shall increase the total hours of interruption in any twenty-four (24) hour period from four (4) hours to a

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maximum of eight (8) hours.

In either case, advance notice of Customer interruptions shall be given by release to appropriate news media.

(iii) The Company shall make direct contact of Customers with an electric demand of five hundred (500) kW or higher to implement a mandatory electric reduction of fifty percent (50%) based upon the same criterion as in the preceding Section C.2.b.(iii) paragraph. This may further be restricted to plant protection level (approximately twenty percent (20%) allowable usage) as circumstances dictate.

(iv) Customers failing to comply with the specified reductions for more than a thirty (30) day period will be subject to disconnection for the duration of the emergency.

(v) Through mass media, the Company shall request curtailment of all non-essential electric usage such as nighttime sports, entertainment and recreational activities, and suggest closing public museums, art galleries, etc., that require electrical illumination heating or cooling.

d. Short-term capacity shortages in neighboring control areas.

Where possible, service to the Company's Customers shall not be interrupted in order to provide emergency service to suppliers of electric energy in neighboring systems.

The neighboring system seeking assistance shall be requested to reduce its takings of electric energy if such takings endanger the reliability of bulk power supply in the Company's area. If such neighboring system fails to reduce its takings and the reliability of bulk power supply in the Company's area is endangered, steps will be taken, if appropriate, to relieve the burden on the Company's bulk power system, including as a last resort, opening of appropriate interconnections.

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D. FORMULAS FOR BASE PERIOD ADJUSTMENT

The formula for base period adjustment is as follows:

$$\text{AMBP} = \text{CM times } \frac{\text{PQ}}{\text{BPQ}}$$

Where:

AMBP = Adjusted Monthly Base Period (kW or kWh).

CM = Corresponding Month during the year immediately preceding the current year.

PQ = Average use (kW or kWh) for the second, third, and fourth monthly billing periods immediately prior to the date of the curtailment order. Should a curtailment be extended so that one of the three (3) monthly billing periods reflects usage under a curtailment period, the actual billing for that month is replaced with the AMBP previously calculated for that month.

BPQ = Average of corresponding three monthly billings prior to CM.

Example: (Curtailment ordered during month of May 1977)

1st Curtailment Month

Since the April, 1977 billing may not always be available, then for uniformity to all Customers-from the time curtailment is ordered until the May meter reading date:

$$\text{May } 77 = \frac{(\text{Jan. Feb. March}) 77}{(\text{Jan. Feb. March}) 76} \text{ times May } 76$$

2nd Curtailment Month

$$\text{June } 77 = \frac{(\text{Feb. Mar. April}) 77}{(\text{Feb. Mar. April}) 76} \text{ times June } 76$$

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3rd Curtailment Month

Since May, 1977, will reflect electric use under a curtailment, May, 1977, will be replaced with May, 1977, as calculated in the 1st Curtailment Month:

$$\text{July } 77 = \frac{(\text{Mar. Apr. May}) 77}{(\text{Mar. Apr. May}) 76} \text{ times July } 76$$

NOTE: The nomenclature for any one billing period is determined by the last reading date in the period. For example, a bill from April 2 to May 1 (where May 1 is the scheduled meter reading day for May) is considered the May billing period.

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