DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS

PUBLIC SERVICE COMMISSION

TECHNICAL STANDARDS FOR ELECTRIC SERVICE

Filed with the secretary of state on

These rules take effect immediately upon filing with the secretary of state unless adopted under section 33, 44, or 45a(9) of the administrative procedures act of 1969, 1969 PA 306, MCL 24.233, 24.244, or 24.245a. Rules adopted under these sections become effective 7 days after filing with the secretary of state.

(By authority conferred on the public service commission by section 7 of 1909 PA 106, MCL 460.557, section 2 of 1909 PA 300, MCL 462.2, section 5 of 1919 PA 419, MCL 460.55, sections 4 and 6 of 1939 PA 3, MCL 460.4 and 460.6, and sections 3, 9, and 231 of the Executive organization act of 1965, 1965 PA 380, MCL 16.103, 16.109, 16.331, and Executive Reorganization Order Nos. 1996-2, 2003-1, 2008-4, and 2011-4, MCL 445.2001, 445.2011, 445.2025, and 445.2030)

R 460.3101, R 460.3102, R 460.3203, R 460.3204, R 460.3205, R 460.3301, R 460.3303, R 460.3304, R 460.3305, R 460.3308, R 460.3408, R 460.3409, R 460.3410, R 460.3411, R 460.3501, R 460.3502, R 460.3503, R 460.3504, R 460.3505, R 460.3601, R 460.3602, R 460.3603, R 460.3605, R 460.3606, R 460.3607, R 460.3609, R 460.3610, R 460.3611, R 460.3612, R 460.3613, R 460.3614, R 460.3615, R 460.3617, R 460.3701, R 460.3702, R 460.3703, R 460.3704, R 460.3705, R 460.3801, R 460.3802, R 460.3803, and R 460.3804 of the Michigan Administrative Code are amended, R 460.3506 and R 460.3613a are added, and R 460.3309 and R 460.3608 are rescinded, as follows:

PART 1. GENERAL PROVISIONS

R 460.3101 Applicability; purpose; modification; adoption of rules and regulations by **electric** utility **or cooperative**.

Rule 101. (1) These rules apply to ~~utility service that is provided by~~ electric utilities **as that term is defined in section 2 of the electric transmission line certification act, 1995 PA 30, MCL 460.562, and cooperative electric utilities as that term is defined in section 2 of the electric cooperative member-regulation act, 2008 PA 167, MCL 460.32,** that are subject to the jurisdiction of the public service commission.

(2) These rules are intended to promote safe and adequate service to the public and to provide standards for uniform and reasonable practices by **electric** utilities **and cooperatives**.

(3) These rules do not relieve a**n electric** utility **or cooperative** from any of its duties under the laws of **this state.** ~~the state of Michigan. (See R 460.1601(3).)~~

(4) ~~Each~~ **An electric** utility **or cooperative** may adopt reasonable rules and regulations governing its relations with customers ~~which~~ **that** it finds necessary and ~~which~~ **that** are not inconsistent with these rules for electric service. Adopted rules and regulations must

be filed with, and approved by, the commission.

(5) An electric utility **or cooperative** may petition the commission for a permanent or temporary waiver or exception from these rules for good cause shown provided that the waiver or exception is consistent with the purpose of these rules.

R 460.3102 Definitions.

Rule 102. As used in these rules:

(a) "Approved by the commission" means that a commission order has been issued.

(b) "Commission" means the Michigan public service commission.

(c) "Cooperative" or "cooperative electric utility" means that term as defined in section 2(c) of the electric cooperative member-regulation act, 2008 PA 167, MCL 460.32.

~~(c)~~ **(d)** "Customer" means an **individual who is at least 18 years of age or an emancipated minor, who is an account holder, and who purchases electric service from an electric utility or cooperative** ~~account holder who purchases electric service from utility. An individual who is a customer must be at least 18 years of age or an emancipated minor~~.

~~(d)~~ **(e)** "Electric plant" means all real estate, fixtures, or property that ~~is~~ **are** owned, controlled, operated, or managed in connection with, or to facilitate the production, transmission, and delivery of, electric energy.

(f) "Electric utility" means that term as defined in section 2 of the electric transmission line certification act, 1995 PA 30, MCL 460.562.

~~(e)~~ **(g)** "Electricity meter" means a device that measures and registers the integral of an electrical quantity with respect to time.

~~(f)~~ **(h)** "Electro-mechanical meter" means a meter in which currents in fixed coils react with the currents induced in the conducting moving element, generally a disk or disks, which causes their movement proportional to the energy to be measured. This meter may also be called an induction watthour meter.

~~(g)~~ **(i)** "File" means to deliver to the commission's executive secretary.

(j) "Major interruption" means either of the following:

(i) For an electric utility or cooperative with greater than 1,000,000 customers, any weather condition that results in sustained service interruptions impacting 50,000 or more customers or an electrical system component failure that occurs under normal conditions, as defined in R 460.702, impacting 7,500 or more customers unless otherwise ordered by the commission.

(ii) For an electric utility or cooperative with less than 1,000,000 customers, any weather condition that results in sustained service interruptions impacting 5% or 2,000 or more customers, whichever is greater, or an electrical system component failure that occurs under normal conditions, as defined in R 460.702, impacting 3,000 or more customers unless otherwise ordered by the commission.

~~(h)~~ **(k)** "Meter" or "watthour meter" means an electricity meter that measures and registers the integral with respect to time of the active power of the circuit in which it is connected. The unit by which this integral is measured is usually the kilowatt-hour.

~~(i)~~ **(l)** "**Meter creep" means a continuous apparent accumulation of energy in a meter with voltage applied and the load terminals open circuited.**

~~(j)~~ **(m)** "Meter error" means a failure to accurately measure and record all of the

electrical quantities used that are required by the applicable rate or rates.

(n) "Meter shop" means a shop where meters are inspected, repaired, and tested. A meter shop may be at a fixed location or may be mobile.

(o) "Planned interruption" means the loss of electric power to 1 or more customers that results from a planned outage.

~~(k)~~ **(p)** "Premises" means an undivided piece of land that is not separated by public roads, streets, or alleys.

(q) "Regional transmission organization" means a voluntary organization of electric transmission owners, transmission users, and other entities approved by the federal energy regulatory commission to efficiently coordinate electric transmission planning, operation, and use on a regional and interregional basis.

(r) "Serious injury" means any injury or illness to an employee, including contract employees, or a non-employee that results in inpatient hospitalization.

(s) "Service point" means the point of connection between the facilities of the serving electric utility or cooperative and the premises wiring.

~~(l)~~ **(t)** "Solid state meter" means a meter in which current and voltage act on electronic (solid state) elements to produce an output proportional to the energy to be measured.

~~(m)~~ **(u)** "Submit" means to deliver to the commission's designated representative.

(v) "Sustained interruption" means any interruption that lasts more than 5 minutes and is not classified as a part of a momentary event. The duration of a customer's interruption must be measured from the time that the electric utility or cooperative is notified or otherwise becomes aware of the full or partial loss of service to 1 or more customers for longer than 5 minutes.

~~(n) "Utility" means a firm, corporation, cooperative, association, or other legal entity that is subject to the jurisdiction of the commission and that distributes, sells, or provides electric service.~~

PART 2. RECORDS**,** ~~AND~~ REPORTS**, AND OTHER INFORMATION**

R 460.3203 Documents and information; required submission.

Rule 203. ~~A~~ **An electric** utility **or cooperative** shall submit all of the following documents and information and ~~shall~~ maintain the documents and information in a current status:

(a) A copy of the **electric** utility's **or cooperative's** tariff.

(b) A copy of the **electric** utility's **or cooperative's** rules and standards that are made available to the public covering meter and service installation.

(c) A copy of each type of customer bill form.

(d) A list of the cities, villages, and townships that the **electric** utility **or cooperative** serves. Upon a request by the commission or its designated representative, the **electric** utility **or cooperative** shall also provide copies of the associated franchise information.

(e) The name, title, address, and telephone number of the persons to be contacted in connection with the following matters:

(i) General management duties.

(ii) Customer relations**, including** ~~(~~complaints~~)~~.

(iii) Engineering operations.

(iv) Meter tests and repairs.

(v) Emergencies during non-office hours.

(f) An annual copy of the **electric** utility's **or cooperative's** construction budget, which ~~shall~~ **must** be updated for all major changes to generating and transmission facilities.

(g) An "Electric Service" monthly report, on forms suitable to the commission, that shows information concerning the **electric** utility's **or cooperative's** acquisition and disposition of electric energy and other information as required. The reports ~~shall~~ **must** be submitted by ~~investor-owned~~ **electric** utilities **or cooperatives** within 50 days after the end of the quarter reported ~~and by rural electric cooperatives within 50 days after the end of the month reported~~.

(h) A map or maps that show the **electric** utility's **or cooperative's** operating area within this state, including generating stations and transmission lines with their voltage designations. Upon a request by the commission or its designated representative, the **electric** utility **or cooperative** shall also make available a map or maps that show all of the following:

(i) Distribution lines with the number of phases designated.

(ii) State boundary crossings.

(iii) Service areas.

(i) For an electric utility with greater than 100,000 customers, a line clearing quarterly report, on forms suitable to the commission, that shows information concerning line clearing amounts spent, miles or units cleared, and progress toward achieving the targeted line clearing cycle.

(j) Unless provided through other written reporting to the commission, a solid state meter annual report, on forms suitable to the commission, that shows all of the following:

(i) Information the meter infrastructure is capable of collecting.

(ii) Information the electric utility or cooperative is collecting from the meter infrastructure.

(iii) A description of the electric utility's or cooperative's current use of the information collected.

(iv) A description of the electric utility's or cooperative's future plans for information collection and use.

R 460.3204 Customer records; retention period; content.

Rule 204. (1) ~~The~~ **An electric** utility **or cooperative** shall retain, either within the **electric** utility **or cooperative** or as contracted through a third party with access by the **electric** utility **or cooperative**, customer records as necessary to comply with R ~~460.3309~~ **460.115a**. ~~The~~ **An electric** utility **or cooperative** shall retain the records for not less than 3 years.

(2) Records for customers must show, if applicable, all of the following information:

(a) Kilowatt-hour meter reading.

(b) Metered kilowatt-hour consumption.

(c) Kilowatt, kilovolt ampere, and kilovar meter reading.

(d) Kilowatt, kilovolt ampere, and kilovar measured demand.

(e) Kilowatt, kilovolt ampere, and kilovar billing demand.

(f) Total amount of bill.

R 460.3205 Security reporting.

Rule 205. (1) To inform the commission regarding matters that may affect the security or safety of persons or property, whether public or private, an electric ~~provider~~ **utility or cooperative** ~~must~~ **shall** do both of the following:

(a) Provide a written or oral annual report, individually or jointly with other electric ~~providers~~ **utilities or cooperatives**, to designated members of the commission staff regarding the electric ~~provider's~~ **utility's or cooperative's** cybersecurity program and related risk planning. This report on the threat assessment and preparedness strategy must contain all of the following information:

(i) An overview of the program describing the electric ~~provider's~~ **utility's or cooperative's** approach to cybersecurity awareness and protection.

(ii) A description of cybersecurity awareness training efforts for the electric ~~provider's~~ **utility's or cooperative's** staff members, specialized cybersecurity training for cybersecurity personnel, and participation by the electric ~~provider's~~ **utility's or cooperative's** cybersecurity staff in emergency preparedness exercises in the previous calendar year.

(iii) An organizational diagram of the electric ~~provider's~~ **utility's or cooperative's** cybersecurity organization, including positions and contact information for primary and secondary cybersecurity emergency contacts.

(iv) A description of the electric ~~provider's~~ **utility's or cooperative's** communications plan regarding unauthorized actions that result in loss of service, financial harm, or breach of sensitive business or customer data, including the electric ~~provider's~~ **utility's or cooperative's** plan for notifying the commission and customers.

(v) A redacted summary of any unauthorized actions that resulted in ~~material~~ loss of service, financial harm, or breach of sensitive business or customer data, including the parties that were notified of the unauthorized action and any remedial actions undertaken.

(vi) A description of the risk assessment tools and methods used to evaluate, prioritize, and improve cybersecurity capabilities.

(vii) General information about current emergency response plans regarding cybersecurity incidents, domestic preparedness strategies, threat assessments, and vulnerability assessments.

(b) In addition to the information required under subdivision (a) of this subrule, an **electric** ~~investor-owned public~~ utility must include in its annual report to the ~~Michigan public service~~ commission an overview of major investments in cybersecurity during the previous calendar year and plans and rationale for major investments in cybersecurity anticipated for the next calendar year.

(2) As soon as reasonably practicable and ~~prior to any~~ **before** public notification, an electric ~~provider~~ **utility or cooperative** must orally report the confirmation of a cybersecurity incident to a designated member of the commission staff and to the ~~Michigan fusion center~~ **Michigan intelligence operations center**, unless prohibited by law or court order or instructed otherwise by official law enforcement personnel, if any of the following occurred:

(a) A person intentionally interrupted the production, transmission, or distribution of electricity.

(b) A person extorted money or other thing of value from the electric ~~provider~~ **utility or cooperative** through a cybersecurity attack.

(c) A person caused a denial of service in excess of 12 hours.

(d) ~~An unauthorized person accessed or acquired data that compromises the security or confidentiality of personal information maintained by the electric provider, as defined by section 3(r) of the identity theft protection act, 2004 PA 452, MCL 445.63(r)~~ **A security breach, as that term is defined in section 3 of the identity theft protection act, 2004 PA 452, MCL 445.63**, ~~prior to~~ **before** public and customer notification.

(e) At the electric ~~provider's~~ **utility's or cooperative's** discretion, any other cybersecurity incident, attack, or threat which the electric ~~provider~~ **utility or cooperative** deems notable, unusual, or significant.

~~(3) For purposes of this rule, "electric provider" means any of the following:~~

~~(a) Any person or entity that is regulated by the commission for the purpose of selling electricity to retail customers in this state.~~

~~(b) A member-regulated cooperative electric utility in this state.~~

~~(4)~~ **(3)** For purposes of subrule (2) of this rule, "person" means any individual, firm, corporation, educational institution, financial institution, governmental entity, or legal or other entity.

~~(5)~~ **(4)** For purposes of subrule (2)(c) of this rule, "denial of service" means, for an electric ~~provider~~ **utility or cooperative**, a successful attempt to prevent a legitimate user from accessing electronic information made accessible by the electric ~~provider~~ **utility or cooperative** or by another party on the behalf of the electric ~~provider~~ **utility or cooperative**.

PART 3. METER REQUIREMENTS

R 460.3301 Metered measurement of electricity required; exceptions.

Rule 301. (1) All electricity that is sold by ~~a~~ **an electric** utility **or cooperative** ~~shall~~ **must** be on the basis of meter measurement, except where the consumption can be readily computed or except as provided for in ~~a~~ **the electric** utility's **or cooperative's** filed rates.

(2) Where practicable, the consumption of electricity within ~~the~~ **an electric** utility **or cooperative** or by administrative units associated with the **electric** utility **or cooperative** ~~shall~~ **must** be metered.

(3) Meters ~~shall be in compliance~~ **must comply** with part 6 of these rules.

R 460.3303 Meter reading data.

Rule 303. The meter reading data must include all of the following information:

(a) A suitable designation identifying the customer.

(b) **An** ~~I~~**i**dentifying number and description of the meter.

(c) Meter readings or, if **an electric utility or cooperative cannot obtain an actual meter reading, then the electric utility or cooperative shall maintain records of the efforts made to obtain a reading and its reasons for failing to obtain it** ~~a reading was not taken, an indication that a reading was not taken~~.

(d) Any applicable multiplier or constant.

R 460.3304 Meter data **management** ~~collection~~ system**.**

Rule 304. A meter data **management** ~~collection~~ system that takes data from recording meters must indicate all of the following meter information:

(a) The date of the record.

(b) The equipment numbers.

(c) A suitable designation identifying the customer.

(d) The appropriate multipliers.

R 460.3305 Meter multiplier.

Rule 305. If it is necessary to apply a multiplier to the meter registration, then the multiplier ~~shall~~ **must** be displayed on ~~the face of~~ the meter.

R 460.3308 Standards of good practice; adoption by reference.

Rule 308. In the absence of specific rules of the commission, ~~a~~ **an electric** utility **or cooperative** shall apply the provisions of the publications set forth in this rule as standards of accepted good practice. The following standards are available from the American National Standards Institute (ANSI), Customer Service, 25 West 43rd St., 4th floor, New York, New York, 10036, USA, telephone number: 1-212-642-4900 or via the internet at website: http://webstore.ansi.org at the cost listed below as of the time of adoption of these rules, plus a handling charge (for paper copies):

(a) American National Standards Institute standards for electricity meters ANSI C12.1-2014, cost ~~$279.00~~ **$362.00**, ~~and~~ C12.20-2015, cost ~~$107.00~~ **$125.00, and C12.22-2012, cost $264.00**.

(b) American National Standards Institute/American Society for Quality Sampling Procedures and Tables for Inspection by Variables for Percent Nonconforming (ANSI/ASQ Z1.9-2003(R201**8**~~3~~)). Cost $179.00.

(c) American National Standards Institute IEEE Standard Requirements for Instrument Transformers (~~ANSI~~ **IEEE** C57.13-2016). Cost ~~$119.00~~ **$99.00**.

(d) American National Standards Institute IEEE Standard for High Accuracy Instrument Transformers, IEEE Std. C57.13.6-2005. Cost ~~$57.00~~ **$50.00**.

R 460.3309 ~~Metering inaccuracies; billing adjustments.~~ **Rescinded.**

~~Rule 309. (1) An adjustment of bills for service for the period of inaccuracy must be made for over registration and may be made for under registration under any of the following conditions:~~

~~(a) A mechanical meter creeps.~~

~~(b)A metering installation is found upon any test to have an average inaccuracy of more than 2.0%.~~

~~(c) A demand metering installation is found upon any test to have an average inaccuracy of more than 1.0% in addition to the inaccuracies allowed under R 460.3609.~~

~~(d) A meter registration has been found to be inaccurate due to apparent tampering by a person or persons known or unknown.~~

~~(2) The amount of the adjustment of the bills for service must be calculated on the basis that the metering equipment is 100% accurate with respect to the testing equipment used to make the test. The average accuracy of watt-hour meters must be calculated in accordance with R 460.3616.~~

~~(3) If the date when the inaccuracy in registration began can be determined, then that date must be the starting point for determining the amount of the adjustment and is subject to R 460.115.~~

~~(4) If the date when the inaccuracy in registration cannot be determined, then it is assumed that the inaccuracy existed for the period of time immediately preceding discovery of the inaccuracy that is equal to 1/2 of the time since the meter was installed on the present premises, 1/2 of the time since the last test, or 6 years, whichever is the shortest period of time, except as otherwise provided in subrule (5). of this rule and subject to subrule (12) of this rule.~~

~~(5) The inaccuracy in registration due to creep must be calculated by timing the rate of the creeping under R 460.3607 and by assuming that the creeping affected the registration of the meter for the period of time immediately preceding discovery of the inaccuracy that is equal to 1/4 of the time since the meter was installed on the present premises, 1/4 of the time since the last test, or 6 years, whichever is the shortest period of time, subject to subrule (12) of this rule.~~

~~(6) If the average inaccuracy cannot be determined by test because part, or all, of the metering equipment is inoperative, then the utility may use the registration of check metering installations, if any, or estimate the quantity of energy consumed based on available data. The utility shall advise the customer of the metering equipment failure and of the basis for the estimate of the quantity billed. The same periods of inaccuracy must be used as explained in this rule.~~

~~(7) Recalculation of bills must be on the basis of the recalculated monthly consumption.~~

~~(8) Refunds must be made to the 2 most recent customers who received service through the meter found to be inaccurate. If a former customer of the utility, a notice of the amount of the refund must be mailed to such customer at the last known address. The utility shall, upon demand made by the customer within 3 months of mailing of the notice, forward the refund to the customer.~~

~~(9) If the external meter display is not operating so that the customer can determine the energy used, but the meter is recording energy correctly, then no adjustment is required. The utility shall repair or replace the meter promptly upon discovery of the failure.~~

PART 4. CUSTOMER RELATIONS

R 460.3408 Temporary service; cost of installing and removing equipment owned by **an electric** utility **or cooperative**.

Rule 408. If ~~the~~ **an electric** utility **or cooperative** renders temporary service to a customer, it shall require that the customer bear the cost of installing and removing the **electric** utility- **or cooperative**-owned equipment in excess of any salvage realized.

R 460.3409 Protection of **electric** utility- **or cooperative**-owned equipment on customer's premises.

Rule 409. (1) The customer shall use reasonable diligence to protect **electric** utility- **or cooperative**-owned equipment on the customer's premises and to prevent tampering or interference with the equipment. The **electric** utility **or cooperative** may shut off service ~~in accordance with~~ **pursuant to** applicable rules of the commission if the

metering or wiring on the customer's premises is unsafe, or has been tampered with or altered in any manner that allows unmetered or improperly metered energy to be used.

(2) If ~~a~~ **an electric** utility **or cooperative** shuts off service for unauthorized use of service, then both of the following provisions apply:

(a) The **electric** utility **or cooperative** may bill the customer for the unmetered energy used and any damages that have been caused to **electric** utility- **or cooperative-**owned equipment.

(b) The **electric** utility **or cooperative** is not required to restore service until the customer does all of the following:

(i) Makes reasonable arrangements for payment of the charges in subdivision (a) of this subrule.

(ii) Agrees to pay the approved reconnection charges.

(iii) Agrees to make provisions and pay charges for relocating **electric** utility- **or cooperative-**owned equipment or making other reasonable changes that may be requested by the **electric** utility **or cooperative** to provide better protection for its equipment.

(iv) Provides the **electric** utility **or cooperative** with reasonable assurance of the customer's compliance with the **electric** utility's **or cooperative's** approved standard rules and regulations.

(3) Failure to comply with the terms of an agreement to restore service after service has been shut off pursuant to subrule (1) of this rule is cause to shut off service ~~in accordance with~~ **pursuant to** the rules of the **electric** utility **or cooperative** and the commission.

(4) If service is shut off pursuant to subrule (3) of this rule and the **electric** utility **or cooperative** must incur extraordinary expenses to prevent the unauthorized restoration of service, the **electric** utility **or cooperative** may bill the customer for the expenses, in addition to all other charges that may apply under this rule, and may require that the expenses and other charges be paid before restoring service. A reasonable effort must be made to notify the customer at the time of shutoff that additional charges may apply if an attempt is made to restore service that has been shut off.

(5) The customer of record who benefits from the unauthorized use is responsible for payment to the **electric** utility **or cooperative** for the energy consumed.

(6) The **electric** utility **or cooperative** may bill the customer for the reasonable actual cost of the tampering investigation.

R 460.3410 Extension of facilities plan.

Rule 410. ~~Each~~ **An electric** utility **or cooperative** shall develop a plan, approved by the commission, for the extensions of facilities where the investment is in excess of that included in the regular rates for service and for which the customer is required to pay all or part of the cost.

R 460.3411 Extension of electric service in areas served by 2 or more **electric** utilities **or cooperatives.**

Rule 411. (1) As used in this rule:

(a) "Customer" means the buildings and facilities served rather than the individual, association, partnership, or corporation served.

(b) "Distances" means measurements ~~which~~ **that** are determined by direct measurement from the closest point of ~~a~~ **an electric** utility's **or cooperative's** existing distribution facilities to the customer's meter location and ~~which~~ **that** are not determined by the circuit feet involved in any extension.

(c) "Distribution facilities" means single-phase, V-phase, and 3-phase facilities and does not include service drops.

(2) Existing customers shall not transfer from ~~one~~ **1 electric** utility **or cooperative** to another.

(3) Prospective customers for single-phase service that are located within 300 feet of the distribution facilities of 2 or more **electric** utilities **or cooperatives** shall have the service of their choice.

(4) Prospective customers for single-phase service that are located more than 300 feet, but within 2,640 feet, from the distribution facilities of 1 or more **electric** utilities **or cooperatives** shall be served by the closest **electric** utility **or cooperative**.

(5) Prospective customers for single-phase service that are located more than 2,640 feet from the distribution facilities of any **electric** utility **or cooperative** shall have the service of their choice, subject to the provisions of subrule (10) of this rule.

(6) Prospective customers for 3-phase service that are located within 300 feet of the 3-phase distribution facilities of 2 or more **electric** utilities **or cooperatives** shall have the service of their choice.

(7) Prospective customers for 3-phase service that are located more than 300 feet, but within 2,640 feet, from the 3-phase distribution facilities of 1 or more **electric** utilities **or cooperatives** shall be served by the closest **electric** utility **or cooperative**.

(8) Prospective customers for 3-phase service that are located more than 2,640 feet from the 3-phase distribution facilities of any **electric** utility **or cooperative** shall have the service of their choice, subject to the provisions of subrule (10) of this rule.

(9) Regardless of any other provisions in these rules, a prospective industrial customer, as defined under the industrial classification manual, division D, manufacturing, for 3-phase service that will have a connected load of more than 500 kilowatts shall have its choice of service from any nearby **electric** utility **or cooperative** that is willing to construct the necessary facilities. The facilities that are constructed to serve an industrial customer that would otherwise have been served by another **electric** utility **or cooperative** shall not qualify as a measuring point in determining which **electric** utility **or cooperative** will serve new customers in the future.

(10) The extension of distribution facilities, except as provided in subrules (3), (4), (6), and (7) of this rule, where an extension will be located within 1 mile of another **electric** utility's **or cooperative's** distribution facilities, shall not be made by ~~a~~ **an electric** utility **or cooperative** without first giving the commission and any affected **electric** utility **or cooperative** 10 days' notice of its intention by submitting a map showing the location of the proposed new distribution facilities, the location of the prospective customers, and the location of the facilities of any other **electric** utility **or cooperative** in the area. If no objections to the proposed extension of distribution facilities are received by the commission within the 10-day notice period, the **electric** utility **or cooperative** may proceed to construct the facilities. If objections are received, the determination of which **electric** utility **or cooperative** will extend service may be made the subject of a public hearing and a determination by the commission, upon proper

application by any affected party.

(11) The first **electric** utility **or cooperative** serving a customer pursuant to these rules is entitled to serve the entire electric load on the premises of that customer even if another **electric** utility **or cooperative** is closer to a portion of the customer's load.

(12) ~~A~~ **An electric** utility **or cooperative** may waive its rights to serve a customer or group of customers if another **electric** utility **or cooperative** is willing and able to provide the required service and if the commission is notified and has no objections.

(13) Nothing contained in these rules shall be construed to circumvent the requirements of ~~Act No. 69 of the Public Acts of 1929~~ **the certificate of convenience and necessity, 1929 PA 69**, ~~as amended, being S460.501 et seq. of the Michigan Compiled Laws~~ **MCL 460.501 to 460.506**, or to authorize ~~a~~ **an electric** utility **or cooperative** to extend its service into a municipality then being served by another **electric** utility **or cooperative** without complying with the provisions of ~~Act No. 69 of the Public Acts of 1929~~ **1929 PA 69**, **MCL 460.501 to 460.506** ~~as amended~~.

(14) Regardless of other provisions of this rule, except subrule (9) **of this rule**, ~~a~~ **an electric** utility **or cooperative** shall not extend service to a new customer in a manner that will duplicate the existing electric distribution facilities of another **electric** utility **or cooperative**, except where both **electric** utilities **or cooperatives** are within 300 feet of the prospective customer. Three-phase service does not duplicate single-phase service when extended to serve a 3-phase customer.

(15) The first **electric** utility **or cooperative** to serve a customer in a new subdivision under the other provisions of this rule has the right to serve the entire subdivision. In extending service to reach the subdivision, the **electric** utility **or cooperative** shall not duplicate the existing facilities of another **electric** utility **or cooperative**.

(16) An existing industrial customer that meets the criteria in subdivision (a) of this subrule and that desires to change electric providers is entitled to a 1-hour meeting as set forth in subdivision (b) of this subrule.

(a) The existing industrial customer shall comply with all of the following:

(i) Meet the characteristics of the industrial classification manual, division D, manufacturing.

(ii) Have a connected load of more than 500 kilowatts.

(iii) Be served with 3-phase electric service.

(iv) Be located within 5 miles of any 3-phase facilities owned and operated by the non-incumbent electric utility or cooperative.

(b) The 1-hour meeting must comply with all of the following:

(i) Occur within 60 days of the customer's request for the meeting.

(ii) Include in attendance the customer, the electric utility or cooperative currently serving the customer, and the electric utility or cooperative from whom the customer proposes to take service.

(iii) Include a discussion of the customer's proposal to switch providers.

(c) If all attendees agree, the meeting may take place via telecommunications.

(d) The customer or group of customers are entitled to not less than 1 meeting in a 3-year period. Additional meeting requests during the 3-year period may be approved or denied by the incumbent electric utility or cooperative, the non-incumbent electric utility or cooperative, or both.

(17) An incumbent electric utility or cooperative may waive its right to serve a

customer or group of customers pursuant to subrule (12) of this rule. The incumbent electric utility's or cooperative's decision must be provided in writing to the customer within 60 days of the meeting described in subrule (16)(b) of this rule. Any facilities that are constructed to serve an existing industrial customer that has switched providers do not qualify as a measuring point in determining which electric utility or cooperative will serve new customers in the future.

PART 5. ENGINEERING

R 460.3501 Electric plant; construction, installation, maintenance, and operation pursuant to good engineering practice required.

Rule 501. The electric plant of ~~the~~ **an electric** utility **or cooperative** ~~shall~~ **must** be constructed, installed, maintained, and operated pursuant to accepted good engineering practice in the electric industry to ~~assure~~ **ensure**, as far as reasonably possible, continuity of service, uniformity in the quality of service furnished, and the safety of persons and property.

R 460.3502 Standards of good practice; adoption by reference.

Rule 502. In the absence of specific rules of the commission, ~~a~~ **an electric** utility **or cooperative** shall apply the standards of accepted good practice that are adopted by reference in R 460.811~~ et seq~~.

R 460.3503 **Electric** ~~Utility~~ **utility or cooperative** plant capacity.

Rule 503. The electric capacity regularly available from all sources ~~shall~~ **must** be large enough to meet all normal demands for service and to provide a reasonable reserve for emergencies.

R 460.3504 Electric plant inspection program.

Rule 504. ~~Each~~ **An electric** utility **or cooperative** shall adopt a program of inspection of its electric plant to ensure safe and reliable operation. The frequency of the various inspections ~~shall~~ **must** be based on the **electric** utility's **or cooperative's** experience and accepted good practice. Each **electric** utility **or cooperative** shall keep sufficient records to verify compliance with its inspection program.

R 460.3505 Electric ~~Utility~~ **utility or cooperative** line clearance program.

Rule 505. ~~Each~~ **An electric** utility **or cooperative** shall adopt **and implement** a program of maintaining adequate line clearance through the use of industry-recognized guidelines. A line clearance program **must do all of the following:** ~~shall recognize the national electric safety code standards that are adopted by reference in R 460.811 et seq. The program shall include tree trimming~~.

(a) Recognize the national electric safety code standards that are adopted by reference in R 460.813.

(b) Ensure safety and reliability.

(c) Include tree trimming.

(d) Provide customer and property owner notifications not less than 3 days and no more than 90 days before planned maintenance tree trimming. Emergent and

emergency tree trimming are exempt. Customer and property owner notifications must include all of the following:

(i) A customer service phone number.

(ii) Personal contact with the customer that includes 1 or more of the following:

(A) An in-person visit to the customer's premises with a door hanger.

(B) A phone call.

(C) Written notification to persons residing within the target area.

(iii) Personal contact or written notification to local government officials within the target area.

(e) Statistically relevant representative inspection after line clearing.

R 460.3506 Cybersecurity program.

Rule 506. (1) An electric utility or cooperative shall develop, implement, and maintain a cybersecurity program. At a minimum, the cybersecurity program must include procedures to do all of the following:

(a) Protect against the unauthorized acquisition, access, use, or disclosure of customer, electric utility, or cooperative information.

(b) Protect against the unauthorized destruction, degradation, or disruption of electric utility or cooperative information or communication systems, networks, or infrastructure.

(c) Identify and mitigate software vulnerabilities.

(d) Implement a least-privileged electronic access approach to electric utility or cooperative assets and information.

(e) Manage cybersecurity risks relating to vendors and suppliers.

(f) Respond to and recover from a cybersecurity incident as detailed in a cybersecurity incident response plan.

(g) Determine appropriate training requirements for cybersecurity staff and ensure they are met.

(h) Inventory the electric utility's or cooperative's information technology and operations technology hardware and software assets.

(2) In addition to the requirements under subrule (1) of this rule, an electric utility or cooperative shall do all of the following:

(a) Conduct annual assessments of the cybersecurity program using the United States National Institute of Standards and Technology Cybersecurity Framework, the Department of Energy Cybersecurity Capability Maturity Model, or a similar tool.

(b) Conduct an annual exercise to test the procedures to ensure the effectiveness of the program.

(c) At least quarterly, conduct cyber threat simulations, such as phishing, to test employee awareness and responsiveness to cyber threats.

(d) At least annually, conduct cybersecurity awareness and procedure training.

(3) By March 31 of each year, on forms suitable to the commission, an electric utility or cooperative shall file with the commission a written attestation, signed by an officer of the electric utility or cooperative who is authorized to manage the operations of the cybersecurity program, that the electric utility or cooperative maintains a cybersecurity program in compliance with this rule.

PART 6. METERING EQUIPMENT INSPECTIONS AND TESTS

R 460.3601 Customer-requested meter tests.

Rule 601. (1) Upon request by a customer to ~~a~~ **an electric** utility **or cooperative**, ~~a~~ **an electric** utility **or cooperative** shall make a test of the meter serving the customer **if the customer does not request more than 1 test in any 12-month period**. Any charge to the customer ~~shall~~ **must** conform with the **electric** utility's **or cooperative's** filed and approved **tariff** rates and rules. ~~Provided, however, that the utility need not make more than 1 test in any 12-month period.~~

(2) The customer, or his or her representative, may be present when his or her meter is tested.

(3) A report of the results of the test ~~shall~~ **must** be made to the customer within a reasonable time after the completion of the test, and a record of the report, together with a complete record of each test, ~~shall~~ **must** be kept on file at the office of the **electric** utility **or cooperative**.

R 460.3602 Meter and associated device inspections and tests; certification of accuracy.

Rule 602. Every meter ~~shall~~ **must** be inspected and tested, and associated device~~s(s) shall~~ **must** be inspected, in the meter shop of the **electric** utility **or cooperative**, or a meter testing facility certified by the **electric** utility **or cooperative**, before being placed in service. The accuracy of each meter ~~shall~~ **must** be certified to be within the tolerances permitted by these rules, except that the **electric** utility **or cooperative** may rely on the certification of accuracy by the manufacturer on all new meters.

R 460.3603 Meters with transformers; post-installation inspection; exception.

Rule 603. Meters with associated instrument transformers ~~and phase-shifting transformers shall~~ **must** be inspected to determine the proper operation and wiring connections. Inspections ~~shall~~ **must** be made within 60 days after installation by a qualified person who, when possible, should be someone other than the original installer. ~~All self-contained, socket~~ **Socket**-type ~~meters~~ **meter exchanges** are excluded from post-installation inspections, except that the original installation ~~shall~~ **must** be inspected when the meter is installed.

R 460.3605 Metering electrical quantities.

Rule 605. (1) All electrical quantities that are to be metered as provided in R 460.3301 must be metered by commercially acceptable instruments which are owned and maintained by the **electric** utility **or cooperative**.

(2) Every reasonable effort must be made to measure at 1 point all the electrical quantities necessary for billing a customer under a given rate.

(3) **For electro-mechanical meters,** ~~Metering~~ **metering** facilities located at any point where energy may flow in either direction and where the quantities measured are used for billing purposes ~~shall~~ **must** consist of meters equipped with ratchets or other devices to prevent reverse registration and ~~shall~~ **must** be so connected as to separately meter the energy flow in each direction, unless used to implement **an electric** utility **or cooperative** tariff approved by the commission for service provided under a net

metering program.

(4) ~~A~~ **For electro-mechanical meters, an electric** utility **or cooperative** shall not employ reactive metering for determining the average power factor for billing purposes where energy may flow in either direction or where the customer may generate an appreciable amount of his or her energy requirements at any time, unless suitable directional relays and ratchets are installed to obtain correct registration under all conditions of operation.

(5) **For electro-mechanical meters,** ~~All~~ **all** electric service of the same type rendered by a**n electric** utility **or cooperative** under the same rate schedule must be metered with instruments having like characteristics, except that the commission may be requested to approve the use of instruments of different types if their use does not result in unreasonable discrimination. Either all of the reactive meters which may run backwards or none of the reactive meters used for measuring reactive power under 1 schedule must be ratcheted. This rule is only applicable to equipment owned by the **electric** utility **or cooperative**.

R 460.3606 ~~Nondirect reading meters and meters~~ **Meters** operating from instrument transformers; marking of multiplier on instruments; ~~marking of charts and magnetic tapes; marking of register ratio on meter registers;~~ watthour constants.

Rule 606. (1) ~~Meters that are not direct reading and meters~~ **Meters** operating from instrument transformers must have the multiplier plainly marked on the ~~dial~~ **nameplate** of the instrument or otherwise suitably marked. ~~All charts and magnetic tapes taken from recording meters must be marked with the date of the record, the meter number, customer, and chart multiplier, except as in R 460.3304.~~

~~(2) The register ratio must be marked on all meter registers.~~

~~(3)~~ **(2)** The watthour constant **(K sub h)** for the meter itself must be **displayed** ~~shown~~ on ~~all~~ **the** watthour meter **nameplate**.

R 460.3607 Watt-hour meter requirements.

Rule 607. (1) Watthour meters that are used for measuring electrical quantities supplied ~~shall~~ **must** conform to ANSI **C12.1 or C12.20** specifications and meet all of the following requirements:

(a) Be of proper design for the circuit on which the meters are used; be in good mechanical and electrical condition; and have adequate insulation, correct internal connections, and correct register.

(b) **For electro-mechanical meters,** ~~Not~~ **not** creep at no load with all load wires disconnected at a rate of ~~one~~ **1** complete revolution of the moving element in ~~ten~~ **10** minutes when potential is impressed.

(c) Be accurate to within plus or minus ~~1.0%~~ **1% for electro-mechanical meters and 0.8% for solid state meters**, referred to the portable standard watthour meter as a base, at ~~two~~ **2** unity power factor loads: light load (l.l.) and **full** ~~heavy~~ load (~~h~~**f**.l.).

~~Meter Must be Accurate within ± 1.0% to Portable Standard~~

Meter Class	Light Load Test Amperes	~~Heavy~~ **Full** Load Test Amperes	Inductive Load 50% Lagging Power Factor Test Amperes
Self-Contained	10% Rated Test Amperes of Meter	~~75-~~100% Rated Test Amperes of Meter	~~75-~~ 100% Rated Test Amperes of Meter
Transformer-~~Rated~~ **rated**	~~5-~~10% Rated Test Amperes of Meter	~~75-~~100% Rated Test Amperes of Meter	~~75-~~100% Rated Test Amperes of Meter

(d) Be accurate to within plus or minus ~~2.0%~~ **2% for electro-mechanical meters and 1.6% for solid state meters**, referred to the portable standard watthour meter as a base, at inductive load (i.l.).

(2) Polyphase meters ~~shall~~ **must** have their elements in balance within ~~2.0%~~ **2% for electro-mechanical meters and 1.6% for solid state meters** at rated test amperes at unity power factor and at approximately 50% lagging power factor.

~~(3) Meters that are used with instrument transformers shall be adjusted so that the overall accuracy of the metering installation meets the requirements of this rule.~~

~~(4) Meters and associated devices shall be adjusted as close as practical to zero error and within the accuracy limits specified in subrule (1)(c) of this rule.~~

R 460.3608 ~~Demand meters, registers, and attachments; requirements.~~ **Rescinded.**

~~Rule 608. A meter that records, or is capable of recording electric demand, is subject to the requirements of this rule. A demand meter, demand register, or demand attachment that is used to measure a customer's service shall meet all of the following requirements:~~

~~(a) Be in good mechanical and electrical condition.~~

~~(b) Have proper constants, indicating scale, contact device, recording tape or chart, and resetting device.~~

~~(c) Not register at no load.~~

~~(d) Curve-drawing meters that record quantity-time curves and integrated-demand meters must be accurate to within plus or minus 2.0% of full scale throughout their working range. Timing elements measuring specific demand intervals must be accurate to within plus or minus 2.0%, and the timing element which serves to provide a record of the time of day when the demand occurs must be accurate to within plus or minus 4 minutes in 24 hours.~~

R 460.3609 Instrument transformers used in conjunction with metering equipment; requirements~~; phase shifting transformers; secondary voltage~~.

Rule 609. (1) Instrument transformers used in conjunction with metering equipment to

measure a customer's service ~~shall~~ **must** meet both of the following requirements:

(a) Be in proper mechanical condition and have satisfactory electrical insulation for the service on which used.

(b) **Meet minimum metering accuracy class 0.3 as defined in IEEE/ANSI C57.13-2016 or accuracy class 0.15 as defined in IEEE C57.13.6-2005.** ~~Have characteristics such that the combined inaccuracies of all transformers supplying 1 or more meters in a given installation will not exceed the percentages listed in the following chart:~~

~~100% Power 50%~~
~~Factor Power Factor~~

~~Current~~	~~10%~~	~~100%~~	~~10%~~	~~100%~~
~~Error 1%~~	~~0.75%~~	~~3%~~	~~2%~~	

~~(2) Meters that are used in conjunction with instrument transformers shall be adjusted so that the overall accuracies will come within the limits specified in this part.~~

~~(3) Instrument transformers shall be tested with the meter with which they are associated by making an overall test or may be checked separately. If the transformers are tested separately, the meters shall also be checked to see that the overall accuracy of the installation is within the prescribed accuracy requirements. (See R 460.3613 (6).)~~

~~(4)~~ **(2)** The results of tests of instrument transformers ~~shall~~ **must** be kept on record and ~~shall be~~ available for use.

~~(5) Phase shifting transformers shall have secondary voltages under balanced line voltage conditions within plus or minus 1.0% of the voltage impressed on the primary side of the transformer.~~

R 460.3610 Portable indicating voltmeters; accuracy.

Rule 610. All portable indicating voltmeters that are used for determining the quality of service voltage to customers ~~shall~~ **must** be checked against a suitable secondary reference standard at least once every 6 months for **electro-mechanical** ~~analog devices~~ **voltmeters**, and once every 12 months for **solid state** ~~digital devices~~ **voltmeters**. The accuracy of these voltmeters ~~shall~~ **must** be rated so that the error of the indication is not more than plus or minus 1% of full scale. If the portable indicating voltmeter is found to be in error by more than the rated accuracy at commonly used scale deflections, it ~~shall~~ **must** be adjusted.

R 460.3611 Meter testing equipment; availability; provision and use of primary standards.

Rule 611. (1) ~~A~~ **An electric** utility **or cooperative** shall maintain sufficient laboratories, meter testing shops, secondary standards, instruments, and facilities to determine the accuracy of all types of meters and measuring devices used by the **electric** utility **or cooperative**. The **electric** utility **or cooperative** may, if necessary **and with commission approval**, have all or part of the required tests made, or its portable testing equipment checked, by another **electric** utility **or cooperative** or agency ~~which~~ **that uses standards with traceable accuracies to the United States National Institute of Standards and Technology (NIST) or National Research Council (NRC) Canada** ~~is approved by the commission~~ and ~~which~~ **that** has adequate and sufficient testing equipment to comply with these rules.

(2) At a minimum, ~~a~~ **an electric** utility **or cooperative** shall keep all of the following

testing equipment available:

(a) One or more portable standard watthour meters that has a capacity and voltage range ~~which~~ **that** is adequate to test all watthour meters used by the **electric** utility **or cooperative**.

(b) Portable indicating instruments that are necessary to determine the accuracy of all instruments used by the **electric** utility **or cooperative**.

(c) One or more secondary standards to check each of the various types of portable standard watthour meters used for testing watthour meters. Each secondary standard ~~shall~~ **must** consist of an approved portable standard watthour meter ~~which~~ **that** is kept permanently at 1 point and ~~which~~ **that** is not used for fieldwork. Standards ~~shall~~ **must** be well-compensated for both classes of temperature errors, ~~shall be~~ practically free from errors due to ordinary voltage variations, and ~~shall be~~ free from erratic registration due to any cause.

(d) Suitable standards, which are not used for fieldwork, to check portable instruments used in testing.

(3) ~~A~~ **An electric** utility **or cooperative** shall provide and use primary standards that have accuracies ~~which~~ **that** are traceable to the United States National Institute of Standards and Technology (NIST) **or National Research Council (NRC) Canada**.

R 460.3612 Test standards; accuracy.

Rule 612. (1) The accuracies of all primary reference standards ~~shall~~ **must** be certified as traceable to the National Institute of Standards and Technology (NIST) **or National Research Council (NRC) Canada**, either directly or through other recognized standards laboratories. These standards ~~shall~~ **must** have their accuracy certified at the time of purchase. Standard cells ~~shall~~ **must** be intercompared regularly and at least 1 standard cell ~~shall~~ be checked by a standardizing laboratory at intervals of not more than 2 years. Reference standards of resistance, potentiometers, and volt boxes ~~shall~~ **must** be checked at intervals of not more than 3 years.

(2) Secondary watthour meter standards ~~shall~~ **must** not be in error by more than plus or minus 0.3% at loads and voltages at which they are to be used, and ~~shall~~ **must** not be used to check or calibrate working standards, unless the secondary standard has been checked and adjusted, if necessary, within the preceding 6 months. Each secondary standard watthour meter ~~shall~~ **must** have calibration data available and ~~shall~~ have a history card.

(3) Secondary standards indicating instruments ~~shall~~ **must** not be in error by more than plus or minus 0.5% of indication at commonly used scale deflection and ~~shall~~ **must** not be used to check or calibrate portable indicating instruments, unless the secondary standard has been checked and adjusted, if necessary, within the preceding 12 months. A calibration record ~~shall~~ **must** be maintained for each standard.

(4) Regularly used working portable standard watthour meters ~~shall~~ **must** be compared with a secondary standard at least once every 6 months. Infrequently used working standards ~~shall~~ **must** be compared with a secondary standard before they are used.

(5) Working portable standard watthour meters ~~shall~~ **must** be adjusted so that their percent registration is within 99.7% and 100.3% at 100% power factor and within 99.5% and 100.5% at 50% lagging power factor at all voltages and loads at which the standard may be used. A history and calibration record ~~shall~~ **must** be kept for each

working standard.

(6) The meter accuracies required in this rule for all primary, secondary, and working standards ~~shall~~ **must** be referred to 100%. Service measuring equipment ~~shall~~ **must** be adjusted to within the accuracies required assuming the portable test equipment to be 100% accurate with the calibration correction taken into consideration.

R 460.3613 **Solid state** ~~Meter~~ **meter** and metering equipment testing requirements.

Rule 613. (1) The testing of any unit of metering equipment must consist of a comparison of its accuracy with a standard of known accuracy. Units that are not properly connected or that do not meet the accuracy or other requirements of these meter and metering equipment rules at the time of testing ~~shall~~ **must** be reconnected or ~~rebuilt to meet such requirements and must be adjusted to within the required accuracy and as close to zero error as practicable or else their use shall be~~ discontinued.

(2) **All solid state single-phase, 3-phase, network, self-contained, and transformer-rated** ~~Self-contained, electro-mechanical, solid state, single-phase, and all network~~ meters must ~~be in compliance~~ **comply** with ~~all~~ **both** of the following requirements:

(a) Be checked for accuracy as provided for in R 460.3602.

(b) Notwithstanding the provisions of subdivision (a) of this subrule, ~~upon application to the commission and upon receipt of an order granting approval,~~ the testing of ~~self-contained, electro-mechanical,~~ solid state~~, single-phase and all network~~ meters in service must be governed by a quality control plan ~~as follows:~~ **that must test meters for accuracy or rejection pursuant to normal inspection as set forth in subrule (3) of this rule, tightened inspection as set forth in subrule (4) of this rule, or reduced inspection as set forth in subrule (5) of this rule, as applicable.**

(3) Normal inspection of in-service solid state meters must include all of the following:

~~(i)~~ **(a)** Meters must be divided into homogenous groups by manufacturers' types, and certain manufacturers' types must be further subdivided into separate groups by manufacturers' serial numbers.

~~(ii)~~ **(b)** The meters in each homogeneous group must then be further subdivided into lots of not less than 301, and not more than 35,000, meters each, except that meters of the most recent design may be combined into lots regardless of manufacturers' type, except that where the number of meters of a single type is 8,001 or more, that number of meters must be segregated by types for the formation of lots.

~~(iii)~~ **(c)** From each assembled lot, a sample of the size specified in table A-2, ANSI/ASQ~~C~~ Z1.9-**2003(R2018) using general inspection level II**, must be drawn annually. The sample must be drawn at random.

~~(iv)~~ **(d)** The meters in each sample must be tested for accuracy **as follows:** ~~pursuant to paragraphs (v) to (xi) of this subdivision.~~

~~(v)~~ **(i)** The test criteria for acceptance or rejection of each lot must be based on the test **of the sample** at heavy load only and must be that designated for double specification limits and an acceptable quality level (AQL) that is not higher than 2.50 (normal inspection) as ~~shown~~ **set forth** in table B-3, ANSI/ASQC Z1.9-**2003(R2018)**.

~~(vi)~~ **(ii)** The necessary calculations must be made pursuant to Example B-3 of ANSI/ASQC Z1.9. The upper and lower specification limits, U and L, must be 102% and 98%, respectively.

~~(vii)~~ **(iii)** A lot must be rejected if the total estimated percent defective (p) exceeds the appropriate maximum allowable percent defective (M) as determined from table B-3 as specified in paragraph ~~(v)~~ **(i)** of this subdivision.

~~(viii)~~ **(iv)** All meters in a rejected lot must be tested within a maximum period of 60 months ~~and be adjusted pursuant to~~ **and comply with** the provisions of R 460.3607 or be replaced with meters that ~~are in compliance~~ **comply** with the requirements of R 460.3607.

~~(ix)~~ **(v)** During each calendar year, new meter samples must be drawn as specified in this ~~subdivision~~ **subrule** from all meters in service, with the exception that lots that have been rejected must be excluded from the sampling procedure until all meters included in the rejected lots have been tested.

(e) The electric utility or cooperative shall complete normal inspection before implementing tightened inspection or reduced inspection.

~~(x) The utility may elect to adopt a mixed variables-attributes sampling plan as outlined in Section A9 of ANSI/ASQC Z1.9, in which case, a lot that is not in compliance with the acceptability criteria of the variables sampling plan shall be resampled the following year using an attributes sampling plan. If the acceptability criteria of the attributes sampling plan are met, then the lot shall be considered acceptable and shall be returned to the variables sampling plan the following year. If the acceptability criteria of the attributes sampling plan are not met, then the utility shall reject that lot and all meters in the lot must be tested and adjusted or replaced within a maximum period of 48 months after the second rejection.~~

~~(xi) The plan specified in paragraph (x) of this subdivision does not alter the rules under which customers may request special tests of meters.~~

~~(c) Be checked for accuracy in all of the following situations:~~

~~(i) When a meter is suspected of being inaccurate or damaged.~~

~~(ii) When the accuracy of a meter is questioned by a customer. (See R 460.3601.)~~

~~(d) Be inspected for mechanical and electrical faults when the accuracy of the device is checked.~~

~~(e) Have the register and the internal connections checked before the meter is first placed in service and when the meter is repaired.~~

~~(f) Have the connections to the customer's circuits checked when the meter is tested on the premises or when removed for testing.~~

~~(g) A meter need not be tested or checked for any reason if the device was tested, checked, and adjusted within the previous 12 months except when a complaint is received.~~

(4) Tightened inspection of in-service meters may be adopted and must include all of the following:

(a) The meters in rejected lots from the previous year must be tested as follows:

(i) From rejected lots, a sample of the lot size specified in table A-2, ANSI/ASQ Z1.9-2003(R2018) using general inspection level III, must be drawn at random.

(ii) The test criteria for acceptance or rejection of each lot must be based on the test at heavy load and must be that designated for double specification limits and an acceptable quality level (AQL) that is not higher than 2.50 (tightened inspection) as set forth in table B-3 of ANSI/ASQ Z1.9-2003(R2018).

(iii) The necessary calculations must be made pursuant to Example B-3 of ANSI/ASQ Z1.9-2003(R2018). The upper and lower specification limits, U and L, must be 102% and 98% respectively.

(b) A lot must be rejected if the total estimated percent defective (p) exceeds the appropriate maximum allowable percent defective (M) as determined from table B-3 specified in paragraph (ii) of subdivision (a).

(c) If the acceptability criteria of the sampling plan are met, then the lot is considered acceptable and must be returned to the variables sampling plan the following year as required by R 460.3613(3). If the acceptability criteria of the sampling plan are not met, then the electric utility or cooperative shall reject that lot and all meters in that lot must be tested and adjusted or replaced within a maximum period of 48 months after the second rejection.

(5) Reduced inspection of in-service meters may be adopted and must include all of the following:

(a) All meters must be divided into homogenous groups by manufacturers' types, and certain manufacturers' types must be further subdivided into separate groups by manufacturers' serial numbers.

(b) The meters in each homogeneous group must then be further subdivided into lots of not less than 301, and not more than 35,000, meters each, except that meters of the most recent design may be combined into lots regardless of manufacturers' type, except that where the number of meters of a single type is 8,001 or more, that number of meters must be segregated by types for the formation of lots.

(c) From each assembled lot, a sample of the lot size specified in table A-2, ANSI/ASQ Z1.9-2003(R2018) using general inspection level I, must be drawn annually. The sample must be drawn at random.

(d) The meters in each sample must be tested for accuracy as follows:

(i) The test criteria for acceptance or rejection of each lot must be based on the test of the sample at heavy load only and must be that designated for double specification limits and an acceptable quality level (AQL) that is not higher than 2.50 (reduced inspection) as set forth in table B-4, ANSI/ASQ Z1.9-2003(R2018).

(ii) The necessary calculations must be made pursuant to Example B-3 of ANSI/ASQ Z1.9-2003(R2018). The upper and lower specification limits, U and L, must be 102% and 98%, respectively.

(iii) A lot must be rejected if the total estimated percent defective (p) exceeds the appropriate maximum allowable percent defective (M) as determined from table B-4 as specified in subrule (5)(d)(i).

(e) When reduced inspection is in effect, the electric utility or cooperative shall return to normal inspection if a lot is rejected and shall adhere to the quality control plan as set forth in subrule (3).

(f) Normal or reduced inspection shall continue unchanged except where the above switching procedures require change.

(g) The electric utility or cooperative may adopt reduced inspection of meters if normal inspection, as set forth in subrule (3) of this rule, has been in effect for the preceding 3 years and all lots of same manufacturer meter type have been accepted on normal inspection in preceding 3 years.

(6) The quality control plan set forth in subrules (3), (4), and (5) of this rule does not alter the rules under which customers may request special tests of meters.

(7) All solid-state meters must comply with all of the following requirements:

(a) Be checked for accuracy in all of the following situations:

(i) When a meter is suspected of being inaccurate or damaged.

(ii) When the accuracy of a meter is questioned by a customer under R 460.3601.

(b) Be inspected for electrical faults when the accuracy of the device is checked.

(c) Have the connections to the customer's circuits checked when the meter is tested on the premises or when removed for testing.

(d) A meter need not be tested or checked for any reason if the device was tested and checked within the previous 12 months except when a complaint is received.

(8) All transformer-rated solid state meters must comply with all of the following requirements:

(a) Be checked for accuracy at unity and 50% power factor on the customer's premises within 60 days after installation, unless the transformers comply with the specifications outlined in the American National Standards Institute standard ANSI C-57.13.

(b) Have the connections to the customer's circuits and multipliers checked when the equipment is tested for accuracy on the premises, when removed for testing, or when instrument transformers are changed.

~~(3) All single-phase instrument rated electro-mechanical meters must be in compliance with all of the following requirements:~~

~~(a) Be checked for accuracy at unity power factor at the point where a meter is installed, at a central testing point, or in a mobile testing laboratory as follows:~~

~~(i) Not later than 9 months after 144 months of service for a surge-resistant meter and not later than 9 months after 96 months of service for a non-surge-resistant meter.~~

~~(ii) When a meter is suspected of being inaccurate or damaged.~~

~~(iii) When the accuracy of a meter is questioned by a customer. (See R 460.3601.)~~

~~(iv) Before use when a meter has been inactive for more than 1 year after having been in service.~~

~~(b) Be inspected for mechanical and electrical faults when the accuracy of the device is checked.~~

~~(c) Have the register and the internal connections checked before the meter is first placed in service and when the meter is repaired.~~

~~(d) Have the connections to the customer's circuits checked when the meter is tested on the premises or when removed for testing.~~

~~(e) Be checked for accuracy at 50% power factor when purchased and after rebuilding.~~

~~(f) A meter need not be tested or checked for any reason if the device was tested, checked, and adjusted within the previous 12 months except when a complaint is received.~~

~~(4) All self-contained electro-mechanical and solid state 3-phase meters and associated equipment must be in compliance with all of the following requirements. However, a utility may elect to include self-contained solid state 3-phase meters in service in its quality control plan as provided for in R 460.3613(2)(b). Therefore, a utility may be exempt from the periodic meter test requirements as provided in subdivision (a)(ii) of this subrule.~~

(a) Be tested for accuracy at unity and 50% power factor as follows:

(i) Before being placed in service.

(ii) Not later than 9 months after 120 months of service.

(iii) When a meter is suspected of being inaccurate or damaged.

(iv) When the accuracy of a meter is questioned by a customer. (See R 460.3601.)

(v) When a meter is removed and put back in service.

(b) Be inspected for mechanical and electrical faults when the accuracy is checked.

(c) Have the register and internal connections checked before the meter is first installed, when repaired and when the register is changed.

(d) Have the connections to the customer's circuits and multipliers checked when the equipment is tested for accuracy on the customer's premises.

(5) All transformer-rated electro-mechanical and solid state 3-phase meters and associated equipment must be in compliance with all of the following requirements. However, a utility may elect to include transformer-rated solid state 3-phase meters in service in its quality control plan as provided for in R 460.3613(2)(b). Therefore, a utility may be exempt from the periodic meter test requirements as provided in subdivision (a)(iii) of this subrule.

(a) Be checked for accuracy at unity and 50% power factor as follows:

(i) Before being placed in service.

(ii) On the customer's premises within 60 days after installation, unless the transformers are in compliance with the specifications outlined in the American National Standards Institute standard ANSI C-57.13, and unless the meter adjustment limits do not exceed plus or minus 1.5% at 50% power factor.

(iii) Not later than 9 months after 72 months of service.

(iv) When a meter is suspected of being inaccurate or damaged.

(v) When the accuracy is questioned by a customer. (See R 460.3601.)

(vi) When a meter is removed and put back in service.

(b) Be inspected for mechanical and electrical faults when the accuracy is checked.

(c) Have the register and internal connections checked before the meter is first placed in service and when the meter is repaired.

(d) Have the connections to the customer's circuits and multipliers checked when the equipment is tested for accuracy on the premises or when removed for testing and when instrument transformers are changed.

(e) Be checked for accuracy at 50% power factor when purchased and after rebuilding.

(6) A utility shall test instrument transformers in all of the following situations:

(a) When first received, unless a transformer is accompanied by a certified test report by the manufacturer.

(b) When removed and put back in service.

(c) Upon complaint.

(d) When there is evidence of damage.

(e) When an approved check, such as the variable burden method in the case of current transformers that is made when the meter is tested indicates that a quantitative test is required.

(7) Demand meters must be in compliance with both of the following requirements:

(a) Be tested for accuracy in all of the following situations:

(i) Before a meter is placed in service.

~~(ii) When an associated meter is tested and the demand meter is a block interval nonrecording type or a thermal type.~~

~~(iii) After 2 years of service if the meter is of the recording type, but testing is not required if the meter is of the pulse-operated type and the demand reading is checked with the kilowatt-hour reading each billing cycle.~~

~~(iv) When a meter is suspected of being inaccurate or damaged.~~

~~(v) When the accuracy is questioned by a customer. (See R 460.3601.)~~

~~(b) Be inspected for mechanical and electrical faults when a meter is tested in the field or in the meter shop.~~

R 460.3613a Electro-mechanical meter and metering equipment testing requirements.

Rule 613a. (1) The testing of any unit of metering equipment must consist of a comparison of its accuracy with a standard of known accuracy. Units that are not properly connected or that do not meet the accuracy or other requirements of these meter and metering equipment rules at the time of testing must be reconnected or rebuilt to meet these requirements and must be adjusted to within the required accuracy and as close to zero error as practicable or must be discontinued.

(2) Self-contained, electro-mechanical, combination electro-mechanical and solid state, single-phase, and network meters must comply with all of the following requirements:

(a) Be checked for accuracy as provided for in R 460.3602.

(b) Notwithstanding the provisions of subdivision (a) of this subrule, the testing of self-contained, electro-mechanical, combination electro-mechanical and solid state, single-phase, and network meters in service must be governed by a quality control plan that complies with all of the following:

(i) Meters must be divided into homogenous groups by manufacturers' types, and certain manufacturers' types must be further subdivided into separate groups by manufacturers' serial numbers.

(ii) The meters in each homogeneous group must then be further subdivided into lots of not less than 301, and not more than 35,000, meters each, except that meters of the most recent design may be combined into lots regardless of manufacturers' type, except that where the number of meters of a single type is 8,001 or more, that number of meters must be segregated by types for the formation of lots.

(iii) From each assembled lot, a sample of the size specified in table A-2, ANSI/ASQ Z1.9-2003(R2018), must be drawn annually. The sample must be drawn at random.

(iv) The meters in each sample must be tested for accuracy pursuant to paragraphs (v) to (xi) of this subdivision.

(v) The test criteria for acceptance or rejection of each lot must be based on the test at heavy load only and must be that designated for double specification limits and an acceptable quality level (AQL) that is not higher than 2.50 (normal inspection) as set forth in table B-3, ANSI/ASQ Z1.9-2003(R2018).

(vi) The necessary calculations must be made pursuant to Example B-3 of ANSI/ASQ Z1.9-2003(R2018). The upper and lower specification limits, U and L, must be 102% and 98%, respectively.

(vii) A lot must be rejected if the total estimated percent defective (p) exceeds the appropriate maximum allowable percent defective (M) as determined from table B-3 as specified in paragraph (v) of this subdivision.

(viii) All meters in a rejected lot must be tested within a maximum period of 60 months and be adjusted pursuant to the provisions of R 460.3607 or be replaced with meters that comply with the requirements of R 460.3607.

(ix) During each calendar year, new meter samples must be drawn as specified in this subdivision from all meters in service, with the exception that lots that have been rejected must be excluded from the sampling procedure until all meters included in the rejected lots have been tested.

(x) The electric utility or cooperative may elect to adopt the following sample plan for lots that have been rejected the previous year:

(A) From each rejected lot, a sample of the lot size specified in table A-2, ANSI/ASQ Z1.9-2003(R2018) using general inspection level III, must be drawn at random.

(B) The test criteria for acceptance or rejection of each lot must be based on the test at heavy load and must be that designated for double specification limits and an acceptable quality level (AQL) that is not higher than 2.50 (tightened inspection) as set forth in table B-3 of ANSI/ASQ Z1.9-2003(R2018).

(C) The necessary calculations must be made pursuant to Example B-3 of ANSI/ASQ Z1.9-2003(R2018). The upper and lower specification limits, U and L, must be 102% and 98% respectively.

(D) A lot must be rejected if the total estimated percent defective (p) exceeds the appropriate maximum allowable percent defective (M) as determined from table B-3 specified in paragraph (B) of this subdivision. If the acceptability criteria of the sampling plan are met, then the lot is considered acceptable and must be returned to the variables sampling plan the following year. If the acceptability criteria of the sampling plan are not met, then the electric utility or cooperative shall reject that lot and all meters in that lot must be tested and adjusted or replaced within a maximum period of 48 months after the second rejection.

(xi) The plan specified in paragraph (x) of this subdivision does not alter the rules under which customers may request special tests of meters.

(c) Be checked for accuracy in both of the following situations:

(i) When a meter is suspected of being inaccurate or damaged.

(ii) When the accuracy of a meter is questioned by a customer under R 460.3601.

(d) Be inspected for mechanical and electrical faults when the accuracy of the device is checked.

(e) Have the register and the internal connections checked before the meter is first placed in service and when the meter is repaired.

(f) Have the connections to the customer's circuits checked when the meter is tested on the premises or when removed for testing.

(g) A meter may not be tested or checked for any reason if the device was tested, checked, and adjusted within the previous 12 months except when a complaint is received.

(3) All single-phase transformer-rated electro-mechanical meters must comply with all of the following requirements:

(a) Be checked for accuracy at unity power factor at the point where a meter is installed, at a central testing point, or in a mobile testing laboratory when any of the following occurs:

(i) Not later than 9 months after 144 months of service for a surge-resistant meter and not later than 9 months after 96 months of service for a non-surge-resistant meter.

(ii) When a meter is suspected of being inaccurate or damaged.

(iii) When the accuracy of a meter is questioned by a customer under R 460.3601.

(iv) Before use when a meter has been inactive for more than 1 year after having been in service.

(b) Be inspected for mechanical and electrical faults when the accuracy of the device is checked.

(c) Have the register and the internal connections checked before the meter is first placed in service and when the meter is repaired.

(d) Have the connections to the customer's circuits checked when the meter is tested on the premises or when removed for testing.

(e) Be checked for accuracy at 50% power factor when purchased and after rebuilding.

(f) A meter may not be tested or checked for any reason if the device was tested, checked, and adjusted within the previous 12 months except when a complaint is received.

(4) All self-contained electro-mechanical, combination electro-mechanical meters, solid-state 3-phase meters, and associated equipment must comply with all of the following requirements:

(a) Be tested for accuracy at unity and 50% power factor when any of the following occur:

(i) Before being placed in service.

(ii) Not later than 9 months after 120 months of service.

(iii) When a meter is suspected of being inaccurate or damaged.

(iv) When the accuracy of a meter is questioned by a customer under R 460.3601.

(v) When a meter is removed and put back in service.

(b) Be inspected for mechanical and electrical faults when the accuracy is checked.

(c) Have the register and internal connections checked before the meter is first installed, when repaired, and when the register is changed.

(d) Have the connections to the customer's circuits and multipliers checked when the equipment is tested for accuracy on the customer's premises.

(5) An electric utility or cooperative may elect to include self-contained solid state 3-phase meters in service in its quality control plan as provided for in subrule (2)(b) of this rule. An electric utility or cooperative may be exempt from the periodic meter test requirements as provided in subdivision (a)(ii) of subrule (4).

(6) All transformer-rated electro-mechanical 3-phase meters, all combination electro-mechanical and solid state 3-phase meters, and associated equipment must comply with all of the following requirements. However, an electric utility or

cooperative may elect to include transformer-rated solid state 3-phase meters in service in its quality control plan as set forth in subrule (2)(b) of this rule. Therefore, an electric utility or cooperative may be exempt from the periodic meter test requirements as provided in subdivision (a)(iii) of this subrule.

(a) Be checked for accuracy at unity and 50% power factor when any of the following occur:

(i) Before being placed in service.

(ii) On the customer's premises within 60 days after installation, unless the transformers comply with the specifications outlined in the American National Standards Institute standard ANSI C-57.13, and unless the meter adjustment limits do not exceed plus or minus 1.5% at 50% power factor.

(iii) Not later than 9 months after 72 months of service.

(iv) When a meter is suspected of being inaccurate or damaged.

(v) When the accuracy is questioned by a customer under R 460.3601.

(vi) When a meter is removed and put back in service.

(b) Be inspected for mechanical and electrical faults when the accuracy is checked.

(c) Have the register and internal connections checked before the meter is first placed in service and when the meter is repaired.

(d) Have the connections to the customer's circuits and multipliers checked when the equipment is tested for accuracy on the premises, when removed for testing, or when instrument transformers are changed.

(e) Be checked for accuracy at 50% power factor when purchased and after rebuilding.

R 460.3614 Standards check by the commission.

Rule 614. (1) Upon request of the commission, ~~a~~ **an electric** utility **or cooperative** shall submit 1 of its portable standard watthour meters and 1 portable indicating voltmeter, ammeter, and wattmeter to a commission-approved standards laboratory for checking of their accuracy.

(2) ~~A~~ **An electric** utility **or cooperative** shall normally check its own working portable standard watthour meters or instruments against primary or secondary standards and shall calibrate these working standards or instruments before they are submitted with a record of such calibration attached to each of the working standards or instruments.

R 460.3615 Metering equipment records.

Rule 615. (1) ~~A~~ **An electric** utility **or cooperative** shall maintain a complete record of the most recent test of all metering equipment. The record must show all of the following information:

(a) Identification and location of unit.

(b) Equipment with which the device is associated.

(c) The date of test.

(d) Reason for the test.

(e) Readings before and after the test.

(f) **For electro-mechanical meters,** ~~A~~ **a** statement as to whether or not the meter creeps and, in case of creeping, the rate.

(g) A statement of meter accuracies before and after adjustment sufficiently complete to permit checking of the calculations employed.

(h) Indications showing that all required checks have been made.

(i) A statement of repairs made, if any.

(j) Identification of the testing standard and the person making the test.

(k) Communications type.

(l) Firmware.

(2) The **electric** utility **or cooperative** shall also keep a record of each unit of metering equipment which shows all of the following information:

(a) When the unit was purchased.

(b) The unit's cost.

(c) The company's identification.

(d) Associated equipment.

(e) Essential nameplate data.

(f) The date of the last test. The record must also show either the present service location with the date of installation or, if removed from service, the service location from which the unit was removed with the date of removal.

(3) An electric utility or cooperative shall maintain records of the necessary calculations made pursuant to Example B-3 of ANSI/ASQ Z1.9 for each sample or resample drawn. In addition to the actual computation, the data must include all of the following:

(a) The type of meter.

(b) The number of meters in the lot.

(c) The meter numbers of sample meters.

(d) The actual prior-to-adjustment test data of each meter tested.

(e) The number of months since the last test for each meter in the sample.

R 460.3617 Reports to be filed with the commission.

Rule 617. ~~(1) A~~ **An electric** utility **or cooperative** shall file, with the commission, **on or before April 1** ~~within 30 days after the first day of January~~ of each year, **all of the following information covering the 12-month period ending December 31:** ~~an officer-certified statement that the utility has complied with all of the requirements set forth in these rules relating to meter standardizing equipment.~~

(a) A statement from an officer of the electric utility or cooperative or from the vendor, supplier, or contractor who provides the metering equipment that certifies that the metering equipment complies with the requirements set forth in the rules relating to meter standardizing equipment.

(b) A meter test report summarizing all rejected lots tested as part of the sampling plan during the preceding calendar year. The report must include all of the following information for each rejected lot:

(i) Meter manufacturer.

(ii) Meter type.

(iii) Average months in service since the last test.

(iv) Meter lots in tightened inspection.

(c) A meter test report summarizing all rejected lots not tested as part of the sampling plan during the preceding calendar year. The report must include all of

the following information for each rejected lot:

(i) Meter manufacturer.

(ii) Meter type.

(iii) Purchase year.

(iv) As found accuracy or accuracy range.

~~(2) For all meters that are not included in the provisions of R 460.3613(2)(b), the utility shall file, with the commission, on or before the first day of April of each year, its annual tabulation of all of its prior-to-adjustment meter test results covering the 12-month period ending December 31. The utility shall summarize, by meter type, all individual meters and overall light and heavy load prior-to-adjustment test results at the power factors required by these rules. The summary shall be divided into heavy load 100% power factor, light load 100% power factor, and heavy load 50% power factor test results and shall also be divided according to the length of meter test period and types of single-phase and polyphase meters. The summary shall show the number of meters or overall tests found within each of the following accuracy classifications:~~

~~(a) No recording.~~

~~(b) Creeping.~~

~~(c) Equal to or less than 94.0%.~~

~~(d) 94.1 to 96.0%.~~

~~(e) (e) 96.1 to 97.0%.~~

~~(f) (f) 97.1 to 98.0%.~~

~~(g) 98.1 to 99.0%.~~

~~(h) 99.1 to 100.0%.~~

~~(i) 100.1 to 101.0%.~~

~~(j) 101.1 to 102.0%.~~

~~(k) 102.1 to 103.0%.~~

~~(l) 103.1 to 104.0%.~~

~~(m) 104.1 to 106.0%.~~

~~(n) Over 106.0%.~~

~~When a utility is subject to multiple state jurisdiction, these accuracy classifications may be modified with the approval of the commission.~~

~~(3) For all meters that are included in the provisions of R 460.3613(2)(b), the utility shall file, with the commission, on or before the first day of April, all of the following information:~~

~~(a) A summary of all samples of meter lots that pass the acceptability criteria as set forth in ANSI/ASQC Z1.9-1980, including complete data on all of the following:~~

~~(i) The type of meter.~~

~~(ii) The number of meters in a lot.~~

~~(iii) The size of the sample.~~

~~(iv) The average months in service since the last test.~~

~~(v) The computed p (total estimated percent defective in lot).~~

~~(vi) The corresponding M (maximum allowable percent defective) as determined from table B-3 in ANSI/ASQC Z1.9-1980.~~

~~(b) The necessary calculations made pursuant to Example B-3 of ANSI/ASQC Z1.9-1980 shall be retained for each sample or resample drawn. In addition to the actual computation, the data shall include all of the following:~~

~~(i) The type of meter.~~
~~(ii) The number of meters in the lot.~~
~~(iii)The meter numbers of sample meters.~~
~~(iv) The actual prior-to-adjustment test data of each meter tested.~~
~~(v) The number of months since the last test for each meter in the sample.~~
~~A sample of the calculations and data for a lot that passes the acceptability criteria shall be included in the report to the commission.~~
~~(c) A copy of the complete data, as outlined in this subrule, shall be included for each meter lot that is not in compliance with the acceptability criteria of the sampling plan employed as set forth in ANSI/ASQC Z1.9-1980.~~
~~(d) A report summarizing the testing of all meters in rejected lots that are to be returned to service. The heavy load preadjustment tests only shall be recorded, and the accuracy classifications as established in subrule (2) of this rule shall be used. Each rejected lot shall be reported separately and shall be separated into groups by the number of months since the last test as follows:~~
~~(i) 0 to 48 months.~~
~~(ii) 49 to 72 months.~~
~~(iii) 73 to 96 months.~~
~~(iv) More than 96 months.~~

PART 7. STANDARDS OF QUALITY OF SERVICES

R 460.3701 Alternating current systems; standard frequency.
Rule 701. The standard frequency for alternating current systems ~~shall be~~ **is** 60 hertz. The frequency ~~shall~~ **must** be maintained within limits **as administered by the regional transmission organization.** ~~that will permit the satisfactory operation of customers' clocks which are connected to the system.~~

R 460.3702 Standard nominal service voltage; limits; exceptions.
Rule 702. (1) Each **electric** utility **or cooperative** shall adopt and submit standard nominal service voltages.
(2) With respect to secondary voltages, the following provisions shall apply:
(a) For all retail service, the variations of voltage ~~shall~~ **must** ~~be~~ not **be** more than 5% above or below the standard nominal voltage as submitted pursuant to subrule (1) of this rule, except as noted in subrule (4) of this rule.
(b) Where 3-phase service is provided, the **electric** utility **or cooperative** shall exercise reasonable care to ensure that the phase voltages are balanced within practical tolerances.
(3) With respect to primary voltages, the following provisions ~~shall~~ apply:
(a) For service rendered principally for industrial or power purposes, the voltage variation ~~shall~~ **must** not be more than 5% above or below the standard nominal voltages as submitted pursuant to subrule (1) of this rule, except as noted in subrule (4) of this rule.
(b) The limitations in subdivision (a) of this subrule do not apply to special contracts in which the customer specifically agrees to accept service with unregulated voltage.
(4) Voltages ~~outside~~ **above or below** the limits specified in **subrules (2) and (3) of**

this rule ~~shall~~ **may** not be considered a violation if the variations are infrequent fluctuations or occur from adverse weather conditions, service interruptions, causes beyond the control of the **electric** utility **or cooperative**, or voltage reductions that are required to reduce system load at times of supply deficiency or loss of supply.

R 460.3703 Voltage measurements and records.

Rule 703. (1) ~~A~~ **An electric** utility **or cooperative** shall make voltage measurements at the **electric** utility's **or cooperative's substation** service terminals **and, where permissible, at the electric utility's or cooperative's service points**.

(2) Each **electric** utility **or cooperative** shall make a sufficient number of voltage measurements, using recording voltmeters, to determine if voltages ~~are in compliance~~ **comply** with the requirements stated in R 460.3702. For installations in which the meter measures voltage ~~variations~~, measurements using recording voltmeters are not necessary unless records of the measurements through the meter are not available.

(3) All records obtained under subrule (2) of this rule must be retained by the **electric** utility **or cooperative** for not less than 2 years and must be available for inspection by the commission's representatives. The records ~~shall~~ **must** indicate all of the following information:

(a) The location where the voltage was measured.

(b) The time and date of the measurement.

(c) For installations without meters that measure voltage variations, the results of the comparison with an indicating voltmeter at the time a recording meter is set.

(d) Number of customers impacted.

R 460.3704 Voltage measurements; required equipment; periodic checks; certificate or calibration card for standards.

Rule 704. (1) ~~Each~~ **An electric** utility **or cooperative** shall have access to at least 1 indicating voltmeter that has a stated accuracy within 0.25% of full scale. The instrument ~~shall~~ **must** be maintained within its stated accuracy.

(2) Each **electric** utility **or cooperative** shall have not less than 2 indicating voltmeters that have a stated accuracy within ~~1.0%~~ **1%** of full scale.

(3) Each **electric** utility **or cooperative** shall have not less than 2 portable recording voltmeters, or their electronic equivalent, with a stated accuracy within 1.5% of full scale.

(4) Standards ~~shall~~ **must** be checked ~~in accordance with~~ **pursuant to** R 460.3612.

(5) Working instruments ~~shall~~ **must** be checked ~~in accordance with~~ **pursuant to** R 460.3610.

(6) Each standard ~~shall~~ **must** be accompanied at all times by a certificate or calibration card, duly signed and dated, on which the corrections required to compensate for errors found at the customary test points at the time of the last test are recorded.

R 460.3705 Interruptions of service; records; planned interruption; notice to commission.

Rule 705. (1) ~~Each~~ **An electric** utility **or cooperative** shall make a reasonable effort to avoid interruptions of service. When interruptions occur, service ~~shall~~ **must** be restored within the shortest time practical, consistent with safety.

(2) ~~Each~~ **An electric** utility **or cooperative** shall keep records of sustained interruptions of service to its customers and ~~shall~~ make an analysis of the records for the purpose of determining steps to be taken to prevent recurrence of the interruptions. The records ~~shall~~ **must** include the following information concerning the interruptions:

(a) Cause.

(b) Date and time.

(c) Duration.

(3) Planned interruptions ~~shall~~ **must** be made at a time that will not cause unreasonable inconvenience to customers and ~~shall~~ be preceded, if feasible, by adequate notice to persons who will be affected.

(4) ~~Each~~ **An electric** utility **or cooperative** shall promptly notify the commission of any major interruption of service to its customers.

PART 8. SAFETY

R 460.3801 Protective measures.

Rule 801. ~~Each~~ **An electric** utility **or cooperative** shall exercise reasonable care to reduce the hazards to which its employees, its customers, and the general public may be subjected.

R 460.3802 Safety program.

Rule 802. ~~Each~~ **An electric** utility **or cooperative** shall comply with the provisions of the occupational safety and health act, ~~29 U.S.C. S651 et seq.~~ **29 USC 1970**, ~~and Act No. 154 of the Public Acts of 1974, as amended, being S408.1001 et seq. of the Michigan Compiled Laws, and known as~~ **and** the Michigan occupational safety and health act, **1974 PA 154, MCL 408.1001 to 408.1094,** and shall operate under applicable federal and state health and safety laws and regulations.

R 460.3803 Energizing services.

Rule 803. When energizing services, ~~each~~ **an electric** utility **or cooperative** shall comply with the provisions of all applicable codes and statutory requirements, unless otherwise specified by the commission. The **electric** utility **or cooperative** may refuse to energize a service if an unsafe condition is observed.

R 460.3804 Accidents; notice to commission.

Rule 804. ~~Each~~ **An electric** utility **or cooperative** shall promptly notify the commission of fatalities and serious injuries that are substantially related to the facilities or operations of the facilities.