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Chapter PSC 134

STANDARDS FOR GAS SERVICE

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PSC 134.01 Rules mandatory. The following rules are to be considered mandatory, although where special, local conditions develop, which make the application of these rules unreasonably burdensome, impossible, or inadequate, exemptions will be ordered formally or informally at the discretion of the commission. The explanatory matter which follows each rule is for clarification and any prescriptions therein are to be considered advisory.

n **PSC 134.014 Rules, scope.** The following rules concern metering of gas service, quality of gas, and fluctuations which might adversely affect the consumers' use of the service.

n **PSC 134.015 Meter test.** (1) Each complete meter test for all meters with a rated capacity of 2,400 cubic feet per hour or less shall consist of one proving at a rate of flow one-fifth or less of the rated capacity of that meter and one proving at a rate of flow at or greater than the rated capacity of that meter.

(2) Each complete meter test for all meters with a rated capacity greater than 2,400 cubic feet per hour shall consist of one proving at a rate of flow of one-fifth or less of the rated capacity of that

Explanation of section PSC 134.015. Tests at two rates of flow are necessary in order to determine the existence of compensating errors or the action of the meter in actual operation. The lower rate of flow, however, is the better indication of the average use of the meter and should be used as the quantitative measure of the error. Many utilities do not have sufficiently large provers to test their few large capacity meters in accordance with the procedure outlined for the smaller meters. Consequently, a compromise has to be provided in the rule. This should not be objectionable because all utilities realize the necessity for individual careful attention and more frequent testing of the large capacity meters.

New meters and newly repaired meters sometimes tend to gain in registration because of the loosening or freeing up of the new parts. Less tolerance on the fast side is allowed for these meters in order to compensate for this tendency.

The limit of error for meter testing requires that the prover be carefully installed and operated, and that it be in a suitable location. Meters should be stored near the prover for a period of time sufficiently long to allow both to come to the same temperature. Sufficient and proper illumination should be provided in order that readings may be taken of both prover and meter without eye-strain. The prover-room should be maintained at a fairly even temperature and meters should not be tested at times when the variation in room temperature has exceeded 5 to 10 degrees during the 12 hours preceding the testing. The prover water should be within 2 degrees of the room temperature while tests are being made. The prover should be shielded from direct radiation such as direct sunlight or steam radiators, from cold walls or windows, and from draughts. A half-inch seal of light oil on the surface of the prover water will assist in eliminating errors which result from evaporation. Air and water thermometers are part of the prover equipment and should be accurate.

meter and one proving at a rate of flow not less than 2,500 cubic feet per hour, but not less than twice the minimum test flow.

(3) A meter shall be considered correct for service if the results of these two tests agree within 1% and neither test shows an error of more than 2%. In case of new meters or newly repaired meters neither test shall show an error of more than 1% fast.

(4) The results of the test at a minimum flow as required above shall determine the accuracy of the meter for refund and report purposes.

(5) These meter tests shall be made with a standard meter prover which shall be so operated and so equipped that the tests can be made with an error of not greater than one-half of 1%.

PSC 134.02 Installation test. No meter shall be installed unless it has been tested and found to be correct, as defined in section PSC 134.015 not longer than 6 months previous to the date of installation. Date of installation is defined as date meter was actually placed on consumers' premises.

Explanation of section PSC 134.02. The purpose of this rule is to limit the time between testing and installing a meter. It has no application to the practice of some utilities of leaving a locked meter on consumers' premises when service at that location has been temporarily discontinued. However, it does prevent removing a meter from one location to another after 6 months following the date of test without another test on that meter.

PSC 134.03 Periodic testing and maintenance. Each utility shall notify the commission which of the following rules shall be used for each of the communities which are served by that utility and shall not change without the consent of the commission:

(1) Each meter shall be removed from service and tested at least once every 48 months.

(2) Each meter shall be removed from service, tested, opened, all parts inspected or tested, and repaired at least once every 120 months.

(3) Any utility wishing to change to an area testing plan or adopt another variation from the chronological plan shall obtain approval from the commission.

PSC 134.04 Refunds for fast meters. (1) Whenever a meter is found, under section PSC 134.015 to be more than 3% fast, a recalculation of bills for service shall be made for the period of inaccuracy. The recalculation shall be made on the basis that the service meter should be 100% accurate.

(2) If the period of inaccuracy cannot be determined, it shall be assumed that the full amount of inaccuracy existed during the last half of the period since the previous test was made on the meter.

(3) If the recalculated bills indicate that more than one dollar is due an existing customer or \$2 is due a person no longer a customer of the utility, the full amount of the calculated difference between the amount paid and the recalculated amount shall be refunded to the customer. The refund to an existing customer may be in cash or as credit on a bill. If the refund is due a person no longer a customer of the utility, a notice shall be mailed to the last known address, and the utility shall upon demand made within 3 months thereafter refund the amount due.

(4) Whenever a meter is found to be more than 3% slow, the utility may bill the customer for the amount the test indicates has

been undercharged for the period of inaccuracy, which period shall not exceed the last 6 months the meter was in service.

Note: Explanation of section PSC 134.04. This rule is in recognition of the well-known fact that meters cannot be kept absolutely accurate and that some meters will become erroneous. It is based on the assumption that meters are accurate when originally installed and on the conclusion that the fairest approximation of the changes which take place in the registration of a fast meter may be made by assuming that the change took place at the middle of the period in service. Only a small portion of the meters, however, will be found over 3% fast and the number of refunds will be small.

Subsection (2) allows utility to bill a consumer for under-registration. This provision is optional because the difficulties of back-billing do not make it practicable unless the amount is substantial. The limit of 6 months on the back-billing does not prevent civil action by the utility to collect, but does remove commission sanction from attempts to collect in any case where the probabilities are that sufficient diligence on the part of the utility would have prevented the accumulation of any great amount of money due.

If the time when a meter began over-registering or under-registering can be determined, then the refund should be made from that time and the above rule would not apply. However, it should be noted that the time when a meter became fast can seldom be determined, because almost always the meter becomes fast more or less gradually. More often the time a meter became slow can be determined because a frequent cause of slowness is leaks which develop suddenly within the meter. The consumers' bills seldom, if ever, give any indication of when a meter became fast, though in the case of a very slow or nonregistering meter, a change in the rate of consumption might well be an indication of the time when the error started. Adjustments for nonregistering meters cannot be based upon the test and must be negotiated between the consumer and the company on whatever basis they may be able to agree upon.

PSC 134.05 Request and referee tests. (1) Each utility furnishing gas service shall make a test of the accuracy of any gas meter upon request of the consumer, provided that consumer does not request such test more frequently than once in 6 months. A report giving the results of each request test shall be made to the consumer, and the complete, original record shall be kept on file in the office of the utility.

(2) Any gas meter may be tested by a commission inspector upon written application of the consumer. For such test, a fee shall be forwarded to the commission by the consumer with the application. The amount of this fee shall be refunded to the consumer by the utility if the meter is found to be more than 3% fast. The amount of the fee that is to be remitted for such tests shall be \$2 for each consumption meter that has a rated capacity not exceeding 1,000 cubic feet per hour; for larger consumption meters, demand meters, etc., the test fee shall be the actual expense of the test.

Explanation of section PSC 134.05. Where a customer suspects that the meter is registering incorrectly, the company should test the meter. Should the customer feel that a third party ought to test the meter, a commission representative may do it, provided the consumer is willing to wager the amount of the test fee, that the meter is fast. However, anyone making such a wager should realize that the probability is very small that the meter will be more than 3% fast. The fee for testing small meters is small because such tests must be made available to everyone, but for large meters where the amount involved might justify a test by a third party as referee, the fee paid should cover the entire expense of making the test.

PSC 134.06 Meter records and reports. (1) Whenever a gas meter is tested, the original test record shall be kept until that meter is tested again. This record shall indicate the information that is necessary for identifying the meter, the reason for making the test, the reading of the meter before it was removed from service, the accuracy of measurement, and all the data that were taken at the time of the test. This record must be sufficiently complete to permit convenient checking of the methods and calculations that have been employed.

(2) Another record shall be kept which is numerically arranged and indicates when the meter was purchased, its size, its identification, its various places of installation, with dates of installation and removal, the dates and results of all tests, and the dates and details of all repairs.

(3) All utilities shall keep a test summary of all meters brought in from service. A summary of such tests shall be made yearly and forwarded to this commission. This summary shall be made according to a form which will be prescribed by this commission. The form shall be such that it will show the accuracies of the meters by years in service since last tested.

Explanation of section PSC 134.06. The purpose of this rule is to facilitate supervision by the commission of the companies' meter testing practices and methods. Such supervision is for the protection of the consumers and the utility against inaccurate or insufficient testing. The great number of meters involved requires systematic records and summaries in order to make possible a comprehensive check of what has been done.

PSC 134.07 Billing of consumers. (1) The bills that are rendered periodically for gas service shall designate the readings of the meters at the beginning and at the end of the interval for which the bill is rendered, and shall give the dates of the meter readings. A statement of the heating-value standard and a statement of the rates applicable to the kind of service for which a bill is rendered shall be upon the bill.

(2) In lieu of including the rate schedule on the bill the utility may, whenever a rate change becomes effective and at least twice a year, attach to the bill a schedule of the rates at which the bill is computed.

PSC 134.08 Standards for heating value. (1) Each utility which is furnishing gas service shall have on file with this commission the standard heating value in B.t.u. per standard cubic foot which it maintains in each of the communities which it serves. The monthly average heating value of the gas, as delivered to consumers within the community served, shall be not less than the heating value standard on file with the commission, and the heating value at any time shall not be more than 5% above or 4% below this standard. Unless the commission rules differently in specific cases, the average of all heating value tests made in 1 day shall be considered the daily average, and the average of all daily averages shall be considered the monthly average.

(2) The standards which a company files with this commission subsequent to the effective date of this order shall not be more than 6 B.t.u. below the average which the company has maintained during the year previous, nor less than 520 B.t.u. per cubic foot, the higher of which two figures will be considered to have been the company standard; provided, that should any company elect to adjust its rates within 90 days following the effective date of this order, which adjustment is approximately pro rata to the reduction in heating value standard as determined above, then such standard will be acceptable for filing.

(3) If the utility finds it more practical, economical, and efficient to render service with gas of another heating value than that on file with the commission, the utility may file a new heating value standard, and if the conditions hereinafter stated shall have been complied

with, and the commission shall not have ruled against the change, such new heating value standard shall be put into force not less than 30 days from the date of acknowledgment of the filing of this standard. Conditions follow:

(a) The utility shall charge for gas service on the thermal basis and shall have received permission from this commission to charge for gas service on the thermal basis as provided in section PSC 134.08 (4).

(b) The utility shall readjust and shall repair where necessary all consumers' appliances as required in section PSC 134.13 (1).

(c) The utility shall produce records of adjustments, pressure records, or any other data which the commission may require as evidence that the service has not been impaired.

(d) The utility shall be prepared to justify the standard it adopts before the commission by such pertinent facts as may be required.

(4) If a utility decides to charge for gas service on the thermal basis instead of on the volume basis, the utility shall file a new rate schedule, and if the conditions hereinafter stated shall have been complied with, and the commission shall not have ruled against the change, such new schedule shall become effective 30 days from the date of acknowledgment of the filing of this schedule. Conditions follow:

(a) The unit of service shall be the "Therm" which shall be the amount of gas which will yield 100,000 British thermal units of total heating value.

(b) The price of any number of Therms consumption or demand shall not be greater than when charged for by the thousand cubic foot basis under the rates which have been approved by the commission. The minimum charge, service charge, or other charges which are independent of the volume of gas used, shall not be increased under the provisions of this order.

(c) The number of Therms which have been taken by a consumer during a certain period shall be determined by multiplying the difference in the meter readings in cubic feet at the beginning and

Explanation of section PSC 134.08. A utility may sell gas by the cubic foot with the heat units per cubic foot of the gas specified, or it may sell gas by the heat unit. If the cost per heat unit is the same, the consumer is not affected whichever method is used, provided that the quality of the service is the same in both cases. The custom for many years has been to sell on the cubic foot or volume basis. The trend recently has been toward the heat unit or the thermal basis. This rule provides for both bases so that the consumers are protected and the methods of billing are standardized whichever method of sale is used. The advantage of the former method is that it is the method to which consumers are accustomed and the unit for billing purposes is the same as the unit for the meter readings. The advantage of the latter is that it removes rate considerations from changes in heating value standard, and the unit for billing purposes is the true unit or measure of service. Should it be necessary for a utility to change its heating-value standard, the first method requires a revision of rates, if the cost to the consumer is not to be affected; the second does not. Consequently, the thermal basis of charging provides an inducement and an opportunity for the utility to select that heating-value standard which will enable it to deliver gas service most cheaply.

Regardless of the system of billing, the fluctuations in heating value must be limited if proper service is to be obtained. Practically all appliances in use today can burn gases of a wide range of heating values with equal efficiency provided that the burner is adjusted properly to each gas. Without readjustment the range of heating value which a burner can handle satisfactorily is relatively limited.

end of the period by a heating-value factor which has been determined as prescribed in (d) below. The consumer shall be billed to the nearest one-tenth of a Therm.

(d) The heating value factor shall be the heating value standard which the utility has on file with the commission for the community in which the service has been taken, divided by 100,000; provided that during the calendar month nearest coinciding with the billing period the average heating value as determined under subsections (1) and (2) of this section is at or above that standard. In case the average heating value during the calendar month has been below the standard, then the value to be used in determining the factor shall be the heating value standard minus a deduction of 1% for each 1% or fraction thereof that the average heating value has been below the standard.

PSC 134.09 Calorimeter equipment. (1) Each gas producing plant, unless specifically directed otherwise by the commission, shall maintain a complete standard calorimeter outfit at or near the center of distribution. The heating value of the gas shall be determined as often as is necessary to obtain an accurate record of the average heating value and of the fluctuations in heating value. These determinations shall be made with a measurable error not greater than 1%, and the original record of all these tests shall be kept on file for at least 6 years.

(2) Where gas has been compressed to a pressure of 20 pounds per square inch gauge, and beyond any reasonable doubt has not been subject to contact with moisture since being cooled while under this pressure, the determinations of heating value which are made on standard type calorimeters equipped with wet-test meters may be considered to be 1½% below the actual heating value of the gas as delivered to the consumer. Any other adjustments for dehydration effects will have to be approved by the commission before they shall be used in company records of heating value.

Explanation of section PSC 134.09. Measurement of the heating value of the gas is as important as measurement of the volume of gas. A calorimeter should be provided wherever regular measurement is necessary, but in certain cases some substitute for a calorimeter is justified. Sufficient operation of calorimeters is required by this rule, in order to insure reasonably accurate knowledge of what heating value gas is actually being delivered to the consumers at all times.

PSC 134.10 Pressure variation. (1) Every utility shall decide upon and file with the commission the maximum pressure to be maintained at the outlet of the utility service to all consumers in each city, community, or distribution area, which maximum shall not be greater than 12 inches of water column.

(2) The gas pressure at the outlet of the utilities service meters to consumers shall meet the following requirements:

(a) At no outlet in the community shall it ever be greater than the declared maximum nor ever be less than one-third of the declared maximum nor less than 2 inches.

(b) At any single outlet it shall never be greater than twice the actual minimum at the same outlet.

(c) At any one outlet between the hours of 6:00 a.m. and 7:00 p.m. of any one day, the variation of pressure shall not be greater than the following:

Minimum Pressure	Greatest Variation Permissible
2-3 in. -----	2 in.
3-4 " -----	2½ in.
4-5 " -----	3 in.
5-6 " -----	3½ in.
6-8 " -----	4 in.

(d) The above maximum pressure requirements do not apply to pressures due to the creeping of individual regulators while no gas is being used. The above requirements do not apply where gas is being measured at pressure higher than 12 inches in agreement with the customer and a proper correction factor is applied.

Explanation of section PSC 134.10. Gas pressure variations affect the operation of consumers' appliances. Adjustments to the burners can correct the effects but the range over which adjustments can be made is limited and the range for which a single adjustment is satisfactory is still more limited. Whenever a burner is being adjusted, due consideration should be given to the pressure at that time in relation to the normal pressure at that location.

Three limits of variation which are prescribed concern the variation which takes place during various periods of time and over various areas. Subsection (2), paragraph (c) limits the variation on any 1 day at any one location; (b) limits the variation over any period at one location; (a) limits the variation over any period over an entire community, if the pressure conditions are changed permanently, readjustment of consumers' appliances should be made in order to compensate for the change.

PSC 134.11 Pressure surveys. (1) Each utility shall be equipped with a sufficient number of portable recording pressure gauges, and shall make frequent measurements of the gas pressure and pressure variations throughout each separate distribution system. A record shall be kept of the pressure at some point on each system at all times.

(2) All pressure charts which have been made shall be filed by the utility for at least 6 years and shall be sufficiently complete and so arranged that compliance with the individual requirements of section PSC 134.10 can be determined easily.

(3) Each interruption of service which affects more than 50 consumers shall be reported to the commission within 48 hours following the discovery of the interruption.

Explanation of section PSC 134.11. Pressure records enable the utility to avoid service troubles. Unusual demands or main obstructions are first shown by pressure surveys, and the knowledge of pressure conditions enable appliance adjusters to work intelligently. Properly organized pressure surveys are one valuable indication of the quality of the service.

Each distribution system should be considered separately even though a group of such systems may be fed by one transmission main. A continuous record at one point on each system gives good indication of the continuity of service and adequacy of the feeder. Spot readings at regular intervals during a peak period at a number of points on an individual system give a good indication of its adequacy. Portable recording gauges set at outlying points and at known weak points in the systems are necessary in order to keep adjustments of appliances and main tie-ins up to changes in load conditions.

Probably the most useful method of keeping these records is to index the records according to a distribution map. A permanent record of the area fed by each governor as a unit, which record indicates the normal pressure, the time, duration and location of high pressures, and similar information for low pressures, gives a very convenient method of reviewing data obtained by pressure surveys.

PSC 134.12 Purity of the gas. In no case shall the gas contain more than 20 grains of sulphur per hundred cubic feet, nor more than 5 grains of ammonia per hundred cubic feet. Not more than a trace of hydrogen sulphide shall be present at any time. Each utility shall keep a record of all purity tests which it makes.

Explanation of section PSC 134.12. Some impurities should be removed from gas as far as is commercially practicable because they damage the consumers' appliances or because they are liable to cause a stuffy condition of the atmosphere where burned. Impurities of this class which are liable to be found in the gas are limited by this rule. Other impurities which are diluents and are not fuels, such as air and carbondioxide, cannot be limited because they are necessarily associated with certain manufacturing processes. However, the variation in the percentage of inert constituents should be avoided in any case and the amount should be kept as low as possible in other cases. The heating value requirements and specific gravity limits serve to a considerable extent to discourage the presence of these impurities.

No routine of testing for impurities is prescribed because the liability of finding these impurities varies greatly. Generally speaking a utility which makes over 100,000,000 cubic feet per year of coal gas or water gas should make quantitative determinations of total sulphur monthly. Coal gas plants of this size should make quantitative ammonia determinations about as often. Qualitative hydrogen sulphide tests should be made at intervals of 1 hour to 2 weeks depending upon the liability of this impurity being found.

PSC 134.13 Service at consumers' premises. (1) All changes in the heating-value standard, all changes in pressure and specific gravity greater than the allowable variation, and all changes in the composition of the gas which would seriously affect the operation of the consumers' appliances must be accompanied by a general inspection and adjustment of all appliances that would be affected by the changes. The utility shall make such adjustments and such changes to all consumers' appliances as may be necessary in order that the appliance may operate as efficiently and give as good service as was possible before the change. This shall be done promptly and without cost or unnecessary inconvenience to the customer.

(2) Each utility shall adopt and file with this commission a policy for periodic inspection of consumers' appliances. This period shall not be greater than 5 years.

(3) Each utility shall keep a record of all service calls and of all complaints, which record shall include the name and address of the person who made the complaint, the date and nature of the complaint, the remedy and the date of completing the work. These reports shall be filed according to street and number.

Explanation of section PSC 134.13. Sections PSC 134.08, 134.10 and 134.14 limit the variations in heating value, pressure, and specific gravity. Should a permanent change be made in any of these properties of the gas, no violations of these rules would occur provided that consumers' appliances were adjusted in order to compensate for the change within a reasonable time after the change was made. Subsection (1) requires such adjustments, and others that might be made necessary by changes in composition which might adversely affect the operation of consumers' appliances.

Subsection (2) requires that the utility shall provide periodic inspection of consumers' appliances. The intention is not to place any liability upon the utility company, but because the utility has the best qualified and in many cases the only qualified experts to observe burner operations and to make adjustments, the necessary inspection work can only be done properly by the utility. All gas utilities make certain adjustments at the request of the consumers. However, some consumers fail to request these adjustments when necessary, and the purpose of the periodic inspection is to call to the attention of these consumers improper conditions. These conditions may be corrected by the utility, if the consumers desire, and if the adjustments are made within the province of the utility's service.

PSC 134.14 Specific gravity of gas. (1) Each utility shall adopt and file with this commission the standard specific gravity of the gas which it distributes.

(2) The specific gravity of the gas at the outlet of the plant or plants on any distribution system shall not vary more than 10% from this standard.

(3) Each utility which sells gas which is made by two or more different processes shall make daily determinations of the specific gravity of the mixed gas at the outlet of the plant or plants, and shall keep a record of these determinations. The method of determination shall be approved by this commission.

Explanation of section PSC 134.14. Specific gravity variations are as important as variations in heating value, pressure, and chemical composition of the gas. The last cannot be limited effectively but the others may be. Changes in specific gravity may be compensated for by changes in heating value, but such compensation is of very limited practical value. In some cases a variation in specific value may be preferable to an increase in the proportion of inert constituents of the gas, and it is not intended that dilution be used as a method of conforming to this rule.

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 134.18, 134.19, 134.20,
 134.21, 134.22, 134.23,
 134.24, 134.25, 134.26,
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