BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of Union Electric Company, d/b/a Ameren Missouri, for an Order Granting a Variance from 4 CSR 240-10.030(19) to revise its Sample Meter Testing Plan.	)))))	File No. GO-2017-_____

APPLICATION AND REQUEST FOR VARIANCE

COMES NOW Union Electric Company d/b/a Ameren Missouri ("Ameren Missouri" or "the Company"), a Missouri corporation, and pursuant to 4 CSR 240-2.060, submits this *Application and Request for Variance* from 4 CSR 240-10.030(19) to give the Company authority to revise its Sample Meter Testing Plan for natural gas meters that has been in place, unchanged, since its implementation in 1997. In support of its request, Ameren Missouri states as follows:

INTRODUCTION

1. On July 18, 1997, the Company filed an request for a variance from 4 CSR 240-10.030(19), which generally required then (as it does now) the removal, inspection, and testing of all natural gas service meters no less than once every 120 months. Specifically, the Company asked to use a statistical sampling plan for meters with a capacity under 450 cubic feet per hour. The Company submitted this plan as Exhibit A to its application, and titled the plan, "Technical Description of Proposed Method for the Sample Testing of Inservice Gas Meters" ("Sample Meter Testing Plan"). The Commission, noting the cost savings and other efficiencies created by the Sample Meter Testing Plan, approved the variance and required the Company to re-submit the Sample Meter Testing Plan with certain revisions. The Company re-submitted the Sample Meter Testing Plan on March 27, 1998, and has used this methodology for sample tests for gas

meters since that time. The Commission's Order and the Company's revised and approved Sample Meter Testing Plan are included as Schedules A and B, respectively. Ameren Missouri has not previously requested any revisions or expansions to this Sample Meter Testing Plan.

2. Ameren Missouri submits this *Application and Request for Variance* to request additional revisions to the Sample Meter Testing Plan in order to provide clarity and to appropriately adjust timing and capacity requirements to more appropriate levels in today's environment. This pleading specifically requests a variance from 4 CSR 240-10.030(19) to the extent necessary to incorporate the necessary changes into the Sample Meter Testing Plan. This request aligns with Ameren Missouri's similar requests regarding electric meter testing. (*See* Case No. 18,172, Application filed August 26, 1974, and Order granting issued March 12, 1975; Case No. EO-2001-0521, Application filed March 3, 2001, Order granting issued September 11, 2001; and File No. EE-2013-0009, Application filed July 3, 2012, Order granting issued August 15, 2012.)

3. In support of its position and in compliance with 4 CSR 240-2.060, Ameren Missouri provides the required information in the following sections of this *Application and Request for Variance*:

I. 4 CSR 240-2.060(1), (A) through (M)

II. Requested Modifications to the Sample Meter Testing Plan

The information required by 4 CSR 240-2.060(1), as well the requested modifications to the Sample Meter Testing Plan and the support thereof, are discussed in more detail below.

I. 4 CSR 240-2.060(1), (A) through (M)

Paragraph (A) – Applicant

4. The Company is a Missouri corporation doing business under the fictitious name of Ameren Missouri, organized and existing under the laws of the State of Missouri, in good standing in all respects, with its principal office and place of business located at One Ameren Plaza, 1901 Chouteau Avenue, St. Louis, Missouri 63103. The Company is engaged in providing electric and gas utility services in portions of Missouri as a public utility under the jurisdiction of the Commission. The Company is a subsidiary of Ameren Corporation.

Paragraph (B) – Articles of Incorporation; Paragraph (E) – Fictitious Name; Paragraph (G) – Information Previously Submitted; Paragraph (H) – Character of Business[1]

5. Ameren Missouri previously submitted to the Commission a certified copy of its Articles of Incorporation (See Case No. EA-87-105), as well as its Fictitious Name Registrations as filed with the Missouri Secretary of State's Office (See Case Nos. EN-2011-0069 and GN-2011-0070). The Company also recently submitted to the Commission a certified copy of its Certificate of Corporate Good Standing in File No. EO-2017-0044. These documents are incorporated by reference and made a part of this *Application and Request for Variance* for all purposes.

Paragraph I – Correspondence and Communication

6. Correspondence and Communication -- Correspondence, communications, orders and decisions in regard to this *Application and Request for Variance* should be directed to:

For Company

Paula N. Johnson
Senior Corporate Counsel
and
Wendy K. Tatro
Director and Assistant General Counsel

[1] Paragraphs (C), (D), and (F) do not apply to Ameren Missouri.

Ameren Missouri
1901 Chouteau Avenue
PO Box 66149, MC 1450
St. Louis, MO 63166-6149
(314) 554-3533 (phone)
(314) 554-4014 (fax)
AmerenMOService@ameren.com

Paragraph (K) – Actions, Judgments, and Decisions; Paragraph (L) – Fees[2]

7. Ameren Missouri has no final unsatisfied judgments or decisions against it from any state or federal agency or court that involve customer service or rates that have occurred within three years of the date of this *Application and Request for Variance*. By the nature of its business, the Company has, from time-to-time, pending actions in state and federal agencies and courts involving customer service or rates. Company has no annual report or assessment fees overdue to this Commission.

Paragraph (M) – Affidavit

8. An affidavit in support of this *Application and Request for Variance* by an authorized individual is included as Schedule C.

II. Requested Modifications to the Sample Meter Testing Plan

9. Ameren Missouri specifically requests the following changes to its Sample Meter Testing Plan:

- General: Revise "AmerenUE" to "Ameren Missouri" throughout.
- Section 2 – Definitions

F. **Lot** – a collection of meters ~~in a~~ from the same group having ~~the same~~ multiple set ~~year~~ years beginning in the 10th year after installation, from which a sample is drawn and inspected to determine compliance with the acceptance criteria.

G. **Meter** – a hard case diaphragm type gas meter with a flow capacity of less than ~~four~~ six hundred ~~fifty~~sixty cubic feet per hour (~~450~~660 ^{3}/hr.).

[2] Paragraph (J) does not apply to Ameren Missouri.

(As of ~~March 9, 1998~~May 18, 2016, ~~AmerenUE~~Ameren Missouri had ~~103,617~~129,513 such meters in its ~~Missouri~~ service territories.)

- Section 5

  Section Heading: Revise the section heading from "Periodic Sampling Procedure" to "Sampling Test Procedure."

  D. If a lot fails, ~~AmerenUE~~ Ameren Missouri will remove all meters in that lot over a period not to exceed 4 years and it will replace or repair and recalibrate the meters before they can be reused. However, within a lot of meters, if a particular sub-lot can be identified from evaluation of test results which indicates an untimely performance degradation due to possible manufacturer's defect or geographical location, ~~and is clearly not a condition brought on by age as compared to other members of the lot~~ or old age as compared to other members of the lot, the following action will be taken:

  (Subparagraphs 1, 2, and 3 under Section 5.D. will remain unchanged).

  F. [Delete the entirety of 5.F.] ~~For each lot, the maximum permissible sampling period will be limited to thirty (30) years.~~

10. The Sample Meter Testing Plan has remained unchanged for nearly 20 years. During that time, Ameren Missouri's distribution system has changed, as well as the age of its meter assets. The changes enumerated above will appropriately update the Sample Meter Testing Plan to account for the change in number of installed meters of a certain size, will group the meters for testing in a logical manner, and will more appropriate account for meter age and the possibility of manufacturer defect. Additionally, modifying the definitions of "lot" and "meter" will result in more efficient use of resources, and accordingly, increased savings over the current Sample Meter Testing Plan. Revising the definition of "lot" as shown above will create a new meter grouping that will be sampled every 10 years based on meter codes rather than set year, reducing the number of meters to exchange in that particular lot. Further, by increasing the capacity in the "meter" definition, additional meters are added to the sampling program rather than being wholly tested every 10 years. Aside from these revisions, the remainder of the Sample Meter Testing Plan will continue to remain

unchanged.

11. Ameren Missouri acknowledges that the timing is tight, but requests approval of this *Application and Request for Variance* to the extent necessary to make the revisions to its Sample Meter Testing Plan listed above. Ameren Missouri hopes to implement these revisions with the 2017 calendar year. Ameren Missouri does not anticipate that this matter will be a contested case. A hearing is not required in order to grant a variance from a portion of the Commission's regulations. Accordingly, Ameren Missouri is not required to file a Notice of Filing pursuant to 4 CSR 240-4.020(2).

WHEREFORE, Ameren Missouri respectfully requests that the Commission grant the requested variance, which would allow the Company to revise and update its Sample Meter Testing Plan that has been in place and unchanged since 1997, as set forth above and for such further relief as the Commission may find appropriate.

Respectfully submitted,

/s/ *Paula N. Johnson*
Paula N. Johnson, #60261
Senior Corporate Counsel
Ameren Missouri
1901 Chouteau Avenue
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for Union Electric Company
d/b/a Ameren Missouri

SCHEDULES TO APPLICATION AND REQUEST FOR VARIANCE

Schedule and Description

Schedule A - October 30, 1997, *Order Granting Variance*

Schedule B - March 27, 1998, *Sample Meter Testing Plan*

Schedule C - *Affidavit* in Support of *Application and Request for Variance*

STATE OF MISSOURI

PUBLIC SERVICE COMMISSION

At a Session of the Public Service
Commission held at its office
in Jefferson City on the 30th
day of October, 1997.

In the Matter of Union Electric Company=s)
Application for a Variance Waiver from the) **Case No. GO-98-25**
Provisions of 4 CSR 240-10.030(19).)

ORDER GRANTING VARIANCE

On July 18, 1997, Union Electric Company (UE or Company) filed an application for a variance from Commission rule 4 CSR 240-10.030(19). This rule requires the Company to remove, inspect and test its gas service meters at least once every one hundred-twenty months or more often, if necessary, unless otherwise ordered by the Commission. UE requests approval of a proposed meter sampling program for meters with a capacity under 450 cubic feet per hour. UE stated as of April 1, 1996, it had 102,356 of these meters in its Missouri service territory classified into 20 groups by manufacturer, type and size. The larger meters which are not included in the sampling plan will continue to be tested in accordance with the Commission=s rule. The proposed meter sampling program is set forth in Exhibit A to UE=s application. Under the program, each meter group is stratified into lots by set years so that beginning in the ninth year after installation, every lot in each group is sample tested every year. The meters are statistically analyzed to ensure that not more than 6.5 percent of the meters in service will deviate from 100 percent accuracy by more than plus or minus two percent.

UE states in its application that the proposed program is similar to the Company=s existing variance for testing electric meters which was approved by the Commission in Case No. 18,172. An Acceptable Quality Level (AQL) of two percent is used in the electric meter sampling program. Nevertheless, UE proposes an AQL of 6.5 percent for the gas meter sampling program, based on the technological limitations of gas metering. An AQL of 6.5 percent has been adopted for gas utilities by the Illinois Commerce Commission and is used by Central Illinois Public Service (CIPS). See 83 Ill. Adm. Code 500.215. According to UE=s application, UE and CIPS have entered a merger agreement which is currently under regulatory review. The random sample testing method for the proposed program is detailed in an American National Standards Institute (ANSI) standard for sampling, ANSI/ASQC Z1.4. If a lot fails under the proposed program, then UE will remove all meters in that lot within four years. The maximum permissible sampling period is 30 years.

UE states in its application that full compliance with the rule will require that UE annually test approximately 10,000 gas service meters with a capacity of under 450 cubic feet per hour. With the proposed sampling program, UE would

initially test about 5,400 meters. According to UE, this program will save approximately $500,000 per year without compromising UE=s ability to meet the measurement accuracy standards set forth in rule 4 CSR 240-10.030(18). UE asserts that approval of its application would be in the public interest, and UE seeks to begin the program by January 1, 1998.

On October 16 the Staff of the Commission (Staff) filed a memorandum in the official case file which indicated that the Commission granted UE and CIPS conditional approval to merge in Case No. EM-96-149. Therefore, the approval of this application would allow for consistent meter sampling programs in both states. Staff reported that the proposed program is similar to meter testing programs approved for Laclede Gas Company (Laclede) in Case No. GO-95-320 and for the predecessor of Missouri Gas Energy (MGE) in Case No. GO-91-353, although the proposed 6.5 percent AQL is less stringent for small lot sizes. Staff concluded that the benefit of consistency with the CIPS meter sampling program outweighs any benefit of requiring a more stringent AQL for small lot sizes. Staff indicated that tables providing meter breakdowns as of January 1, 1998, should be available by April 1, 1998, that minor editorial changes to Exhibit A should be added and that references to the meter testing variances should be included in the tariff sheets. Staff recommended that the Commission issue an order approving the variance and ordering UE to submit a revised Exhibit A to its application by April 1, 1998, and to include references of the variance at an appropriate location in its tariff.

The Commission has reviewed the verified application and the Staff=s memorandum. The Commission finds that the variance will result in savings of approximately $500,000 per year and initially will eliminate approximately 4,400 visits to test and remove meters. The Commission determines that this decline of 4,400 visits will eliminate 4,400 opportunities to observe and remedy potentially unsafe conditions. Therefore, while the Commission will grant the variance request, the Commission finds that the appropriate response by UE to this decision would be the implementation by the Company of a program which recaptures those Alost@ opportunities elsewhere in UE=s safety inspection program.

The program should be set up so that the costs and labor hours involved approximate the costs and hours saved by implementation of the sample meter program. If UE desires Commission review of the program, UE should file a motion to establish a docket regarding the program, along with the proposed program. In developing the program, UE should bear in mind the need to inspect older homes on a regular basis whose occupants are more likely to benefit from piping and appliance inspections as compared to the occupants of newer homes.

The Commission determines that UE should be permitted a variance from 4 CSR 240-10.030(19) to establish its sample method program for testing gas service meters as set forth in its application. The Commission further determines that UE should submit a revised Exhibit A to its application no later than April 1, 1998, and should include references of the variance at an appropriate location in its tariff.

IT IS THEREFORE ORDERED:

1. That the Application for Variance filed by Union Electric Company on July 18, 1997, is granted.

2. That Union Electric Company is granted a variance from 4 CSR 240-10.030(19) to establish its sample method program for testing gas service meters beginning on January 1, 1998, as set forth in its application filed on July 18, 1997.

3. That Union Electric Company shall file a revised Exhibit A with tables in this docket no later than April 1, 1998, as recommended by the Staff of the Commission.

4. That Union Electric Company shall file tariff sheets referencing the variance granted herein no later than December 1, 1997, bearing an effective date of January 1, 1998.

5. That the Staff of the Missouri Public Service Commission shall file a memorandum in this case regarding whether the tariff sheets

filed pursuant to ordered paragraph 4 comply with this order no later than December 15, 1997.

6. That this order shall become effective on November 12, 1997.

BY THE COMMISSION

Cecil I. Wright

Executive Secretary

(S E A L)

Lumpe, Ch., Murray and Drainer, CC., concur

Crumpton, C., dissents with opinion to follow

George, Regulatory Law Judge

SCHEDULE B

sent Fed Ex

Ameren Services

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March 27, 1998

Mr. Dale Hardy Roberts
Secretary / Chief Regulatory Judge
Missouri Public Service Commission
P.O. Box 360
Jefferson City, Missouri 65102

Ameren

RE: ***Case No. GO-98-25 / In the Matter of Union Electric Company d/b/a AmerenUE's Application for a Variance Waiver from the Provisions of 4 CSR 240-10.030(19)***

Dear Mr. Roberts:

In accordance with the Commission Order issued on October 30, 1997, in the above-referenced case, Union Electric Company d/b/a AmerenUE hereby submits an updated copy of Exhibit A, *Technical Description of Proposed Method for the Sample Testing of Inservice Gas Meters*. This technical description has been updated to reflect the most recent meter breakdowns that are being used to sample test the inservice gas meters.

Sincerely yours,

William B. Bobnar
Attorney for AmerenUE

WBB:mas
Enclosure

cc: John D. Kottwitz (MPSC)

bcc: W. J. Carr (820)
M. E. Vandas (666)
J. C. Thompson
RKE/WBB
Legal File

MISSOURI

EXHIBIT A

TECHNICAL DESCRIPTION OF PROPOSED METHOD FOR THE SAMPLE TESTING OF INSERVICE GAS METERS

1. INTRODUCTION

Union Electric Company d/b/a AmerenUE ("AmerenUE") proposes to employ a sample testing method, using fully developed and widely recognized quality control standards, principles and rules, to test inservice gas meters. These standards, principles and rules can be found in standard texts and statistical sampling tables. Details of the method are described in ANSI/ASQC Z1.4[1] which is the "attributes sampling technique." Sampling testing is an economical substitute for one hundred percent (100%) testing.

2. DEFINITIONS

A. **Acceptable Quality Level (AQL)** - a statistically based acceptance criteria for the maximum percentage or proportion of variant units in a lot that can be considered satisfactory as a process average (See ANSI/ASQC Z1.4) The AQL to be used in sample testing gas meters is 6.5%.

B. **Annual Sample** - a random sample taken each year from a group of meters based on guidelines set forth in ANSI/ASQC Z1.4 (inspection by attributes) using general inspection level II, Double Sampling Plans for Normal Inspection.

C. **Check Flow** - the measured flow rate at twenty to forty percent (20-40%) of the meter's rated nameplate capacity.

D. **Group** - meters of a particular type, manufacturer, and size.

E. **Intest Accuracy** - the accuracy of a meter determined during its flow test following removal from operation and before repair and adjustment. It is the sum of the open flow accuracy plus the check flow accuracy divided by two (2).

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[1] ANSI/ASQC Z1.4 (Military Standard MIL-STD-105E), Sampling Procedures and Tables for Inspection by Attributes (1993)

F. **Lot** - a collection of meters in a group having the same set year, from which a sample is drawn and inspected to determine compliance with the acceptance criteria.

G. **Meter** - a hard case disphragm type gas meter with a flow capacity of less than four hundred fifty cubic feet per hour (450 ft.^{3}/hr.). (As of March 9, 1998, AmerenUE had 103,617 such meters in its Missouri service territories.)

H. **Meter Code** - an AmerenUE unique identification number used to identify a meter's size. Size is specificed by the manufacturer.

I. **Open Flow** - the measured flow rate at eighty to one hundred twenty percent (80-120%) of the meter's rated nameplate capacity.

J. **Percent Accuracy** - the ratio comparison of the registered volume of a meter under test to the registered volume of a standard.

K. **Random** - a statistical method of sampling that ensures that each member of a population has the same probability of being selected as any other member.

L. **Set Year** - the calendar year during which a meter was installed for a customer.

M. **Specification Limits** - limits that define the conformance boundaries for the registration accuracy of individual meters. These limits are plus or minus two percent (±2%) of one hundred percent (100%) accuracy.

N. **Type** - the meter's temperature compensation (compensated or uncompensated).

O **Year of Purchase** - the calendar year in which a meter was purchased from a manufacturer.

P. **Years in Service** - the number of years between the year a meter was set and the year it was removed.

3. PURPOSE

The purpose of the AmerenUE gas meter sample testing plan is:

A. To determine the quality level of each meter lot by providing a reliable percentage estimate of the meters in each lot lying outside the specification limits for registration accuracy.

B. To provide information relating to the performance of various meter lots when meter accuracy does not meet the specified quality level and thus provide the basis for repair and recalibration or planned retirement of those meters which are nonconforming.

4. GENERAL METER TESTING PROCEDURES

Meters are tested in accordance with the following:

A. With the exception of those meters removed from service specifically for known leakage, damage, tampering, noise, or non-registration, and meters that have been selected for retirement, all meters removed from service shall be tested for in-test accuracy at both check flow and open flow prior to any adjustment or repair. The meter accuracy shall be the sum of the open flow accuracy plus the check flow accuracy divided by two (2). This shall be referred to as the intest accuracy. Those meters which have been removed from service specifically for known leakage or non-registration shall be monitored so that potential problems with certain meter types can be identified, even though the accuracy rate is acceptable.

B. Meters shall be repaired as necessary and adjusted to withinplus or minus one percent (±1%) of one hundred percent (100%) accuracy at the open and check flowrates before being returned to service.

Records shall be maintained for each lot of meters showing intest accuracy of each lot for each calendar year. This intest accuracy data shall be organized into three (3) accuracy categories as follows: (1) more than 2% above 100% accuracy (fast); (2) from 2% above to 2% below 100% accuracy; and (3) more than 2% below 100% accuracy (slow). The accuracy data shall be maintained by number of years in service, by year of purchase (for meters purchased since 1994), and by total meters tested in a lot. When calculating the above accuracy categories, all fractions shall be rounded to the nearest whole number (0.5 and greater to be rounded up).

5. PERIODIC SAMPLING PROCEDURE

Meters shall be sample tested in accordance with the procedure described herein.

A. AmerenUE will classify its meters into groups according to manufacturer, type and size. (As of March 9, 1998, there were 21 groups varying in size from 34 to 23,751 meters.) Groups are further stratified into lots by set year such that beginning in the

9th year after installation, each lot in every group will be sample tested annually. (Table 1 provides a detailed breakdown of groups and Table 2 provides a detailed breakdown of lots as of March 9, 1998. Note that Table 1 also indicates those meter groups that are being phased out over time.)

B. Sampling will be in accordance with standard sampling plans as set forth in recognized statistical quality control standards. The size of the sample will depend on the size of the lot it will represent. Sample size code letters are given in Table I of ANSI/ASQC Z1.4 for attributes plans. An additional percentage of the meters needed for the sample shall be selected on a random basis as substitutes for damaged, non-registering, inaccessible, or otherwise invalid meters in the sample. All meters in the sample will be tested for their accuracy of registration, where test results are rounded to the nearest whole number (0.5 and greater to be rounded up).

C. The statistical method applied to the test data will ensure that not more than six and one half percent (6.5%) of the meters in a lot will deviate from one hundred percent (100%) accuracy of registration by more than plus or minus two percent (±2%).

Attributes Method

1. Sampling by attributes can be performed several ways, usually classified as "single-sampling," "double-sampling," or "multiple-sampling." The plan selected for sampling meters in Missouri is the "double-sampling" technique.
2. The intest acccuracy of registration of each meter in the sample is classified as either being within or beyond the 98% to 102% specification limits. The decision to accept or reject a lot is then based upon the number of meters in the sample with accuracies beyond these limits. The total number of non-conforming meters is compared with the acceptance and rejection numbers in Table III-A of ANSI/ASQC Z1.4. For those meter lots which have either a very high quality level or a very low quality level, the original sample will be sufficient to provide a decision. The second sample need only be drawn in those instances where the percentage of non-conforming units is within the range between the acceptance and rejection criteria.

D. If a lot fails, AmerenUE will remove all meters in that lot over a period not to exceed 4 years and it will replace or repair and recalibrate the meters before they can be reused. However, within a lot of meters, if a particular sub-lot can be identified from evaluation of test results which indicates an untimely performance degradation due to possible manufacturer's defect or geographical location, and is clearly not a condition brought on by age as compared to other members of the lot, the following action will be taken:

1. The particular sub-lot will be further sampled as appropriate to verify above indications.
2. If confirmed, an accelerated removal program of this particular sub-lot will be implemented.
3. In this instance the sub-lot is not indicative of the overall meter lot so the intest accuracy data will be excluded form the analysis.

E. All other diaphragm meters, turbine meters, and rotary meters are excluded from sample testing and will be removed, inspected, and tested at least once every one hundred twenty (120) months to ensure proper operation.

F. For each lot, the maximum permissible sampling period will be limited to thirty (30) years.

In the Matter of the Application of Union Electric Company, d/b/a Ameren Missouri, for an Order Granting a Variance from 4 CSR 240-10.030(19) to revise its Sample Meter Testing Plan.	)))))	File No. GO-2017-_____

AFFIDAVIT OF DAVID N. WAKEMAN

STATE OF MISSOURI)
) ss
CITY OF ST. LOUIS)

David N. Wakeman, being first duly sworn on his oath, states:

1. My name is David N. Wakeman. I work in the City of St. Louis, Missouri, and I am employed by Union Electric Company d/b/a Ameren Missouri as Senior Vice President Customer Operations.

2. Attached hereto is the *Application and Request for Variance*, including the schedules thereto, of Union Electric Company d/b/a Ameren Missouri for an Order approving the requested variance, which would allow the Company to revise and update its natural gas Sample Meter Testing Plan.

3. I have read the *Application and Request for Variance* and affirm that the information contained therein is true and correct to the best of my knowledge, information, and belief.

David N. Wakeman

Subscribed and sworn to before me this 1st day of December, 2016.

Notary Public

GERI A. BEST
Notary Public - Notary Seal
State of Missouri
Commissioned for St. Louis County
My Commission Expires: February 15, 2018
Commission Number 14930811