MISSOURI PUBLIC SERVICE COMMISSION

STAFF REPORT

COST OF SERVICE

REVENUE REQUIREMENT

APPENDIX 3
Testimony Schedules

UNION ELECTRIC COMPANY,

d/b/a Ameren Missouri

CASE NO. ER-2012-0166

Jefferson City, Missouri
July 2012

**** Denotes Highly Confidential Information ****

NP

Union Electric Company d/b/a Ameren Missouri
Case No. ER-2012-0166

ASSET VERIFICATION METHOD & ANALYSIS

INDEX

1. Sample Universe

For the physical verification phase of the Staff continuing property records (CPR) audit, 29 sample items were selected from the three water treatment plants operated by Ameren Missouri. These facilities were selected as a high level survey to determine the adequacy of Ameren Missouri's CPR.

2. Sampling Technique

In response to Data Request Nos. 0133 and 0134, Ameren Missouri provided a detailed CPR listing for each of the three audited production facilities. From these documents, sample items were selected for physical verification in the field. All sample items were selected on a judgmental basis by reviewing the CPR. Sample items were selected from among the accounts randomly.

3. Methods of Sample Analysis and Audit Parameters

Analysis and evaluation of any sample item selected during the audit ultimately yielded only two possible outcomes: one, the item is fully in compliance with the FERC-USOA as it applies to recordkeeping and the CPR and is therefore deemed to be COMPLIANT, or two, the item fails in some way to comply with USOA as it applies to recordkeeping and the CPR and is therefore deemed to be NON-COMPLIANT.

In order for a sample item to have been deemed compliant during the audit process, it had to be verified. An item was deemed to be completely verified when it met the four key audit criteria of verification of location, description, placement date, and installed cost.

It is important to note that while a sample item might be deemed to be unverified in any or all of the observed criteria (location, description, placement date, and installed cost), a sample item that was misplaced, but located in essence in the wrong location, would be ultimately deemed to be verified and non-compliant. The reason for this is to show that while the item was non-compliant, the dollars represented by the item were in service and providing benefit.

The following page depicts a Decision Analysis Flow Chart which indicates the possible sample item determinations made by the Staff.

A. Location

The location parameter is an element designated in the CPR indicating the particular place where an item can be found. Verification of the sample item requires that it must be proven that the item physically exists. This was done by searching for the selected sample item at its location as stated in the CPR. If the sample item was found at the location stated in the CPR, the sample item had been verified and the location was noted as correct. If the sample item was not found at the location stated in the CPR, a search was undertaken to determine if the item was simply at another location. The search was conducted within the production facility, using engineering expertise and the assistance of Ameren Missouri personnel to identify the area most likely where the item may have been misplaced. In the event that the sample item was found, a determination was made via the description, vintage (placement date) and cost to confirm that this item was 'in fact' the misplaced item.

Judgment plays a role in all three of the above parameters. If, for example, the missing item was 75 horsepower sewer pump (75HSP) for a production plant, and a 75HSP was found in room 101, instead of the CPR stated location of room 201, and there was only one 75HSP listed

in the CPR, it may be assumed that the stated location of the 75HSP was incorrect. The audit results would note that the 75HSP sample item was verified, but that the location was incorrect and, therefore, the sample item was non-compliant.

However, to take the example a step further, if upon finding the 75HSP in room 101 it is determined that the 75HSP was several years newer then the placement date listed in the CPR or the description (model number, serial number, brand, etc.) does not match the description listed in the CPR, it may be assumed that this is not the 75HSP listed in the CPR. Further, professional judgment may be engaged to conclude that based upon the above scenario the old 75HSP was *retired,* but not removed from the CPR and the "new" 75HSP was not *added* to the CPR. For purposes of the instant audit, under this expanded example this 75HSP sample would be recorded as missing; unverified and non-compliant. Moreover, an additional sample item entry may be made indicating the verified 75HSP set, noting that the CPR failed to indicate its existence and that the description, placement date, and installed cost are unverified, as a result of the CPR not listing these parameters. However, the ultimate tabulation of this sample would be as verified because a 75HSP was found and non-compliant.

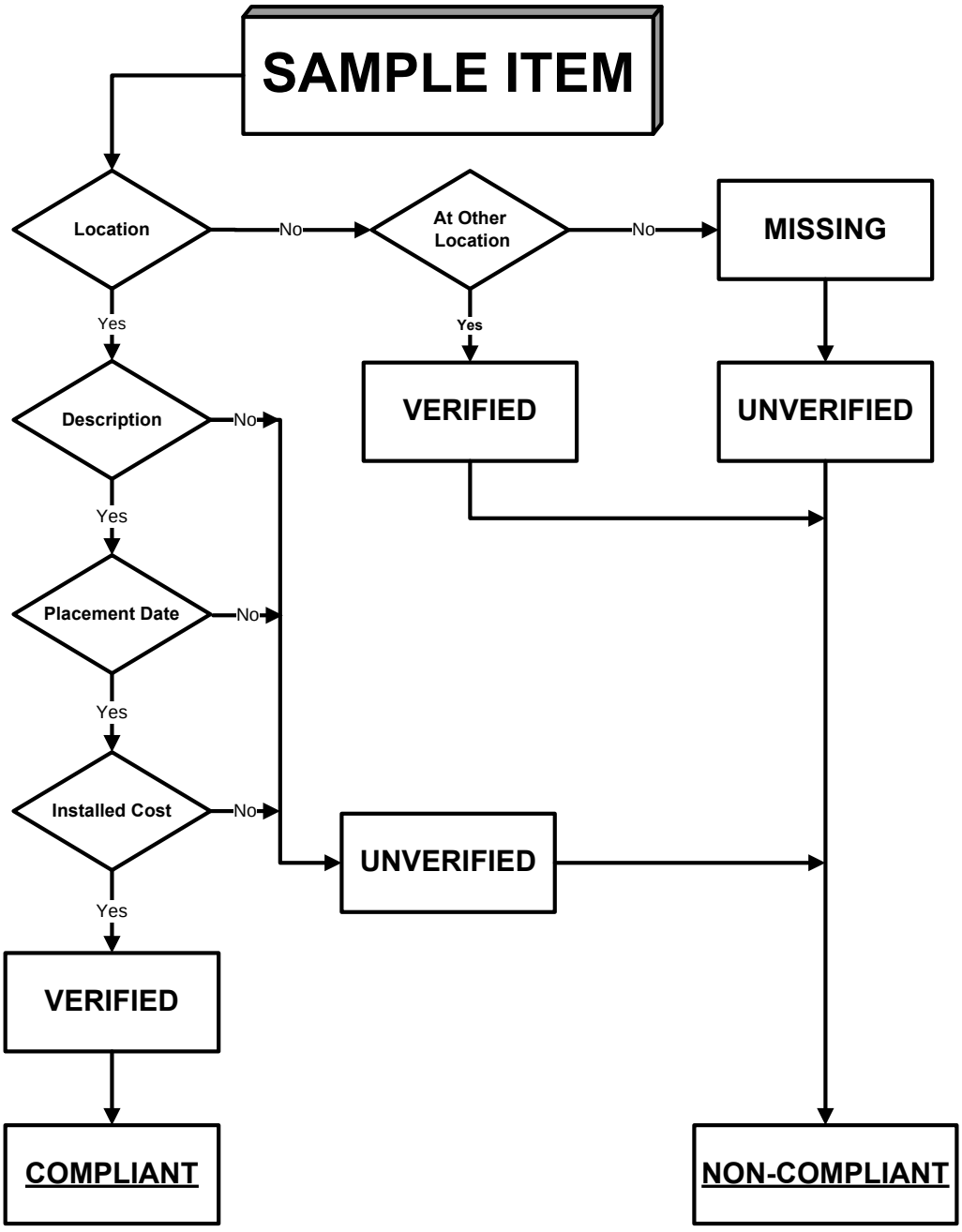
Finally, the 75HSP sample item found had an unknown installed cost and was entered into the sample record as the installed cost unknown. The unknown cost was entered into the dollar calculations as $0.00. This skews the total dollar amount of items non-compliant downward. As a result, some percentage calculations may total less than 100%. Attempts were made in the field at the production facilities to identify and locate for physical verification of selected sample items from the CPR for the production facilities. If the sample item was not found at the location stated in the CPR, a search was undertaken to determine if the item was simply at another location. The search was conducted within the exchange area, using engineering expertise and the assistance of Ameren Missouri personnel to assess the most likely area where the item may have actually been placed.

B. Description

The "description" parameter provides a brief identification detail respecting the sample item and may entail the sample item's serial number, model number, function, manufacturer, vendor, etc, Throughout the CPR, there did not appear to be a level of detail equivalent to a unique description of the sample items which would be provided if each item had a unique number and bar code. The uniqueness of an item was best associated with its physical location.

The description was generally deemed to be correct and verified unless the description was absent, obviously wrong. Any of the above three findings would result in the sample item being deemed unverified.

DECISION ANALYSIS FLOW CHART



November 21, 2011

C. Placement Date

To comply with USOA, the placement date (vintage) parameter is maintained in the CPR so that the age of an item can readily be determined. If the date of manufacture on the sample item, if at all present, was after the placement date, or the CPR failed to indicate a placement date, the sample item would be deemed unverified. In all instances, the sample item placement date was generally deemed to be correct and deemed verified.

D. Installed Cost

The installed cost parameter is the total cost associated with the engineering, labor, construction placement, billings from outside contractors, pricing of the listed materials, including additional overhead charges and any other charges, deemed to be associated with placing a sample item in service. If the installed cost were to be found different for a like unit of the same work order or the CPR failed to indicate an installed cost, the sample item would be deemed unverified. In all instances, the sample item installed cost was generally deemed to be correct and verified.

4. Aggregate Results

Of the 29 samples observed 22 were found to be compliant.

5. Observations and Recommendations

Ameren Missouri's CPR does not meet the basic requirements of the USOA for legacy or maintenance of past historical data. Retired items are removed from the CPR and there is no accounting for separate salvage and cost of removal.

6. Glossary:

<u>At Another Location:</u>

Denotes that the item was physically verified at a location different from that stated in the CPR.

<u>Continuing Property Records:</u>

The basic property records are that portion of the total property accounting system which preserves the following detailed information:

The identity, date of placement, location and original cost of units of property;

Original and ongoing transactional (plant account activity) in terms of such units; and

Any other specific financial and cost accoun ting information not properly warranting separate disclosure as an account or subaccount but which is needed to support regulatory, cost, tax, management and other specific accounting needs and requirements.

Compliant:

Denotes that the item was corroborated in the field as it was iden tified in the CPR in all of the utilized parameters (location, description, placement date and installed cost).

Continuing Property Record:

The continuing property record is that portion of the CPR which reveals the description, location, date of placem ent, the essential details of construction and the original cost of the property record units. The continuing property record and other underlying records of construction should be so m aintained that, upon retirem ent of one or more units, or of m inor items without replacement when not included in the costs of re tirement units, the actual cost or a reasonably accurate estimate of the cost of the plant retired can be determined.

Date of Placement: (Vintage)

Calendar year a particular item was placed into service.

Details of Construction:

The engineered work plans for building a project or installing equipment.

Installed Cost:

The cost of an item including those costs associated with its installation.

Item:

A unit of property, an article; unit; separate item; particular entry in an account.

Location:

An area designated in the CPR detailing a pa rticular place where an item is supposed to be found.

Missing:

Denotes that during the audit an item was not found and therefore it was impossible to physically verify the existence of the item.

Non-Compliant:

Denotes that the item was incorr ectly identified in the CPR in one or m ore of the utiliz ed parameters (location, description, placement date and installed cost).

Original Cost: (see Installed Cost)

Property Record Units:

The size and type with the amount of original cost associated with a sample item.

Unverified:

Denotes that the item was incorrectly identified in the CPR with respect to *a specific identified parameter* (location, description, placement date or installed cost), this is determined prior to making the decision if the sample is compliant or non-compliant.

Verified:

Denotes that the item was correctly identified in the BPR with respect to one or more specific utilized parameter(s) (location, description, placement date or installed cost), this is determined prior to making the decision if the sample is compliant or non-compliant.

Vintage: (See Date of Placement)

UNION ELECTRIC COMPANY d/b/a AMEREN MISSOURI
CASE NO. ER-2012-0166

AMEREN MISSOURI (ELECTRIC) LOW INCOME WEATHERIZATION
FUNDING, EXPENDITURES AND PRODUCTION
PPROGRAM YEAR 2011 (NOV 2010 - OCT 2011)

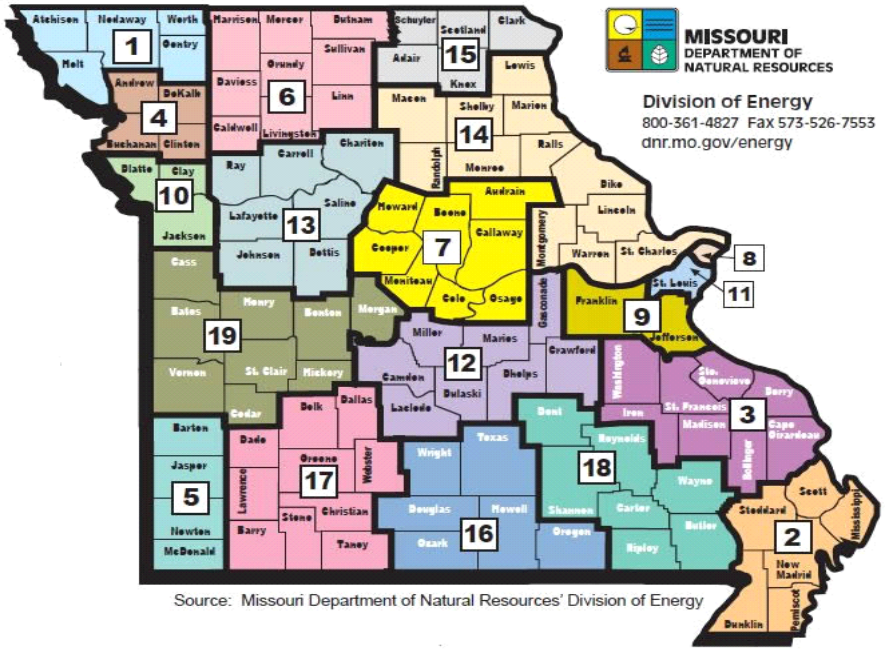
Agency Number	Low-Income Weatherization Administered by Department of Natural Resources Divison of Energy Subrgrantee Weatherization Agency Name and Location	Total Grant	Total Expenditures through 10/31/2011	Balance	% of Carryover	Total Homes
		**	**	**	**	**
1	Community Services, Inc. of Northwest Missouri, Maryville (CSI)					
2	Delta Area Economic Opportunity Corporation, Portageville (DAEOC)					
3	East Missouri Action Agency, Park Hills (EMAA)					
6	Green Hills Community Action Agency, Trenton (GHCAA)					
7	Central Missouri Community Action, Columbia (CMCA)					
8	Urban League of Metro. St. Louis (ULMSL)					
9	Jefferson-Franklin Community Action Corporation, Hillsboro (JFCAC)					
10	Kansas City Housing and Community Development Department, (KCHCDD)					
11	Community Action Agency of St. Louis County, Overland (CAASTLC)					
12	Missouri Ozarks Community Action, Inc., Richland (MOCA)					
14	North East Community Action Corporation, Bowling Green (NECAC)					
15	Northeast Missouri Community Action Agency, Kirksville (NMCAA)					
	Grand Totals	**	**	**	**	**

SCHEDULE HEW-1
NP

HIGHLY CONFIDENTIAL

SCHEDULE HEW-1
NP

UNION ELECTRIC COMPANY d/b/a AMEREN MISSOURI
CASE NO. ER-2012-0166



Ameren Missouri Funded	MDNR Subgrantees -- Weatherization for Low Income Weatherization
1	Community Services, Inc. of Northwest Missouri, Maryville (CSI)
2	Delta Area Economic Opportunity Corporation, Portageville (DAEOC)
3	East Missouri Action Agency, Park Hills (EMAA)
4	Community Action Partnership of Greater St. Joseph (CAPSTJO)
5	Economic Security Corporation of the Southwest Area, Joplin (ESC)
6	Green Hills Community Action Agency, Trenton (GHCAA)
7	Central Missouri Community Action, Columbia (CMCA)
8	Urban League of Metro. St. Louis (ULMSL)
9	Jefferson-Franklin Community Action Corporation, Hillsboro (JFCAC)
10	Kansas City Housing and Community Development Department, (KCHCDD)
11	Community Action Agency of St. Louis County, Overland (CAASTLC)
12	Missouri Ozarks Community Action, Inc., Richland (MOCA)
13	Missouri Valley Community Action Agency (MVCAA)
14	North East Community Action Corporation, Bowling Green (NECAC)
15	Northeast Missouri Community Action Agency, Kirksville (NMCAA)
16	Ozark Action, Inc., West Plains (OAI)
17	Ozarks Area Community Action Corp., Springfield (OACAC)
18	South Central Missouri Community Action Agency, Winona (SCMCAA)
19	West Central Missouri Community Action Agency, Appleton City (WCMCAA)
	INDEPENDENCE
	O'FALLON
	ST. CHARLES
	Helping Ministry Neighborhood Development Corporation, Hayti (HMNDC)
	Mid-America Regional Council, Kansas City (MARC)

SCHEDULE HEW-2

SCHEDULE HEW-2

UNION ELECTR C COMPANY d/b/a AMEREN MISSOURI
CASE NO. ER-2012-0166

Weatherization Funding for the Subgrantee Agencies

Ameren Missouri Funding Administered by DNR/DE			
Ameren Missouri Electric Subgrantees -- Weatherization Agency	Ameren Missouri Electric (11/2011 - 10/2012) **	Spent thru 3/31/12 **	Balance **
CSI			
DAEOC			
EMAA			
GHCAA			
CMCA			
ULMSL			
JFCAC			
KCHCDD			
CAASTLC			
MOCA			
NECAC			
NMCAA			
TOTAL:			
	**	**	**

SCHEDULE HEW-3

NP

SCHEDULE JAR-1

HAS BEEN DEEMED

HIGHLY CONFIDENTIAL

IN ITS ENTIRETY

SCHEDULE MJE-1

HAS BEEN DEEMED

HIGHLY CONFIDENTIAL

IN ITS ENTIRETY

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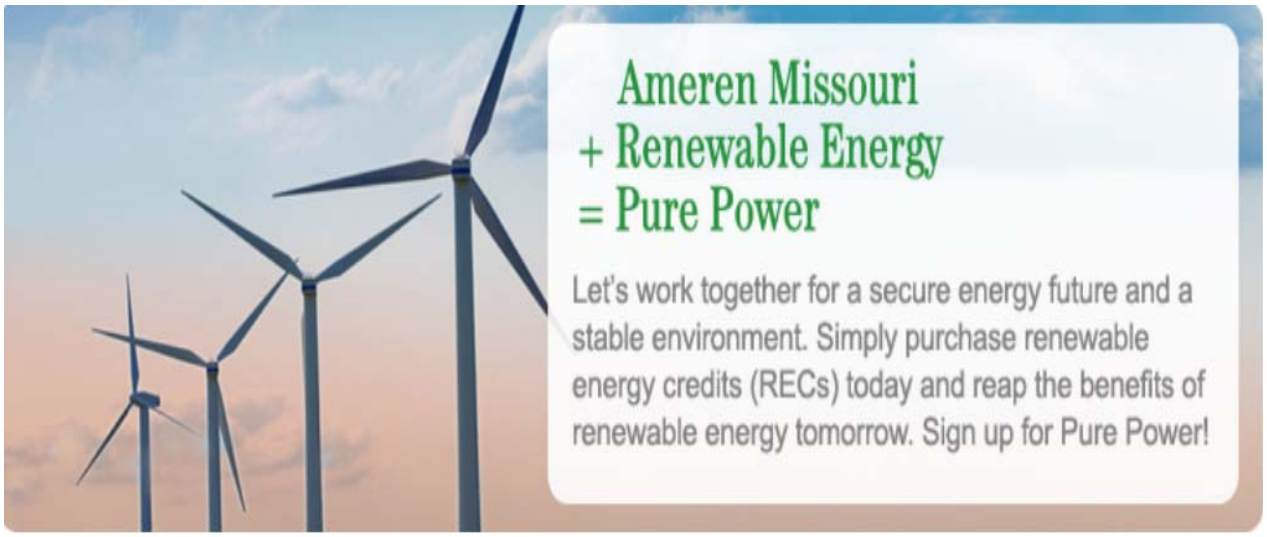
These "examples" were extracted from the following Ameren Missouri website:
http://www.ameren.com/sites/aue/Environment/PurePower/Pages/PurePower.aspx

EXAMPLE #1



EXAMPLE #2
http://www.ameren.com/sites/aue/Environment/PurePower/Pages/FAQ.aspx

- How does the program work?

  100% Pure Option: When residential or small business customers enroll in the Pure Power 100% usage option, Ameren Missouri monitors their monthly energy usage and buys an equivalent amount of local, Green-e Energy certified, Renewable Energy Credits (RECs) and retires them on behalf of the customers. **Green-e Energy certification guarantees that your Pure Power premium supports renewable sources and keeps the economic and environmental benefits local. (Emphasis Added)**

EXAMPLE #3
http://www.ameren.com/sites/aue/Environment/PurePower/Pages/FAQ.aspx

- How much does the program cost?

  Pure Power participants pay an extra 1.5 cents per kilowatthour (kWh) of electricity or purchase $15 "Blocks"* or $7.50 "Half Blocks" **of power** to support renewable energy **(Emphasis Added)**

  100% Pure Option: Residential and small business customers can offset 100% of their energy with clean power. Ameren Missouri will monitor your monthly energy usage and buy an equivalent amount of Green-e Energy certified Renewable Energy Credits (RECs) and retire them on your behalf. The average residential customer, who uses about 1,000 kWh per month, will pay a Pure Power premium of $15 each month. **(Emphasis Added)**

EXAMPLE #4
http://www.ameren.com/sites/aue/Environment/PurePower/Pages/FAQ.aspx

- How can I be sure my purchase is making a difference and supporting renewable energy? Is the program certified?

  Pure Power is a Green-e Energy Certified® program.

  Green-e Energy was established by the non-profit Center for Resource Solutions to provide information and an objective standard for consumers to compare renewable energy options and to verify that consumers get what they pay for.

  When you see the Green-e Energy logo, it means:

- The renewable energy option contains only new renewable resources;

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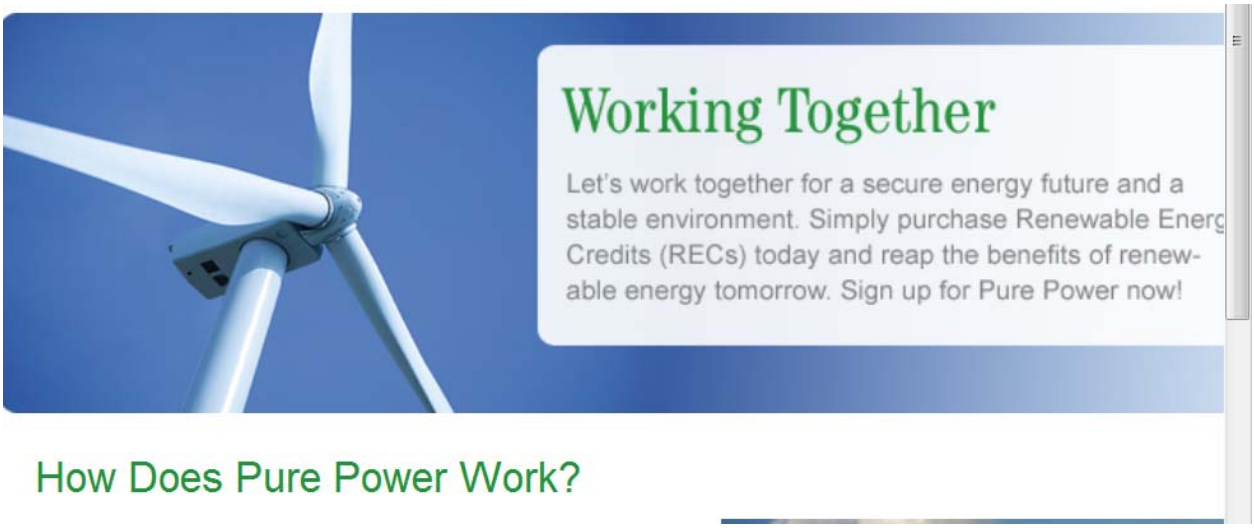
EXAMPLE #5

http://www.ameren.com/sites/aue/Environment/PurePower/Pages/PurePower.aspx

EXAMPLE #6

http://www.ameren.com/sites/aue/Environment/PurePower/Pages/PurePower.aspx



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Smart Grid Solutions Employed by Ameren Missouri

Mature technology solutions include the following:

- **Smart Line Capacitors**. Ameren Missouri has approximately 2,300 distribution line (less than 20kV) capacitors automating 1,087 of 2,184 (50%) distribution feeders and 14 of the 501 (3%) subtransmission feeders (20kV to100kV) that are automated via one-way radio communications to provide line voltage stability and limit line losses. Ameren Missouri plans to upgrade the control scheme for all of these smart line capacitors by 2014.
- **Automatic Voltage Regulation and Control**. Ameren Missouri has deployed tap changing substation transformers on 493 of 758 (65%) distribution substation units and 82 of 113 (73%) subtransmission (34kV to 69kV) units that are automated to adjust system voltage from commands issued by Distribution Control Offices. System voltage reduction has proven to work with documented cases over 15 years that have shown a 1.0-1.2 percent demand reductions resulting from a 2.5 percent voltage reduction.
- **Microprocessor Relaying.** Ameren Missouri has 228 of 319 (72%) line terminals in transmission (over 100kV) substations, 153 of 501 (31%) line terminals in subtransmission substations, 228 of 319 (72%) line terminals in transmission switchyards and 132 of 758 (17%) line terminals in distribution substations converted from electro-mechanical to digital relaying that provide improved operating performance and self-diagnostic checks. Future plans are to upgrade 12 line terminals and four 69kV network terminals annually for a goal of complete deployment by 2020.
- **Supervisory Control and Data Acquisition (SCADA).** These systems are deployed in all the switchyards and provide real time outage notification for enhanced outage response performance, improve operating flexibility and prevent overloads.
- **Smart Line Switches.** These devices detect line disturbances and provide communication of events to system operations personnel, isolate faulted lines, and restore service via alternate paths. There are 250 switches automating 84 of 501 (17%) subtransmission line feeders and 250 switches automating 96 of 2,184 (4%) distribution lines with annual additions bases upon system needs.
- **Smart line capacitors.** Capacitor banks control or stabilize the system voltage by minimizing voltage drops and absorbing energy from a line spike. The banks provide voltage stability by switching in capacitor banks to provide reactive power when large inductive loads occur, such as when air conditioners, furnaces, dryers, and/or industrial equipment start. They are deployed on 14 of 501 (3%) subtransmission feeders and 2,300 capacitors automating 1,087 of the 2,184 (50%) distribution lines with additions deployments based upon system needs.

- **Automatic Supply Line Transfer.** These system s detect su pply line disturbances and au tomatically reconfigure distribution substation switching to restore power following an outage. Ameren Missouri currently has 268 of 524 (51%) distribution substations depl oyed with this tech nology and will add this capability to new and existing substations.
- **Outage Management System.** This system provides outage managem ent services that includes collecting customer call data and creates and p rioritizes work orders to optim ize the Company' response to outages by shortening the outage duration and im proving efficiency. This system is scheduled to be replaced with a new Outage Manage ment System with updated technology in 2013.

New technology solutions include the following:

- **Transformer Insulating Oil Dissolved Gas Monitors.** This equipm ent provides real tim e monitoring of the m oisture and com bustible gases that are dissolved in the insu lating oil of generator step-up transformers (20kV to 138 or 345kV) large power, transm ission substation, subtransmission substation, and distribution substation transform ers. The detection of certain com bustible gases and moisture provides an early warni ng system of an i mpending transformer internal fault that will d estroy the transf ormer and cause s ignificant collateral damage. The Com pany has currently depl oyed this system on 4 of 16 (25%) Generator Step-Up transfor mers, 1 of 19 (5%) transm ission substation autotransformers, 2 of 113 (2%) subtrans mission substation transform ers and 10 of 758 (1%) distribution substation tran sformers and plans to continue deployment on the rem aining transformers based upon periodic m aintenance schedules.
- **High Voltage Bushing Monitors.** These are d evices that are installed on each high voltage bushing of generator step-up transformers, transmission substation autotransformers,[1] and subtransm ission and distri bution substation transform ers to monitor the insu lating oil quality or integrity. These m onitors detect small degradations in the insulatin g level of the bushing that if allowed to continue would decrease the insulating cap ability of the bushing to the point of failure causing collateral damage to transformer. The Com pany has currently deployed this system on 4 of 16 (25%) generator step-up transfor mers, 1 of 19 (5%) transmission substation autotransform ers, 2 of 113 (2%) subtransmission substations and 10 of 758 (1%) distribution substation transformers. The Com pany plans to c ontinue deployment on new transfor mers and the remaining transformers based upon periodic maintenance schedules.
- **Fiber Optic Winding Temperature Sensor.** These devices m onitor the condition of transform er and an autotr ansformer's cooling system and allow more accurate load ing to the actual ope rating capability of the transfor mer. Currently deployed on 1 of the exis ting 19 (5%) transm ission substation autotransformers and 2 of 113 (2%) subtransm ission substation transfor mers with plans to deploy on all new and replacement autotransformer installations.

[1] An autotransformer utilizes one set of windings with multiple connection points to change voltage levels.

- **Comprehensive Analysis Monitor.** This equ ipment uses weather d ata and online transformer sensor inputs to cal culate accurate d ynamic transmission substation autotransformer ratings. This equip ment will allow closer operating margins and m ore accurate determ ination of the autotransform er rating. Currently deployed on 1 of the existing 19 (5%) autotransformers with plans to deploy on all new and replacement autotransformer installations
- **Multi-Function Transformer Temperature Monitor.** These monitors perform simulation of several auto transformer and t ransformer winding temperatures to allow optimum cooling during high transfor mer loading and predict unstable tem perature conditions. Currently deployed on 8 of the existing 19 (42%) autotransformers in the transm ission substations, 40 of 113 (35%) subtransmission substations 190 of 758 (25%) distribution substation units with plans to deploy on all new and replacement transformer installations.
- **Phase Measurement Units (PMUs).** These devices pro vide highly accurate voltage, current and frequency m onitoring at strategic transm ission points to provide wide area situational aw areness to detect im pending serious upset conditions and allow correction actions to be taken to m itigate the event. Currently deployed on 9 of 319 (3%) transmission substation and switchyard line terminals with plans to a dd 7 more locations this year as part of a Departm ent of Energy project.
- **Faulted Circuit Indicators (FCI).** These devices provide inform ation on subtransmission (20kV to 100kV) a nd distribution (under 20kV) line disturbances and communicate this infor mation to system operators in near real time. There are 10 indicating sets on 5 of the 2,184 distribution line feeders (less than 1%) and 40 indicating sets on 25 of the 501 (5%) subtransm ission line feeders with plans to deploy with smart line switches in the future.
- **Smart Line Regulators.** The devices m onitor and regulate line voltage via remote control of the regul ator's tap changing mechanism. These regulators are currently deployed on 1 of the 2,184 (less than 1%) distribution lines with additional deployment based upon system requirements.
- **Wide Area Networks (WAN).** A WAN is a high cap acity communications backbone network that transports large qua ntities of s mart field device data to the Company's control centers. Am eren Missouri currently has 6 of 12 (50%) substations and 5 of 20 (25%) de ployed with this technology and will add this capability to new and existing s ubstations that are being upgraded with the long term goal of 100% deployment.
- **Field Area Networks (FAN).** A FAN is a wireless communication network that collects transmitted data from smart field devices and relays this inf ormation via traditional radio/cellular based n etworks. There are nearly 400 intelligent subtransmission line and 2,500 distribution line devices using this type of network with annual additions bases upon system needs.
- **Local Area Network (LAN).** These networks aggregate data and provide communications from smart field to the WAN. LANs are curren tly deployed in 2 of 113 (2%) subtransm ission substations and 2 of 524 (less than 1%) distribution substations. Fu ture LAN deploym ent will be bas ed upon system needs.

Union Electric Company d/b/a Ameren Missouri
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Lambert - St. Louis International Airport (STL)
Adjustments to the Time Series of Monthly Minimum Temperatures

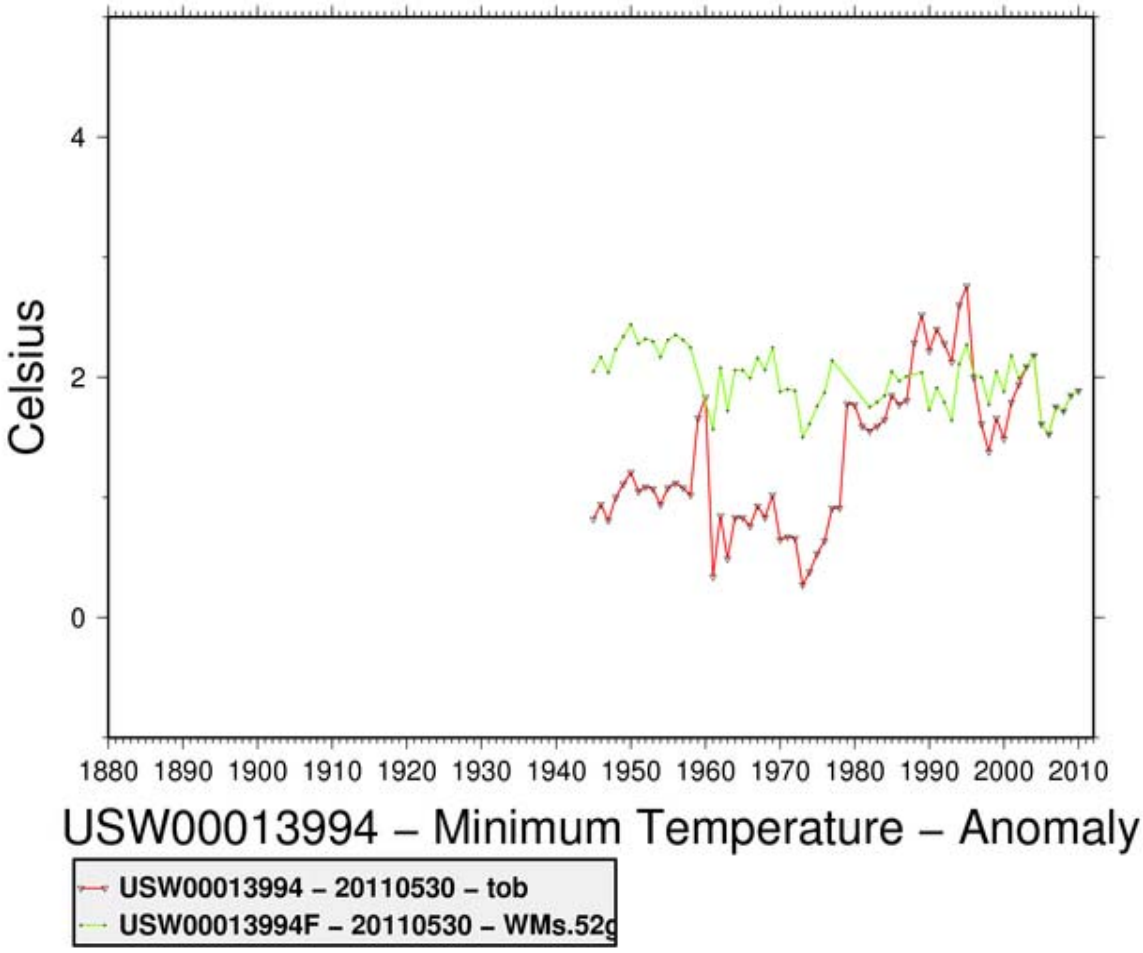

Figure 1

Lambert - St. Louis International Airport (STL)
Adjustments to the Time Series of Monthly Maximum Temperatures

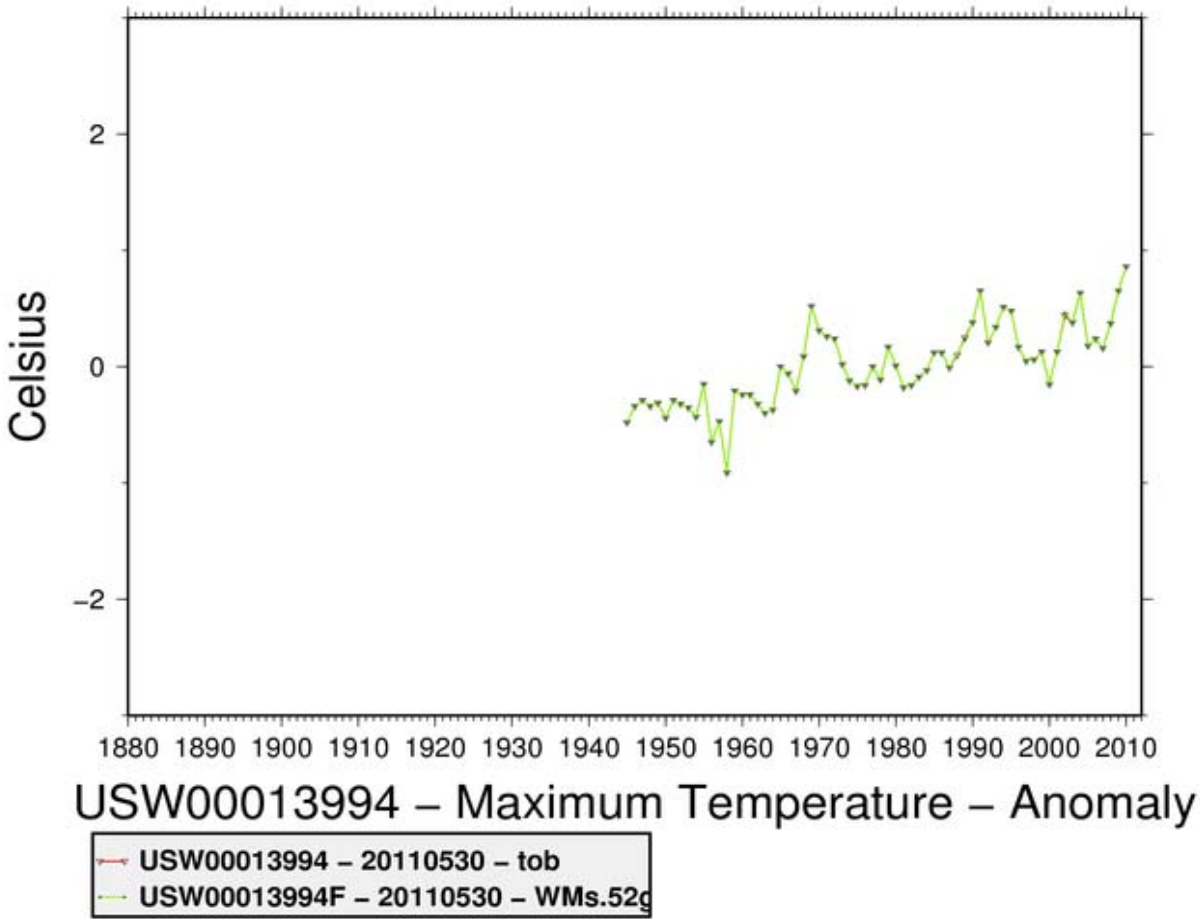

Figure 2