

**Ameren Missouri**

**Renewable Energy Standard  
Compliance Plan  
2018-2020**

**Prepared in Compliance with 4 CSR 240-20.100**

**April 13, 2018**



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## Introduction

The Missouri Renewable Energy Standard (RES) began as a public initiative and was placed on the Missouri ballot during the November 4, 2008 election. Labeled as Proposition C, it requires the three investor owned utilities (IOUs) in the state (Ameren Missouri, Empire District and Kansas City Power & Light) to acquire renewable energy resources or renewable energy credits (REC's)'s as a percentage of the total retail sales that each utility makes to its customers in the state.

As part of the statute and Public Service Commission approved rule making as of July 7<sup>th</sup> 2010, Section (8)(B) requires that the IOUs file a plan that covers their intended compliance measures for the current year plus the following 2 years.

There are two basic forms of compliance that are required under the RES. Compliance with “non-solar” RES which relates to compliance using renewable energy credits (RECs) from all forms of qualified renewable generation resources (wind, hydro, biomass, solar etc.) as certified by the Missouri Department of Economic Development (MoDED). The other component is the “solar” RES, compliance which can only be met with solar RECs (S-RECs).

There are two basic means by which compliance is deemed to have been achieved. The first is based on providing enough RECs to meet the MWh requirements as stated in the paragraph above. The other is related to the 1% rate cap calculation. Based on that calculation, a utility will be deemed to be in compliance with the RES once the cost of compliance is equal to or greater than the 1% calculation. Thus a utility could fall short of meeting the MWhs deemed necessary but if the 1% calculation is met then the utility is deemed to be in full compliance.

The following table details the renewables percentage requirements of the retail electric sales for the non-solar and solar RES:

<u>Time Period</u>	<u>Total Renewable Requirement</u>	<u>Solar*</u>
2011-2013	2%	2%
2014-2017	5%	2%
2018-2020	10%	2%
2021-forward	15%	2%

*\*Solar percentages are applied to the Total Renewable Requirement amounts*

As referenced above, the MoDED is responsible for certifying all eligible renewable resources that can be utilized in meeting the requirements of the RES. MoDED 4 CSR 240-20.100 (1), contains the list of all eligible renewable resources allowed to meet the compliance with the RES. Ameren Missouri’s compliance with the RES, as demonstrated in this report, adheres to the use of only those renewable resources as currently defined by the above referenced rule.

In addition, the RES rules allow for the banking of RECs for up to a three year time period. This will allow for the use of eligible RECs generated from January 1, 2015 to the current time period to meet the RES requirements for calendar year 2018.

Any generation and/or RECs from a Missouri renewable resource are entitled to a factor of 1.25 applied to each MWh or REC.

The following information in this report will demonstrate the specific means by which Ameren Missouri intends to meet its obligations under both the non-solar and solar RES for the calendar years 2018-2020. A part of each section will address the necessary information required for each individual year.

## **Planned RES Compliance**

### **Section (8) (B) 1 A**

#### **Non-Solar RES**

Ameren Missouri currently operates or has contracted for generation with the following eligible renewable resources:

- Keokuk Hydro-electric Generation Station
- Horizon (EDPR) Pioneer Prairie II Wind Farm
- Maryland Heights Renewable Energy Center (Landfill Gas)

The Ameren Missouri Keokuk Hydro-electric Generation Station is located on the Mississippi River in Keokuk, Iowa. The station consists of 15 separate generators. The individual nameplate ratings range from 7.2 to 8.8 MWs. This generation facility is wholly owned by Ameren Missouri and has been operational since 1913. The estimated generational output of the facility 2018-2020 is approximately 1,000,000 MWh annually.

In June, 2009, Ameren Missouri and Pioneer Prairie Wind Farm I LLC entered into a 15 year power purchase agreement. Ameren Missouri is purchasing 102.3 MWs of generation from the Pioneer Prairie Wind Farm consisting of 65 turbines, located in north east Iowa. The facility site covers approximately 10,000 acres of land located in Mitchell County, Iowa in Wayne and Stacyville Townships. The estimated generational output of the facility 2018-2020 is approximately 320,000 MWh annually.

On June 16, 2012, the Maryland Heights Renewable Energy Center (MHREC) became commercially operational. This facility burns methane gas produced by the IESI Landfill in Maryland Heights, MO in 3 Solar 4.9 MW Mercury 50 gas turbines to produce electricity. In 2018-2020, this facility is expected to produce an average of approximately 50,000 MWh annually.

#### **Planned Actions**

For the 2018-2020 compliance years, Ameren Missouri will utilize the generational output from the Keokuk, MHREC and Pioneer Prairie facilities. Ameren Missouri will continue to place RECs into the NAR account associated with the actual 2017 generation from Keokuk, MHREC and the Pioneer Prairie facilities. The need for addition REC purchases are expected in the 2019-2020 timeframe to fully meet compliance.

Currently, Ameren Missouri is finalizing several wind generation projects that will total at least 700 MW's of new wind resources. These projects are expected to be owned by Ameren Missouri and fully operational by the end of 2020. The production of these renewable resources will be used to meet non solar RES compliance in 2021 and going forward for Ameren Missouri.

### **Solar RES**

In late 2010, Ameren Missouri completed the installation of approximately 100 kW of solar generation capacity at its headquarters facility located in St. Louis. All generation from this facility will be utilized towards the solar requirements of the RES.

In addition, Ameren Missouri filed a Standard Offer Contract (SOC) tariff with the PSC in November, 2011. This tariff became effective on January 1, 2012. Under the terms of the tariff, Ameren Missouri bought S-RECs from its electric customers who installed or are installing net metered solar facilities (100 kW or less) at their homes and/or businesses. The price per S-REC was \$50 and the program was funded to a total of \$2.0 million. The program was fully subscribed in 2012.

Based on the success of the program, a revised tariff was filed in November 2012 with additional funding of \$1.0 million to continue the purchase of S-RECs from customers during the 2013 calendar year. Due to various factors influencing pricing for installations, the price per S-REC was reduced to \$5. For systems 10 kW or larger installed prior to January 1, 2013, a five year contract was used but an additional meter was required and customers are paid based on actual production. For systems 10 kW or larger installed after January 1, 2013 and before August 28, 2013, the contract term was extended to 10 years. Due to the implementation of the provisions associated with HB 142, systems greater than 10 kW that are installed after August 28, 2013 no longer require a second meter and their generational output is determined in the same fashion as systems less than 10 kW, utilizing the PV Watts formula.

However, on Aug. 28, 2013, due to the passage of HB 142, the RES law was amended. That amendment provided that if a customer accepts a solar rebate from the utility, the S-RECs transfer to the utility. All S-RECs associated with the customer installed net metered systems, as well as the generation at the Ameren Missouri headquarters facility are entitled to the 1.25 factor as they represent Missouri based generation.

During CY 2017 Ameren Missouri had acquired 60,041 S-RECs from customers. Ameren Missouri anticipates receiving an approximately 60,000 S-RECs annually over the 2018-2020 time period from customer supplied S-RECs.

Ameren Missouri completed construction of its first utility scale solar generation project, the O'Fallon Renewable Energy Center (OREC) which became fully operational in November, 2014. This 5.7 MW (DC) facility is located at the site of the Ameren Missouri O'Fallon substation in O'Fallon, Missouri. The annual output in 2017 was 5,943 MWh.

### **Planned Actions**

For the 2018-2020 compliance years Ameren Missouri will use the generation from OREC and the S-RECs that have been banked and generated by Ameren Missouri customers.

**List of Executed Contracts**  
**Section (8) (B) 1 B**

Table 1 provides a summary of all contracts which are being utilized by Ameren Missouri to procure certified RECs as well as RECs with associated energy.

### Table 1

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[REDACTED] [REDACTED]	[REDACTED] [REDACTED]	[REDACTED] [REDACTED]	[REDACTED] [REDACTED]	[REDACTED] [REDACTED]	[REDACTED] [REDACTED]	[REDACTED]
[REDACTED] [REDACTED] [REDACTED]	[REDACTED] [REDACTED]	[REDACTED]	[REDACTED] [REDACTED]	[REDACTED] [REDACTED] [REDACTED]	[REDACTED] [REDACTED] [REDACTED]	[REDACTED] [REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED] [REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED] [REDACTED] [REDACTED]	[REDACTED] [REDACTED] [REDACTED]	
[REDACTED]						

Ameren Missouri has executed only one third party contract (2009) associated with the purchase and delivery of renewable energy to the Ameren Missouri system that is being used to meet the non-solar RES compliance provisions. This is a 15 year power purchase agreement between Ameren Missouri and Horizon's Pioneer Prairie Wind Farm.

Through the time period ending August 28, 2013, Ameren Missouri executed 1,965 agreements with its customers who have installed small scale solar net metered systems and have chosen to accept the terms and conditions of the Standard Offer Contract (SOC). However, on Aug. 28, 2013, due to the passage of HB 142, the RES law was amended. That amendment provided that if a customer accepts a solar rebate from the utility, the S-REC's transfer to the utility. Due to this change, the program was discontinued and the \$1.0 million SOC cap was not reached.

## **Projected Retail Sales**

### **Section (8) (B) 1 C**

Table 2 below demonstrates the current forecasted total retail electric sales by year and the corresponding portfolio requirements in MWhs for both the non-solar and solar RES.

**Table 2**

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## **Comparison to Preferred Resource Plan**

### **Section (8) (B) 1 D**

The RES Compliance Plan detailed in this report substantially mirrors the renewables plan in the 2017 Integrated Resource Plan filed by Ameren Missouri on October 1, 2017. An exception is a corrected Forecast of Retail Electric Sales and RES Requirements has been reflected in this model. In the model filed in October of 2017 with the IRP there are two corrections to the load that have been reflected in the current RES model. The first is the inclusion of lighting load. The lighting load was inadvertently omitted and has been included in this model. Second, the probability weightings of the low, base and high loads were applied incorrectly. The net effect of these changes on load caused the probability weighted average load to increase from what was used in the 2017 IRP RES model. These changes can be seen on the GAA tab of the RES model and specifically on rows 21-23.

Additionally the capacity value rating of wind resources in MISO has been updated to 15.2% based on the 2018 Wind Capacity Report provided by MISO. Also, the tax rate used to determine revenue requirements was adjusted down to 25.45% to reflect the changes in tax law.

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Given the changes to load an additional 39 MW's of Missouri wind is required to fully meet the non-solar needs of Ameren Missouri for a total of 739 MW's of wind. Additionally, 1 more MW of Missouri solar is needed to fully comply with the solar RES requirement.

## **RES Compliance Plan Cost**

### **Section (8) (B) 1 E**

The ability to utilize renewable resources that currently exist in rate base, places Ameren Missouri and its rate payers in a unique position regarding compliance cost. As stipulated in the statute and rule, though the megawatt hours from these renewable resources can be utilized to meet the compliance requirements, some costs were incurred prior to the compliance requirements and are already included in the current rate base. Consequently, these particular renewable resources will have no cost implications towards meeting the specifics of the RES and therefore will result in no cost impact to the plan or the rate cap limitation of 1%.

The cost of the RES Compliance Plan for the 2018-2020 Compliance Plan periods is comprised of the following items:

- Solar Rebates paid to residential and commercial customers
- Purchase of solar RECs from residential and commercial customers
- Cost to register RECs with the North American Renewable Registry
- Fixed, Fuel and O&M associated with the MHREC
- Fixed and O&M associated with the OREC
- Purchase of non-solar REC's

### **Standard Offer Contract**

The price per REC (\$5 per MWh) offered under the Ameren Missouri Standard Offer Contract was determined by taking into account the total cost to install solar in the region, the rebate required by statute and the eligibility for the Federal tax credit in 2013. Total funding for the 2013 program was capped at \$1.0 million.

However, on Aug. 28, 2013, due to the passage of HB 142, the RES law was amended. That amendment provided that if a customer accepts a solar rebate from the utility, the S-RECs transfer to the utility. Due to this change, the program was discontinued and the \$1.0 million SOC cap was not reached.

### **Solar Rebates**

Solar rebates required by statute were at \$2.00 per watt and limited to an individual maximum of \$50,000. This amount per watt was adjusted downward based on the provisions of HB 142. The rebate amount was reduced to \$1.50 per watt for systems that became operational between July 1, 2014 and June 30, 2015. A further reduction will be made to \$1.00 per watt for systems that become operational between July 1, 2015 and June 30, 2016 and to \$0.50 per watt for systems that become operational between July 1, 2016 and June 30, 2019.

On November 26, 2013, Rider SR of the Solar Rebate Tariff was implemented. A \$91.9 million rebate cap was agreed upon by Ameren Missouri, the MPSC staff and various stakeholders. The cap encompasses all rebate applications received after Aug.1, 2012. On Dec. 17, 2013 the \$91.9 million cap was reached based on applications received. Rebates continue to be paid thru calendar year 2016 based on the queue of applications received as of December 17, 2013.

### **REC Registration Fees**

In accordance with 4 CSR 240-20.100 Section (3) (F), utilities are to use a commission designated common central third party registry for REC accounting of the RES requirements. The North Ameren Renewable Registry (NAR) was selected by the Commission for this purpose. Tracking and registration fees are charged by NAR for all RECs deposited and then retired from the utilities' accounts.

## **RES Retail Rate Impact**

### **Section (8) (B) 1 F**

The *10 Year MO RES Compliance Model 2018* (provided to Staff and others as a work paper to this filing) is designed to calculate the retail rate impact, as required by 4 CSR 240-20.100(5). The “report” tab of the model sets forth the size and timing of the renewable resources that would be needed in the next ten years to fully meet the unconstrained Renewable Energy Standard (RES) requirements along with the size and timing of those renewable resources that can be built while meeting the 1% retail rate impact limitation. The model includes the projection of generation, costs and benefits from existing resources including Keokuk hydropower, Maryland Heights landfill gas generation (LFG), Ameren Missouri’s headquarters solar and Pioneer Prairie Wind. A detailed projection of the solar Renewable Energy Credits (REC) purchases from customer installed solar projects and third party purchases is shown in the “Cust&3<sup>rd</sup> Party Solar” tab. Additionally, many assumptions needed to develop RES compliance projections, including Ameren Missouri’s projected revenue requirements (adjusted for exclusion of costs for existing renewable energy resources), market values for capacity and energy and costs for new wind and solar resources, are also included.

The “Term 1” tab in the spreadsheet is where a ten year sum of Ameren Missouri’s annual costs for compliance are summarized to provide a framework to determine the amount of renewables that can be built to meet RES compliance and yet stay within the rate impact limitation. This tab summarizes annual ongoing costs, including administrative, solar rebate, REC and existing renewable generation resource costs. The tab also includes an interactive section that allows for assumed wind and solar projects in each of the ten years to determine the impact of adding additional renewable resources in the plan based on assumptions identified in the plan. This interactive section allows Ameren Missouri to input a compliance plan that shows the dollar impact to the rate impact limitation.

With this information, it is possible to develop an annual projection of the amount of wind and solar renewable energy resources that can be built to meet the planning needs of the utility and yet remain within the rate impact limits of the renewable energy standard. In

addition, there is a tab labeled “Test” that provides an overall view of year by year targets, how they are determined and how they will be met for both the solar and non-solar REC requirements. These tabs are also repeated in the model for an unconstrained view of the amount of wind and solar generation that would be built to fully meet the RES if there were no rate cap limitations imposed. This model is used to provide a view on RES compliance and the amount of additional generation needed for both an unconstrained and constrained view of compliance. The results are summarized in the table below.

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### **Compliance with Air, Water or Land Use Requirements** **Section (8) (B) 1 G**

All generating facilities utilized by Ameren Missouri to meet the requirements of the Missouri Renewable Energy Standard have been certified by the Missouri Department of Economic Development in accordance with 393.1030.4, RSMo.

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