Ameren Missouri

Renewable Energy Standard Compliance Plan 2021-2023

Prepared in Compliance with 20 CSR 4240-20.100

April 15, 2021

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Reference Table

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 Electric Company and Kansas City Power & Light Company) to acquire renewable energy resources or renewable energy credits (REC's)'s equal to a percentage of the total retail sales that each utility makes to its customers in the state.

In 2010 the Missouri Public Service Commission (PSC) approved a rule to implement the RES requirements. Section 8(B) of the rule requires that each IOU file a plan annually that addresses its planned compliance measures for the current year plus the following two years.

There are two basic forms of compliance that are required under the RES. The first is compliance with "non-solar" RES which allows the use of RECs from all forms of qualified renewable generation resources (wind, hydro, biomass, solar etc.) as certified by the Missouri Department of Natural Resources (MoDNR). The other requirement is the "solar" RES, which requires the use of solar RECs (S-RECs) for compliance

Compliance is achieved by providing enough RECs to meet the megawatt-hour (MWh) requirements of the RES. However, a utility will be deemed to be in compliance with the RES once the cost of compliance is equal to or greater than a 1% rate cap calculation. Thus a utility could fall short of meeting the MWhs that would otherwise be required if the 1% rate cap is met.

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

Time Period	Total Renewable Requirement	Solar*
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 MoDNR is responsible for certifying all eligible renewable resources that can be utilized to meet the requirements of the RES. DNR rule 10 CSR 140-8.010 (2), contains the list of all eligible renewable resources that are eligible 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 that are eligible under the above referenced rule.

In addition, the RES rules allow for the banking of RECs for up to a three-year time period. This allows for the use of eligible RECs generated from January 1, 2017 to the current time period to meet the RES requirements for calendar year 2020.

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

The following information in this report demonstrates the specific means by which Ameren Missouri intends to meet its obligations under both the non-solar and solar RES for the calendar years 2021-2023. 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)
- High Prairie Renewable Energy Center (Wind)
- Atchison County Renewable Energy Center (Wind)

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 megawatts (MWs). This generation facility is wholly owned by Ameren Missouri and has been operational since 1913. The estimated annual generational output of the facility for 2021-2023 is 923,929 MWh. Due to fluctuations in river flows, the generation can range from 782,420 to 1,017,277 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 Northeast Iowa. The facility site covers approximately 10,000 acres of land located in Mitchell County, Iowa in Wayne and Stacyville Townships. The estimated annual generational output of the facility for 2021-2023 is 286,763 MWh. In recent years, the generation has ranged from 238,884 to 323,320 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 three Solar 4.9 MW Mercury 50 gas turbines to produce electricity. The estimated annual generational output of the facility for 2021-2023 is 61,859 MWh. In recent years, the generation has ranged from 43,119 to 78,336 MWh annually.

On December 23, 2020, the 400 MW High Prairie Renewable Energy Center (HPREC) became commercially operational. This wind farm is located in Adair and Schuyler counties, Missouri and consists of 175 wind turbines covering about 50,000 acres. The estimated generational output is approximately 1.195 GWh in 2021 and 1.339 GWh/year for 2022 and beyond. HPREC received certification from the MoDNR on February 16, 2021.

On March 2, 2021 the Atchison County Renewable Energy Center (ACREC) became operational at a reduced capacity of 128.4 MW with an expected full operational by end of 2021 at a 298.4 MW capacity. This wind farm is located in Atchison County Missouri will consist of a total of 91 turbines covering about 30,000 acres once complete. The estimated generational output is approximately 950,000 MWh in 2021 and 1.1 GWh/yr once it reaches full capacity. ACREC received certification from the MoDNR on February 22, 2021. The ACREC wind farm was expected to be available at full capacity for the entire year of 2021. Unanticipated project challenges led to the delay of reaching full capacity by year end 2020.

Planned Actions

For the 2021-2023 compliance years, Ameren Missouri will utilize the generational output from the Keokuk, MHREC, Pioneer Prairie, HPREC, and ACREC facilities. Ameren Missouri will continue to place RECs associated with the actual 2021 generation from these facilities into the North American Renewable Registry (NARR) account.

REC purchases of 399,795 have been made to cover the potential shortfall in 2021 due to the delay of the ACREC wind farm. Table 1 below estimates that Ameren Missouri will meet compliance in 2021 based on recent average expected generation from its renewable generation resources and recent average output of the Pioneer Prairie II wind farm. A shortfall in 2022 and 2023 is expected if renewable generation resources generate at these levels. The shortfall still exists after using projected excess S-REC's for non-solar compliance and is also reflected in Table 1. As noted above, the annual renewable generation can fluctuate dramatically. Also, the actual retail loads can fluctuate potentially causing a higher or lower than expected compliance volume of REC's. To manage this uncertainty, Ameren Missouri will continue to utilize spot market REC purchases along with potentially adding renewable resources to the generation portfolio. In the attached "10 yr MO Compliance Model 2021_30" a 200 MW solar farm is modeled to come on-line in late 2023 to meet to the long term shortfall. This will also offset the loss of the Pioneer Prairie II Wind farm PPA which expires in 2024.

Table 1

Ameren Missouri Non-Solar Compliance Plan 2021-23			
	2021	2022	2023
Retail Load Base GWh (from 2020 IRP)	31,680,099	31,195,985	30,887,873
RES Target	15%	15%	15%
RES Solar Target	0.3%	0.3%	0.3%
RES Non-Solar Target	14.7%	14.7%	14.7%
RES MWh Target	4,752,015	4,679,398	4,633,181
RES Solar MWh Target	95,040	93,588	92,664
RES Non-Solar MWh Target	4,656,975	4,585,810	4,540,517
Inventory of non-solar REC's after meeting previous year's compliance (includes 1.25 MO adder)	184,026	0	0
Keokuk (MWh)	923,929	923,929	923,929
MHREC (MWh) (includes 1.25 MO adder)	61,859	61,859	61,859
Pioneer Prairie II (MWh)	286,763	286,763	286,763
HPREC (MWh) (includes 1.25 adder)	1,493,331	1,673,160	1,673,160
ACREC (MWh) (includes 1.25 adder)	1,187,921	1,373,261	1,373,261
Non-Solar REC's purchased	399,795	0	0
Over/under Non-Solar Compliance	** **	** **	** **
solar REC's available for non-solar compliance	136,868	113,440	132,464
net over/under Non-solar compliance	17,517	** **	** **
Total compliance over/under	17,517	** **	** **

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Solar RES

In late 2010, Ameren Missouri completed the installation of approximately 100 kilowatts (kW) of solar generation capacity at its headquarters facility located in St. Louis. Generation from this facility will be utilized to help meet the solar requirements of the RES.

In addition, Ameren Missouri filed a Standard Offer Contract (SOC) tariff with the PSC that 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 per S-REC 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 per S-REC. 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 House Bill 142 (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 multiplier as they represent Missouri based generation.

During calendar year 2020 Ameren Missouri acquired 71,719 S-RECs from customers, that is 57,375 MWh generated x 1.25 in-state factor. Ameren Missouri anticipates receiving approximately 50,000 – 56,000 S-RECs annually over the 2021-2023 time period from customer supplied S-RECs.

In 2018 Senate Bill 564 (SB 564) became law. One of the provisions of this law is that $28 million in solar rebates be made available to customers that install solar generation on their property from 2019-2023. Ameren Missouri expects to receive the S-REC's from these customer owned resources pursuant to the provisions of SB 564. Ameren Missouri has made an estimate of the expected S-REC's it expects to receive from these resources; 2021 – 55,782 S-REC's 2022 – 88,440 S-REC's and 2023 – 121,349 S-REC's. The $28 million of rebate costs have been included as a RES compliance cost and are accounted for in the Company's 1% calculation.

In addition to the rebate dollars SB 564 requires Ameren Missouri to invest at least 14 million dollars in additional utility owned solar generation. This additional $14 million of solar generation has been accounted for in the 1% calculation and will be utilized to support projects related to Ameren Missouri's neighborhood solar program.

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 2020 was 5,913 MWh.

On September 16, 2019, the BJC Solar Facility became commercially operational. This facility is 1.8 MW (DC) PV project located on the top of an existing parking garage at Barnes Jewish Hospital in St. Louis, MO.

On January 21, 2020, MoDNR certified the BJC Solar Facility as a renewable resource. The total generational output of this facility during CY 2020 was 2,107 MWhs.

Planned Actions

For the 2021-2023 compliance years Ameren Missouri will use the generation from OREC, BJC Solar and the S-RECs received from Ameren Missouri customers. Ameren Missouri is also in the process of implementing the Neighborhood Solar program, which will install between 4-7 smaller solar projects (<2 megawatts) throughout the region to benefit communities and meet the solar requirements under SB564. In addition, Ameren Missouri plans to add at least 50 MW of utility scale solar by 2023 as described in the 2020 IRP.

Table 2 below estimates that Ameren Missouri will meet solar compliance in 2021, 2022 and 2023 based on recent average expected generation from OREC and customer solar installations. The excess shown in all 3 years is projected to be used to meet non-solar compliance as shown in Table 1 above. The uncertainty in both solar generation and the retail load may cause fluctuations in the volume of S-REC's needed for compliance. To manage this uncertainty, Ameren Missouri will continue to utilize spot market purchases along with potentially adding renewable resources to the generation portfolio. In the attached "10 yr MO Compliance Model 2021_23" a 200 MW solar farm is modelled to come on-line in late 2023 to meet to the long term shortfall. This will also offset the loss of the Pioneer Prairie II Wind farm PPA which expires in 2024.

Table 2

Ameren Missouri Solar Compliance Plan 2021-23			
	2021	2022	2023
RES Solar MWh Target	95,040	93,588	92,664
Inventory of solar REC's after meeting previous year's compliance (includes 1.25 MO adder)	81,744	17,517	0
OREC (MWh) (includes 1.25 MO adder)	7,911	7,871	7,832
BJC (MWh) (includes 1.25 MO adder)	2,620	2,608	2,595
Ameren Customers including GOB (MWh) (includes 1.25 MO adder)	139,634	179,032	214,701
Solar REC's purchased	0	0	0
Inventory of S-REC's after meeting previous year's compliance (includes 1.25 MO adder)	81,744	17,517	0
Over/under Solar Compliance	136,868	113,440	132,464

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

Table 3 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 3
List of Executed Contracts

Contracting Party	Resource Type	Contract Type	Contract Duration	Time Period	Expected REC's	Terms
Horizon Pioneer Prairie	Wind	Energy/REC's	09/01/09-08/31/24	2021	286,763	Deliveries of energy and REC's began 9/1/09. Term is 15 years with option an option to extend based on mutually acceptable terms & conditions
				2022	286,763	
				2023	286,763	
Various Residential & Commercial Customers	Solar	S-REC only	10 year	2021	139,634	
				2022	179,032	
				2023	214,701	
Note: All S-RECs procured from customers are entitled to the additional factor of 1.25 and the figures in this table reflect the total including the 1.25 factor.						

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-RECs transfer to the utility. Due to this change, the program was discontinued and the $1.0 million Standard Offer Contract cap was not reached.

Projected Retail Sales
Section (8) (B) 1 C

Table 2 below shows 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 4
****Forecasted Retail Electric Sales and RES Requirements**

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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 Integrated Resource Plan (IRP) filed by Ameren Missouri on October 1, 2020 and provides greater detail regarding new wind resource additions along with how Senate Bill 564 will be incorporated.

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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 customers in a unique position regarding compliance cost. As provided in the RES 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 applicable to RES compliance 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 2021-2023 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 REC's
Fixed and O&M costs associated with new wind resources
Fixed and O&M costs associated with new solar resources required by Senate Bill 564

Standard Offer Contract

The price per REC ($5 per MWh) that was 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 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 million Standard Offer Contract cap was not reached.

Solar Rebates

Solar rebates required by RS MO 393.1030 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 was made to $1.00 per watt for systems that became 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; and $0.25 per watt for systems that become operational between July 1 2019, and June 30, 2020. SB 564 subsequently provided for a new

funding requirement by utilities and extended the $0.25 per watt rebate to systems installed on or before December 31, 2023.

On November 26, 2013, a $91.9 million rebate cap associated with RS MO 393.1030 was agreed upon by Ameren Missouri, the MPSC staff and various stakeholders. The cap encompasses all rebate applications received after Aug.1, 2012. While all $91.9 million was committed to customer applications on Dec. 17, 2013 the final payout did not occur until 2019 as a result of the queue processes established in the solar rebate tariff..

Under RS MO 393.1670, Ameren Missouri's solar rebate funding requirement is $28 million over the period January 1, 2019 through December 31, 2023. Ameren Missouri's solar rebate tariff specifies $0.8 million to be available for low-income customers and the remainder to become available in annual allotments according to the schedule included in the solar rebate tariff.

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 (NARR) was selected by the Commission for this purpose. Tracking and registration fees are charged by NARR 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 2021_30* (provided to Staff and others as a work paper to this filing) calculates 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 new 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 (MHREC), Ameren Missouri's headquarters solar, Pioneer Prairie Wind, O'Fallon Renewable Energy Center (OREC), BJC Solar, High Prairie Renewable Energy Center (HPREC) wind farm, Atchison County Renewable Energy Center (ACREC) wind farm and the utility scale solar investment required by SB 564. 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&3rd 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 1% 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 if so needed. 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 of RES compliance and the amount of additional generation needed for both an unconstrained and constrained view of compliance.

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.