

Customer-Owned DER (9/30/2017)

| | <u>MW</u> | <u>MWH</u> |
|------------------------------------|-----------|----------------------|
| Renewable (QF & Net Metering) | ~57 | ~78,000 ² |
| Non-Renewable (CHP QF) - Retail | ~24 | unknown |
| Non-Renewable (CHP QF) - Wholesale | ~30 | unknown |

Ameren Missouri-Owned DER

| | <u>MW</u> | <u>MWH³</u> |
|-----------------------------|-----------|------------------------|
| GOB Solar | 0.1 | 91 |
| Maryland Heights (Landfill) | 15 | 58,481 |
| O'Fallon (Solar) | 4.5 | 7,488 |

2. **Question:** *Should previous Commission policy decisions regarding demand-response aggregation be reconsidered?*

Response: Ameren Missouri has not identified any change in circumstances that would justify the Commission reversing its previous order.

3. **Question:** *Should a model state tariff be designed?*

Response: Ameren Missouri is unclear what type of tariff this question references. If the question is in reference to PURPA, please see the comments filed by Ameren Missouri on October 13, 2017, in File No. EW-2018-0078. In general, Ameren Missouri prefers utility-specific tariffs, as there may be circumstances that are different between utilities.

4. **Question:** *Should changes be made to the Integrated Resource Planning ("IRP") process to accommodate increased use of distributed energy resources?*

Response: The existing IRP rules are sufficiently broad and flexible to allow for robust consideration of DER. The IRP rules allow the consideration of DER as either supply-side or demand-side resources and/or through their effects on customer sales forecasts. The IRP rules also include a broad requirement to review resource decisions in

² Virtually all of this is solar. Estimated using PVWatts

³ 2016 Data (from most recent RES Compliance Report)

the context of state policies, which may include current or future policies regarding the consideration of DER.

5. **Question:** *What information about distributed energy resources do the Regional Transmission Organizations need? What information do the utilities have? And what information are the utilities providing to the Regional Transmission Organizations?*

Response: With regard to what the Regional Transmission Organizations ("RTOs") need, the RTOs ultimately are the best source for identifying this information, based on their specific configurations such as their footprints and available technologies. Based on Ameren Missouri's experience, the Midcontinent Independent System Operator, Inc. ("MISO") already has tariffs and business practice manuals that contain information requirements.

As for what information Ameren Missouri has regarding DER, utilities typically have very limited information, since gathering that information is generally dependent upon how - and whether - the DER has chosen to interconnect to grid. When the DER is registered with MISO, participates in net metering, or is a qualifying facility, then the utility will have information about size, type, and location.

Finally, with regard to what information it provides to the RTOs, Ameren Missouri provides information to MISO about its own DER facilities, specifically the Maryland Heights and O'Fallon generation facilities. Additionally, the Company includes a general description of net metering resources in the load forecast it provides MISO.

6. **Question:** *Is any new behind-the-meter technology or hardware needed to accommodate or facilitate the development of distributed energy resources?*

Response: At relatively low penetration levels of DER, no additional behind-the-meter technology or hardware is required. As penetration levels of DER, such as solar PV or battery storage, increase and market structures or operational practices evolve to increase utility/RTO visibility into and/or control of DER generation, this will change. The deployment of existing technologies, such as smart inverters and associated communications equipment and protocols, will likely be needed in order to obtain significant benefits by providing a means to integrate the DER systems in a manner that optimizes their impact on both the economics and reliability of the grid.

7. **Question:** *Will any distribution system upgrades be required to accommodate or facilitate the development of distributed energy resources?*

Response: This is the most important question to answer, and the most important issue to address in encouraging effective DER development. The short answer is yes. As these resources proliferate, significant investment will be required to replace, upgrade, and modernize electric utilities' distribution grids to accommodate more DER and continue to provide reliable service to all customers. Electrical distribution systems were traditionally designed for one-way power flow from generation plants to load centers. The large-scale implementation of DER will materially change the pattern of power flow in the future. To accommodate this change, electric utilities will not only have to replace aging distribution facilities (which is an issue even in the absence of DER), but they will also need to upgrade and modernize those facilities to accommodate the new reality.

Modernization will likely require the installation and/or redeployment of capacitor banks and voltage regulators, implementation of static VAR compensation equipment, and deployment of distributed battery energy storage capability among other things.

Maintaining control of voltage profiles with higher levels of DER implementation will require the monitoring of voltage and power flow along the entire lengths of distribution feeders. Ultimately, distributed energy management systems will be required to handle increasing amounts of system measurement and DER equipment data to control power flows, voltage quality, and line loading. AMI meters will play an important role in monitoring delivery voltage levels and load magnitude, while the associated meter data backhaul system will be needed to provide communications support to the distributed energy management system. If investments like these are made, the electric grid can become the center of value creation for owners of DER, and can continue to provide increasingly reliable service to all customers.

Unfortunately, Missouri's current regulatory framework discourages the type of investments in the electric grid necessary to facilitate and encourage broad deployment of DER. Regulatory lag, which is more of a challenge in Missouri than most other states, encourages electric utilities to keep capital investments to the minimum necessary to provide safe and adequate service. Unless changes are made to address the disincentives to make the investments necessary to transform the capability of the grid, Missouri will continue to fall behind other states in replacing, modernizing, and upgrading its electric grid, and relatively low DER penetration may be one of the results. On the other hand, if policymakers at the legislature and/or the Commission adopt more constructive policies to address the disincentive to invest, grid modernization could help enable customers to deploy DER in a manner that enhances the economics and reliability of the system.

8. **Question:** *What process should be developed to provide for resource accreditation, including consideration of capacity factors?*

Response: At this time, net metering interconnection applications and protocols are sufficient for accrediting DER resources such as solar photovoltaic ("PV"). DER such as energy efficiency and demand response are subject to sufficient evaluation, measurement and verification, including RTO accreditation where those resources directly participate in wholesale markets. To the extent that market structures evolve to allow additional small scale, customer-sited DER to participate in wholesale or other transactive energy markets, further accreditation of those systems may need to be developed by the entity administering the market.

Even without participation in such markets, to the extent that operational issues arise on the grid due to solar PV performance differing from what is anticipated by utilities or RTOs, revisiting the level of rigor associated with the existing accreditation may become warranted.

9. **Question:** *Are there any other issues related to distributed energy resources that should be brought to the Commission's attention?*

Response: While this concern is likely already on the Commission's radar, any conversation related to DER development is incomplete without referencing the potential for cross-subsidization of participants by non-participants under net metering policies, particularly under rate designs with more fixed costs recovered in variable charges. This issue is currently receiving considerable attention in markets across the country. Customers who deploy DER still rely on the grid, and therefore have a responsibility to participate in paying for it in a manner that is reflective of the cost of serving them. Rate design proposals and policies should be carefully evaluated for the impact they have on exacerbating or alleviating cross-subsidization.

WHEREFORE, the undersigned respectfully requests that the Commission take these responses under advisement.

Respectfully submitted,

UNION ELECTRIC COMPANY,
d/b/a Ameren Missouri

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and correct copy of the foregoing document was served on all parties of record via electronic mail (e-mail) on this 20th day of October, 2017.

/s/ Wendy K. Tatro
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