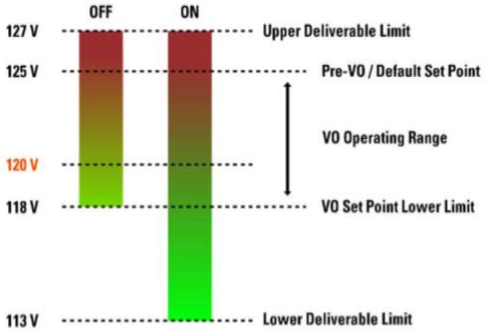
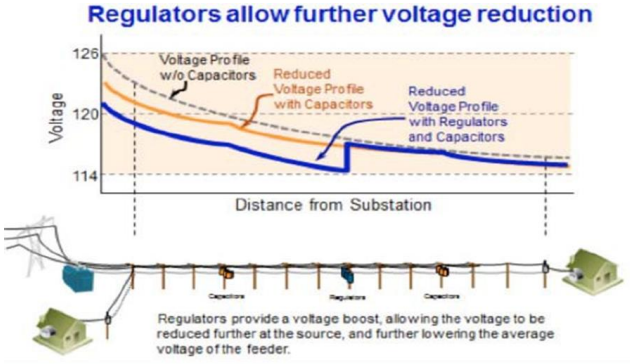
What is Voltage Optimization (VO)?





- The VO Program originated to address criteria from IL Senate Bill 2814 (FEJA), which became law in June 2017, requiring Ameren Illinois Company (AIC) to file a plan with the ICC that identified the cost-effective voltage optimization investment AIC planned to undertake through 2024.
- Voltage Optimization is the use of automation on distribution voltage control devices (switched capacitor banks, voltage regulators and LTC's) to reduce reactive power (VAR) flows on a circuit and lower the voltage within regulatory limits to reduce end-use customer energy consumption and utility distribution losses.

VO Program Benefits

- Increased energy savings across AIC territory.
- Additional VO circuits improve overall distribution system health with greater AMI visibility.
- Benefits the grid as visibility is increased on circuits with VO through supervisory control and data acquisition (SCADA).
- Has potential to improve Distributed Energy Resource (DER) hosting capacity and lower DER interconnection costs.

VO Program Yearly Stats

	2018	2019	2020	2021	2022	2023	2024	2025
*Estimated Incremental # of Circuits Deployed	19	130	170	182	182	182	182	0
*Estimated Cumulative Annual Savings (MWh)	0	7,650	59,994	128,433	201,725	275,006	348,287	421,568
*Data from original filing								
Actual # of Circuits Deployed	19	125	180	181	194	TBD	TBD	TBD
Actual Cumulative Annual Savings (MWh)	0	9,172	81,844	177,275	264,167	TBD	TBD	TBD
Planned # of Circuits Deployed						215	322	0
Planned Cumulative Annual Savings (MWh)						337,658	411,170	484,987

Year 1: Design → Year 2: Construct & calculate pre-VO voltage levels → Year 3: Measure savings

Preliminary information for SAG discussion purposes only; subject to Section 3.1 of EE Policy Manual

Current Status of VO

- There are ~2,400 circuits across AIC. As part of the formal program, ~1,238 circuits are planned for VO.
  - This corresponds to 74% of AIC customers.
  - Some circuits are not feasible due to cost effectiveness or operational concerns.
- The program is on track to exceed the plan's target cumulative savings of 1.5% by 2025, which further exceeds the cumulative savings of 1.0% established in FEJA. AIC's seven-year VO Plan is designed to achieve ~422 Gigawatt hours (GWh) of total energy savings.

VO Program Expansion

2025-2027

- As part of the Multi-Year Integrated Grid Plan (MYIGP), AIC proposed a 3-year VO expansion to be extended beyond the 2025 formal program evaluation where the company can further prove it is both cost effective and operationally suitable.
- ~440 circuits will be added with an expected capital spend of $47 million and an estimated cumulative gross energy savings of 58 GWh.
- At the end of the proposed expansion, ~87% of Ameren Illinois customers will be on VO.

VO Program Expansion

Approach

Ameren Illinois will take a similar approach as the initial VO plan.

1. Re-calculate base line energy usage using the same criteria as the initial VO Plan using 2019-2021 data.
2. Assume a 3.2% voltage reduction instead of 3%. This will allow for more circuits to fall into the expansion plan due to more circuits being cost-effective.
3. Re-calculate circuit level total-resource costs (TRC).
4. Work with region engineering and Low Voltage Distribution Planning to model and screen all cost effective circuits.