2023 MPS Sensitivity

RESIDENTIAL/BUSINESS SENSITIVITIES FOR ENERGY EFFICIENCY (EE)

Sensitivity 1 Avoided Costs

The GDS Team will analyze the impacts of varied avoided costs on both the economic potential and downstream achievable and program potential.

High Sensitivities:

- Increase avoided energy and generation capacity costs by 35% ; no change to avoided transmission and distribution (T&D) costs
- Double avoided T&D costs ; no change to energy and capacity costs.

Low Sensitivities:

- Decrease avoided energy and generation capacity costs by 50%; no change to T&D costs
- Eliminate avoided T&D costs for 10 years, then apply base case T&D costs in second decade ; no change to energy and capacity costs.
- If needed, run 3rd avoided cost scenario

Sensitivity 2 Prolonged Economic Downturn

GDS will hold constant economic factors* in the Ameren MO load forecast, resulting in a negative impact on future energy sales. Adoption rates were also reduced to reflect concern over financial barriers.

*Population, households, and income will be held constant at 2022 levels for residential. GDP, employment, and other rate class outputs were held constant in the business sector.

High Sensitivity: n/a

Low Sensitivity:

TBD, will be based on adjustments to forecast inputs.
 For context, adjustments were 9% in residential, 13% commercial, and 10% in industrial in 2019.

Sectors: Res / Biz

Sensitivity 3 COVID-19 Short/Long-Term Impacts

Sensitivity is expected to perform like the prolonged economic downturn, with a focus on changes in pre/post-COVID customer consumption and usage patterns.

High Sensitivity: n/a*

• Although overall sensitivity is expected produce a result lower than the base case, the residential sector may see a slight increase due to increased work from home behaviors

Low Sensitivity:

- Analyze potential decreases in commercial sector sales based on COVID-related impacts and degree to which the forecast includes post-COVID assumptions.
- Short-term impacts on lower adoption rates due to supply-chain concerns.

2023 MPS Sensitivity RESIDENTIAL/BUSINESS SENSITIVITIES FOR EE

Sensitivity 4 High Touch Marketing

Intended to explore strategy of increasing marketing/high-touch administration to increase program participation.

The high-touch marketing scenario will be applied to RAP and produces a result between the current RAP and MAP levels to provide an indication which strategy (increased incentives or increased marketing) is likely to have a larger impact on adoption.

High Sensitivity:

 Assume historical incentive levels but raises the program awareness threshold to the MAP level. Non-Incentive costs will be estimated to be higher as well.

Low Sensitivity: n/a

Sectors: Res / Biz

Sensitivity 5 Large Customer Opt-Outs

The base case excludes sales and savings from all eligible customers that currently opt-out of Ameren Missouri's energy efficiency programs. This sensitivity will look at the range of potential if no C&I customers were to opt-out, or if all eligible customers chose to opt-out.

High Sensitivity:

- Include currently opted-out customers in analysis.
- Consider impact of a new "large" non-opt load on the system.

Low Sensitivity:

 Exclude all eligible opt-out customers from analysis [For purposes of estimating sales from all eligible customers opt-out, GDS used the existing opt-out customers and included sales from all additional customers in the 11M rate (that are not currently designated as an optout customer).]

Sensitivity 6 NTG Uncertainty (Attribution Case)

In 2019, GDS MPS looked at impact on program potential cost-effectiveness and total impacts. The measure-level economic potential screening is at the gross level, so no impact is expected for economic potential.

High Sensitivity:

• 15% increase to current NTG ratios

Low Sensitivity:

• 30% decrease to current NTG ratios

Sectors: Res / Biz

2023 MPS Sensitivity RESIDENTIAL/BUSINESS SENSITIVITIES FOR EE

Sensitivity 7 Volatile Weather

Assessed impact of increasing Heating Degree Days and Cooling Degree Days, impacting measure savings and cost-effectiveness. GDS included a similar adjustment to heating and cooling load in the sales forecast (i.e., as HDD/CDD increased, the heating and cooling portion of the sector loads was similarly increased).

High Sensitivity:

+25% CDD/HDD

Low Sensitivities: n/a

Sectors: Res / Biz

Sensitivity 8 TOU Rate Scenario

Assess all customers are converted to a TOU Rate. GDS will review existing research on TOU rates to determine if there are any annual energy savings impacts.

High Sensitivity:

 TBD; Assume % reduction impact on annual consumption across all households and small/medium businesses (after accounting for traditional EE impacts). TOU impacts will be assumed to replace current behavioral offerings as a competing pathway.

Low Sensitivity: n/a

Sectors: Res / Biz

Sensitivity 9 Improved Technology Savings/Costs

This sensitivity will be included to assess the impact of improved technology savings and/or reduced technology costs.

High Sensitivity:

 Assume program participation focuses on higher tier technologies regardless of current market acceptance ; assume a 34% decrease in emerging technology/high tier equipment over the study horizon.

Low Sensitivity: n/a

Sectors: Res / Biz

2023 MPS Sensitivity RESIDENTIAL/BUSINESS SENSITIVITIES FOR EE

Sensitivity 10 Additional IQ-Funding Sensitivity

Will assume for HVAC and Water Heating equipment measures that Ameren Missouri covers 100% of the full measure costs for income-qualified program measures

High Sensitivity:

- Increased adoption rates
- Modified measure costs & associated incentives

Low Sensitivity: n/a

Sectors: Res

Sensitivity 11 PAYS Sensitivity

Assign a portion of qualifying measures to a PAYS program delivery channel. Model parameters to be adjusted will include market adoption rates and net-to-gross assumption.

High Sensitivity:

 Adoption rates will be based on assuming financing elements of PAYS yields adoption rates equal same assumed level as covering 100% of measure cost. NTG ratios for these measures will be re-calibrated to account for assumed level of participation in the PAYS program vs other program delivery options.

Low Sensitivity: n/a

Sectors: Res

2023 MPS Sensitivity SENSITIVITES FOR DEMAND RESPONSE

Of the 11 proposed sensitivities planned for the EE Analysis, five (5) will also be included as Demand Response (DR) Sensitivities:

- Alternative avoided costs
- Prolonged Economic Downtown/Impact on load
- COVID-19 Short/Long-Term Impacts
- High Touch Marketing/Uncertainty Around Adoption Rates
- Opt-Out Customer Impact

*The other EE sensitivities are not directly applicable to demand response programs.

ADDITIONAL DEMAND RESPONSE SENSITIVITY

The Base Demand Response included direct load control (DLC), peak time rebates, time of use rates, capacity bidding, demand bidding. And on-site generation/battery storage DR.

Additional demand response rate programs will be included as a sensitivity to the base case analysis.

High Sensitivity:

 Interruptible Rate, Inclining Block Rate, Critical Peak Pricing, Electric Thermal Storage-Cooling Rate, Golf Cart Off-Peak Charging, and Personal Vehicle Offpeak Charging

Low Sensitivity: n/a

Sectors: Res / Biz

2023 MPS Sensitivity DER SENSITIVITIES ON ECONOMIC POTENIAL

Sensitivity 1 Avoided Energy Costs

The GDS Team will analyze the impacts of varied avoided costs on both the economic potential and downstream achievable and program potential.

High Sensitivity:

 Increase avoided energy and generation capacity costs by 30%; no change to avoided transmission and distribution (T&D) costs

Low Sensitivity:

 Decrease avoided energy and generation capacity costs by 50%; no change to T&D costs

Sensitivity 1A Avoided T&D Costs

The GDS Team analyzed the impacts of varied avoided transmission and distribution (T&D) costs on both the economic potential and downstream achievable and program potential to simulate the potential differences for locational value of DERs.

High Sensitivity:

Increase avoided transmission and distribution capacity costs by 200%, 300%, 400%, and 500%

Low Sensitivity: n/a

Sensitivity 3 Declining Technology Costs

The GDS considered decline technology costs for solar photovoltaics and batteries to consider future technology and costs improvements

High Sensitivity:

- TBD ; Assumed reduction to solar costs
- TBD ; Assumed reduction to battery storage costs

Low Sensitivity: n/a

Sensitivity 3 Large Customer Opt-Outs

The base case will exclude sales and savings from all eligible customers that currently opt-out of Ameren Missouri's energy efficiency programs. This sensitivity looks at the range of potential if no C&I customers were to opt-out, or if all eligible customers chose to opt-out.

High Sensitivity:

- Include currently opted-out customers in analysis.
- Consider impact of a new "large" nonopt load on the system.

Low Sensitivity:

Exclude all eligible opt-out customers from analysis [For purposes of estimating sales from all eligible customers opt-out, GDS used the existing opt-out customers and included sales from all additional customers in the 11M rate (that are not currently designated as an opt-out customer).]