# Reproducing SPP Delivery Point Study Results

## Methodology and Validation across Five Published Studies

Five published SPP delivery point studies (DPNS / DPA) reproduced blind. OG&E and Evergy territories, 138–345 kV, delivery points from 50 to 1,200 MW

Dendrite, August 2026

## Background

SPP's delivery point studies (DPNS / DPA) evaluate new and expanded load at a delivery point, and are published with the monitored facility loadings that govern the result. Dendrite reproduced five of those published studies to measure how closely SPP's delivery point results can be recovered from public data alone. Each study was run blind: the case was built only from SPP's public ITP models and the published study report, and the result was graded afterward against the printed answer. The pass criterion was agreement within ±5% of SPP's published loading. All five delivery points sit on existing or recoverable as-built topology, which adds new load at existing buses.

## Methodology


*Figure 1. The six-step method at a glance.*

1. **Case preparation.** Cases are prepared from SPP's public ITP models. The delivery point is constructed per the published report, attached at an existing bus, or cut in on the reported line.
2. **Delta method.** An untouched BASE case is compared against a CHANGE case carrying the delivery point load, with nothing else altered.
3. **Dispatch.** Island-based AGC with a tiered sink injection group: host-TO areas first, overflow areas added only on a proven headroom shortfall. Unit MW limits enforced. Per SPP methodology, confirmed via email with their modelling team.
4. **Contingency and solve.** The published contingencies are applied and solved full AC. Convergence is positively verified for every reported number.
5. **Scoring.** Per SPP's flow convention, non-transformer branches on a current basis, transformers in actual MVA, against the case's own ratings.
6. **Load semantics.** Taken from the report's own language: a restated forecast is a total, "add new load" is an addition. Committed sibling delivery points from the same cycle are stacked into the change case. This was decisive for R3, where including Shale & Mica's committed loads moved the result from 443.9 to 530.4 MVA against 528.4 published.

## Results

**Six of six graded targets pass.** Every monitored element reproduces SPP's published loading within the ±5% criterion; the maximum error is 2.5% and the median |error| is approximately 0.6%. The set spans two transmission owner territories, 138 through 345 kV, five lines and one transformer, and delivery points from 50 to 1,200 MW — up to 1,793 MW stacked in the R3 change case.

| Study | Utility / load / case | Monitored element | SPP pub. | Dendrite | Δ | Δ % |
|---|---|---|---|---|---|---|
| 1 Rohan | OG&E, 300 MW, 26S | KINZE4 – UNVRSTY4 138 kV | 246.9 | 245.3 | −1.6 | −0.65% |
| 1 Rohan | (same study) | MCELROY4 – UNVRSTY4 138 kV | 237.1 | 235.7 | −1.4 | −0.59% |
| 2 Shale & Mica | Evergy, 1,200 MW, 34W | MICA – NASHUA-5 161 kV | 625.5 | 638.4 | +12.9 | +2.06% |
| 3 Astra North | Evergy KC, 1,008 MW, 29S | ATLNTIC7 – W.GRDNR7 345 kV | 1405.3 | 1406.4 | +1.1 | +0.08% |
| 4 R3 "Cave" | Evergy, 975 MW, 34S | SIBLEY 345/161 kV transformer | 528.4 | 530.4 | +2.0 | +0.38% |
| 5 Ink Blot | Evergy, +50 MW, 26S | Grand W – Crosstown 161 kV | 261.33 | 267.87 | +6.54 | +2.50% |

*Table 1. The six graded monitored elements. Loadings in MVA; lines scored on a current basis, the SIBLEY transformer in actual MVA, following SPP's own convention ("non-transformer branches checked in current; transformers in MVA").*

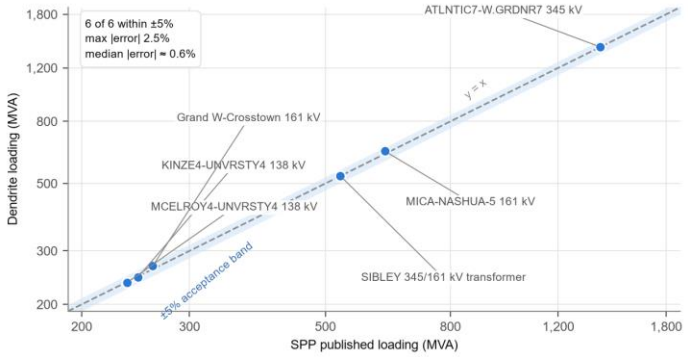


*Figure 2. Dendrite loading against SPP published loading, one point per graded monitored element (n = 6); log axes. The shaded band is the ±5% acceptance criterion.*

## Discussion

The two largest residuals, +2.1% on MICA – NASHUA-5 and +2.5% on Grand W – Crosstown, trace to loads present in SPP's internal cases but not enumerated in any public document. They mark the reproduction floor available from public data rather than a limit of the method. The flow-convention rule was validated separately against 183 rows of SPP's own DocuCheck workbook: current-basis scoring fits SPP's printed percentages to 0.05 points mean, and the transformer control group inverts exactly.