New York ISO
Independent System Operator

Generator Transition Rate Matrices: Software Transition Update

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Background

- **The Generator Availability Data System (GADS) Open Source (GADS OS) software was utilized by the NYISO to collect operating data from Generators participating in the Installed Capacity (ICAP) market.**
  - This operating data was used as an input for generating statistics such as resource-specific derating factors used in calculating each resource's Unforced Capacity (UCAP) for participation in the ICAP market.
- **In 2011, the Generator Transition Rate Matrices approach for input into the GE Multi-Area Reliability Simulation software program (MARS) was developed by the New York State Reliability Council (NYSRC) and the functionality was built within the GADS OS software.[1]**
  - The Generator Transition Rate Matrices were created to simulate a probabilistic four-state representation of generators status used in the GE MARS simulation using GADS data.
  - The Generator Transition Rate Matrices methodology was developed to maintain consistency in the total UCAP modeled in the installed reserve margin (IRM) study to the amount used in the ICAP market.
- **Effective October 2025, the NYISO transitioned to a new generator availability data reporting software known as PowerGADS, following the retirement of the GADS OS software.**
  - The transition was completed with all historical data from GADS OS migrated into the PowerGADS system.
  - The NYSRC was informed of the software transition at the February 4, 2026 ICS meeting.[2]
- **The objective of today's presentation is to review results from the benchmarking of the PowerGADS system.**

1. NYSRC Transition Matrix Whitepaper
2. https://www.nysrc.org/wp-content/uploads/2026/01/Generator-Transition-Rate-Matrices-Software-Transition.pdf

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Implementation Benchmarking

- **To test the implementation of the GE MARS methodology within the PowerGADS system, the NYISO compared EFORdAPA[1] results for generators of both GADS OS and PowerGADS to the Equivalent Demand Forced Outage Rates (EFORds) calculated using the NERC formula.**
  - Each metric uses the same underlying 5-year data set for generators and includes 9300 cause code events.
  - Each data set compared the results for ~200 units.
- **The following slides show a comparison of data sets from the 5-year historical periods used for the last 3 IRM study cycles :**
    - Set 1: 2020-2024 (2026-2027 IRM study)
    - Set 2: 2019-2023 (2025-2026 IRM study)
    - Set 3: 2018-2024 (2024-2025 IRM study)

1.EFORdAPA is a resultant metric using the capacity states and transitional probabilities that are directly used in the MARS model.

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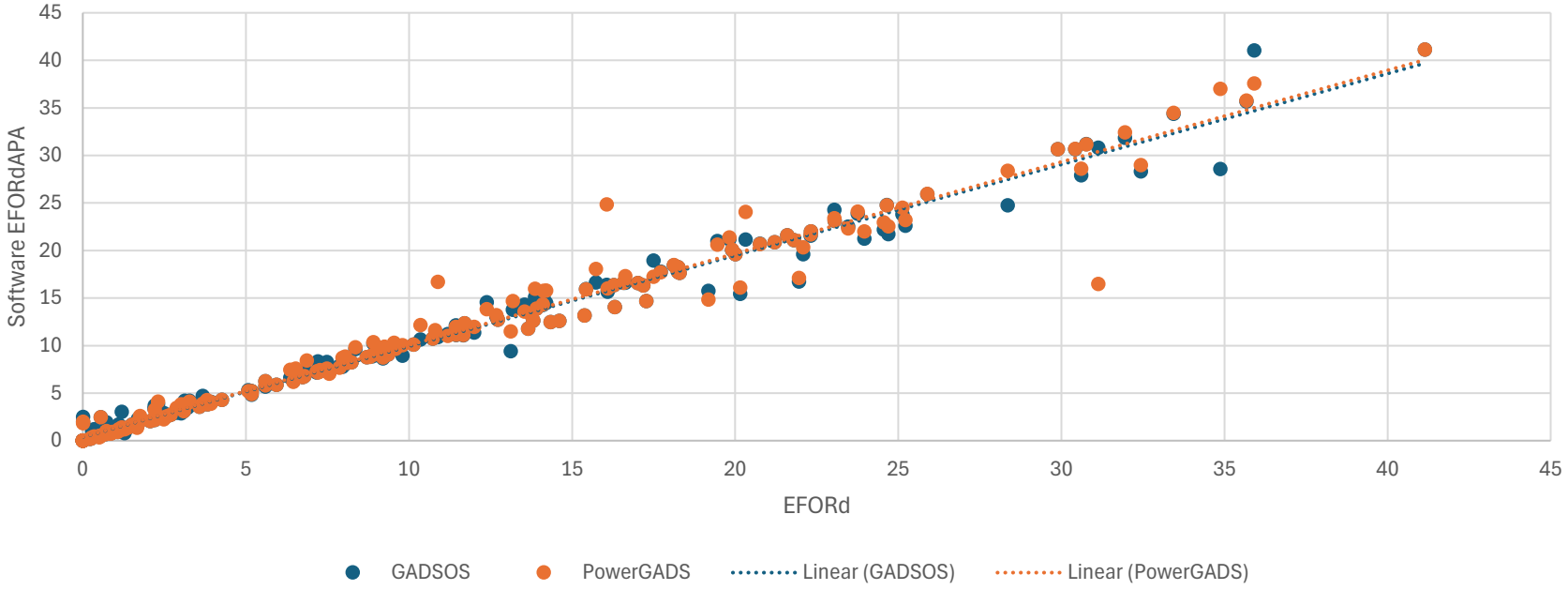
Set 1: 2020-2024



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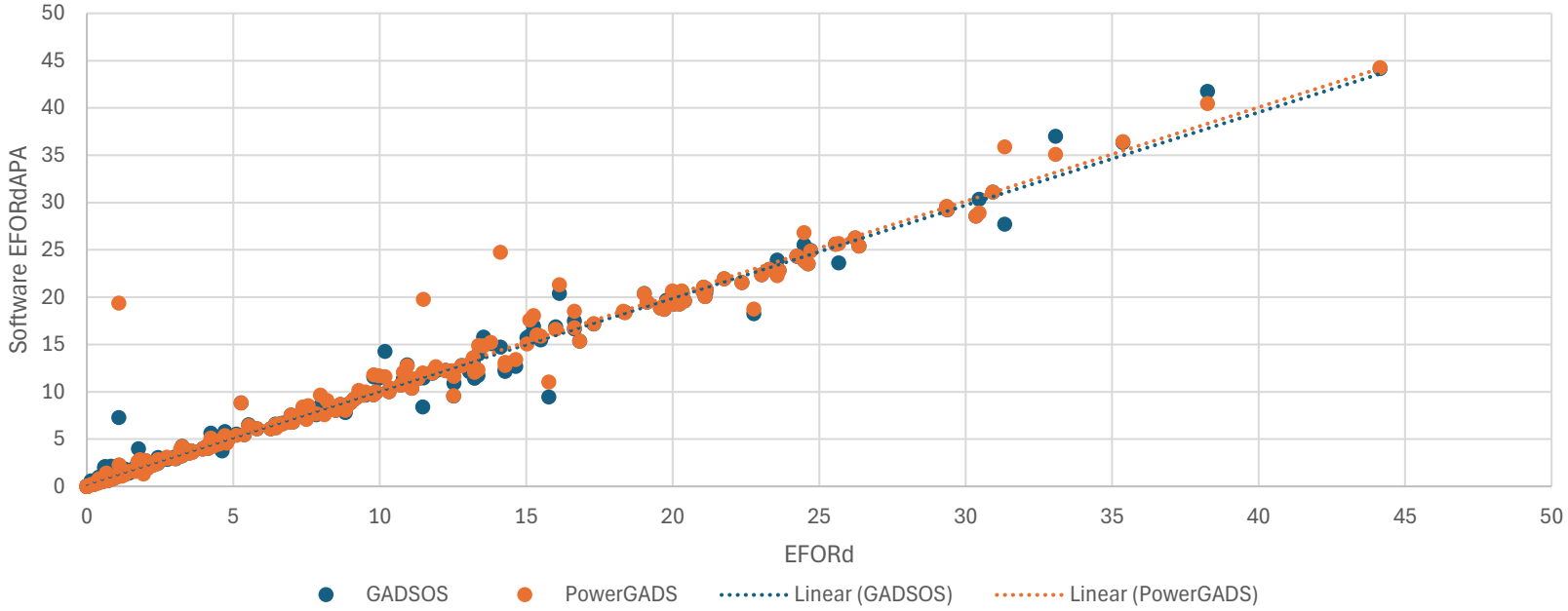
Set 2: 2019-2023



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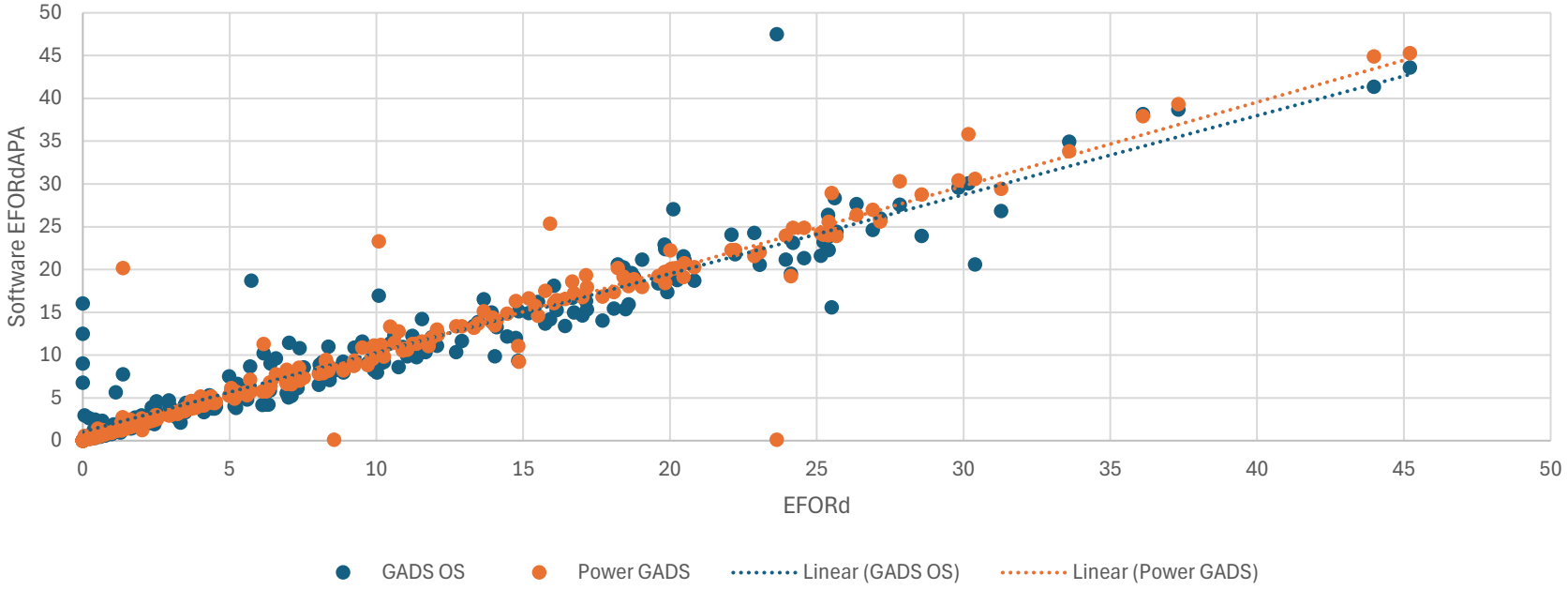
Set 3: 2018-2022



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Conclusion

- **Based on this assessment, on average, the PowerGADS system produces a EFORdAPA metric closer to the NERC EFORd than the GADS OS.**
- **Some material differences were observed due to deliberate code enhancements as part of the transition to the PowerGADS system such as:**
  - ICAP Ineligible Forced Outage (IIFO) forced outage hours being represented in the PowerGADS data.
  - The PowerGADS system considers derates smaller than 5% of full capacity as the affected unit operating at full capacity.
  - Effectuating a more seamless event transition timeline by extending events with less than 5 minutes between them.
- **Additionally, during the testing phase, the NYISO discovered a software bug and is working with the software vendor on a resolution.**

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Questions?

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Vision

Working together with stakeholders to build the cleanest, most reliable electric system in the nation

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