How long is a resilience event in a transmission system?: Metrics and models driven by utility data

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We discuss ways to measure duration in a power transmission system resilience event by modeling outage and restore processes from utility data. We introduce novel Poisson process models that describe how resilience events progress and verify that they are typical using extensive outage data collected across North America. Some usual duration metrics show impractically high statistical variability, and we recommend new duration metrics that perform better. Moreover, the Poisson process models have parameters that can be estimated from observed network data under different weather conditions, and are promising new models of typical resilience events.