



Business Rules for Residential Synchronized Reserve Sample M&V

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M&V Plans

An M&V Plan will be provided to PJM by the CSP to describe the M&V structure for the program and obtain PJM approval prior to start of the program. An updated M&V plan will be submitted after the performance season or annually.

Approval schedule should allow 2 months for M&V implementation by the CSP and 2 weeks for approval by PJM staff

M&V Plan should specify:

- Sampling approach
- Metering, including qualification forms and quality assurance protocol to meet Manual 11 requirements
- Device operability study approach

M&V Plans: Sampling

The M&V plan will specify a sampling methodology that meets the Manual 19 “90/20 two-tailed” accuracy standard

- Statistical Criteria
 - Normal distribution is reasonable because we are averaging a large number of independent random variables, so the central limit theorem applies
 - Two tailed insures the value is within a defined range
 - Use engineering estimates and similar programs to estimate initial sample variance and sample size for first year
 - M&V plan would propose stratification and provide rationale, or describe why classic stratification approaches are unnecessary
- For programs with multiple curtailment methods or curtailed end uses, must specify how samples are segmented.
 - Default approach is to use a separate M&V population for each different permutation of curtailment methods or end use types
 - M&V plan may specify a single sample for multiple methods or end uses if justified by method and population characteristics

M&V Plans: Device Operability

The M&V plan will specify a method of annually measuring device operability that meets the following requirements:

- Device operability survey must meet “90/10 two tailed” criteria
- Perform survey in season to match time period of resource performance
- M&V plan will specify how device operability rates are included in performance measurement

M&V Plans: Updates

Prior to subsequent years/seasons, the CSP will submit an updated M&V plan

- Report on prior year's/season's performance
- Sample Calibration
 - Use specific program history to determine sample variance and size of sample in subsequent years
 - Over time the sample may no longer represent the population. If the DR population changes significantly from year to year the M&V plan should review the changes and document implementation to match within reason the new population
 - Replacement M&V sites should be drawn in a manner to maintain the integrity of sample, e.g. to maintain the stratification approach
 - Sample adjustments once per year will be considered sufficient
- Device Operability Report
- Metering Reports as required by quality assurance plan.

Metering

Metering of sample sites must meet the following requirements:

- Meters to be installed at utility metering points and have one-to-one correspondence with EDC account numbers.
- Meters meet all manual and tariff requirements for a stand-alone SR site, including:
 - +/-2% accuracy
 - 1 minute interval data
 - Time synchronization
 - Comply with NAESB VEE where applicable
- AMI meters could be used
- Reasonable efforts will be made to replace defective meter equipment or M&V participant dropouts

Registration

Once M&V plan is approved by PJM, programs can be registered as Synchronized Reserve Resources:

- Generally, one registration per EDC for each program unless otherwise agreed to in M&V plan
 - Multiple technologies or populations within a program can be aggregated into a single resource while maintaining separate sampling.
- Registration will specify maximum amount of SR resource can provide
- SR quantity may be updated periodically as program enrollments change
- Resources offer into SR market normally
- Resources may be inflexible or flexible SR

Verification

After each synchronized reserve call, CSP follows verification procedures:

- Data provided to PJM by two business days after event day, as for other demand resources
- Document transmission of control signal as specified in the M&V Plan
- One-minute interval consumption of participating population determined from sample as specified in the M&V Plan
- Population treated as a single SR resource, with compliance and settlement as normal for SR
- Active population at the end of business day will be considered for events on that business day
- Participation records for each program day will be maintained and available for audit
- PJM would have rights to review and audit analyses submitted as well as the supporting data

Thank You

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