



Department
of Energy &
Climate Change

Appendix G – Sampling approaches

Electricity Demand Reduction pilot
M&V manual

Sampling Approaches

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Sampling Approaches

Scenarios

Not all EDR projects will require sampling, but this is an appropriate measurement technique where there are numerous implementations of the same equipment type – either in one building or across several buildings, as long as the implementations are of the same technology.

There are two scenarios where sampling should be considered:

- Multiple implementations of the same measure, for example replacing 200 motors in a production process. A sample of the motors could be measured and subsequently used to extrapolate savings for the whole population of motors.
- Aggregated projects where savings from multiple sites are added together to provide an overall kW bid value. Similarly to the first scenario, the measures sampled must be of the same type. Aggregated projects may consist of just one technology type, in which case a sample size can be established from the total number of implementations across all buildings. Where aggregated projects consist of different technology types, a sample should be established for each type, which again can be from the total number of implementations in the aggregated project.

Input Data

A spreadsheet calculator for determining sample sizes is appended to the manual (5. Sample Size Calculator). In order to use this you will need the following information:

- The size of the population, i.e. how many fittings or pieces of equipment of the same type are there in the project?
- The desired precision and confidence levels need to be selected. “Precision” refers to the error around the true estimate of the measurement (e.g. $\pm X\%$) and “confidence” refers to the probability that the estimate will fall within the selected range of precision. Minimum values of a 10% range of precision and 90% confidence should be used. Using these parameters would mean that there is a 90% probability that the true value of the whole population is within 10% of the value measured from the sample.
- The “co-efficient of variation”, or “CV”. This is equal to the standard deviation of the dataset divided by the average (mean). As this isn’t usually known until readings have been taken, a value of 0.5 is often used as a starting point and then refined as readings become available to adjust the sample size up or down.

The sample size calculator uses default values of 10% precision, 90% confidence and a CV of 0.5, so will return a sample size if the population size is entered.

Further details of the underlying calculations used by the sample size calculator are included in the FAQs.

Example

Lighting retrofit project

Original fittings:

- 200 type A
- 300 type B
- 400 type B

To be replaced with new fittings:

- 400 type Y
- 300 type Z

For the baseline period, samples sizes for each of type A, B and C should be established and average demand readings taken in order to calculate the total baseline for all fittings of the three types.

For the reporting period, samples sizes for each of type Y and Z should be established and average demand readings taken to provide the new level of demand with the fittings of the two new types.

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