

INTRODUCTION

Dispatching demand response will lead to a demand reduction at one or more customer load sites. Since a demand reduction cannot be directly measured, a suitable calculation needs to be devised to assess the performance obtained.

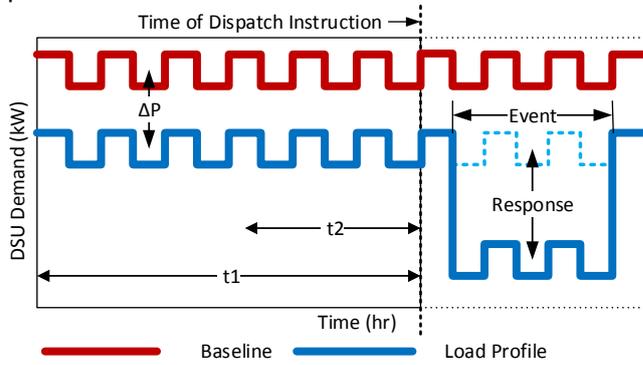


Fig. 1 Evaluating demand response performance

Objectives for proposed methods:

- Use only independent sources of data
- Not open to interpretation
- Capable of being automated
- Accurately report demand side contribution
- Not overly complex or complicated

PROGRAMS REVIEWED

- North American Energy Standards Board (NAESB)
- Federal Energy Regulatory Commission (FERC)
- Pennsylvania Jersey Maryland Power Pool (PJM)
- National Grid
- Eskom
- EirGrid
- EnerNoc



NAESB BASELINE METHODOLOGIES

- Baseline Type I – historical interval meter data that can change from interval-to-interval (standard method)
- Baseline Type II – statistical sampling of customers of an aggregated demand resource for cases where interval meter data is not available for individual demand sites
- Maximum Base Load – flat constant demand level that customers must remain at or below, created using system demand and individual meter data from past demand response seasons
- Meter Before, Meter After – only utilises demand data from time periods immediately prior to the respective event
- Generation – baseline set at zero and measured against usage from behind-the-meter generators

GENERAL CONSIDERATIONS

- Flexibility of performance measuring methods
- Variety of event calls (load increase or reduction)
- Diversity of customers/loads participating in demand response
- Reliance on aggregated data (Fig. 2)
- Ability to game the system

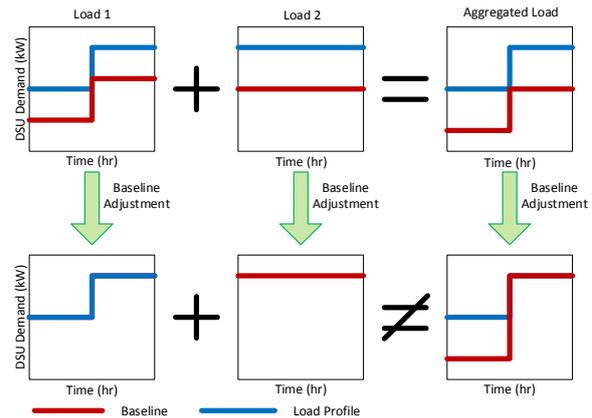


Fig. 2 Aggregated vs non-aggregated data

BASELINE METHOD CONSIDERATIONS

- Suitable for customer's load profile
- Look back window (days to years)
- Baseline time frame (hours to days; e.g. t1, Fig. 1)
- Baseline adjustments
 - Baseline adjustment time frame (minutes to hours; e.g. t2, Fig. 1)
 - Scaling versus offset (Fig. 3)

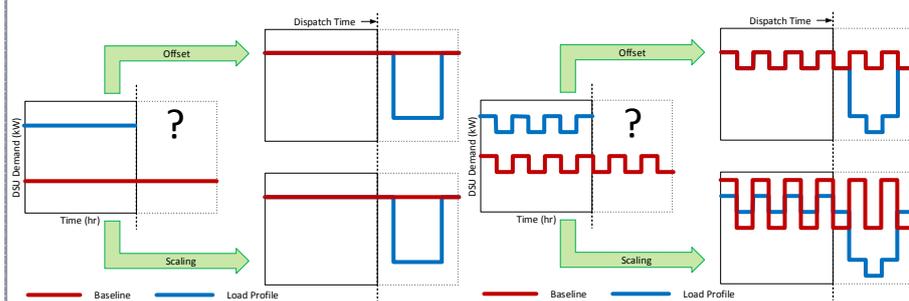


Fig. 3 Scaling vs offset

CONCLUSIONS

- NAESB standards are the basis for most demand response performance monitoring programs
- Performance monitoring methods should be flexible
- Account for a variety of event calls (load increase or reduction)
- Different customers and loads may suit different or multiple baseline methods

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