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Demand Estimation Sub-Committee



9th December 2011

Alternative demand attribution formula
– a suggestion from National Grid Transmission

Alternative demand attribution formula

- Suggested formula is shown below:

  Supply point allocation before scaling =

  $(AQ / AQ_{EUC}) * [SND_{EUC} + WSENS_{EUC} * (CWV – SNCWV)]$

  where

  AQ = Supply Point AQ

  AQ_{EUC} = EUC model AQ

  SND_{EUC} = EUC model seasonal normal demand

  $WSENS_{EUC}$ = EUC model weather sensitivity

  (see Appendix 3 Section 1.2 of Xoserve's June 2011 NDM report)

- Equivalent to "Best estimate" allocated demand in NDM sample analysis (see Appendix 13 Section 3 of Xoserve's June 2011 NDM report)

  - next slide gives the algebra showing this equivalence (for non-leap years)

- Alternative formula only uses EUC model parameters, CWV and SNCWV values

  - does contain ALPs or DAFs

Algebra showing equivalence

Best estimate allocated demand is equivalent to alternative demand attribution formula

(for non-leap years):

- Best estimate allocated demand = (AQ / 365) * ALP * [1 + (DAF * EWCF)] * 1 (1)
- Since EWCF = $(WSENS_{AGG\ NDM} / SND_{AGG\ NDM}) * (CWV - SNCWV)$
  and DAF = $(WSENS_{EUC} / SND_{EUC}) / (WSENS_{AGG\ NDM} / SND_{AGG\ NDM})$,
  DAF * EWCF = $(WSENS_{EUC} / SND_{EUC}) * (CWV - SNCWV)$ (2)
- Combining (1) and (2) gives:
  Allocation = $(AQ / 365) * ALP_{EUC} * [1+(WSENS_{EUC} / SND_{EUC}) * (CWV - SNCWV)]$ (3)
- Also $ALP_{EUC} = (365 * SND_{EUC}) / AQ_{EUC}$ (for non-leap years) (4)
  (where AQ_{EUC} = EUC model AQ = $\sum_{365\ DAYS} SND_{EUC}$)
- Combining (3) and (4) gives alternative demand attribution formula:
  Allocation = $(AQ / AQ_{EUC}) * [SND_{EUC} + WSENS_{EUC} * (CWV - SNCWV)]$

AQ calculation - alternative formula

- $AQ = (RMQ * 365) / \sum_{M\ DAYS} WAALP$ (5)

  where

  RMQ = relevant metered quantity

  M = number of days in relevant metered period

  WAALP = Weather Adjusted ALP = ALP * [1 + (DAF * EWCF)]

- From (2) and (4) on previous slide:

  $WAALP = [(365 * SND_{EUC}) / AQ_{EUC}] * [1 + (WSENS_{EUC} / SND_{EUC}) * (CWV - SNCWV)]$

- Simplifying the above gives:

  $WAALP = (365 / AQ_{EUC}) * [SND_{EUC} + WSENS_{EUC} * (CWV - SNCWV)]$ (6)

- Combining (5) and (6) gives alternative AQ calculation formula:

  $AQ = (AQ_{EUC} * RMQ) / (\sum_{M\ DAYS} [SND_{EUC} + WSENS_{EUC} * (CWV - SNCWV)])$

- AQs can be calculated directly from RMQ, EUC model parameters, CWV & SNCWVs