Attachment 1 – Detailed Requirements for Ad Hoc Deeming Tool

This attachment contains additional detail on the requirements for the ad hoc deeming tool.

Data Input Required from User

The data items required from the user are listed in the *Proposed Solution* section of the CP. The details of the form used to input this data will need to be worked out by the SVASS developer (either when doing the impact assessment, or during the design stage of the release)i.

Note that some additional user input will be required in the event of a meter rollover – this is described in the section on *Validation of Input Data* below.

In order to assist in entering meter readings, the form should be able to populate the list of relevant TPRs automatically (by looking at which TPRs have DPC data for the SSC specified).

For audit trail purposes, the user will be required to specify the reason for the DMA calculation. They should do this be selecting an option from a list of valid reasons, plus optionally entering a textual comment. Like other system parameters, the set of valid reasons will be stored on the database (in edb_ref_domains and edb_ref_values), and will be populated by the EAC/AA installation script. A screen for the user to edit the set of valid reasons is not required. Any changes will need to be carried out by a DBA or other suitably qualified person editing the content of the database tables.

Validation of Input Data

The screen should perform similar validation to the current processes for calculating EAC/AA and DMA values, although the detailed implementation may differ (due to it being an online rather than batch process). In particular, the screen will need to validate that:

- For each Settlement Day in the period of the calculation[1], a Daily Profile Coefficient exists on the database for each register. In other words, for each TPR and each Settlement Day d there must be a Daily Profile Coefficient for the combination of:
    - Settlement Day d;
    - The SSC and GSP Group specified for the metering system;
    - The Profile Class specified for the metering system on day d; and
    - That TPR.

- The start of the Meter Advance Period (i.e. D_1) is before the end (i.e. D_2).

In addition, the following validation (relating to the new data items) is also required:

- The required reading date D_3 must not be equal to either D_1 or D_2 (because in either of these cases there is no need to deem a meter reading).

- Each meter reading must be an integer between zero and (10^n-1) inclusive, where n is the number of register digits on the meter.

The screen must also check for negative meter advances (i.e. TPRs for which the reading on D_2 is less than that on D_1). For each such negative advance, the user will be prompted to clarify whether this represents:

- A genuine negative Meter Advance;
- A meter rollover; or

[1] The period of the calculation means the period running from the earliest of the three dates specified (i.e. D_1, D_2 and D_3) to the day before the latest of the three dates.

- A mistake in the data entered (in which case they will be able to amend it).

Calculation of Meter Advances

Once the input data has been validated, the actual calculation of deemed meter readings can begin. The first step is to calculate the Meter Advance for each TPR between D_1 and D_2. Normally this is just the difference between the two meter readings:

$$\text{Meter Advance} = (M_2 - M_1)$$

where M_1 and M_2 are the meter readings on days D_1 and D_2 respectively. The exception is if the user has indicated that a meter rollover occurred for that register, in which case:

$$\text{Meter Advance} = (10\text{^}n + M_2 - M_1)$$

where n is the number of register digits.

Calculation of Annualised Advances

Having calculated Meter Advances, these are then converted to Annualised Advances, using the same equation as the current AA calculation:

$$AA = \text{Meter Advance} / (SDPC_{gptd})$$

where the summation is over all Settlement Days in the Meter Advance Period i.e. the period from day D_1 to the day before D_2. Further detail of the AA calculation can be found in common function EC004 ('Estimate Annual Consumption') in the EAC/AA Function Definition document.

Having calculated the AA, it will then be compared to the high and low tolerance values for that metering system's GSP Group and Profile Class. Again, further detail can be found in common function EC004 ('Estimate Annual Consumption') in the EAC/AA Function Definition document. Any values outside of range will be reported back to the user. Note that the calculation will still continue in this case i.e. the message is only a warning.

Calculation of Deemed Meter Advances

The next step is to use the AA values to calculate a Deemed Meter Advance for each register. The appropriate Deemed Meter Advance Period depends on where the required reading date D_3 falls:

- CASE 1 – If D_3 is before D_1, the Deemed Meter Advance Period runs from D_3 to the day before D_1.
- CASE 2 – If D_3 is between D_1 and D_2, the Deemed Meter Advance Period runs from D_1 to the day before D_3.
- CASE 3 – If D_3 is after D_2, the Deemed Meter Advance Period runs from D_2 to the day before D_3.

Having determined the Deemed Meter Advance Period, the Deemed Meter Advance for each TPR can then be determined in accordance with the usual equation (as described in common function EC005 of the EAC/AA Function Definitions):

$$DMA = AA * S(DPC_{gptd})$$

where the summation is over all Settlement Days in the Deemed Meter Advance Period.

The calculated Deemed Meter Advance values should be all rounded to the nearest kWh. (Note that the EAC/AA system does not currently do this: it outputs Deemed Meter Advance values to one decimal place. However, in the context of the ad hoc deeming tool this creates too much risk of error, and all output values should be rounded to the nearest kWh).

Calculation of Deemed Meter Readings

The last step of the calculation is to convert the Deemed Meter Advances to Deemed Meter Readings for each TPR:

- CASE 1 – If D_3 is before D_1, the deemed meter reading is the meter reading on D_1 minus the Deemed Meter Advance.
- CASE 2 – If D_3 is between D_1 and D_2, the deemed meter reading is the meter reading on D_1 plus the Deemed Meter Advance.
- CASE 3 – If D_3 is after D_2, the deemed meter reading is the meter reading on D_2 plus the Deemed Meter Advance.

In all three cases, the resultant meter reading must then be checked for meter roll-over:

- If the deemed meter reading is less than zero, add 10^n (where n is the number of register digits). For instance, if n=5 a deemed meter reading of -173 would become 99,827.

- If the deemed meter reading is greater than or equal to 10^n (where n is the number of register digits), subtract 10^n from it. For instance, if n=5 a deemed meter reading of 100041 would become 41.

Audit Report

The system must produce an audit report showing details of the calculation. This report must be produced on the server hosting the EAC/AA database, not the client PC on which the form is running (thus ensuring that all the audit reports are kept together). The report must show:

- A unique identifier or reference number for the calculation (so that it can be easily referenced);
- The identity of the user who initiated the calculation;
- All of the input data items entered by the user;
- Details of any meter rollovers confirmed by the user;
- The date and time at which the calculation was initiated;
- Details of any warnings (e.g. AA values outside tolerance values);
- The values of the Annualised Advances, Deemed Meter Advances and deemed meter readings calculated by the process.

Note that audit reports are only required for successfully-initiated calculations. If the screen was exited before triggering the calculation (e.g. if the screen validation detected errors in the input data and the user decided not to proceed) no report is required.