



Department  
of Energy &  
Climate Change

# Modelling Quality Assurance of the Dynamic Dispatch Model: Internal Review

DDM Internal QA Review Summary

September 2014

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# Contents

Internal Review Summary .....	4
Follow-up Review.....	5

# Internal Review Summary

## Introduction

As part of DECC's on-going quality assurance review of its business critical models, the DECC Modelling Integrity Team formally reviewed the Dynamic Dispatch Model between March and May 2014.

## Findings

The review found that the model '**achieves the design purpose**' with '**no critical errors or issues with the implementation of the methodology**'. However, a number of issues were found which needed to be addressed; to remove a number of small errors, improve transparency, and reduce risk of error in future developments.

The model was given a QA score<sup>1</sup> **of 76%**, which reflects issues identified around structure and clarity, data and assumptions, and verification. 18 recommendations were made which, if addressed, should bring the score up to the target of 90%. The **five key recommendations** to improve the model were:

- 1) Review and address the actions in the QA and Issues log
- 2) Consistently label variables with units in the input and output workbooks
- 3) Improve formulae robustness by replacing hardcoded values and references with named references
- 4) Develop a systematic plan for acceptance testing for new releases, and create a log to record test details and outputs
- 5) Enhance data and assumptions traceability

The review consisted of:

- performing the verification of the input and the output excel files of the DDM prepared by the DDM team;
- reviewing previous quality assurance (QA) exercises and degree to which recommendations had been actioned; and,
- reviewing the extent to which the QA best practice processes described in the QA log<sup>2</sup> are implemented.

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<sup>1</sup> This reflects the degree to which best practice and QA guidelines are followed in respect of documentation, model structure and clarity, verification, validation, and data and assumptions.

<sup>2</sup> The QA log template can be found here: <https://www.gov.uk/government/organisations/department-of-energy-climate-change/about/procurement#analytical-modelling>

## Follow-up Review

DECC's Modelling Integrity Team revisited the DDM in August to review progress against the recommendations, and as a result **the QA score was upgraded to 82%**. This reflects significant improvements in the following areas:

- Addressing actions outlined in the Issues Log for the Output workbook (Key Recommendation 1);
- Labelling variables with units in the input and output workbooks (Key Recommendation 2);
- Removing hardcoded values from formulae, and replacing with variables and unit conversion tables (Key Recommendation 3); and
- Improved evidence of and guidance for regression testing (contributes to Key Recommendation 4).

Progress has also been made in the following areas, although there is still more to do:

- Addressing the actions outlined in the Issues Log for the Input workbook (Key Recommendation 1). Around half of the issues identified have so far been addressed.
- Developing a systematic plan for acceptance testing, and a testing log (Key Recommendation 4). Guidance on the testing required after each model update has been developed, and a testing log is now in place. However, the testing log needs expanding to capture more information (at the very least this should include model owner and test date), and a QA plan should be developed to ensure the right controls are in place at the right time.
- Version control (non-key recommendation). Version control of the main Envision model is good and an appropriate version naming system for the input and output files is now in place. However, version logs for these files need to be expanded to cover, for example, date and owner of change, full version name, and should also detail changes between every version.
- Removing or clearly marking unused workbook areas (non-key recommendation). This has largely been done for the output workbook, but there are some actions for the input workbook.

## Follow-up Review

- Improving the readability of workbooks through formatting and commenting (non-key recommendation). Some formatting issues have been addressed but a consistent approach still needs to be developed. The most complicated formulae are now explained through cell comments, but this could be extended to other areas of the model (including high-level descriptions of worksheets and tables). Data sources are now generally provided within the output workbook, but this practice needs to be extended to the input workbook.

In addition, the key recommendation to enhance data and assumptions traceability (Key Recommendation 5) is still outstanding.

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