



Greater Manchester Residential Retrofit Commercial Support Model

Commercial Support Model User Guide

March 2011

Ernst & Young LLP

Contents

1. Model structure 1

2. General 4

3. Financial Model Mechanism 6

4. Pro-forma databook 7

1. Model structure

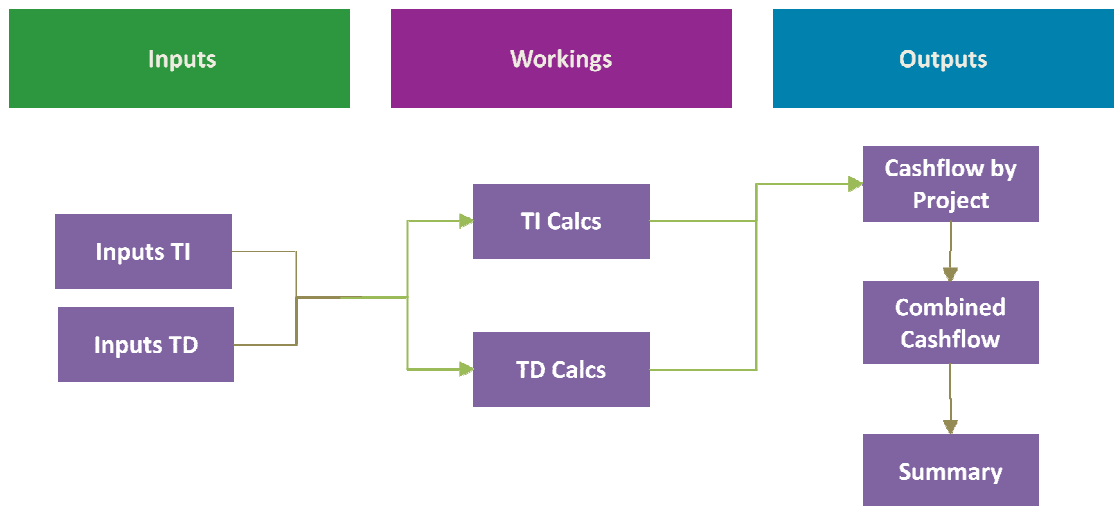
1.1 Overview

The residential retrofit commercial support model 'AGMA Residential Retrofit project cashflow model March 2011.xls' ('the model') is prepared to simulate the financial position of a residential retrofit project.

The model has been produced in Microsoft Excel 2007 and is compatible with Excel 2003, and represents a 25 year operational cash flow forecast. The model has been formulated as an annual model during both construction and operation phases.

The model is constructed in three main sections (inputs, workings and outputs), each section consisting of a number of related worksheets as shown in figure 1 below.

Figure 1



All assumptions for the project are presented in two worksheets. Inputs that remain the same throughout the life of the project are time independent, and are included in the "Inputs_TI" worksheet. Inputs that are time dependent are included in the "Inputs_TD".

Time independent inputs include key model information, model timing and periodicity, inflation, installation costs, energy savings resulting from installations, and secured funding. Time dependent assumptions are those in respect of energy prices and the monetisation of energy savings.

The model is split into two distinct parts, calculating time independent and time dependent elements. This is highlighted in figure 1 above, illustrating the structure of the model diagrammatically. The model itself is driven from the Inputs_TI and Inputs_TD worksheets.

Project outputs are set out by way of cashflows per individual project and across the scheme as a whole. The commercial viability of each individual project and the overall scheme is assessed by way of project returns. Project returns are measured by the net present value of future cashflows and the internal rate of return.

It is important to note that project returns are calculated solely in relation to funding which requires a commercial return. As such, these calculations exclude grants and other capital contributions that do not require a commercial return (these are input into the Inputs_TI worksheet). It should be noted that all cashflows and returns are stated before any adjustments for tax and interest, and are based solely upon the cost inputs provided in the inputs worksheets.

1.2 Description of worksheets

The table below sets out the individual worksheets within the model and gives a brief description of each worksheet.

Sheet	Sheet type	Purpose
Disclaimer	Disclaimer	Disclaimer detailing limitations of model use. The model disclaimer must be accepted via the message box prior to accessing the model.
Summary	Output	<p>This worksheet contains a summary of the key outputs from the financial model. This is split into five sections as follows:</p> <ul style="list-style-type: none"> ▶ Key project dates ▶ Key project financials ▶ Scenarios selected ▶ Key macroeconomic assumptions ▶ Pre-tax and pre-interest rates of return (NPV and IRR)
Inputs_TI	Input	<p>Time independent inputs including the following:</p> <ul style="list-style-type: none"> ▶ Project details ▶ Assumed inflation ▶ NPV discount factor ▶ Carbon Reduction Commitment (CRC) * ▶ Installation costs – benchmark and project specific * ▶ Category of energy savings per installation ▶ Annual energy savings per house/flat per installation – benchmark and project specific * ▶ Basis for monetisation of energy savings * ▶ Power curve * ▶ Sources of funding
Inputs_TD	Input	<p>Time dependant inputs including the following:</p> <ul style="list-style-type: none"> ▶ Percentage of energy savings achieved during construction ▶ Power curves ▶ Monetisation of energy savings – percentage and fixed charge
TI Calcs	Calculation	<p>This worksheet contains financial calculations for the construction and operations periods for the following:</p> <ul style="list-style-type: none"> ▶ Total capital costs ▶ Total funding secured ▶ Funding requirement ▶ Full year effect of energy savings ▶ Full year effect of CRC savings <p>All calculations are performed on a scheme by scheme basis.</p>
TD Calcs	Calculation	<p>This worksheet calculates the reduced energy and CRC costs (gross and monetised) by scheme over the life of the project.</p>

Sheet	Sheet type	Purpose
Cashflow By Project	Output	<p>This worksheet shows the following by individual project:</p> <ul style="list-style-type: none"> ▶ project cashflows by year ▶ Pre-tax and interest investment returns on outstanding funding requirement <p>Outputs are stated before tax and interest, and are based on the input and workings worksheets They are shown on an annual basis until the end of the 25th year.</p>
Combined Cashflow	Output	<p>This worksheet shows the following for the scheme as a whole:</p> <ul style="list-style-type: none"> ▶ project cashflows by year ▶ Pre-tax and interest investment returns on outstanding funding requirement <p>Outputs are stated before tax and interest, and are based on the input and workings worksheets They are shown on an annual basis until the end of the 25th year.</p>
Assumptions	Other	<p>This worksheet acts as a reference point to summarise the source of each assumption which has driven the population of the inputs worksheets.</p>

* Requires scenario selection

2. General

2.1 Macros

The user needs to “Enable Macros” on opening the file – if not some of the functionality in the model will be disabled.

2.2 Install Add-ins

In order to use the full functionality of the model on any computer, the user needs to install the following add-ins, if these have not already been installed:

- Analysis ToolPak
- Analysis ToolPak - VBA

In Excel 2003, go to Tools/Add-ins and tick both boxes as shown below:



Click OK and close Excel completely. On reopening, the user will be able to use and save the model locally.

For Excel 2007 go to the Office menu, Excel Options and under the Add Ins tab select Manage add ins option to access the above screen.

2.3 Conventions: colours of cells and worksheets

2.3.1 Cell Formats

Remember to only input values in yellow cells at all times, the rest of the cells contain formulae and should not be amended or overwritten.

Calculation cells contain formulae and it is advisable not to use these cells, as accidental deletions and formulae amendments can affect the accuracy of the outputs.

The model is based on the classical separation between inputs (in blue ink throughout the model) and calculated values (black ink).

- Modifiable inputs: the user can insert values, these fields are indicated in yellow with blue text:

518

- ▶ Called-up inputs: these fields are linked to an input cell. The user should not change these cells but revert to the original input cell. These cells are white with blue text.

925

- ▶ Calculated fields: these fields cannot be modified by the user, because they contain formulae that are automatically calculated. These cells are white with a black text:

13,959

- ▶ When negative, the values in all types of cells will be appear in red colour (in parenthesis)

(500,000)

3. Financial Model Mechanism

3.1 Model Control

The model is controlled via the worksheet named “Inputs_TI” and “Inputs_TD”. These contain the modifiable inputs that drive the model, represented by cells with a yellow background and blue text.

Different scenarios can be selected via drop down menus as follows:

- ▶ Carbon Reduction Commitment to be applied (Yes/ No): Inputs_TI cell E19
- ▶ Basis of Installation Costs (Benchmark/Project specific costs): Inputs_TI cell E25
- ▶ House Annual Energy Savings (Benchmark/Bespoke): Inputs_TI cell E155
- ▶ Flat Annual Energy Savings (Benchmark/Bespoke): Inputs_TI cell E200
- ▶ Monetisation of Energy Savings (Percentage/Flat charge): Inputs_TI cell E247
- ▶ Power Curve (selection from up to five power curves) Inputs_TI cell E252

Data selected as the live scenario then drive the calculations in the workings worksheets which ultimately derive the model’s outputs.

Running the model with different sensitivities

In order to run a scenario, simply input new data into the required yellow input cells and select the preferred combination of scenarios.

The model does not contain any calculation macros and therefore the resultant cashflows and returns will be automatically calculated and presented in the output and summary worksheets.

4. Pro-forma databook

The table below details a typical databook that might include all the inputs used to drive the model, and the source from which they might be derived.

It should be noted that the assumptions and inputs currently provided in the model are taken from a range of sources and include a number of 'dummy' entries in order for the model to work on an exemplar basis. As such, the outputs provided by the model are illustrative only and are not to be relied upon. In order to utilise the model, the user should input their own assumptions specific to their project(s).

Assumption	Source
Generic Assumptions	
Inflation (%)	Energy Saving Trust
Project start date	Energy Saving Trust
Project life (years)	Energy Saving Trust
Construction period (years)	Energy Saving Trust / Technical Advisor
Carbon Reduction Commitment to be applied	Energy Saving Trust
Carbon Content - Electricity (tonnes per kwh)	Energy Saving Trust / Technical Advisor
Carbon Content - Gas (tonnes per kwh)	Energy Saving Trust / Technical Advisor
Installation Costs	
Live Scenario - Cost Basis to be applied	User
Benchmark Costs	Energy Saving Trust
Project Specific Costs	RSL
Installations types per scheme (1=Yes)	RSL
Number of Properties per scheme	RSL
Category of Energy Savings per Installation	Energy Saving Trust / Technical Advisor
Annual Energy Savings	
Live Scenario - Energy Savings per House to be applied	User
Benchmark Annual Energy Saving / House (kWh)	Energy Saving Trust
Bespoke Annual Energy Saving / House (kWh)	Technical advisor
Live Scenario - Energy Savings per Flat to be applied	User
Benchmark Annual Energy Saving / Flat (kWh)	Energy Saving Trust
Bespoke Annual Energy Saving / Flat (kWh)	Technical advisor

Assumption	Source
Monetisation of Energy Savings	
Live Scenario - Monetisation of Energy Savings	User
Percentage of Energy Savings achieved	Energy Saving Trust
Fixed charge per household per annum (£)	Energy Saving Trust
Fixed charge per household per annum (£)	Energy Saving Trust
Sources of Funding	
CESP	Energy Saving Trust / RSL
Other Funding	Energy Saving Trust / RSL
Energy saving build up profile	
% energy saving during construction	Energy Saving Trust / Technical Advisor
Power Curves	
Live Scenario - Power Curve:	User
Flat Retail Price	Energy Saving Trust
Retail Price Curve	Energy Saving Trust
Price Curve 1 +20%	Energy Saving Trust
Price Curve 1 -20%	Energy Saving Trust
Wholesale Price Curve	Energy Saving Trust