Better Energy Communities Guide to the 2018 Technical Workbook

January 2018

Contents:

1. Technical Workbook

The technical workbook assists applicants submitting applications for the Better Energy

Communities grants.

The workbook can be downloaded from the Project Dashboard section of the Project Evaluation

Platform (PEP): https://pep.seai.ie/

It consists of a number of tabs that must be completed.

1) The **Application Tab** which contains information that must be copied into the main application form.

2) The **Project Summary Tab** which contains the administration details of the project and summarises the savings and cost information of all the project components.

3) The **Domestic Energy Credits Tab** which contains the details of the domestic projects.

4) The **Non-Domestic Tab (s)** which contains more detailed information about each individual non-domestic project component.

Keynote:

- White Cells are completed by the applicant.
- Yellow Cells are automatically completed by the workbook
- Green Cells are guidance notes for importing/exporting data to application form

The workbook is password protected and only White Cells can be accessed by the user.

A Non-Domestic Tab is completed for each non-domestic project in the application. These are summarized in the Project Summary Tab.

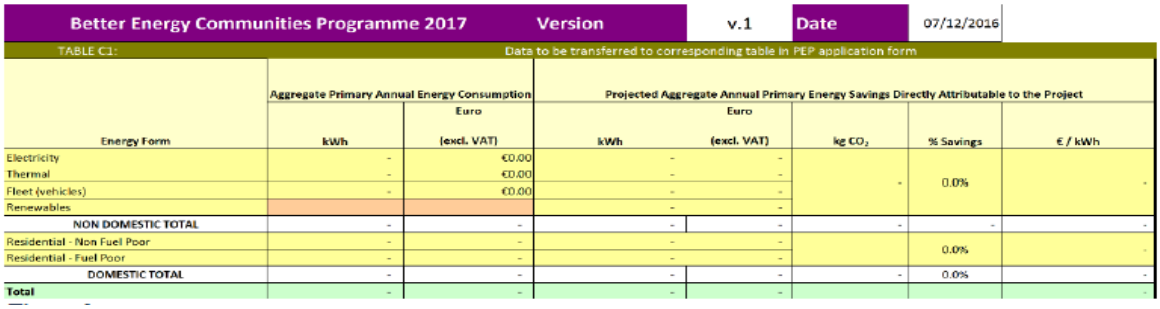
2. Application Tab

The Application tab is automatically completed by the workbook. It provides details to be copied into the main application form.

The **Application Tab** is divided into 3 sections.

The first section (Figure 1) provides details to be copied into Table C1 of the application form. It contains the current primary energy use and proposed primary energy savings, CO2 savings, % savings and Investment Cost per Primary kWh saved for the Domestic, Non-Domestic and Total

Savings.



Better Energy Communities Programme 2017	Version	v.1	Date	07/12/2016

TABLE C1: Data to be transferred to corresponding table in PEP application form

	Aggregate Primary Annual Energy Consumption		Projected Aggregate Annual Primary Energy Savings Directly Attributable to the Project				
Energy Form	kWh	Euro (excl. VAT)	kWh	Euro (excl. VAT)	kg CO_2	% Savings	€ / kWh
Electricity	-	€0.00	-	-			
Thermal	-	€0.00	-	-			
Fleet (vehicles)	-	€0.00	-	-	-	0.0%	-
Renewables			-	-			
NON DOMESTIC TOTAL	-	-	-	-	-	-	-
Residential - Non Fuel Poor	-	-	-	-		0.0%	-
Residential - Fuel Poor	-	-	-	-			
DOMESTIC TOTAL	-	-	-	-	-	0.0%	-
Total	-	-	-	-			-

Figure 1

The second section (Figure 2) details the costs associated with each project type. This is copied to section A.3 to A.3.2 of the application form. Where the applicant is eligible for VAT, the VAT figure is also copied to Section A.3.2 of the application form.

Project Costs (Exclusive of VAT)

Project Name	Project Costs Euro (€) ex VAT	Project Managment Euro (€) ex VAT	Domestic BER costs Euro (€) ex VAT	Non Domestic Design Fees Euro (€) ex VAT	Non Domestic M&V Fees Euro (€) ex VAT
Energy Poor Homes : Local Authority	€0.00	€0.00	€0.00		
Energy Poor Homes : Housing Association	€0.00	€0.00	€0.00		
Energy Poor Homes : Private	€0.00	€0.00	€0.00		
Non-Energy Poor Homes : Local Authority	€0.00	€0.00	€0.00		
Non-Energy Poor Homes : Housing Association	€0.00	€0.00	€0.00		
Non-Energy Poor Homes : Private	€0.00	€0.00	€0.00		
Other Community buildings & services	€0.00	€0.00		€0.00	€0.00
Educational / Library / Cultural	€0.00	€0.00		€0.00	€0.00
Public Sector Buildings & Services	€0.00	€0.00		€0.00	€0.00
Sports & Leisure Centres	€0.00	€0.00		€0.00	€0.00
Private Sector Buildings	€0.00	€0.00		€0.00	€0.00
TOTAL	€0.00	€0.00	€0.00	€0.00	€0.00

Overview - Costs	
Project Costs	-
Project Managment	-
Domestic BER costs	-
Non Domestic Design Fees	-
Non Domestic M&V Fees	-
Eligible VAT Expenditure	-
Total Eligible Costs	-
Overview - Funding	
Grant	-
%	#DIV/0!
KWh	-
3% Bonus PM	-
Grant incl bonus	-
Funding Breakdown (incl PM,BER,Other,VAT)	
Non Domestic	-
Residential - Non Fuel Poor	-
Residential - Fuel Poor	-
Combined Fabric Upgrades - Non Fuel Poor	-
Combined Fabric Upgrades - Fuel Poor	-

TABLE A.3.2: Data to be transferred to corresponding table in PEP application form

Eligible VAT Expenditure			
Project costs - eligible VAT	€0.00	Total Eligible Costs	€0.00

Figures to be checked against Section A.3 to A.3.2

Figure 2

The third section (Figure 3) details the beneficiaries of the grant. This is copied to section D4 of the application form.

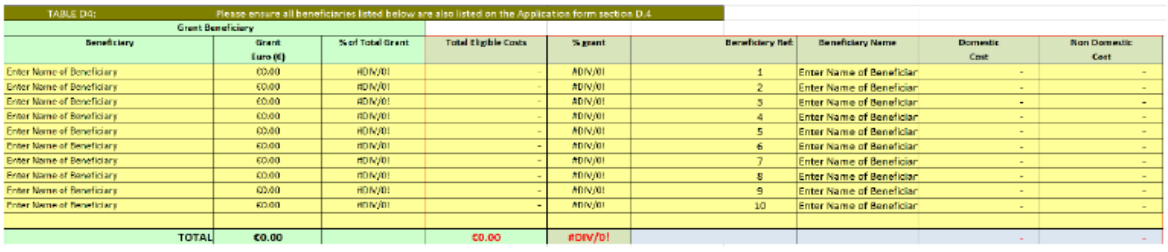


TABLE D0: Please ensure all beneficiaries listed below are also listed on the Application form section D.4

Grant Beneficiary								
Beneficiary	Grant Euro (€)	% of Total Grant	Total Eligible Costs	% grant	Beneficiary Ref.	Beneficiary Name	Domestic Cost	Non Domestic Cost
Enter Name of Beneficiary	€0.00	#DIV/0!	-	#DIV/0!	1	Enter Name of Beneficiar	-	-
Enter Name of Beneficiary	€0.00	#DIV/0!	-	#DIV/0!	2	Enter Name of Beneficiar	-	-
Enter Name of Beneficiary	€0.00	#DIV/0!	-	#DIV/0!	3	Enter Name of Beneficiar	-	-
Enter Name of Beneficiary	€0.00	#DIV/0!	-	#DIV/0!	4	Enter Name of Beneficiar	-	-
Enter Name of Beneficiary	€0.00	#DIV/0!	-	#DIV/0!	5	Enter Name of Beneficiar	-	-
Enter Name of Beneficiary	€0.00	#DIV/0!	-	#DIV/0!	6	Enter Name of Beneficiar	-	-
Enter Name of Beneficiary	€0.00	#DIV/0!	-	#DIV/0!	7	Enter Name of Beneficiar	-	-
Enter Name of Beneficiary	€0.00	#DIV/0!	-	#DIV/0!	8	Enter Name of Beneficiar	-	-
Enter Name of Beneficiary	€0.00	#DIV/0!	-	#DIV/0!	9	Enter Name of Beneficiar	-	-
Enter Name of Beneficiary	€0.00	#DIV/0!	-	#DIV/0!	10	Enter Name of Beneficiar	-	-
TOTAL	€0.00		€0.00	#DIV/0!			-	-

Figure 3

3. Project Summary Tab

The Project Summary tab gives administration details for the project and summarizes all the energy savings from the various components of the project.

The **Project Summary tab** is divided into two sections. The administration area shown in Figure 4 contains information relating to the applicant. The detailed table shown in Figures 5, 6, 7 and 8 summarizes data from the various projects.

The administration details (Figure 4) is divided into three sections as follows:

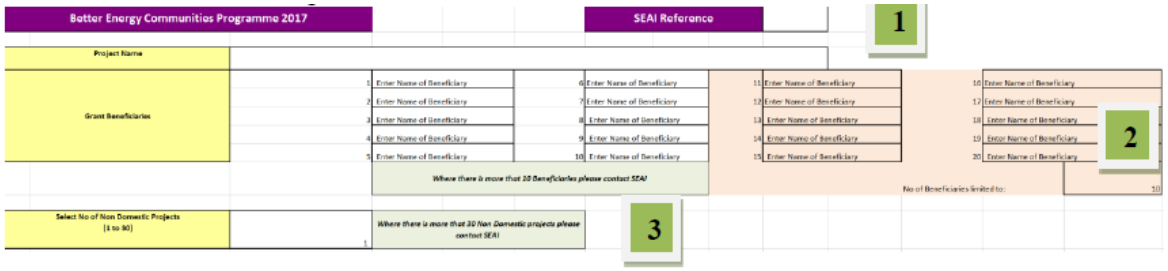


Figure 4

1) The Unique SEAI Reference is completed for each BEC application.

2) The second section must be completed detailing each of the beneficiaries of the grant. This is limited to 10 beneficiaries. Where an applicant has more than 10 beneficiaries, please contact SEAI to seek approval and arrange for additional cells to be unlocked.

3) In the third section, the applicant selects the number of Non-Domestic projects proposed in the application. A non-domestic tab must be completed for each Non-domestic building/ project where an upgrade is proposed. For example, by selecting four Non-Domestic projects, four Non-Domestic tabs will appear that must then be completed. Where an applicant has more than 30 Non-Domestic projects, please contact SEAI to seek approval and arrange for additional cells/ tabs to be unlocked.

The summary data is divided into three sections as follows:

Non Domestic Project Location			Current Primary Annual Energy Use			Current Cost of Energy Use		
	Values automatically brought in from "Non Domestic 1 - 20" sheets		Current Electrical Use kWh	Current Thermal Use kWh	Current Fleet Use kWh	€ Current Electrical Use	€ Current Thermal	€ Current Fleet Use
	Facility Name	Project Category						
1	GAA Club A	Other Community buildings & ser	75,000	600,000	-	6,000.00	60,000.00	-
2	Library B	Educational / Library / Cultural	750,000	-	-	60,000.00	-	-
3	Leisure Centre C	Sports & Leisure Centres	100,000	100,000	-	8,000.00	10,000.00	-
4	Retail Outlet D	Private Sector Buildings	250,000	100,000	-	20,000.00	10,000.00	-
	TOTALS		1,175,000	800,000	-	94,000.00	80,000.00	-

Domestic Project Location		Current Primary Annual Energy Use	Current Cost of Energy Use
	Values automatically brought in from "Domestic Energy Credits"	Current Energy Use kWh	€ Current Energy Use
	Type		
1	Fuel Poor Dwellings	1,818,750	130,040.63
2	Non Fuel Poor Dwellings	727,500	52,016.25
Total		2,546,250	182,056.88

Figure 5

Figure 5 imports the current primary energy use and energy costs from the Domestic Energy Credit Tab and each of the Non-Domestic Tabs completed. The applicant has no inputs in this section.

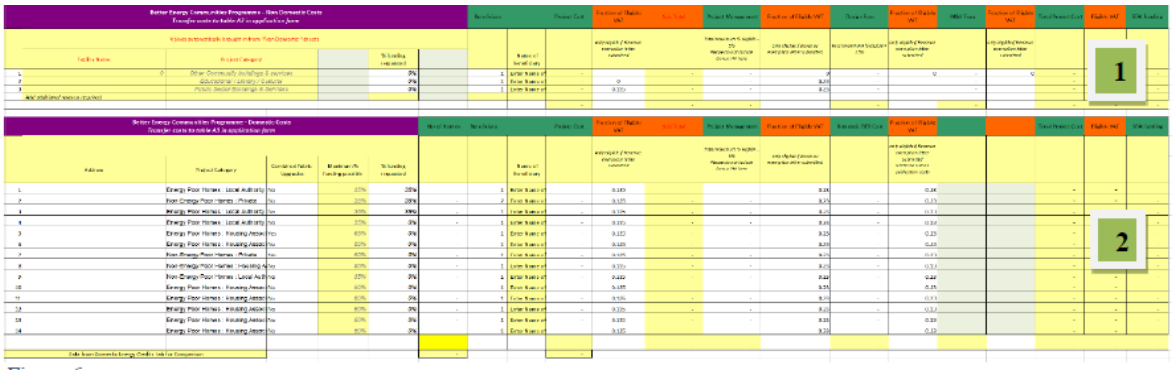


Figure 6

The next section **(Figure 6)** contains data relating to the costs of proposed upgrades.

1) For the Non-Domestic Costs, the project cost is imported from each of the Non-Domestic Tabs. The applicant can then add VAT, Project Management, Design Fees and M&V fees as applicable. The applicant also outlines the % Grant being requested and the beneficiary of the grant for each of the Non-Domestic projects. **Note:** For Measurement and Verification costs, the costs of the equipment are placed as a projects costs in the Non-Domestic Tab. However, the cost of producing the Measurement and Verification report should be entered as a cost under Project Management Cost.

2) For the Domestic Costs, the applicant must select the Residential Category, which subsequently details the maximum % funding possible, the applicant then completes the % funding requested. Where the % funding requested is greater than the maximum % funding available the grant amount is defaulted to zero.

Better Energy Communities Programme - Domestic Costs
Transfer costs to table A3 in application form

	Address	Project Category	Combined Fabric Upgrade	Maximum % funding possible	% funding requested
1		Energy Poor Homes : Local Authority		50%	35%
2		Energy Poor Homes : Local Authority		80%	50%
3		Energy Poor Homes : Housing Association		50%	0%
4		Energy Poor Homes : Private		35%	0%
5		Non-Energy Poor Homes : Local Authority		65%	0%
6		Non-Energy Poor Homes : Housing Association	No	50%	0%

Figure 7

The applicant must then enter the Project Cost and the beneficiary of the grant under each residential category. The applicant can then add VAT, Project Management and Domestic BER costs as applicable.

	Values automatically brought in from 'Non Domestic' - '20' and 'Domestic' sheets		Electrical Savings kWh	Thermal Savings kWh	Fleet Savings kWh	Renewable s Savings kWh	Carbon Savings KgCo2	Payback on investment	Electrical savings £	Thermal Savings £	Fleet Savings £	Renewable Savings £	Energy Credits	Cost per Primary kWh
	Facility Name	Project Category												
1	Unit A	Other Community buildings & s	-	100,000	-	-	20,500.00	10.09	-	10,000.00	-	-	100,000	1.00
2	Library B	Educational (Library / School	10,000	-	-	-	5,280.00	-	2,000.00	-	-	-	25,000	0.00
3	Leisure Centre C	Sports & Leisure Centres	-	10,000	-	-	2,050.00	-	-	1,000.00	-	-	10,000	0.00
4	Mixed Use D	Mixed Social Buildings	10,000	10,000	-	-	7,380.00	-	2,000.00	1,000.00	-	-	35,000	0.00
	Residential	Non Energy Poor						19.93		6,345.63			88,750	1.42
	Residential	Energy Poor						14.14		25,382.50			355,000	1.00
	TOTALS		20,000.00	120,000.00	-	-	35,180.00	28.24	4,000.00	18,345.63	-	-	613,750	0.98

Figure 8

The Final section (Figure 8) contains a summary of all the data relating to the energy savings for each of the domestic and Non-Domestic projects, including delivered energy savings, CO2 savings, running cost savings, payback, energy credits and Cost/ kWh.

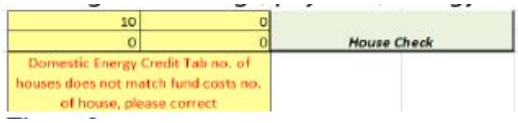


Figure 9

There is also a comparison table (Figure 9) between the number of houses split between Energy Poor and Non-Energy Poor for the Domestic Energy Credit Tab and Project cost inputs. This must be corrected where an error appears.

4. Domestic Energy Credit Tab

The Domestic Energy Credit tab is where the applicants provide details of each of the domestic projects proposed in the application.

Figure 10

The **Domestic Energy Credit Tab** is divided into 8 sections that allows 8 different project types to be entered. Figure 10 shows details that must be completed for each project.

1) The applicant must select the "Energy Supplier" from a drop-down menu to which the energy credits will be assigned (see Figure 11):

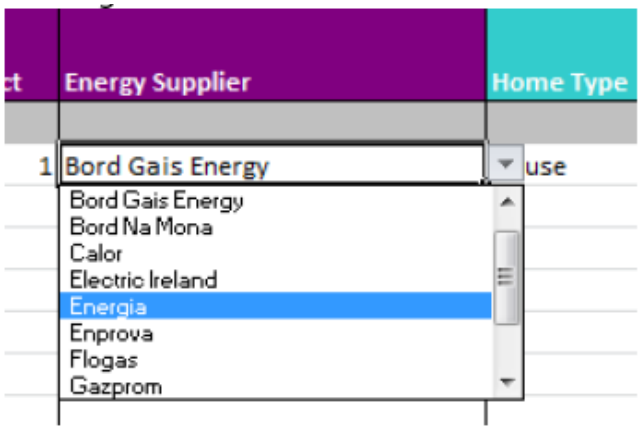


Figure 11

2)The dwelling type is selected from a drop-down menu as shown in Figure 12:

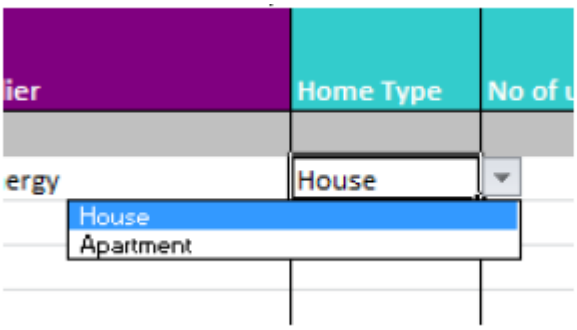


Figure 12

3) The number of dwellings that are to be upgraded are entered.

4) The ownership of the dwelling is entered (see Figure 13):

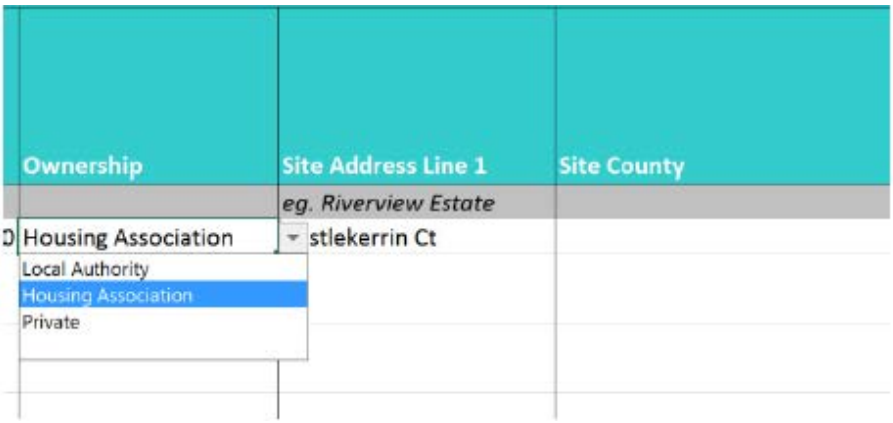


Figure 13

5) The address and county of the project are provided by the applicant.

6) The number of energy poor dwellings that are to be upgraded are entered.

7) The existing primary energy use is automatically completed based on the number and type of dwellings.

8) The applicant then selects the upgrade work proposed from a drop-down menu, this automatically calculates the "Credits per Measure", as shown in Figure 14.

Measure	Credit of measure	No of Units Upgrade Implemented	No of Energy Poor Homes Upgrade Implemented	Total Credits - All Homes	Total Credits - Energy Poor Homes	Cost	NEP cost	EP costs
Published Measures								
Combined Fabric Upgrade	9400	5	5	47000	47000	€10,000.00	€0.00	€50,000.00
Combined Fabric with Heating System A (Oil/Gas Boiler)	13100	5	5	65500	65500	€13,000.00	€0.00	€65,000.00
Combined Fabric with Heating System B (Heat Pump/ Biomass)	16750	5	5	83750	83750	€18,000.00	€0.00	€90,000.00
Roof Insulation External Wall Insulation Internal Dry Lining Wall Insulation	14150	5	0	70750	0	€15,000.00	€75,000.00	€0.00
Combined Fabric with Heating System B (Heat Pump/ Biomass) + Solar Thermal	17800	5	0	89000	0	€20,000.00	€100,000.00	€0.00
Not Applicable	0			0	0		€0.00	€0.00
Not Applicable	0			0	0		€0.00	€0.00
Not Applicable	0			0	0		€0.00	€0.00
Not Applicable	0			0	0		€0.00	€0.00
Not Applicable	0			0	0		€0.00	€0.00
Not Applicable	0			0	0		€0.00	€0.00
Alternate Measures	Enter Credit							
Enter alternate measure details				0	0		€0.00	€0.00
Total Number of Credits				356000	196250		€175,000.00	€205,000.00

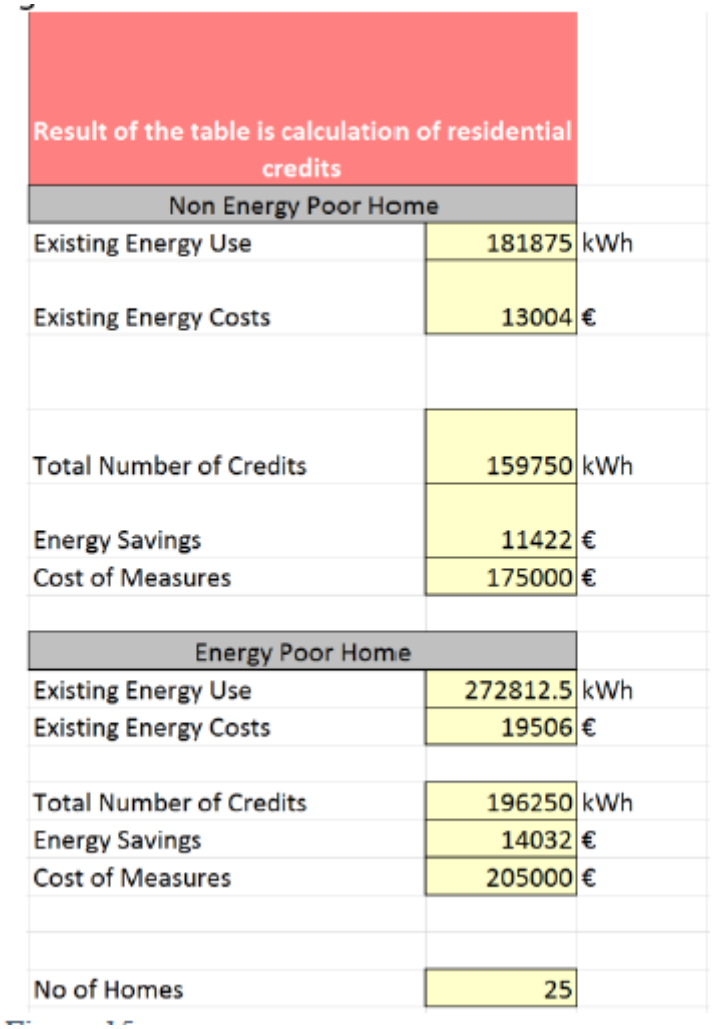
Figure 14

9) The applicant then enters the number of units and energy poor homes within the project that will be upgraded with the selected measure. The tool automatically calculates the total credits for the number of units and energy poor homes.

10) The applicant also enters the average cost for the measure (average across all the dwellings within the project). For example, if wall insulation is the proposed upgrade and the cost is €20,000 for 10 houses, then €2,000 per house is entered.

11) Applicants can also enter an “Alternate Measure”, this is a measure that is not included in SEAI’s published Domestic Credits, for example Photovoltaics. The applicant enters details of the measure and the associated credits and these must be verified during the evaluation process.

The total energy credits and costs are automatically completed based on the measure and number of dwellings.



Result of the table is calculation of residential credits		
Non Energy Poor Home		
Existing Energy Use	181875	kWh
Existing Energy Costs	13004	€
Total Number of Credits	159750	kWh
Energy Savings	11422	€
Cost of Measures	175000	€
Energy Poor Home		
Existing Energy Use	272812.5	kWh
Existing Energy Costs	19506	€
Total Number of Credits	196250	kWh
Energy Savings	14032	€
Cost of Measures	205000	€
No of Homes	25	

Figure 15

The closing section (Figure 15) contains a summary of the data entered for the non-energy poor and energy poor homes, including existing primary energy use, existing energy costs, energy credits and energy cost savings. The applicant has no inputs in this section.

5. Non-Domestic Tab

The Non-Domestic tab is where the applicants provide details of each of the Non-Domestic projects proposed in the application.

The Non-Domestic tab is divided into 3 sections.

- The project summary section (Figure 16) details the existing building and current energy use.
- The energy savings section (Figures 18 & 19) details the proposed upgrades.
- The occupancy section (Figure 20) details the current occupancy use in the building.

Project Category	Public Sector Buildings & Services		
Facility Name	*County Hall*		
Address	*1 Main Street, Mullingar, West Meath*		
Organisation	*West Meath County Council*		
Brief description of the facility	*County Hall building which contain offices and public counters on the ground floor. Basement carpark below the building.*		
Year of Construction	*1970*		
Floor Area of building	10500		
Occupancy Hours (hrs)	3,120.00		
Current Annual Electrical Use kWh/yr	1150000	2875000	Primary Annual Electrical Use kWh/yr
Current Annual Thermal Use kWh/yr	2250000	2250000	Primary Annual Thermal Use kWh/yr
Current Annual Fleet Use kWh/yr	0	0	Primary Annual Fleet Use kWh/yr

Figure 16

1) The Project Category is selected from a drop-down menu:

Figure 17

2) The Facility Name, Address, Organization and description of facility are provided by the Applicant for each Non-Domestic project.

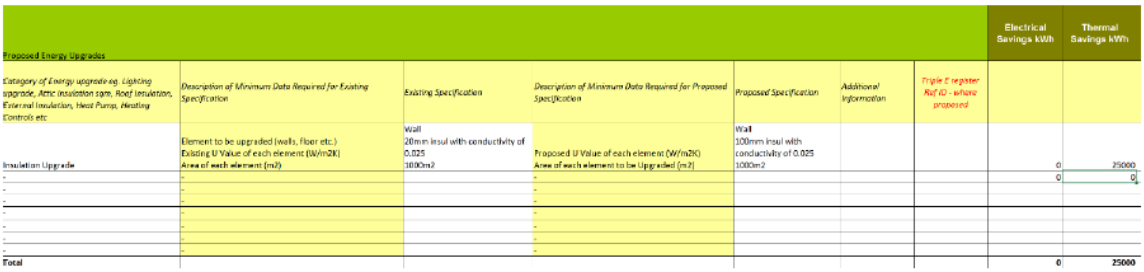
3) The Year of Construction of the facility is an estimate of the building age.

4) The Floor Area of building is the total floor area of the facility and not just the area of the upgrade.

5) The "Occupancy hours" field is automatically completed (see Figure 19 for more details)

6) Current Annual Electrical, Thermal and Fleet Use should be taken directly from utility bills (or existing meter/monitoring systems) for the previous year. Fleet use is only required where proposed energy savings relate to fleet.

7) Primary Annual Electrical, Thermal and Fleet Use are automatically completed based on current energy use multiplied by the Primary Energy Factor.



Proposed Energy Upgrades							Electrical Savings kWh	Thermal Savings kWh
Category of Energy upgrade eg. Lighting upgrade, Attic insulation 50m, Roof insulation, External insulation, Heat Pump, Heating Controls etc	Description of Minimum Data Required for Existing Specification	Existing Specification	Description of Minimum Data Required for Proposed Specification	Proposed Specification	Additional Information	Triple E register Ref ID - where proposed		
Insulation Upgrade	Element to be upgraded (walls, floor etc.) Existing U Value of each element (W/m2K) Area of each element (m2)	Wall 20mm insul with conductivity of 0.025 1000m2	Proposed U Value of each element (W/m2K) Area of each element to be Upgraded (m2)	Wall 100mm insul with conductivity of 0.025 1000m2			0	25000
-	-	-	-	-			0	0
-	-	-	-	-				
-	-	-	-	-				
-	-	-	-	-				
-	-	-	-	-				
-	-	-	-	-				
Total							0	25000

Figure 18

The energy savings section (Figures 18 & 19) is divided into four sections as follows:

1) The applicant must provide details of the proposed energy upgrades. The category of each upgrade should be identified, for example insulation upgrade, lighting upgrade etc.

The existing specification and proposed specification of the upgrade is also completed by the applicant, including the reference ID for the Triple E register where proposed. The tool gives the minimum data that must be provided for each proposed measure:

Measure:	Existing Specification	Proposed Specification-
Aeration Upgrade	Provide technical data of existing system	Provide technical data of proposed system
AHU	Flow Rate of Unit (m3/s) Motor Size (kW) Variable Speed Drive Yes/ No Heat Recovery Present Yes/ No Efficiency of Heat Recovery if present (%)	Flow Rate of Unit (m3/s) Motor Size (kW) Variable Speed Drive Yes/ No Heat Recovery Present Yes/ No Efficiency of Heat Recovery if present (%) **Note:** **1) Where the flow rate does not meet the existing specification design details need to be provided demonstrating reduced flow rate is applicable to the space.** **2) Where a VSD is introduced, design details to be provided demonstrating conditions in space served by AHU can be maintained.**
Biomass Boiler	Type of Heating System Efficiency of Existing System (%) Capacity of Existing System (kW)	Efficiency of Proposed Boiler (%) Capacity of Proposed Boiler (kW) % of heating/hw energy served by proposed boiler **Note:** **1) Where the capacity of existing system is unknown, the applicant must provide detail design showing that new system can meet demand of building.** **2) Where capacity of new system is less than existing system, the applicant must provide detail design showing that new system can meet demand of building.**
Heating Controls	Details of Time and Temperature controls	Proposed Time and Temperature Controls Schematic of heating arrangement showing proposed controls

Cooling Upgrade	Type of cooling system COP of existing cooling system Capacity of existing cooling system (kW)	Type of proposed cooling system COP of proposed cooling system Capacity of proposed cooling system (kW) **Note:** **1) Where the capacity of existing system is unknown, the applicant must provide detail design showing that new system can meet demand of building.** **2) Where capacity of new system is less than existing system, the applicant must provide detail design showing that new system can meet demand of building.**
Cooling Controls	Details of Time and Temperature controls	Proposed Time and Temperature Controls Schematic of heating arrangement showing proposed controls
CHP	Existing Heating System Capacity of Existing System Efficiency of Existing System	Heating Capacity (kW) Electric Capacity (kW) Heating efficiency Electric Efficiency Expected run hours of CHP

2) The applicant provides the proposed energy savings for each of the upgrades.

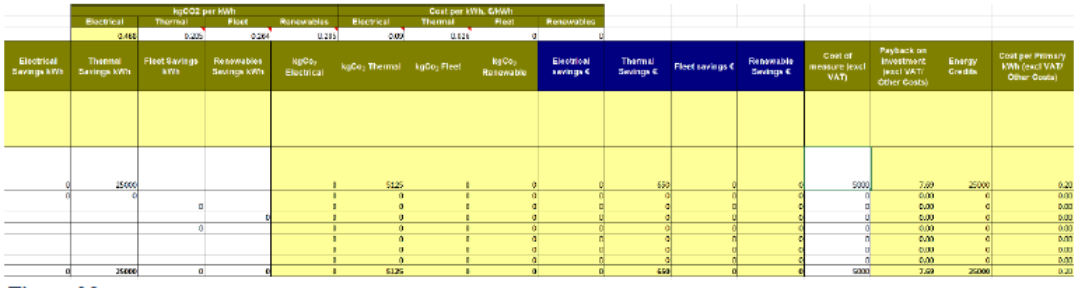


Figure 19

3) The applicant enters the kgCO2 per kWh for each element, for example for the thermal the applicant should adjust the figure based on which fuel is used oil, gas etc. Similarly, where renewable energy is introduced the applicant edits the CO2 figure based on what the renewable technology is replacing. For Solar Thermal, it would be based on heating fuel, for a wind turbine/ PV it would be based on electricity. The tool will then calculate the CO2 savings for each of the energy upgrades. The applicant also enters the Cost per kWh for each fuel type. This should be based on the utility bills for the Non-Domestic project (i.e. the cost of the utility bill divided by the kWh for the bill). **NOTE:** The values currently entered are conservative based on High Energy Users, the applicant can use alternative costs from SEAI published fuel costs:

http://www.seai.ie/Publications/Statistics_Publications/Fuel_Cost_Comparison/

The running cost savings are automatically completed by the tool.

4) In section 4 the applicant enters the cost of the measure excluding VAT. Based on the data completed by the applicant the tool calculates the payback, energy credits and Investment Cost/ Primary kWh saved.

For the occupancy section (Figure 20) the applicant provides details of the typical hours of occupancy for each day during the heating and non-heating season.

occupancy rates of subject building (hours)										
		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	sub-total	total
heating season (oct - march)	No of Hrs	12	12.00	12.00	12	12.00	0	-	60.00	1,560.00
non-heating season (april - sept)	No of Hrs	12	12.00	12.00	12	12.00	0	-	60.00	1,560.00

Figure 20