SRF Optimiser

Version: ESOS Format Report

User Guide – 2015

24 November 2015

SRF Optimiser – User Guide

This tool models current and future greenhouse gas emissions (GHG) and their associated financial/energy implications for a company's road freight transport operation. These emissions can be reduced by the application of a range of technologies and management practices. A total of 29 carbon-reducing measures have been identified using exisiting research and company experience. By modelling the effects of these measures individually and in various combinations, the tool allows you to prioritise carbon-reducing measures and thus help you to develop a 'decarbonisation strategy' for road freight transport operations.

This version of the tool provides an **energy savings report to help with the requirements of the Energy Savings Opportunity Scheme (ESOS)**, which is a mandatory energy assessment scheme for organisations in the UK that meet the qualification criteria.

A step by step guidance on how to navigate across the tool is presented in this user guide. There are mainly four pages where a user can access/enter/change information:

1) **Members Login**: Create login profile
2) **Data Input**: Enter fleet profile
3) **Calculator**: Displays prioritised list of carbon-reducing measures with their associated carbon, fuel and energy savings
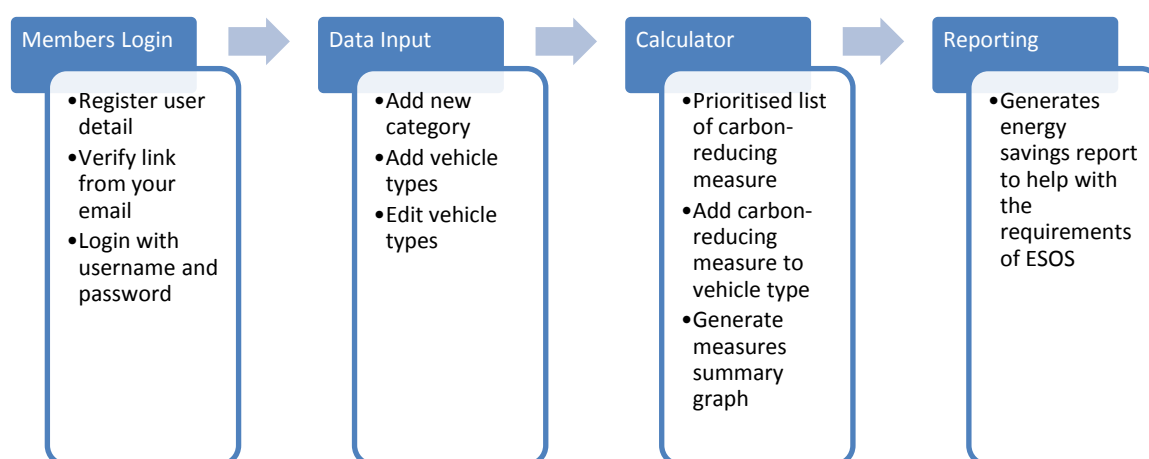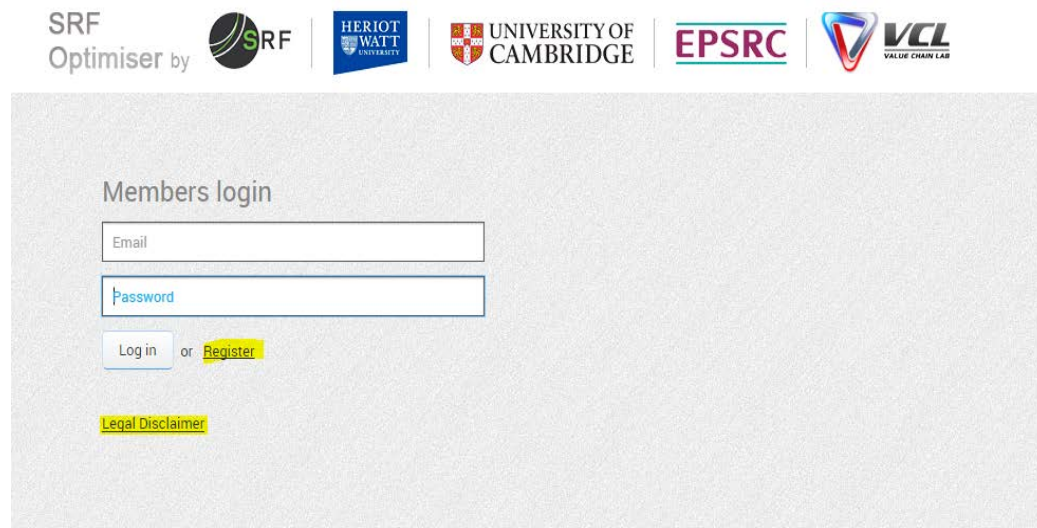4) **Reporting**: Generates ESOS format report based on selected carbon-reducing measures

Members Login	Data Input	Calculator	Reporting
• Register user detail • Verify link from your email • Login with username and password	• Add new category • Add vehicle types • Edit vehicle types	• Prioritised list of carbon-reducing measure • Add carbon-reducing measure to vehicle type • Generate measures summary graph	• Generates energy savings report to help with the requirements of ESOS

Figure 1: General steps

Browser compatibility: *Google Chrome, Internet Explorer 10 or higher, Safari, Mozilla Firefox*

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1. Members Login:

A user can create their user profile on this page. Step by step guidance is given below:

1.1 Click on **'Register'** link (*see Screenshot 1*).
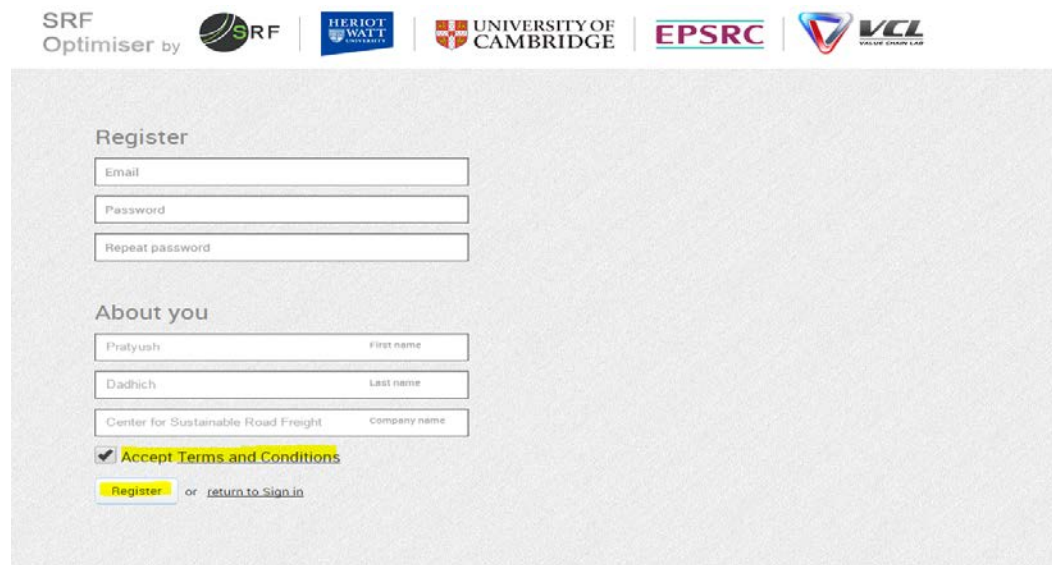
Screenshot 1: User registration

1.2 Enter registration details (*See Screenshot 2*).

Screenshot 2: Register Page

1.3 Read **'Terms and Conditions'** by clicking on the link.

1.4 If you accept terms and conditions, click on checkbox **'Accept Terms and Conditions'**.

1.5 Click on **'Register'** button to receive a verification link on your email ID.

1.6 Verify user details by clicking on the link in your mail.

1.7 The web link will direct you to the 'Members Login' page.

1.8 Enter your email ID and password.

1.9 Click on **'Login'** button to access the SRF Optimiser tool.

2. Data Input

On successful members login, the tool will direct user to **'Data Input'** page (*see Screenshot 3*). All the information entered in the SRF Optimiser tool will be saved automatically in this profile and can be accessed at any stage by logging in. The user can see their profile name on the top right of the screen. Also, a user can logout at any stage by clicking on **'Logout'** link. Step by step guidance on how to enter data on this page is given below:

Screenshot 3: Data Input

2.1 **Fuel Cost Input** – This section provides default fuel cost values for Diesel (£ per litre), Bio diesel (£ per litre), Electric (£ per kWh), CNG (£ per Kg) and LNG(£ per Kg) from secondary sources. The values can be changed by clicking on the default cost provided.

2.2 **Macro Input** - Default discount factor (The percentage rate required to calculate the present value of a future cash flow) is provided from a secondary source, user can overwrite their values by clicking on default percentage. The other Macro Inputs - *Prioritisation, Period, Carbon targets, Fuel consumed, Total distance and Fuel economy* are currently disabled in this version.

2.3 **Add new category** – Clicking on 'Add new category' will allow users to give a name to their fleet. Naming a category helps in identifying the fleet. For example, a user can name fleets being operated from various depots in the country such as depot A

(Manchester), depot B (Livingston) and depot C (Milton Keynes). The name of the new category will appear on the 'Data Input' page. This name can be edited by clicking on **'pencil'** mark or deleted by clicking on **'x'** button. The number displayed before the category name shows the number of vehicle types in that category.

2.4 **Add vehicle type** – Under a category, user can add their fleet information by clicking on **'Add vehicle type'** button. This will open a form on the right side of the screen to enter fleet profile. The user can specify the characteristics of the fleet in various ways. At the most aggregated level, the user can treat it as a single entity and enter only one row of values. If the fleet comprises one type of vehicle undertaking very similar delivery operations this would be the most suitable option. If, however, the user operates a mixed fleet engaging in different types of distribution, it would be advisable to differentiate the various classes of vehicle and/or distribution operation by clicking **'Add vehicle type'**.   If the user operates a small fleet, they may even wish to enter data for individual vehicles, each listed on a separate row by adding more vehicles through **'Add vehicle type'**. Table 1 provides more details on vehicle type inputs below:

Name	Enter a name to describe vehicle type
Vehicle Type	Select a vehicle type from dropdown box
Emission Standard	User can identify their emission standard from dropdown box. This selection is used as text only.
Tyres	Enter number of tyres used in a single vehicle
Trasmission Type	Enter transmission type used in a single vehicle
Type of Operation	Enter type of operation. If your fleet is involved in a mix of operations then select regional distribution.
Number of vehicles	Enter number of vehicles in this vehicle type
Fuel Type	Enter type of fuel from dropdown box
% of Diesel used	**Diesel:** Enter 100% (includes standard biofuel mix) **Biodiesel:** if 5% bio, enter diesel used as 95%. Similarly, if 10% bio, enter diesel used as 90%. **CNG:** Enter 0% diesel **LNG:** Enter 0% diesel **Diesel + CNG:** Enter % of diesel substitution. Default substitution is 40-50% diesel. **Diesel + LNG:** Enter % of diesel substitution. Default substitution is 40-50% diesel. **Hybrid:** Enter 100% of diesel
Total fuel consumption	Annual fuel consumption by all vehicles in a vehicle type
Total distance	Annual distance travelled by all vehicles in a vehicle type
% increase over total distance/year	Expected increase in vehicle kms in next year or in three years. If you don't expect any increase in kms, enter 0%.

Table 1: Vehicle Type Input

2.5 Click **'submit'** to enter a vehicle type or **'cancel'** if you don't want to enter a vehicle type.

2.6 A vehicle type can be edited by clicking on **'pencil mark'** or deleted by clicking on **'x'**.

2.7 Once the user has entered the data in the 'Data Input', the next step is to click **'Calculator'.**

3. Calculator

This page generates a list of carbon-reducing measures based on the input given by the user in the **'Data Input'** section. This page displays a list of prioritised carbon-reducing measure based on Net Present Value (NPV) under each vehicle type generated using the secondary data of each carbon-reducing measures (*Screenshot 4*). The values associated with the carbon-reducing measures are calculated independently. The selected saving measures summary on the right side of the screen shows cumulative values from selected carbon-reducing measures.

Screenshot 4: of Prioritisation of Interventions

Step by step navigation on this page:

3.1 The user can include measures for reporting by clicking on the **checkbox** under 'Include Intervention'.

3.2 Selection of carbon-reducing measures will generate a graphical summary on the right side of the screen. This summary displays cost saving current year (£) cost saving over 3

years (£), fuel saving per year (litres), energy saving per year (kWh) and reduction in carbon emission (KgCO2) associated with all vehicle types.

3.3 At any point, the user can remove selected carbon-reducing measures by de-selecting carbon-reducing measures **checkbox**.

3.4 A description of carbon-reducing measure can be found by clicking on **'Question Mark'** next to a carbon-reducing measure (*see screenshot 5*).

Screenshot 5: Measure Description

3.5 To edit the default values associated with the carbon-reducing measures, click on **'Advance Tuning'** tool (*see screenshot 6*)**.** The user can see the default values of each measure, customise the results by overwriting default figures by adding their own cost and carbon figures. The carbon-reducing measures related to following alternate fuel vehicles are calculated using base vehicle type entered in the 'Data input'.

- Increase use of electric vehicles
- Increase use of hybrid vehicles
- Increase use of biodiesel vehicles
- Increase use of dual-fuel vehicles (Diesel + CNG)
- Increase use of dual-fuel vehicles (Diesel + LNG)
- Increase use of dedicated natural gas vehicles (CNG)
- Increase use of dedicated natural gas vehicles (LNG)

In order to change default fuel substitution, the user can overwrite expected primary fuel% substitution in 'Primary Fuel %' textbox for biodiesel and dual-fuel vehicles. Click on **'Submit'** to save new figures.

Screenshot 6: Advance Tuning

4. Reporting:

The selected carbon-reducing measures in **'Calculator'** page are displayed as a report. The user should click on the **'Reporting'** button to access the report (*Screenshot 7*). This report displays results in the ESOS template format below:

- Total organisational energy consumption (from all vehicles entered in kWh)
- Total cost-effective energy saving potential identified (cumulative sum of selected carbon-reducing measures in kWh)
- Total cost-effective financial saving identified (cumulative sum of selected carbon-reducing measures in £)
- Net Present Value (£) (LCCA: Life-cycle cost analysis)
- Payback Period (Years) (SPP: Simple payback period)
- Identified Energy Savings (£)
- Identified Cost Savings (£)

Note: "*<Total cost-effective energy saving potential identified (in energy) > and <total cost-effective financial saving identified> shows the cumulative savings of selected measures. This will differ from the values of selected individual measures which are calculated independently*".

Screenshot 7 ESOS Report Format

This report can be customised by adding 'Name of Organisation' and 'Total energy consumption assessed'. Upon entering the customisation details in the fields marked "please enter", a user can then download the report by clicking on **'Export to XLS'**. This will create a spreadsheet for filing and further use.