



# APPLICATION MANUAL

For HAWKER® EDGE™ login credentials, contact Scott Hamlin (HAWKER Product Manager).

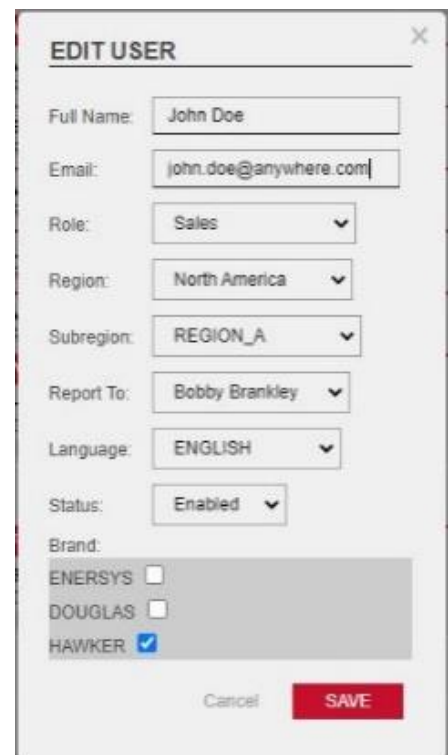
- 423-238-0333, or
- [scott.hamlin@hawkerpowersource.com](mailto:scott.hamlin@hawkerpowersource.com)

### User Suggestions

- HAWKER® EDGE™ works best using the Google Chrome browser.
- While the tool is responsive to screen size, we recommend using a desktop or laptop computer.

## LOG-IN

- Visit <https://www.hawkerese.com/hawkeredge>
- Enter username and password and click LOGIN.
- To edit your user information, click USER ACCOUNT in the first gray, vertical bar on the left-hand side of the page. Click the PENCIL icon and the screen to the right will pop up.
- On this screen, users can change their password and select their preferred language.




The screenshot shows a web form titled "EDIT USER" with a close button (X) in the top right corner. The form contains the following fields and options:

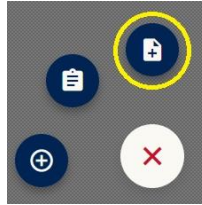
- Full Name:
- Email:
- Role:
- Region:
- Subregion:
- Report To:
- Language:
- Status:
- Brand:  ENERSYS,  DOUGLAS,  HAWKER

At the bottom of the form, there are two buttons: "Cancel" and "SAVE".

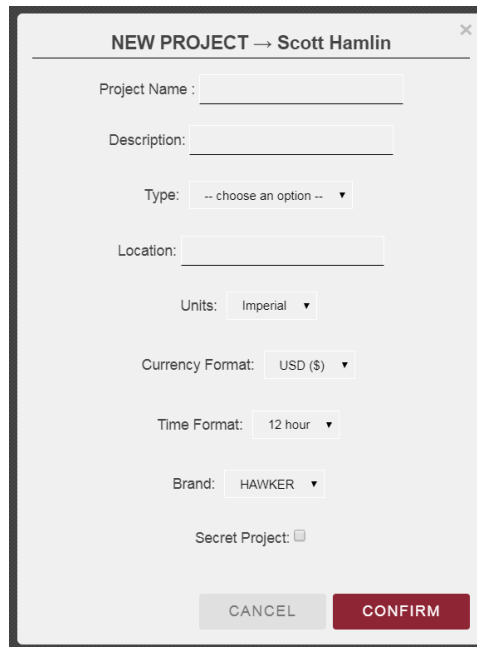
## FEASABILITY AREA (PROJECT MANAGEMENT)

### Create A New Project

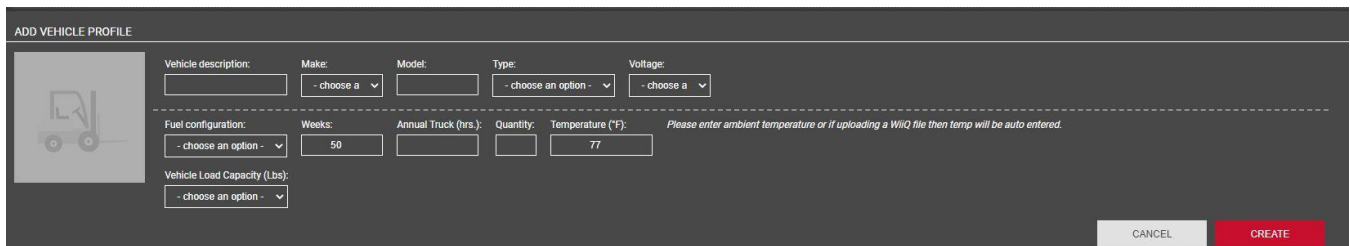
1. Start a new Project by clicking the  button. Move your mouse over each blue icon to see a description. Select the icon that says NEW PROJECT.



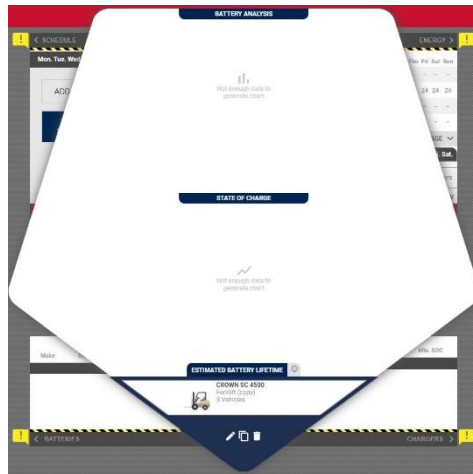
2. The screen below will pop-up. Fill in all fields.



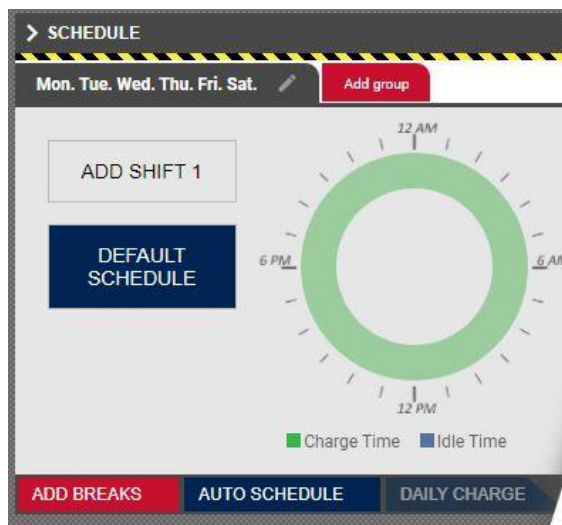
3. Select CONFIRM when everything has been entered.
4. Next, select ADD A VEHICLE PROFILE to your project. Fill in all pertinent information about the vehicle.
5. Select CREATE when you are finished.



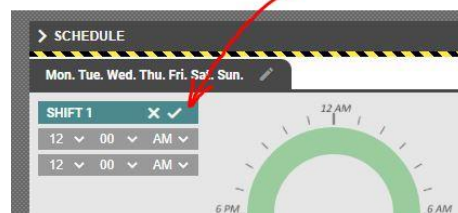
6. To enter truck usage information, click FEASIBILITY MODEL. This screen will come up:



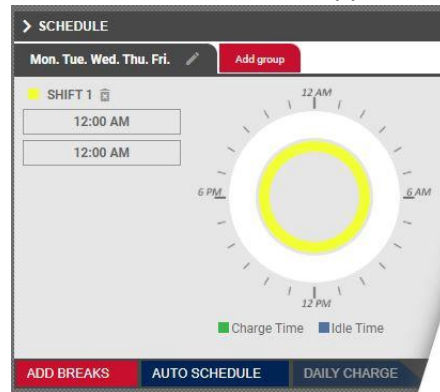
7. There are 4 parameters that can be edited. Select the word next to the yellow warning icon on each corner to enter information. Parameters are SCHEDULE, ENERGY, BATTERIES, and CHARGERS.



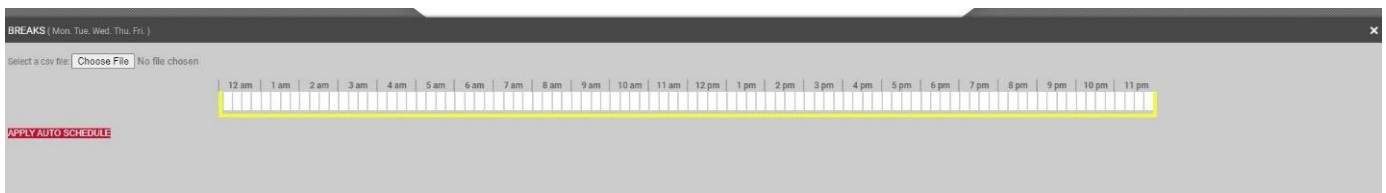
- a. AUTO SCHEDULE: Start with SCHEDULE. There are two ways SCHEDULE can be entered. One is automatically with Event Mode data from the BBWC Reporting Suite software and the other is manually by entering the work days, break and charge times.
- i. First enter a shift (default is fine). Click ADD SHIFT 1 and click check icon.



- ii. The screen below should appear. (Shift is from 12:00 AM to 11:59 PM)



- iii. Select the AUTO SCHEDULE button and the screen below will appear:



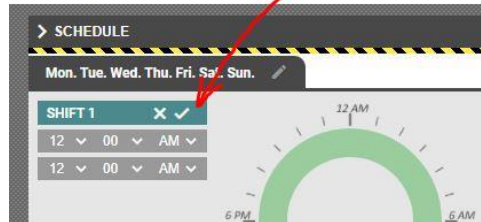
- iv. Select the CHOOSE FILE button and navigate to select previously exported Event Mode data from BBWC Report.
1. If you are not familiar with this in the BBWC Reporting Suite software, HAWKER® EDGE™ requires Event Mode data so the BBWC must be set to Event mode for a period of time. Make sure to use BBWC Report version 5.5.3 or later or the file will not be compatible with HAWKER® EDGE™.
  2. Scan for batteries and select the battery that you want to add data from and add it to the site.
  3. Go to the Event tab in BBWC Report and verify the data loaded.
  4. Hit the Excel icon and save the file on your PC.



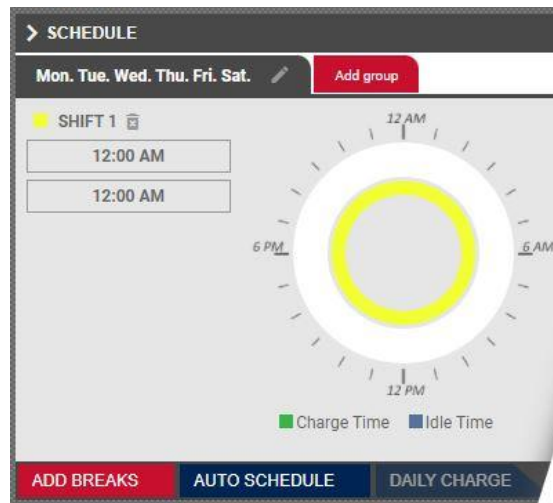
- v. Select the red APPLY AUTO SCHEDULE button to import data. This will populate the schedule into the BREAKS window.
- vi. This will set schedule, energy, and temperature. The program uses the day with the maximum consumption to set schedule and uses energy consumption from that day in the ENERGY pullout. Temperature is the average temperature during charge. You can manually adjust by adding or deleting any breaks or charges as needed.

b. MANUAL ENTRY OF SCHEDULE:

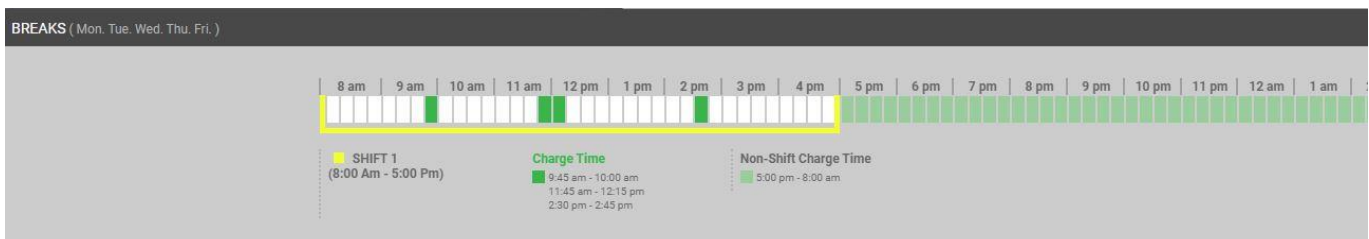
- i. Select days of the week for the first schedule by clicking the pencil icon. Days showing to the left are operation days. To remove a day, click on the day label. When you are finished, click the check icon.



- ii. Edit shift information by clicking ADD SHIFT. Adjust your shift times and click the check icon. Add up to 3 shifts. To remove a shift, click the trashcan icon next to the shift title.



- iii. Add breaks by selecting ADD BREAKS at the bottom of the section. Click the time blocks and select CHARGE TIME, IDLE TIME, or CLEAR BREAK. To select multiple blocks at once, hold down your mouse button and hover over blocs desired. Click the X to the right of the screen to close when finished.



- iv. If there are different schedules on different days, the software will allow you to have up to two different groups. To add a schedule for the remaining days, select ADD GROUP. If all days are the same then ADD GROUP is not used.

c. ENERGY:

- i. Enter energy usage by selecting PER DAY, PER SHIFT, or PER HOUR. Enter information for all groups if schedules differ during days of the week. Click APPLY when you're finished.
  1. If using Per Day, there is a calculator icon that will show details on how data is calculated if APPLY AVERAGE VALUE is selected. This feature will use base energy usage on the vehicle parameters entered (weeks and annual truck hours). Otherwise, this information can come from BBWC data or can be entered it manually.

The screenshot shows the 'ENERGY' settings screen. At the top, there's a header 'ENERGY' with a back arrow. Below it is a table with columns for days of the week (Mon, Tue, Wed, Thu, Fri, Sat, Sun) and rows for 'Scheduled hours', 'Charging hours', 'Idle hours', and 'Avg. Amps per running hours'. The 'Scheduled hours' row shows 8 for Mon-Fri and -- for Sat-Sun. The 'Charging hours' row shows 16 for Mon-Fri and 24 for Sat-Sun. Below the table is a 'SET ENERGY USAGE' dropdown menu with a yellow button for 'Mon. Tue. Wed. Thu. Fri.'. Underneath is a calculator section with a calculator icon, a 'Per Day' dropdown, an input field, and the label 'Ampere-hours'. Below the input field, it says '= 0 Ah / 0 kWh per day @ 48V'. At the bottom, there are two buttons: 'See Calculations' and 'APPLY'.

*\*Note – When you select Per Hour it defaults to Annual hrs (comes from data about truck). If you want it based on the scheduled work hours, select that button.*

The screenshot shows the 'SET ENERGY USAGE' screen. At the top, there's a header 'SET ENERGY USAGE' with a dropdown arrow. Below it is a yellow button for 'Mon. Tue. Wed. Thu. Fri.'. Underneath are two radio button options: 'Annual hrs.' (selected) and 'Schedule hrs.'. To the right of the 'Annual hrs.' option is a 'Per Hour' dropdown, an input field, and the label 'Ampere-hours'. Below the input field, it says '= 0 Ah / 0 kWh per day @ 48V'. At the bottom, there are two buttons: 'See Calculations' and 'APPLY'.

d. BATTERIES: Select ADD BATTERY.

- i. Select a battery option from the CLASS dropdown. Select a battery brand from the Family dropdown. Select the battery model from the MODEL dropdown. Then hit ADD SELECTED.
- ii. Multiple batteries can be added.
- iii. Select a battery by clicking the circle in the USE column. Remove a battery by clicking the red X icon at the end.
- iv. There is also an option to select FULL SEARCH. When you do this a table pops up with much more detail about each battery.

Make	Series	Model	Ah	kWh	Warranty Daily Limit (%)	Use
HAWKER	FLEX	48V 24-FLX770-43	770	36.96	160	<input type="radio"/> <input checked="" type="checkbox"/>
HAWKER	NEXSYS ION	48V 48-L1-66-34.0	666	31.97	300	<input checked="" type="radio"/> <input checked="" type="checkbox"/>
HAWKER	POWERLINE	48V 24-125F-17	1000	48	160	<input type="radio"/> <input checked="" type="checkbox"/>

> BATTERIES + ADD BATTERY

e. **CHARGERS:** Select ADD CHARGER.

- i. Select the proper VAC for the facility in the Facility VAC dropdown.
- ii. Chargers displayed are compatible with the battery selected. If the charger you are looking for is not listed, there are options to select VIEW INCOMPATIBLE CHARGERS, VIEW INADEQUATE CHARGERS, or FULL SEARCH. The color next to each charger displays indicates if it is INADEQUATE, MARGINAL, or OPTIMAL for your operation.



- iii. Select a charger by clicking the check box and then hit APPLY.
- iv. Multiple chargers can be added.
- v. If multiple chargers are added, click the check box in the USE column to select one. To remove a charger, click the red X icon to the left of the line.

Use	Charger	Max. Current at 36V	Max. battery accepts at 770 Ah	Effective Start Rate	Min. SOC
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	LPM3-48F-320Y	320 A	308 A	40%	37%

Inadequate (SOC < 20%)  Marginal (SOC between 20-35%)  Optimized (SOC > 35%)

+ ADD CHARGER CHARGERS <

- Close all pop-outs to see battery and State of Charge (SoC) data for the timeframe selected.



- Growth factors and charge times can be adjusted by using the sliders in the middle of the data.
- For more information on specific data, hover over points in the graphs.

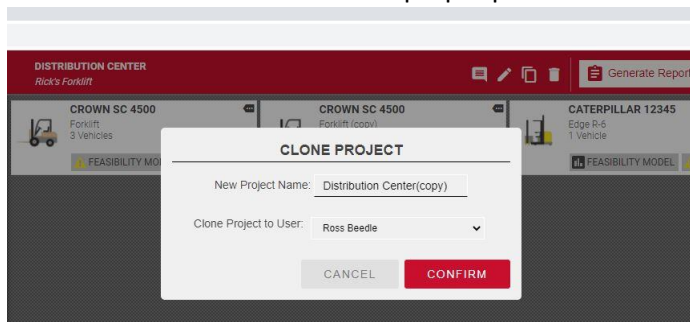
## Project Management

To view all projects, click PROJECTS on the second gray bar to the left.



At the top, in the red area select one of the 4 icons:

- Click the CHAT BUBBLE icon to add a comment about the project.
- Click the PENCIL icon to edit the project information.
- Click the DOUBLE SQUARE to clone the project. You can clone it to yourself or send the project to someone else. Users with the proper permissions will be displayed in the list.



- Click the TRASH CAN to delete the project.
- Click GENERATE REPORT to put the project into a Report format.
  - Select the forecast duration from the drop down, then click confirm.



- b. To print the report, click the PRINTER icon.
- c. To create a PDF, click the PRINTER icon and then select SAVE AS PDF from the Destination dropdown.
6. To request an approval from another team member using HAWKER® EDGE™, click REQUEST APPROVAL.
  - a. All requests are sent to [scott.hamlin@hawkerpowersource.com](mailto:scott.hamlin@hawkerpowersource.com). If a manager's email is entered, they will be cc'd as well.
  - b. We don't require approval for designs but can be used if you have questions about a particular project.
7. To add another vehicle to the project, click ADD VEHICLE PROFILE.

In the gray area to the left of the screen:

- Click the DOWN ARROW icon to download the list of all projects.
- Click the CIRCLE ARROW icon to refresh the column.

To close this section, click the LEFT FACING ARROW icon at the bottom of the gray column.

## FINANCIAL AREA

When you are finished with the Feasibility section of a project, HAWKER® EDGE™ can also be used to provide financial information.

1. Click the FINANCIAL button in the upper right-hand area of the screen.

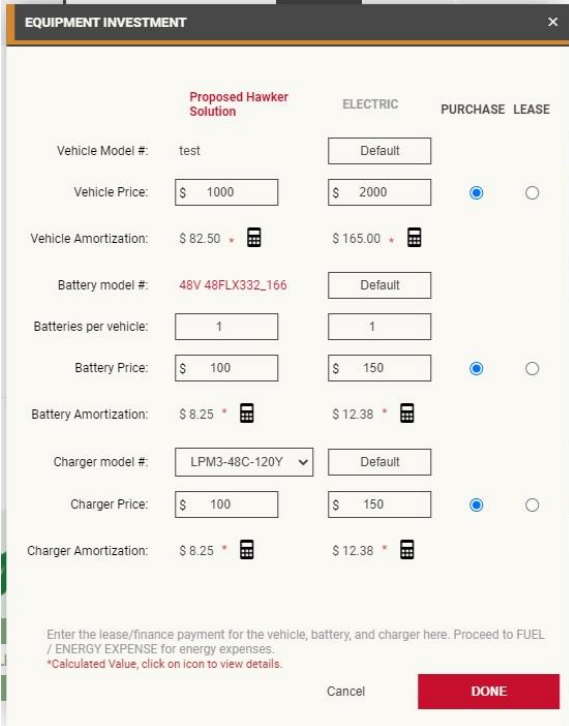


2. A new screen will open that allows vehicle, fleet, and project costs to be entered.
  - i. Parameters such as initial investment and expenses will need to be entered either by vehicle or by fleet.
  - ii. The costs can be reported as monthly or annually.
  - iii. Then it can be viewed by VEHICLE, FLEET, or PROJECT.



- i. When VEHICLE and FLEET are selected, 2 tabs on the left side of the screen will display - ANALYSIS and TCO (Total Cost of Ownership).

1. Analysis will list all project data that has been entered. *(TCO will automatically populate after all costs have been entered. Emission Savings will be included if you are converting from fossil fuel.)*
- ii. When PROJECT is selected, an additional Return on Investment (ROI) tab will display.
  1. *(ROI values will populate after all costs have been entered. Total Years can also be selected under ROI for 1-10 years.)*
3. To enter costs:
  - i. Hover over the white field and click on the PENCIL icon that will appear. Fill in all information. (Required information will have a red \* next to it.)
  - ii. Click on Calculator icons for each entry to lock in the values.
  - iii. Click DONE when all information has been entered.
    - i. *Some suggested defaults if actual values are not known:*
      1. *Propane fuel cost average - \$1.50 per gallon*
      2. *Battery cost per kWh - \$0.085*
      3. *Propane tank change out time - 15 minutes (or possibly even higher)*
      4. *Maintenance cost for batteries - \$1.20 per hour of use per year*
      5. *Maintenance cost for propane - \$1.40 per hour of use per year*




**EQUIPMENT INVESTMENT**

	Proposed Hawker Solution	ELECTRIC	PURCHASE	LEASE
Vehicle Model #:	test	Default		
Vehicle Price:	\$ 1000	\$ 2000	<input checked="" type="radio"/>	<input type="radio"/>
Vehicle Amortization:	\$ 82.50 *	\$ 165.00 *		
Battery model #:	48V 48FLX332_166	Default		
Batteries per vehicle:	1	1		
Battery Price:	\$ 100	\$ 150	<input checked="" type="radio"/>	<input type="radio"/>
Battery Amortization:	\$ 8.25 *	\$ 12.38 *		
Charger model #:	LPM3-48C-120Y	Default		
Charger Price:	\$ 100	\$ 150	<input checked="" type="radio"/>	<input type="radio"/>
Charger Amortization:	\$ 8.25 *	\$ 12.38 *		

Enter the lease/finance payment for the vehicle, battery, and charger here. Proceed to FUEL / ENERGY EXPENSE for energy expenses.  
\*Calculated Value, click on icon to view details.

Cancel **DONE**



**FUEL / ENERGY EXPENSE**

	Proposed Hawker Solution	ELECTRIC
Fuel Cost:	\$ 100 per Battery Ah	\$ 100.00 per Battery Ah
Battery Change / Plug-in:	0 min.	60 min.
Changes Per Day:	0	2
Labor Rate:	\$ 20.00 Cost per hour	\$ 20.00

Consider the impact of taxes and peak rates when inserting cost per kWh. Enter the amount of time, in # of minutes it takes to change or fill a tank (Consider distance to fuel source). Enter in # of minutes to change battery. Enter in a loaded labor rate (including insurance and medical).

Cancel **DONE**

### MAINTENANCE EXPENSE

	Proposed Hawker Solution	ELECTRIC
Annual hours of usage:	5 hrs.	5 hrs.
Vehicle Maintenance: <i>Cost per hour</i>	\$ 50	\$ 100
Vehicle cost for PM: <i>(Annual - See Dealer for pricing)</i>	\$ 50	\$ 100
Battery Maintenance: <i>Annual Cost</i>	\$ 1000	\$ 2000
Watering program: <i>Annual Cost</i>	\$ 500	\$ 700
Charger Maintenance: <i>Annual Cost</i>	\$ 200	\$ 300

Enter vehicle maintenance costs per hour for IC & Electric vehicles in top line. Check with OEM for rates on Planned Maintenance.

Cancel **DONE**

### ADDITIONAL MONTHLY EXPENSES

Misc. Expense Names	Proposed Hawker Solution	ELECTRIC
Default	\$ 0	\$ 0

Remember that these values should be input as MONTHLY costs. Ask questions and consider the safety aspect of converting to electric. Conversion to electric could have a positive impact on insurance, safety, health, as well as in other areas.

Cancel **DONE**

### ANALYSIS TCO

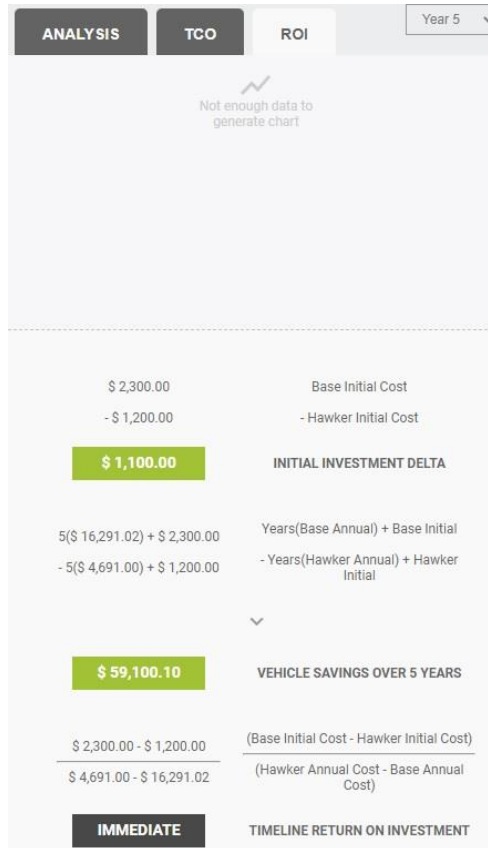
#### Overview

	Proposed Hawker Solution	ELECTRIC
Labor days:	5 days per week	5 days per week
Weeks of operation per year:	50 weeks	50 weeks
Annual hours of usage:	5 hrs.	5 hrs.
Weekly energy required:	0.46 Battery Ah	0.46 Battery Ah
Batteries per vehicle:	1 Battery	1 Battery
Selected Battery Model:	48FLX332_166	Default
Charging methodology:	TPPL BLOC CHARGE	

#### Emission Savings

	Proposed Hawker Solution	ELECTRIC
Weekly Energy Required	0.46 Battery Ah	0.46 Battery Ah
Lbs CO2 / Fuel Unit	x 1.22	x 1.22
Weeks / Year	x 50	x 50
<b>CARBON EMISSIONS ELIMINATED PER YEAR</b>	28.00 Lbs	28.00 Lbs
		<b>0 Lbs</b>





4. To exit the Financial Area, click the LEFT FACING ARROW icon in the upper left-hand corner of the screen.
5. To go back to the Feasibility area, click the FEASIBILITY MODEL button at the top of the screen.

When you are finished using HAWKER® EDGE™ logout by clicking USER ACCOUNT in the first gray vertical bar on the left-hand side of the screen. Click LOGOUT.

For assistance with the HAWKER® EDGE™ data analysis tool, contact:

- Scott Hamlin – [scott.hamlin@hawkerpowersource.com](mailto:scott.hamlin@hawkerpowersource.com) or 423-238-0333
- Mike Eckart – [Michael.eckart@hawkerpowersource.com](mailto:Michael.eckart@hawkerpowersource.com) or 216-870-0353



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AM-HEDGE-AM Rev AB February 2022

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