



LITHIUM VS MULTIBATTERY OPERATION FEASIBILITY ANALYSIS REPORT

Big Building

5K CLAMP E+

5 Vehicles

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Report Date:
2024

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Overview

In this report the we analyze the battery/charging sizing and cost of a Lithium Charge Single Battery Proposal vs a Multiple Battery operation.

The Feasibility report shows the shift schedule and daily use of the site in comparison to the chosen charger and battery. Showcasing the ability to keep up with the demand of the site.

The Financial report inputs the initial equipment cost, the maintenance cost, energy cost, and any other cost associated. Breaking it down over a 36 month lease period. All custom inputs based on the product and the end users inputs.



TOYOTA 8FBCHU25
5K CLAMP TRUCK

Voltage: 48V Quantity: 5
Sit-down Rider

ENERGY

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Scheduled hours	18.00	18.00	18.00	18.00	18.00	18.00	18.00
Adjusted hours	12.36	12.36	12.36	12.36	12.36	12.36	12.36
Charging hours	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Idle hours	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scheduled Avg. Amps per running hours	83.33	83.33	83.33	83.33	83.33	83.33	83.33
Adjusted Avg. Amps per running hours	121.33	121.33	121.33	121.33	121.33	121.33	121.33

SCHEDULE

Mon. Tue. Wed. Thu. Fri. Sat. Sun.

SHIFT 1 (7:00 am - 3:00 pm)

Charge Time	Idle Time
07:00 - 09:00	
SHIFT 2 (3:00 pm - 11:00 pm)	

Charge Time	Idle Time
15:00 - 17:00	
SHIFT 3 (11:00 pm - 7:00 am)	

Charge Time	Idle Time
23:00 - 01:00	

Above shows the end users shift schedule and allotted charge times. Determined from input from the customer.

To the right we see the batteries selected models technology, total daily capacity, and the percentage of that daily capacity used in operation. Above 100% results in overuse and warranty will not be accepted.

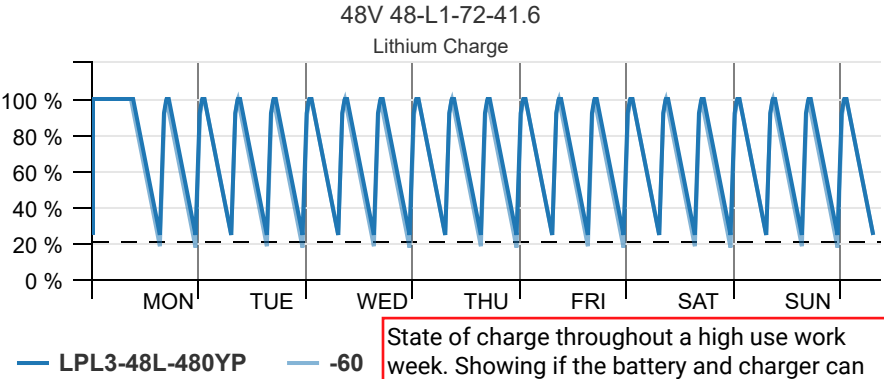
We see that the Lithium batteries offer much higher capacity. There daily capacity is 2x AH. While the the standard lead acid is only 1.2X AH.

FEASIBILITY ANALYSIS REPORT

STATE OF CHARGE

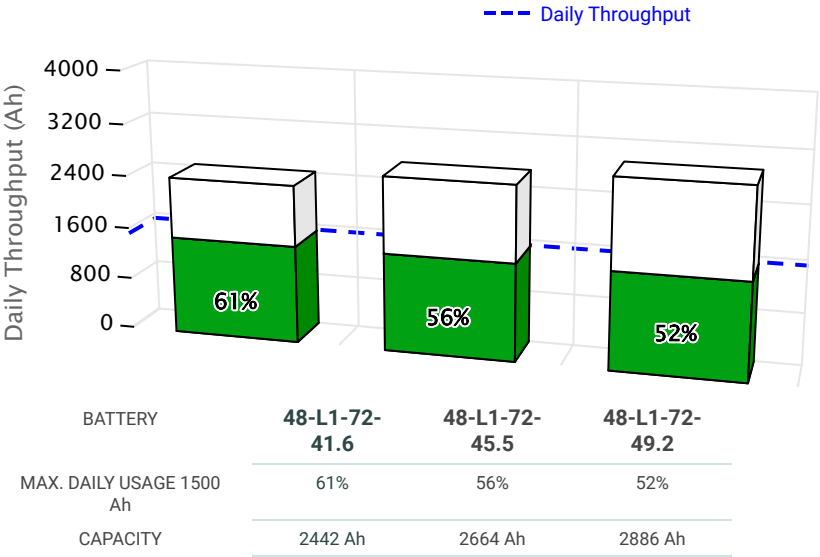
Use	Charger	Max. Current at 48V	Max. battery accepts at 814 Ah	Effective Start Rate	Min. SOC
0	LPL3-48L-480YP	480 A	814 A	59%	25%
0	Inadequate (SOC < 20%)	0	Marginal (SOC between 20-35%)	0	Optimized (SOC > 35%)

Above is the selected charger . It shows the current output of the charger and the percentage that the battery can accept. Lithium Batteries can accept 100% capacity.



BATTERY ANALYSIS

Make	Series	Model	Ah	kWh	Warranty Daily Limit (%)
HAWKER	FLEX Li3	48V 48-L1-72-41.6	814	41.6	300
HAWKER	FLEX Li3	48V 48-L1-72-45.5	888	45.4	300
HAWKER	FLEX Li3	48V 48-L1-72-49.2	962	49.2	300





TOYOTA 8FBCHU25
5K CLAMP TRUCK

FINANCIAL REPORT

OPERATING COST

Proposed Lithium Solution. Broken down into equipment cost, energy cost, maintenance cost, and additional cost related to safety.

APPLICATION ANALYSIS

Vehicle Load Capacity:	4500-6499 Lbs.
Days of operation:	364
Weekly energy required:	252 Battery kWh
Battery model:	48-L1-72-41.6
Batteries per vehicle:	1
Charging methodology:	LITHIUM CHARGE
# of Vehicles:	5

FINANCIAL METHOD

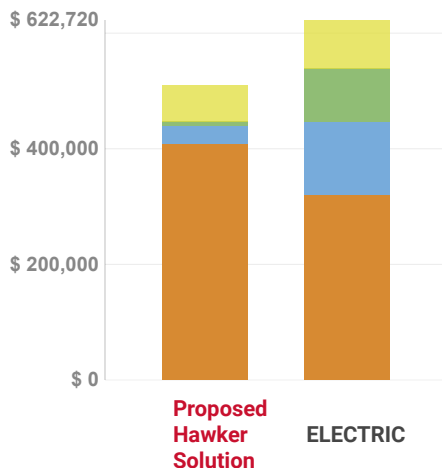
PROPOSED
HAWKER
SOLUTION

ELECTRIC

VEHICLE	LEASE 12 Months 0%	LEASE 12 Months 0%
BATTERY	LEASE 36 Months 0%	LEASE 36 Months 0%
CHARGER	LEASE 36 Months 0%	LEASE 36 Months 0%

Lease period and rate.

FIVE YEAR COST COMPARISON



SUMMARY

Proposed Hawker
Solution

ELECTRIC

INITIAL INVESTMENT SUMMARY
PROJECT

\$ 0.00

\$ 0.00

EQUIPMENT INVESTMENT SUMMARY
ANNUAL / PROJECT

\$ 81,861.00

\$ 64,000.20

FUEL / ENERGY EXPENSE
ANNUAL / PROJECT

\$ 6,133.79

\$ 25,243.83

MAINTENANCE EXPENSE
ANNUAL / PROJECT

\$ 1,500.00

\$ 18,500.00

ADDITIONAL EXPENSES
ANNUAL / PROJECT

\$ 12,540.00

\$ 16,800.00

TOTAL:

\$ 102,034.79

\$ 124,544.03

DETAILS | Annual / Project

Proposed
Hawker Solution

ELECTRIC

INITIAL INVESTMENT SUMMARY

No Upfront Costs Available

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TOTAL:

\$ 0.00

\$ 0.00

LEASE/FINANCE SUMMARY

\$ 81,861.00

\$ 64,000.20

Vehicle Model #: 8FBCHU25

Default

Vehicle Price: \$ 0.00

\$ 0.00

Vehicle Annual Payment: \$ 0.00

\$ 0.00

Battery Price: \$ 203,425.00

\$ 60,000.00

Battery Annual Payment: \$ 61,027.80

\$ 54,000.00

Charger Price: \$ 62,500.00

\$ 30,000.00

Charger Annual Payment: \$ 20,833.20

\$ 10,000.20

FUEL / ENERGY EXPENSE

\$ 6,133.79

\$ 25,243.83

Fuel Cost: \$ 0.08 per Battery kWh

\$ 0.08 per Battery kWh

Battery Change: 0 min.

7 min

Changes Per Day: 0

3

Labor Rate (Cost per hour): \$ 22.00 per hrs

\$ 30.00 per hrs

MAINTENANCE EXPENSE

\$ 1,500.00

\$ 18,500.00

Annual hours of usage: 4500 hrs.

4500 hrs.

Vehicle Maintenance (Per Hour): \$ 0.00

\$ 0.00

Vehicle cost for PM: \$ 0.00

\$ 0.00

Batteries per vehicle: 1 Batteries

3 Batteries

Battery Maintenance (Per Battery): \$ 200.00

\$ 400.00

Watering program (Per Battery): \$ 0.00

\$ 800.00

Charger Maintenance: \$ 100.00

\$ 100.00

ADDITIONAL EXPENSES

\$ 12,540.00

\$ 16,800.00

PPE: \$ 0.00

\$ 60.00

Electrical Savings: \$ 12,540.00

\$ 16,740.00

TOTAL:

\$ 102,034.79

\$ 124,544.03

Initial cost is the cost of the batteries, and chargers. The proposed solution has a higher initial cost due to the high cost of Lithium Batteries. Energy cost is the end users electric rate and including labor for changing batteries. Maintenance costs consist of pms, repairs, and watering. Resulting in an annual 18% savings or 22K difference.

PROJECT FINANCIAL REPORT

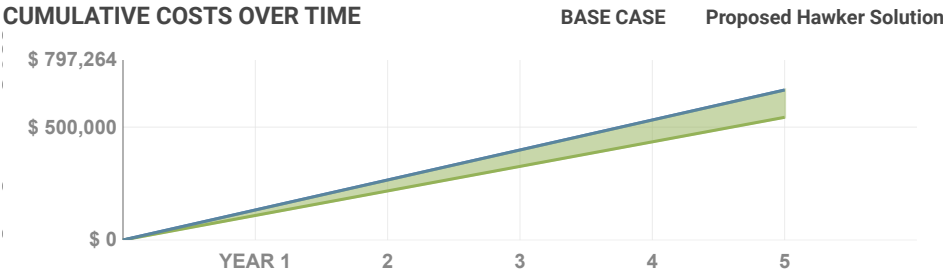
PROJECT RETURN ON INVESTMENT

SUMMARY

	Proposed Hawker Solution	Base Case	
INITIAL INVESTMENT SUMMARY PROJECT	\$ 0.00	\$ 0.00	\$ 0.00
EQUIPMENT INVESTMENT SUMMARY ANNUAL / PROJECT	\$ 81,861.00	\$ 64,000.20	\$ 17,860.80
FUEL / ENERGY EXPENSE ANNUAL / PROJECT	\$ 6,133.79	\$ 25,243.83	\$ 19,110.05
MAINTENANCE EXPENSE ANNUAL / PROJECT	\$ 1,500.00	\$ 18,500.00	\$ 17,000.00
ADDITIONAL EXPENSES ANNUAL / PROJECT	\$ 12,540.00	\$ 16,800.00	\$ 4,260.00
PROJECT ADDITIONAL EXPENSES ANNUAL / PROJECT	\$ 6,666.72	\$ 8,333.28	\$ 1,666.56
TOTAL ANNUAL BENEFIT			\$ 24,175.80

Cost over time shown below. As equipment age the gap grows in cost. Resulting in \$120,878.99 of savings over 5 years.

CUMULATIVE COSTS OVER TIME



PROJECT SAVINGS
OVER 5 YEARS

\$ 120,878.99



TIME LINE FOR
RETURN ON
INVESTMENT

IMMEDIATE

PROJECT COSTS


PROJECT ADDITIONAL EXPENSES	Proposed Hawker Solution	Base Case
Battery Handling Equipment Annual Cost	\$ 0.00	\$ 8,333.28
Infrastructure Annual Cost	\$ 6,666.72	\$ 0.00
iBOS Annual Cost	\$ 0.00	\$ 0.00
HawkerNet Annual Cost	\$ 0.00	\$ 0.00
No	--	--
	\$ 6,666.72	\$ 8,333.28
		\$ 1,666.56
TOTAL UPFRONT ADDITIONAL CHARGES	Proposed Hawker Solution	Base Case
	\$ 0.00	\$ 0.00
		\$ 0.00

(5K CLAMP E+)
2024 5 Vehicles

PROJECT TOTAL COST OF OWNERSHIP

PROJECT ANNUAL TOTAL COST OF OWNERSHIP

Fleet Size: 5 vehicles

Type	Qty	Vehicle	Solution	Proposed Hawker Solution	BASE CASE
	5	Toyota 8FBCHU25 5K CLAMP TRUCK	E2E	\$ 102,034.79	\$ 124,544.03
		PROJECT ADDITIONAL EXPENSES		\$ 6,666.72	\$ 8,333.28
				\$ 108,701.51	\$ 132,877.31

