How can solar help transport emissions?

New Zealand has a need to reduce emissions in the transport fleet. We believe that material transport is of greater impact on emissions than passenger transport and that electrified freight transport will play a large part, including for large distances, which may include most of the New Zealand transport fleet.

Freight transport operators have roof space that can generate about four times what the current local load is. Utilise can help to apply the balance to either forklifts or trucking fuel.

The de-carbonisation challenge with freight transport

We want to help and can provide technology and funding. However, we see fundamental issues with the current approach:

- Waiting for hydrogen to become economic
- Slow battery electric vehicle (BEV) supply chains
- Waiting for fleet turnover to renew with BEV
- Transitioning within current operating practices.

We see a big part of the solution here

To address these issues we believe the best immediate approach is based upon four pillars;

- The use of battery electric vehicles
- Battery swap
- Retrofitting the existing fleet to electric using swap-out batteries
- Optimising charging from solar behind the ICP

The benefits

It starts momentum.

- The technology is here now
- Provides opex savings, paying for itself very quickly
- No need to scrap the existing fleet
- Compatible with current operations
- Low capex compared to buying new
- Minimises grid connection upgrade costs
- Significant emissions reductions from the get-go.

Behind-the-meter solar electricity is the best you will get

To electrify the transport fleet, electricity networks will need significant and expensive upgrades in order to build the capacity and fuel to supply the

Utilise Limited
PO Box 90485
Victoria Street West
Auckland 1142

utilise.co.nz
0800 63 93 63

transition. We believe there are ways to finesse the timing and size of these upgrades that will minimise costs and encourage firms to take the first step on their decarbonisation journey.

For example:

- Local distributed generation – maximise the use of behind-the ICP generation such as on-site rooftop or ground-based solar.
- Avoiding expensive ICP connection upgrades. To electrify the transport fleet for many operators will require a connection upgrade. Before that investment is made, optimising the use of the existing connections should be undertaken,
- Effective roof utilisation - rooftop solar reduces ten times more emissions per m2 when used as a transport fuel than when used as a grid electricity substitute. We have found that businesses in logistics, warehousing and 3PL have roof space well in excess their current electricity consumption – ca 75% extra. Using this roof capacity to generate transport fuel for the fleets underneath is an immediate action firms can take without increasing demand on the grid.

Utilise has got your back on this

This is what we are here to do. Make your decarbonisation journey as easy as possible.

- Avoiding grid or connection upgrades
- Minimising battery storage required
- Minimising operational changes
- Minimising overall energy drawn from the grid
- Identifying practical zero-emission forklift operations
- Confirmation of the cost effectiveness of the solution.

Its not just trucks. Forklifts offer significant emission reductions also.

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We have estimated the current LPG forklift fleet, and the warehouse roof area in New Zealand (based on 30 year Statistics NZ building consent data) to be over 35,000, emitting nearly 2,000 tonnes of CO2-e per day.

We believe that a realistic estimate of on-site solar potential on these roofs to be over 500MW, which could charge over three quarters of the total forklift fleet.

On the basis that lithium forklifts will have a lower total cost of ownership, the incremental cost to transition the New Zealand forklift fleet to lithium electric will be the cost of batteries.

The equipment

Forklifts typically run on LPG. Battery forklifts based on lead acid are in use but have challenges – they only run 6-8 hrs before needing a 16 hr recharge cycle, requiring removal of battery and special rooms for recharging.

Lithium battery forklifts are relatively new and much more convenient to use – they can be charged opportunistically during breaks, such as at lunchtime. If there are just one or two forklifts this may not be a problem but most operators have multiple forklifts. If everyone stops for lunch at the same time, then the power draw would be large.

This spike is problematic as there is not enough transformer capacity to handle it, and a connection upgrade would be expensive; enough to deter companies from making the change to electric in the first place.

Utilise overcomes these barriers through innovative use of technology;

- Smart forklifts
- Monitoring and control software and equipment
- Batteries
- Charger
- Current grid connection
- On-site solar

Sounds like this is a good option for you?

Call us now on 0800 639363 or 027 667 7722