

Recycling International

Uncovering the post-vehicle value in lithium-ion batteries

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United States: The number of available post-vehicle-application lithium-ion batteries will range from a minimum of 1.376 million to an 'optimistic' 6.759 million across America by 2035, says the US Mineta National Transit Research Consortium. This means there will be 'enough batteries to justify remanufacturing, repurposing, and recycling efforts', it notes.



'Lithium-ion batteries provide efficient energy storage and their use in vehicles will [continue](#) to expand,' says Dr Charles Standridge, who led the research project. The battery in the latest-model [Chevrolet Volt](#) can last up to 10 years. Once these batteries are spent, roughly 85% could be suitable for reuse in post-vehicle applications while the remaining 15% are damaged beyond repair.

'Significant' charge

'We must deal with disposition once they fall below regulatory standards for use in on-road vehicles,' Standridge insists. His cost-benefit [analysis](#) has shown that many lithium-ion batteries may still hold 'a significant charge level' and thus have additional economic value that can be recovered.

Research also indicates that recycling in isolation is not profitable as lithium-ion batteries are composed of relatively inexpensive materials. With 'increased technological breakthroughs', recycling could yield up to a 20% recovery of [battery](#) cost.

Conservative promise?

Meanwhile, remanufacturing for reuse in vehicles 'shows promise' as damaged cells may simply be replaced, simultaneously avoiding the cost of producing new batteries. And yet there is no large-scale remanufacturing of post-vehicle-application lithium-ion batteries currently available. It has been estimated that a new plant would cost around US\$ 25 million.

The 'less well-defined [application](#) area' of repurposing is said to be profitable if the development cost is no higher than US\$ 83 to US\$ 114 per kWh. The analysis is based on a US\$ 30 million repurposing plant with a capacity of 5000 units in the first year.

Employing an 'extremely conservative' estimate, Standridge expects that such repurposed batteries will cost seven times more when compared to remanufacturing and about four times more than producing an entirely new battery.

For more information, visit: www.transweb.sjsu.edu