

"Bad" 6 or 12 Volt Battery



Battery Back to Consumer

If Regen

Battery Store

If New Battery



150-300 Watts/Hr for 24 Hrs = 7.2KW
 7.2KW @ 10 cents/KWH =
 Energy Cost - 72 cents

Environmental impact is equal to that of a 150W Light Bulb for 24 Hours

DONE

Bad batteries are collected until there are 45 for a pallet

Multiple Pallets taken to Warehouse

Batteries stored in warehouse until semi load is reached

How did new battery get here?



50 Miles to Warehouse: 10 MPG
 5 gallons of gas @ \$3.50/gal = \$17.50
 For 45 batteries = 40 cents/bat
Fuel & Emissions

250 Miles to Recycle Facility: 5 MPG, 50 Gals @ \$4.50 per
Fuel & Emissions



Batteries to Recycle Facility



Battery recycling is not wholly environmentally benign. Isidor Buchmann explains that there are significant transportation and related fuel costs to get batteries to recycling facilities and properly sorted into chemically related classes of materials. Battery recycling processes also require significant amounts of energy. According to Buchmann, it takes **6 to 10 times more energy** to reclaim metals from batteries than it would take to obtain those same metals by other means. Scientists at the Argonne National Laboratory of the U.S. Department of Energy noted that both intensive energy requirements and sulfur dioxide production are environmental impacts of battery recycling.

Studies By Hittman, Kertes, Rantik, Ishihara, Tudor and others developed a recognized standard for energy usage and emissions when comparing new battery manufacturing using raw vs recycled materials.

Energy to Manufacture Battery:

If From Raw Materials = 6.703 M/J

If From Recycled Materials = 2.261 M/J

Emissions From Manufacturing Battery:

If from Raw Materials = 4.808 Kg/Kg

If from Recycled Materials = 61.4 Kg/Kg

Batteries delivered back to Retail Store
Fuel & Emissions



Batteries transferred to Retail warehouse
Fuel & Emissions



Batteries stored in warehouse until needed by wholesaler
Fuel & Emissions



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