

A Life Cycle Look at End of Life Vehicle Recycling

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The average life of a vehicle is 12 to 15 years, and at the end of its useful life, the vehicle is sent into a recycling infrastructure. This infrastructure is complex and ranges from recovering reusable automotive parts to the recovery of valuable materials, primarily ferrous and non-ferrous metals. The recovery of parts and metals account for 75% of a vehicle's weight with the remaining 25% made up of a mixture of glass, plastics, rubber, foam, fibers, fabrics, as well as dirt referred to as shredder residue (SR). Shredder residue is not recycled and is currently sent to landfill. The Vehicle Recycling Partnership's (VRP) focus is to recover materials of value such as the plastics and foam from the shredder residue and turning them into useful products. Along this line, the VRP has researched a number of mechanical and thermal-chemical recycling technologies and including conducting life cycle analysis on them. This paper will cover life cycle analysis on two different types of technologies, a thermal conversion process as well as a mechanical separation process. The life cycle assessments were performed in order to determine the environmental impacts and benefits offered by each type of technology. These assessments are part of the VRP's long term strategy for developing an entire end of life model which will be used to obtain a better understanding of the trade-offs between alternative technologies for treating and recycling SR.