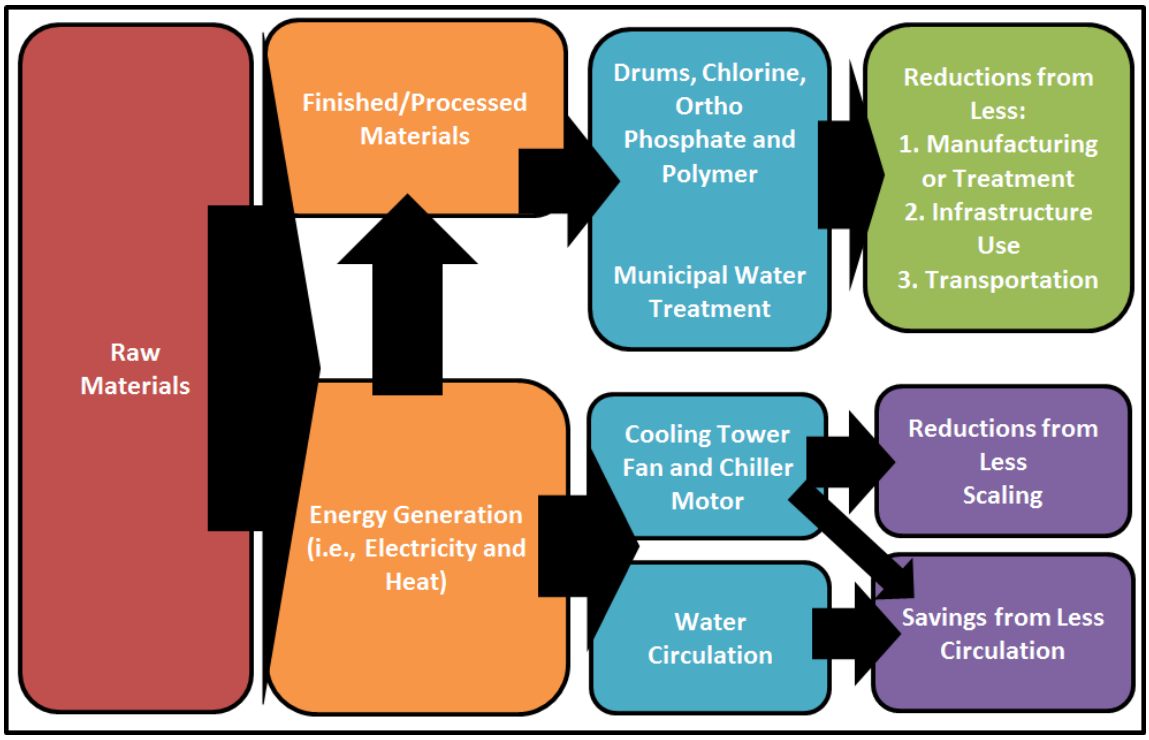
Executive Summary of NREL's Potential Greenhouse Gas Emissions and Energy Reductions from the Use of the Silver Bullet Water Treatment System

In 2012, Silver Bullet Corp. was named "Best Venture" of the year by The National Renewable Energy Laboratory (NREL), part of the United States Department of Energy. As part of the award, NREL preformed analyses to estimate the benefits of using the Silver Bullet Water Treatment System (SBWTS) in cooling towers, to reduce energy demand, water consumption and the generation of greenhouse gases (GHG's). These analyses compared the use of SBWTS with the customary chemical water treatment programs. The Silver Bullet System produces hydrogen peroxide and free radical oxygen that act as a biocide and also reduce and eliminate scaling and corrosion. The Silver Bullet System replaces the current treatment system which requires the manual addition of chemicals, such as polymers, orthophosphate, and chlorine.

When compared to chemical treatment, The Silver Bullet System reduces water consumption of the cooling tower by increased its cycles of concentration. The Silver Bullet System also increases the towers heat transfer efficiency by removing scale. Below is NREL's schematic of the materials and energy avoided or reduced in a cooling tower water treatment system when a Silver Bullet System is used. All of these components contribute to the reduction of GHG, energy demand, and water use.



A reductions calculation tool was used by NREL to perform basic analyses of the potential GHG emissions and energy use reductions achievable through the use of The Silver Bullet System. It is estimated that 240 and 210 gallons of water per hour per 100 tons of tower, are used at 4 and 6-7 cycles of concentration, respectively for a decrease of 30 gallons of water. Calculations assumed that heat transfer efficiency is increased by 7.5% for the removal of 1/16th of an inch of scale. The resulting savings were then estimated to be:

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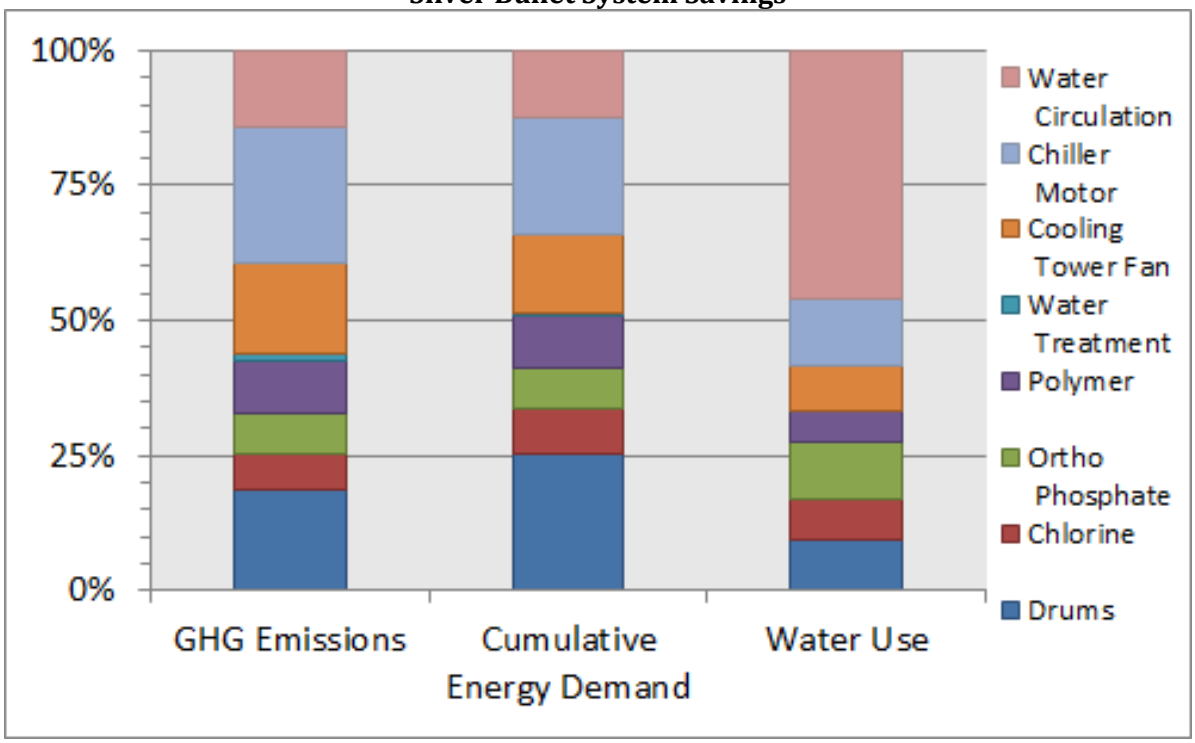
- GHG emissions: 34 Mg CO_2eq/yr
- Cumulative Energy Demand: 102,777 kWh/yr (Electricity)
- Water Consumption: 24,568 gallons/yr
- Gasoline and other hydrocarbons: not estimated

The NREL graph below shows the contribution of each cooling tower system component to greenhouse gas, energy, and water reductions in operating a cooling tower for one year using The Silver Bullet System. Reductions are based on comparing The Silver Bullet System to an average chemical water treatment system.

Silver Bullet System Savings



The reduction in electricity use in water circulation, chiller motor, and tower fan operation are the major potential sources of GHG emission reductions. The primary source of electricity reductions is from increased heat transfer due to reduced scaling. Electricity use in the production of raw materials and finishing of polypropylene drums is another major source of GHG emissions.

The most significant source of overall energy reduction is the elimination of chemical drum manufacturing. Drums manufactured for chemical storage and transportation are made from polypropylene. The key ingredients for polypropylene are crude oil products, and consequently eliminating the use of drum manufacturing in the crude oil supply chain translates to significant savings in energy and petroleum.
Reduced water use in circulation is the greatest contributor to water reductions because of increased cycles of concentration.