



## Improving Industrial Efficiency: Paper Manufacturing

One of the biggest challenges in paper manufacturing is identifying efficiency improvements that can help you achieve additional electricity savings. Following an in-depth energy efficiency and process improvement study, authors from Lawrence Berkeley National Laboratory benchmarked three processes with the greatest potential for electricity savings: papermaking, pulping, and wood preparation. Here are some specific steps, within these processes, that you can take to significantly reduce electricity usage and achieve measurable savings throughout your process.

### Replace sorting systems to improve wood preparation

#### Save up to 154kWh/ton

Large wood pieces require additional mechanical action to break down. Replace your sorting system with fine-slotted wedge wire baskets to save energy in the pre-treatment process.



Log debarking

### Add fungus to ease mechanical pulping workload

#### Save up to 50kWh/ton

Fungus helps to pre-digest and weaken the structure of the biomass, reducing the mechanical equipment workload.



Pulping of recycled papers

### Switch to thermo pulping

#### Save up to 277 kWh/ton

Break down wood more efficiently using high temperatures and pressures for short periods of time.

### Optimize motors and pumps

#### Save up to 315kWh/ton

Large motors and pumping equipment consume elevated levels of electricity. Install variable frequency drives (VFD's), and employ premium efficient motors to drive efficiency improvements throughout the process.



A blower motor



As illustrated below, 62% of the total electricity consumption required to manufacture paper is used in the following processes:

**Papermaking**

This includes all the steps required to make bleached pulp into the desired paper product.

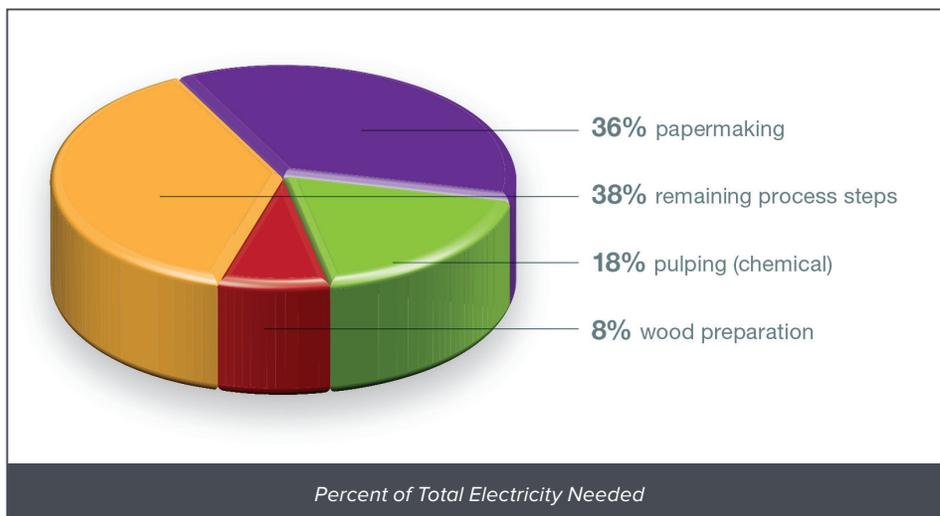
**Pulping (digestion)**

This includes all the process steps after wood chipping, but before digestate bleaching.

**Wood preparation**

This consists of roundwood debarking and chipping prior to pulping.

All other remaining processes only require 38% of total electricity consumption.

**Get started**

Visit [nyserderda.ny.gov](http://nyserderda.ny.gov) or call **1-866-NYSERDA** to learn more about how NYSERDA can help you significantly reduce electricity usage and achieve measurable savings throughout your paper manufacturing process.

