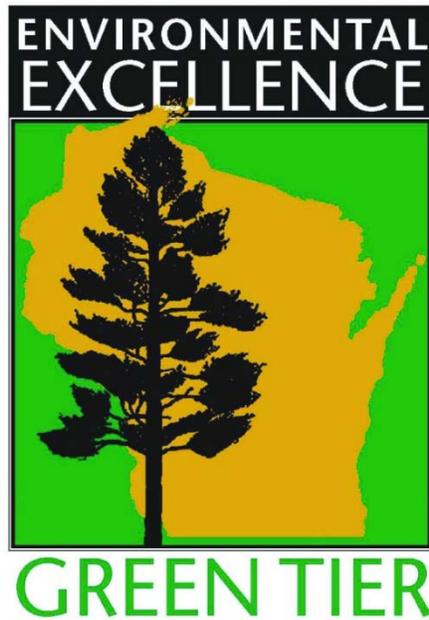


Cardinal Insulated Glass, Spring Green Facility, Green Tier – 2013

**CARDINAL** IG 



**Who we are and what we do:**

Cardinal Insulated Glass, Spring Green (SGIG) manufactures high performance insulated glass units for the residential wood window market.



**SGIG's Sustainability Program:**

SGIG's sustainability program is a 5 pillar program which reports to the Environmental Management Board, a committee composed of the plant leaders. The purpose of the program is to address environmental improvement opportunities in each of the following areas:

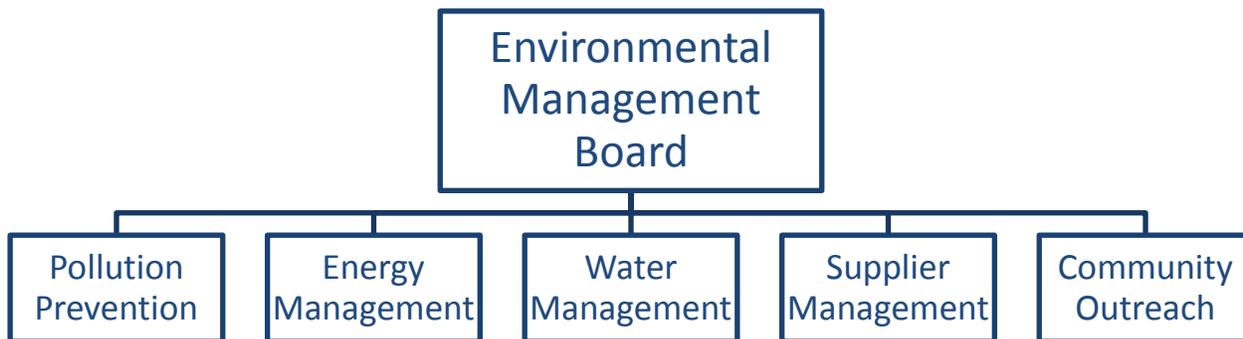
**Pollution Prevention** – Focused on the three pillars of reduce, reuse and recycle. We are ultimately committed to reducing our environmental impact, but in the absence of reduction we will attempt to reuse what we can and finally recycle all which we are able to.

**Energy Management** – We are committed to purchasing and consuming energy in the most efficient, cost-effective, and environmentally responsible manner possible. Towards this end, SGIG will continuously improve energy efficiency by implementing an effective energy management program that supports operations and customer satisfaction while simultaneously providing a safe and comfortable work environment for its employees.

**Water Management** – Committed to ensuring on-site water consumption is reduced and/or optimized to verify that efficient and environmentally friendly processes are implemented and practiced.

**Supplier Management** – The purpose of supplier management is to evaluate/improve the supply chain and control the incoming material looking to have materials that are in compliance with material standards and suppliers are conforming to the SGIG's EMS standards, limiting environmental impacts.

**Community Outreach (Green Team)** – The Green team is responsible for external communication relative to SGIG's environmental management program as well as conducting at least 3 environmental outreach projects per year.



## **Executive Summary**

In 2013, Spring Green IG's environmental program continued to gain momentum in its progression towards achieving its goals while, simultaneously, identifying future potential improvement projects. With process and system implementation complete, Spring Green IG continued to reduce many forms of waste including waste-to-landfill, energy inefficiencies, and water consumption.

We made great progress on each of our pillars not only in meeting our goals but also identifying some of the opportunities that still exist. For example, we are very proud of reaching our pollution prevention goal in reducing our waste-to-landfill, drastically reducing our total water usage, and improving our energy consumption per unit produced figures. However, we would like explore more opportunities to gain insight on monitoring and tracking metrics more accurately and thoroughly in the future. One such example is the Tridium System which was implemented this past year and will allow for future efficiency projects to be realized.

Below you will find a summary of each of our pillars and a description of any and all improvement efforts for each respective pillar for the 2013 calendar year.

## Pollution Prevention

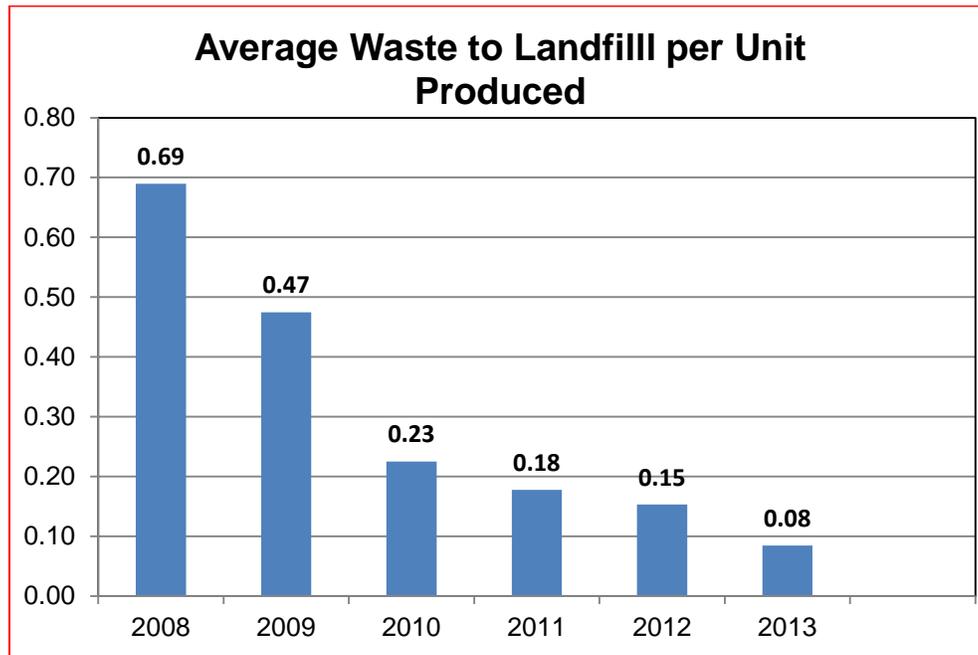
### **Introduction**

Over the past four years our pollution prevention initiative has had great success. Since the initiative was started in 2009, Cardinal IG Spring Green has been able to reduce their waste to the land fill by **EIGHTY PERCENT**. Our goal for the coming year is to reduce our land fill by another fifty percent.

### **Our Goal and Results**

2012 we were able to achieve an average of .15lbs. to the landfill per unit produced. In 2013, we had a goal of .075 lbs. to the landfill per unit produced which was a reduction from the previous year. We ended 2013 at .080 lbs. /per unit produced, slightly higher than our anticipated goal. However this was a significant improvement from 2012. A **53%** improvement from last year and an **89%** since the start of our program

At Cardinal IG Spring Green, we believe we can continue to reduce the ratio of pounds of waste to landfill per unit produced. This will be no small task but Cardinal IG Spring Green is committed to doing what is right for the environment. We shall strive to reduce our waste to landfill through continual education, waste reduction kaizen events and partnerships with our suppliers & customers.



### **Pollution Prevention Projects completed in 2013**

Installed re-rollers to collect release paper from our sticker backing. This alone will divert 2200 lbs. from the landfill each year.

### **Future Goals**

For the year of 2014, our goal at Cardinal IG Spring Green is to reduce our pounds of waste per unit to landfill to .075lbs. This would be approximately a 6 percent reduction from our goal in 2013 of 0.08 pounds. As seen on the graph above, we are progressing in the right direction and by discovering small opportunities in the future, we will achieve our ultimate goal of **Zero Landfill**.

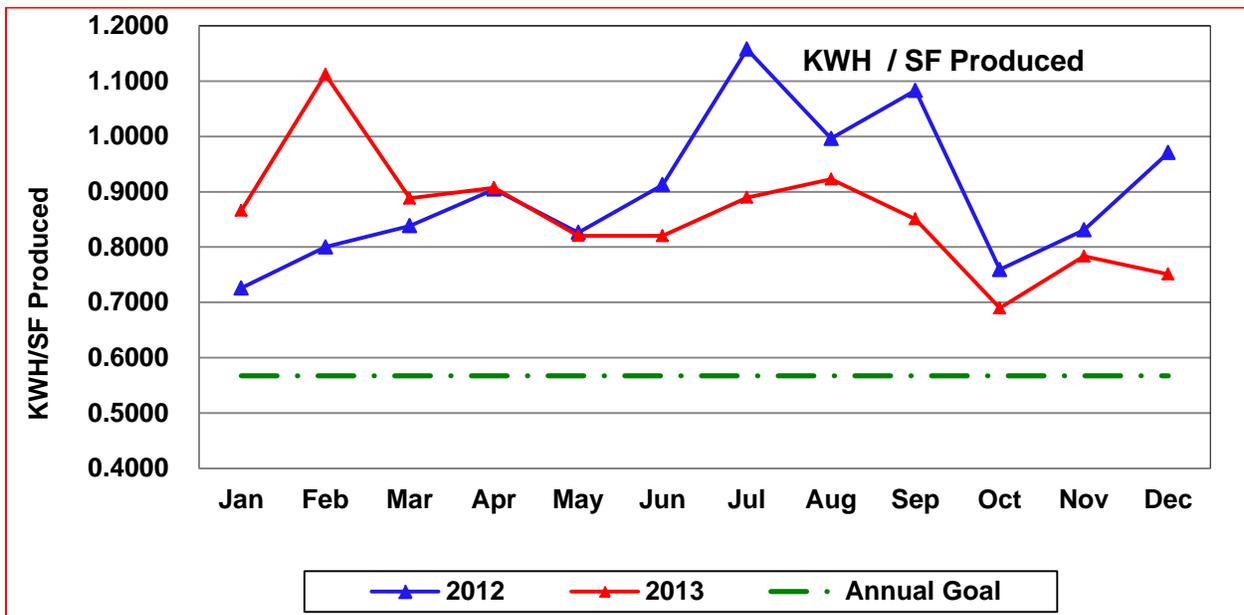
## Energy Management

### Our Goal

In 2008, SGIG set a goal to decrease energy use (KWH per Square Foot of IG produced) by 25% by 2013. This was done to offset an expected 25% increase in energy cost by 2013. To achieve this goal by 2013, we had yearly goals of decreasing energy use by 5% per year. From this model, we had a goal of 0.6163 KWH/SF for 2012.

### Results

Since setting our goal, energy cost have not increased as expected in 2008, however we still maintained the 5% reduction per year as a goal. This goal has been very difficult to achieve. 2012 brought an average of 0.8954 KWH/SF and 2013 was slightly better at 0.8435 KWH/SF. Although we have not achieved our goal from 5 years ago, our yearly average dropped 5.8% from 2012 to 2013.



### Energy Projects Completed in 2013

Compressed air is one of the most wasteful forms of energy. Because of this, we decided to add a more efficient 300 HP variable speed air compressor in our facility in 2013. This air compressor has taken all three of our 150 HP compressors offline for most of the day. In addition, in 2013 we were able to get our building monitoring system back online. This allows us to see our current energy use, and will help us identify new areas for improvement.

### Looking to 2013

In 2014, we will look to get more energy monitoring in our building automation system. Our goal is to have access to real time data on energy consumption so we will try to get pulse metering into the system. This will help determine if the cost savings from interruptible rates are substantial enough to implement. We will also work on creating schedules for our HVACs, so that we are only cooling and heating areas of the plant during hours that we are running production. Additionally, we have evaluated our new energy goals and decided to try to always achieve a lower KWH/ SF Produced than the year before. This will be a more realistic goal that will help drive improvement.

## **Supply Chain Management**

### **Our Goals**

We had several goals for the 2013.

- Reduce packaging material on outgoing shipments.
- Recycle the scrap wood from our process
- Determine Carbon Foot value.
- Evaluation of shipping containers utilization.
- Evaluation of HVAC filters and disposal

### **Results**

- We were able to standardized the packaging on the outgoing shipments and reusing material, to reduce new packing purchases by 30%
- We set up several recycle streams for our wood waste, diverting wood material from the landfill.
- Did an analysis of current production and baseline the carbon foot print of the operation.
- Determined the best filters to use in HVAC that gave us the longest life, which caused less new purchases and less going to the landfill.

### **Looking to 2014**

- Evaluate the emergency response to chemical spills
- Evaluate the procedures for universal waste collection.
- Reduce shipments of cullet loads

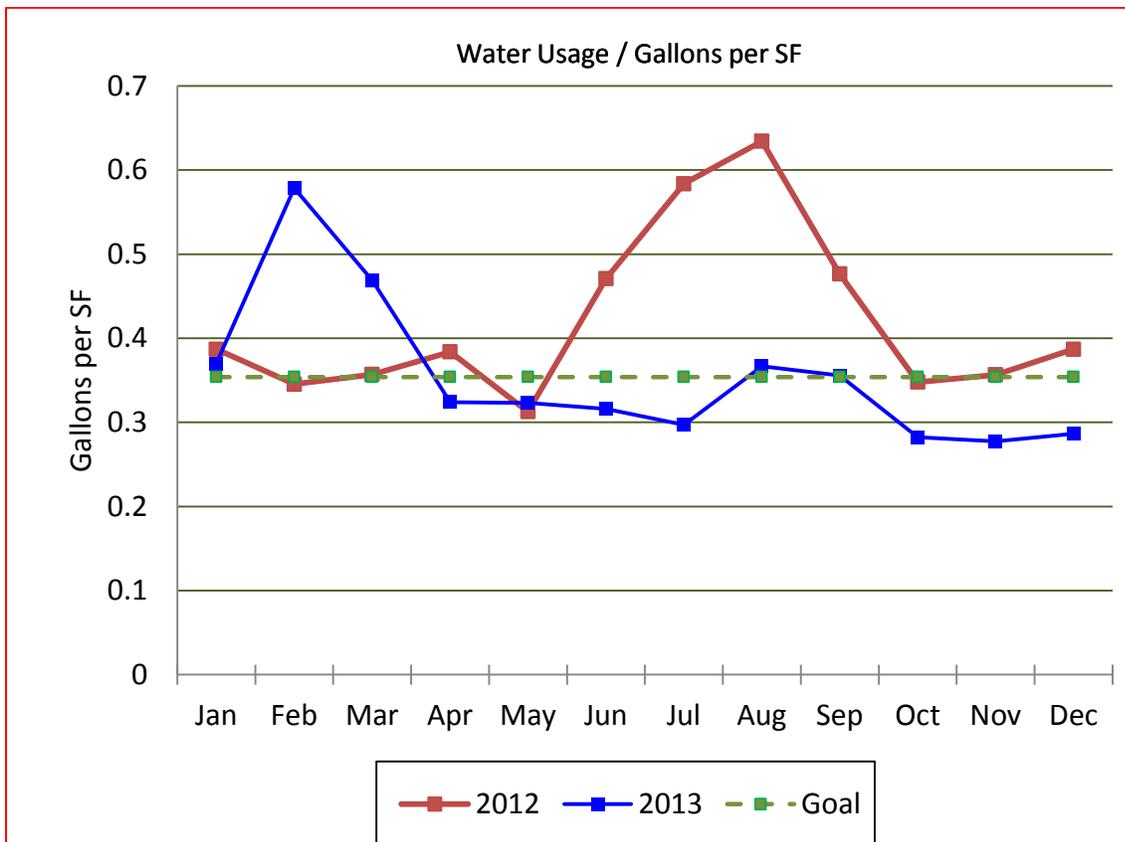
## Water Management

### Our Goal

In 2013, SGIG sought to establish a new Water Usage per Square Foot Produced Goal (Gallons/SF). With the sharp spike in usage rates during the installation of the RO System in 2012, it was decided to use the 2013 figures as a basis of comparison moving forward. Another objective was the implementation of the Tridium System which would allow other efficiency projects to be realized.

### Results

With the 2012 RO System installation spike of water usage, SGIG's 2013 figures were drastically lower in comparison. SGIG saw a 19% reduction in Total Water Usage in 2013, which is impressive considering the increase in production compared to 2012. Additionally, SGIG replaced more than half of its old toilet fixtures. The new fixtures have a reduced volume of water per usage. 2013 also saw the Tridium System be implemented and operational at SGIG.



### Looking to 2014

Looking to 2014, we at SGIG look to reduce our water usage now that the Tridium System is online which allows for the installation of a Closed-Loop Cooling System for an onsite Infrared Camera. The estimated water savings upon the installation of the IR Camera Coolant System is roughly 250,000 gallons per quarter.

## Green Team

### **Community Outreach Program**

The goal of our team is to improve the education of how important it is to recycle and reuse materials. Also reaching out to the community providing proper outputs for E-waste and other materials. Our team will continue to educate the 4<sup>th</sup> grade classes of our area about how important taking care of our environment and planting new trees is.



### **2013 Activities**

2013 was a productive year for the Green Team. We ran events such as E-waste collection, 4<sup>th</sup> grade tree giveaway, and worked with the local food pantries. In 2013 we hosted our first all free E-waste collection, this collection was our biggest collection by for collecting 19.6 tons of electronic waste. We have continued collecting and recycling old batteries and light bulbs from the associates in our plant to help recycle them the proper way.

### **Future Project Ideas**

The Green Team will be looking into 2014 with high hopes to accomplish everything we did in 2013 and more. One project that will be new next year will be a *Soles For Souls* shoe collection. Our Team is looking forward to working with the local food pantries and schools along with helping our factory's sustainability.