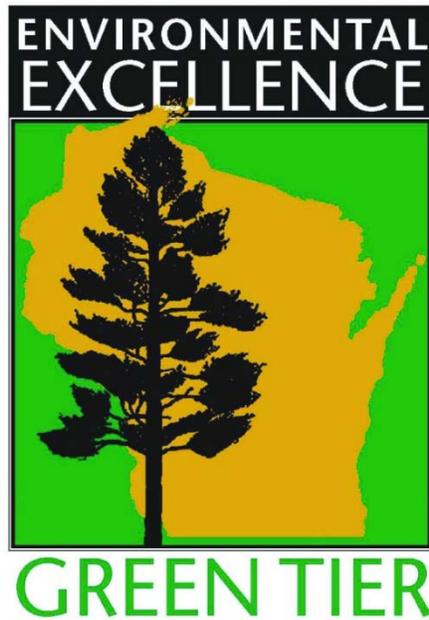


Cardinal Insulated Glass, Spring Green Facility, Green Tier – 2014

**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:

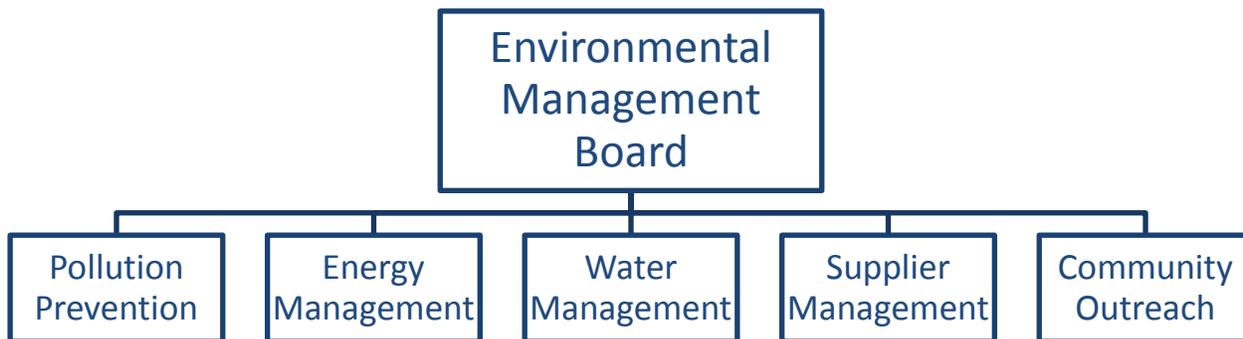
**Pollution Prevention** – Focused on the three pillars of reduce, reuse and recycle. We are ultimately committed to reducing our environmental impact, but in the absence of reduction we will attempt to reuse what we can and finally recycle all which we are able to.

**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 2014, 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 2014 calendar year.

## Pollution Prevention

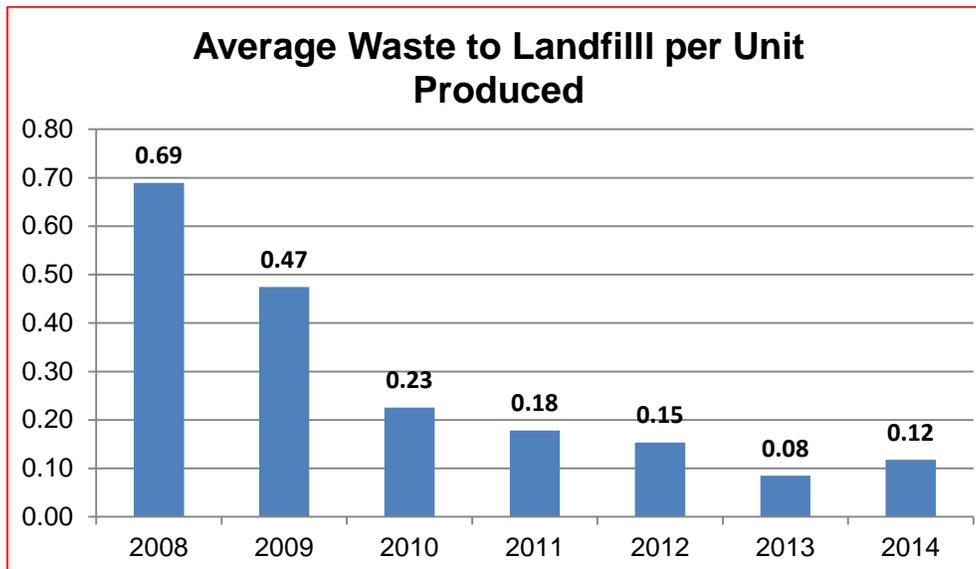
### **Introduction**

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**

2014 we were able to achieve an average of .12lbs. to the landfill per unit produced. In 2013, we set a goal of .075 lbs. to the landfill, nearly achieving it with .08lbs. We ended 2014 at .012 lbs. /per unit produced, slightly higher than our anticipated goal. However this was a significant improvement from 2012. Up 33% from last year, with an 82.7% reduction 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**

In 2014 and into 2015 we have been evaluating our waste to landfill and recycled material providers. Who can provide the best services for the waste generated from our processes. We will continue to have materials evaluated for recycling. We have leads on recycling scrap wood & plastic A-frame materials.

### **Future Goals**

For the year of 2015, 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 37% improvement over 2014 results of .12 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**.

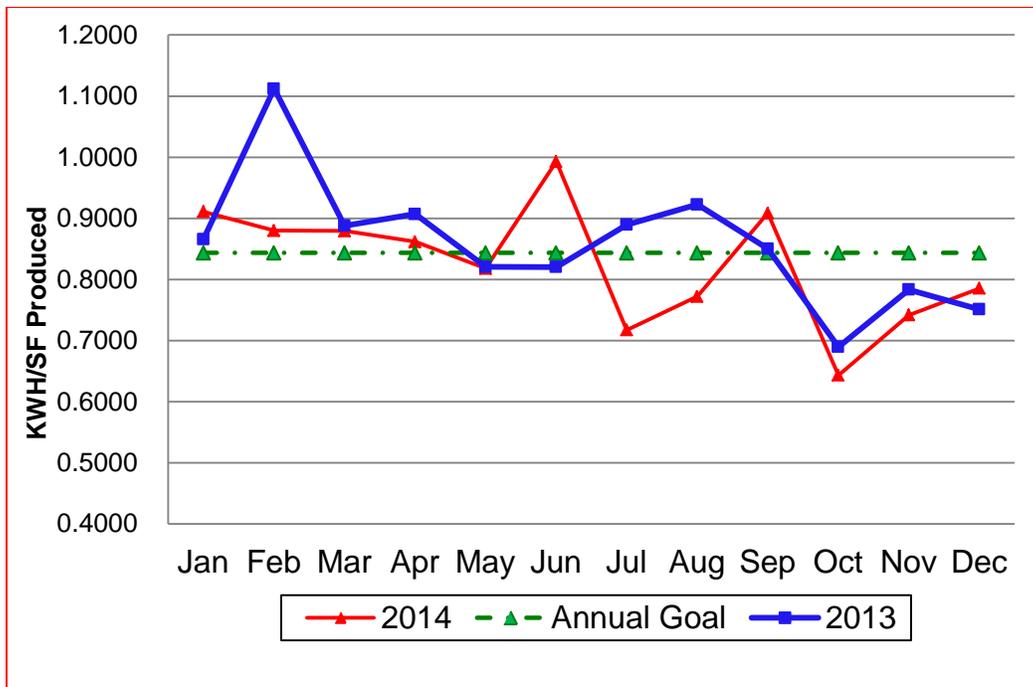
## Energy Management

### Our Goal

In 2014, we looked to get more energy monitoring in our building automation system. Our goal was to have access to real time data on energy consumption and use pulse metering in our system. This would help determine if the cost savings from interruptible rates are substantial enough to implement. We would also work on creating schedules for our HVACs, so that we only cool and heat areas of the plant during hours that we are running production.

### Results

In 2014, with the installation of pulse metering, we found that interruptible energy saving were out of reach. LED lighting has been evaluated and approved for installation throughout the plant. HVAC schedules have been created to help control energy use on off shifts. We were able to come in below our annual goal, finishing the year out at 0.78 which was 0.03 higher than 2013.



### Looking to 2015

Looking to 2015, we at SGIG look to reduce our energy usage by continuing to install LED lighting throughout our facility. We will be starting in the warehouse area of our facility and progressing toward installation over working spaces. Our calculated savings by the installations this year will yield 81,000 lumens without an increase in wattage consumption.

## **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

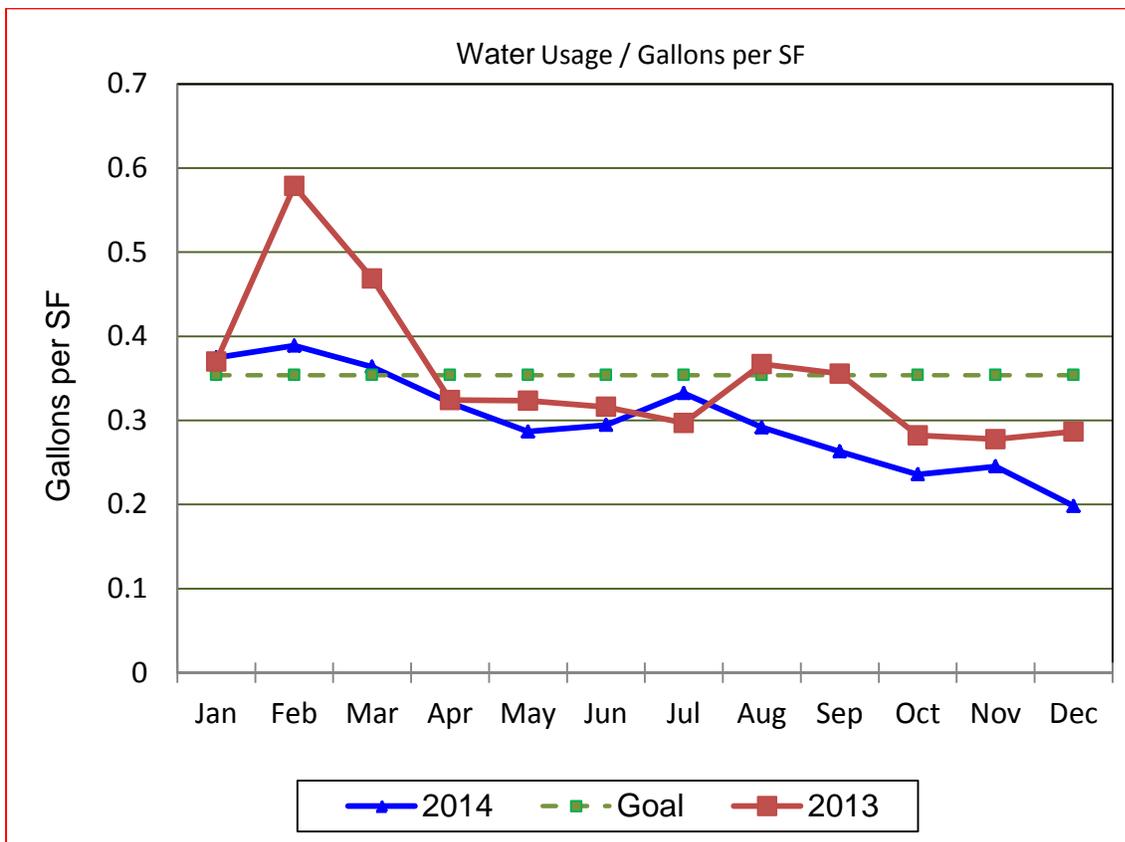
## Water Management

### **Our Goal**

SGIG looked to reduce water usage with the use of Tridium to control a Closed-Loop Cooling System for an onsite Infrared Camera. The estimated water savings upon the installation of the IR Camera Coolant System was roughly 250,000 gallons per quarter.

### **Results**

In 2014 we found that Tridium would not support the Closed-Loop Cooling System for our onsite Infrared Camera. With metering of the IR Camera and reevaluating our cleaning schedule we were able to drive our water usage down from 0.353 to 0.299.



### **Looking to 2015**

Looking to 2015, we at SGIG look to reduce our water usage with the installation of a standalone, closed-loop cooling system for an onsite Infrared Camera. The estimated water savings upon the installation of the IR Camera Coolant System is roughly 636,000 gallons per year.

## 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.