



# Seagate Technology



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## Company Background

Seagate Technology started in the late 1970's when its founders seized an opportunity to join the growing technology industry. Seagate started producing 5.25-inch HDDs, the first of its kind, and found success by supplying them to some of the earliest personal computers. Since then, they have sold over 3 zettabytes of storage capacity. They have operations in 30 countries around the world and employ a team of over 40,000. Seagate produces a variety of data storage technologies today, and the Bloomington campus serves as both a manufacturing and developmental space for semiconductor wafers.



*"I am incredibly grateful for my internship with MnTAP and Seagate this summer. I really enjoyed being able to work with and learn from such a wide range of professionals, and gain valuable real-world experience in industry. This opportunity allowed me to truly grow as a leader, engineer, and sustainability advocate. I look forward to utilizing all the skills I've learned in my future career!" ~ MT*

## Project Background

With operations running 24/7, Seagate manufacturing facilities consume a large amount of energy. As a company, Seagate saved 23,000 MWh of electricity last fiscal year through energy conservation projects, more than double the initial target. They continue to work towards new goals each year to further reduce their energy use and GHG emissions. One of the projects this summer was focused on improving lighting efficiency to further the facility's energy use goals and decrease electricity costs.

The Bloomington facility's manufacturing process requires water of extremely high purity. In order to achieve this, much of the total incoming city water is sent through intensive filtration. This process was explored in great depth in order to find the most effective and viable water conservation opportunities. The other outcome from this project was overall mapping of the facilities average water usage. Seagate has cited water reuse and recycling to be one of the biggest opportunities for the company's future sustainability progress.

## Incentives To Change

Seagate rules by values of Integrity, Innovation, and Inclusion. These values transfer over to their environmental stewardship where they continue to improve their carbon footprint, advance sustainable solutions, and provide transparent metrics and goals to the public. They aim to continue this progress by reducing energy use, improving water management, and decreasing waste.

*"Megan excelled at collaborating with engineers on-site to uncover the distribution of water use across the campus to determine where the best opportunities were located. By the end of the summer, Megan delivered water reuse and LED lighting proposals with significant consumption and cost savings."*

*~ Carter Sola, Engineer, Project Advisor  
Seagate*

# Solutions

## EDI Reject Recycling

For part of the high purity water purification process, water flows through an electrodeionization system which removes charged ions with an applied electric field. This system produces a reject stream that is currently sent to drain. A chemical analysis performed found the reject stream to be relatively pure quality. It holds a much lower concentration of minerals even compared to the incoming city water. The frequency of the system was also investigated, and it was found to have a consistent timing with the RO skids. The recommendation is to recycle this stream back through the high purity water process. This would result in 1.5 million gallons of water saved annually, as well as a decrease in the volume of chemicals needed to pretreat the feed water.

## RO Reject Reuse

The high purity water process also includes a RO system that produces reject. This reject stream flows to an intermediate storage tank and then to drain. The recommendation is to mix this stream with city water in the existing tank and use it for irrigation during the summer months. This would result in 1.2 million gallons of water saved annually.

## LED Fixture Upgrade

The facility is currently lit by fluorescent bulbs that are mostly on 24/7. In order to improve energy use, more efficient upgrades were investigated. This involved performing tests and collecting data on the current lighting system and working with vendors to find the best replacements. A complete cost analysis was performed to consider the energy and maintenance changes along with the full implementation cost. It is recommended that all common and lab spaces upgrade the current fixtures to LED kits. This would result in an annual 1.7 million kWh reduction and a savings of \$114,000.



| Recommendation                 | Annual Reduction      | Annual Savings | Status      |
|--------------------------------|-----------------------|----------------|-------------|
| Reuse EDI Reject in HPW System | 1.5 million gal water | \$14,000       | Recommended |
| Use RO Reject for Irrigation   | 1,200,000 gal water   | \$11,000       | Recommended |
| Upgrade Lighting to LED        | 1,700,000 kWh         | \$114,000      | Recommended |

**MnTAP Advisor:** Jon Vanyo, Engineer