



**Twin Rivers  
Technologies**

2016 Corporate Sustainability Report

# ABOUT TWIN RIVERS TECHNOLOGIES

Twin Rivers Technologies (TRT) is one of the largest oleochemical producers in North America. Our hydrolysis, distillation, fractionation, crystallization, and partial and complete hydrogenation capabilities allow us to produce a product line that includes **over 80 different fatty acid and glycerin products**. We use a variety of feedstocks, including coconut oil, animal fats, soybean oil, and palm oil to create products for a variety of industries and purposes, including food, textiles, plastic, soap, and detergents. TRT's products are shipped throughout North America, South America, Latin America, and Asia.

By operating with integrity and dependability, and providing superior value to our customers, we have become the supplier of choice for naturally based specialty chemicals. TRT has achieved this high level of performance through our dedicated people, our commitment to performance, and our focus on responsible and sustainable business practices. Our sustainability statement guides us in this quest.

Twin Rivers Technologies strives to be the sustainability leader within the oleochemical industry. Our business model incorporates three sustainability pillars into its values:

## • PEOPLE • PLANET • PERFORMANCE

These foundational pillars serve to meet the current and future needs of our customers and stakeholders, with sustainability at the core of our business model.

### TRT History

In 1994, Twin Rivers purchased Proctor & Gamble's former soap plant for the purpose of making biofuels and fatty acid. This plant was located at the junction of two rivers, the Town River and the Weymouth Fore River, inspiring the founders to name the company after this unique geographical location.

By 1998, Twin Rivers' portfolio of products had expanded to include the production of oleic and stearic compounds. Felda, the largest palm plantation owner based out of Malaysia, acquired Twin Rivers Technologies in 2007, and a year later, Twin Rivers added a splitter and glycerin refinery.

In 2010, Twin Rivers hired a sales force and began a strategy of direct sales to its customers.



**2012**

- Early sustainability initiative kickoff
- Implement water reutilization project



**2014**

- American Cleaning Institute's sustainability reporting program involvement
- Quincy plant RSPO certified and certified mass balance products offered



**2016**

- LED lighting project
- Regenerative thermal oxidizer (RTO) project completed



**2013**

- Commence company-wide assessment of sustainability goals and values



**2015**

- Offer Kosher/Halal and Safe Quality Food products
- Combined heat and power (CHP) unit installed



## Statement from Our CEO, Scott Chatlin

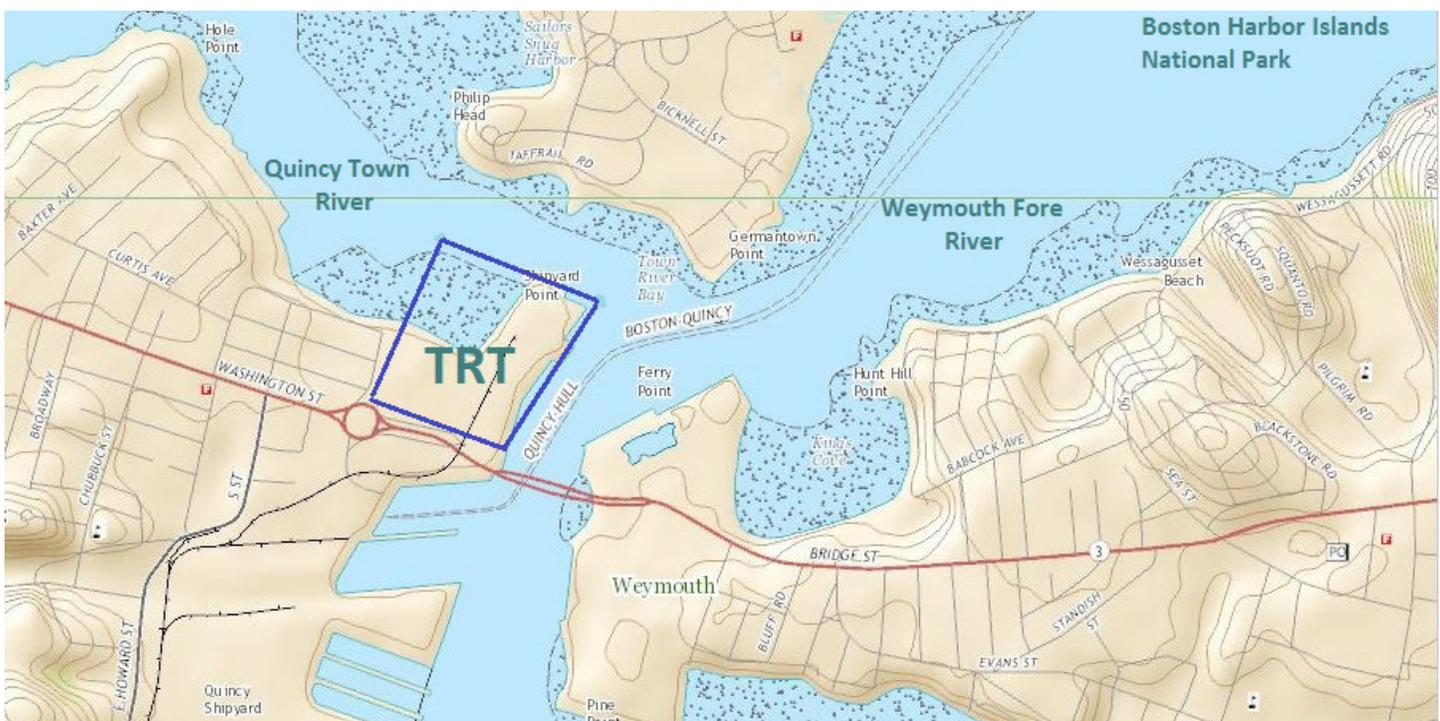
At Twin Rivers Technologies, the term sustainability has a few different meanings. At a high level, sustainability means that we must pay attention to our people, to our impact on the planet, and to our performance as a business.

What “sustainability” really means is that we always need to carefully consider the impact of our operations and supply chain on the global environment. It entails running a business that people want to work for, and a company that our local communities are proud to have as a neighbor. It also necessitates that we must be a reliable, efficient and innovative supplier that continually delights our customers. Ultimately, sustainability denotes identifying and mitigating as much social, environmental and economic risk as possible so that we can remain viable for the long term.

Our challenge is particularly great in that many of TRT’s customers are very sophisticated in their approach to sustainability; therefore, the bar is quite high. We must strive to understand where the risks are greatest, and find cost effective ways to address those risks.

As described in this report, we have identified several key opportunities to improve our sustainability performance. First, while our physical and environmental footprint is relatively small around our operations near Boston, our supply chain reaches around the world. We have found ways, such as participating in the Responsible Sourcing of Palm Oil (RSPO) initiative, that allow us to participate in leading efforts to increase sustainability practices in the very vulnerable parts of the world where we source some of the key ingredients used in our processes. In our research labs, we have identified ways to make our manufacturing processes more efficient, and found opportunities to monetize some of the leftover byproducts of our production processes. We are always looking for ways to produce more product with less energy. In 2015, Twin Rivers invested in a state-of-the-art energy plant that utilizes energy resources more efficiently while simultaneously using modern technology to reduce CO2 emissions. Lastly, we work hard at being an employer of choice. Through our employee health and safety programs, ongoing training initiatives and community outreach, we believe in investing in the wellbeing and development of our key assets, our employees.

Together these initiatives, and others we describe here, form the basis of our approach to being a responsible and sustainable member of the global business community. The talk is easy; however, we really do walk the talk and stand behind our people, our planet, and our performance.



# PEOPLE

To understand Twin Rivers’ performance and sustainability commitment, we must recognize the integral role of our people. Our employees, customers, and communities are invaluable assets that form a foundation for our sustainability mission, business and operational success.

## Employees

We are proud to have a dedicated workforce of 122 employees. TRT’s average employee tenure is 10 years with an employee turnover rate of less than 5% per year. When we do have vacancies, current employees help us identify promising candidates through our employee referral program.

Because our employees tend to stay with us for a long time, TRT invests in their ongoing professional development; encourages employees to attend seminars and webinars; participates in discussions through the Associated Industries of Massachusetts (AIM); hosts human resources roundtables and a CEO Connection; and we provides sales and managerial training. Most of our management team is involved in one or all of these programs.

To keep our entire team informed of operational and business issues, we host quarterly State of the Business meetings. During these meetings, the CEO and senior management present information on Twin Rivers’ performance, financials, safety, compliance, potential customers, quality, and sustainability performance. The goal: to nurture professional and personal leadership, communication, and collaboration among our employees so that they can develop and grow within our organization.



Our core tenets and commitment to our employees revolve around our efforts to **STRIVE** and **CARE**:

<b><u>STRIVE</u></b>	<b><u>CARE</u></b>
<b>SAFETY FIRST</b>	<b>CUSTOMER CENTRIC</b>
<b>TEAMWORK ORIENTED</b>	<b>ADAPTABILITY</b>
<b>RELIABILITY</b>	<b>RESPONSIBILITY</b>
<b>INTEGRITY BASED</b>	<b>EMPLOYEE FOCUSED</b>
<b>VALUE DRIVEN</b>	
<b>ENTREPRENEURIAL SPIRIT</b>	

These principles guide our work ethic to help us work collaboratively and efficiently as a team and a company.

The health and safety of our employees is also extremely important to our team and our long-term success. Approximately 40% of Twin Rivers’ employees participate in one of eight safety committees reporting to one central safety council. Our safety training programs include electronic training and field/classroom training, and cover many safety topics including:

eTraining	Classroom	Manager Sponsored Training (OPLs)
<ul style="list-style-type: none"> <li>• Job safety analysis</li> <li>• Lockout Tagout</li> <li>• Facility security training</li> <li>• PPE training</li> <li>• Code of Conduct</li> <li>• Hazardous Communication Standard</li> <li>• Hotwork</li> <li>• Harassment</li> </ul>	<ul style="list-style-type: none"> <li>• First Aid / CPR / BBP / AED</li> <li>• Confined Space Entry / Rescue</li> <li>• Hearing Conservation</li> <li>• Emergency Response / Spill / ICS</li> <li>• DOT Hazardous Materials</li> <li>• Fire Systems / Evacuation</li> <li>• Fire Extinguisher Use</li> </ul>	<ul style="list-style-type: none"> <li>• Proper Pumping</li> <li>• Line Breaking</li> <li>• Winter Safe Practices</li> <li>• Hot Weather Safe Practices</li> <li>• Hydrogen Safety</li> <li>• Noise</li> <li>• Walking Working Surfaces</li> <li>• Ladder Safety</li> </ul>



Beyond TRT’s Safety Training Program, TRT has resources available to its employees to further their education, skills and knowledge of our business, industry and the technical skills that support both. These resources include tuition assistance; opportunities to participate in lectures, roundtables and seminars; and training systems for technical training. In 2017, TRT is expanding its technical training program to include six new curriculums that give employees training opportunities in: Process Safety, Process Controls, Pumps / Motors, Electrical, Mechanical and Operations skills development. By deepening our commitment to continued development of our employees knowledge of the business, safe practices and technical skills, TRT expects to have a more effective, safe and sustainable workforce.

The TRT Safety System also includes comprehensive programs such as Safety Auditing; Incident Investigation; Management of Change; as well as Emergency Response Plans that address: spill response, evacuation and fire systems, winter and tropical storm preparation, flooding, medical emergencies, pandemic procedures and earthquake response. All these topics are communicated throughout our organization regularly and are woven into our sustainability culture. Furthermore, our team reviews our performance on a monthly basis to ensure that we continue to improve upon our safety performance.

The health and wellness of our employees is also central to our ongoing success. **Approximately 55% of our employees are actively involved in our fitness programs.** Our newly installed onsite fitness center encourages our employees to prioritize health and wellness. Our monthly wellness bulletins, reimbursement for outside gym memberships, and free health and fitness assessments incentivize our team to stay on track with a healthy regime. Our mid-year and year-end 13-week fitness challenges also promote team comradery, health, and well-being.

## Our Customers

Customer satisfaction is a top priority at Twin Rivers. Our commitment to sustainability is consistent with the sustainability commitments of our customers. Many of them are large global companies that have embraced the concept of environmental and social performance, and expect their suppliers to do the same. This reinforces the business value of our programs, and involves all levels of the organization in the commitment to achieve our goals. To ensure that we are providing **consistent, high-quality products and services**, we offer our customers surveys that invite feedback on their experiences. These transactional surveys capture our customers' thoughts on our responsiveness, the quality of our products, and the likelihood that they will continue partnering with us in the future.

## Our Communities

Twin Rivers Technologies is located at the junction of two rivers, the Town River and the Weymouth Fore River, in Quincy, Massachusetts. The surrounding towns are clearly invested in the success of our company as an employer and a responsible member of the community. We work hard to maintain meaningful relationships with all stakeholders in our local communities.

Most importantly, we regularly engage with our local community regarding our safety and environmental programs. We provide annual emergency response training for our local Fire Department, mutual aid companies, ambulance services, and police watch commanders. Twin Rivers is a member of the Local Emergency Planning Committee (LEPC) and a member of the Port Operators Group (POG) and the Area Response Committees

### *Community Reaction Led to Twin Rivers' Pro-Action*

Local community members contacted Twin Rivers about a scent generated from one of our manufacturing processes. We immediately listened and responded to their comments and concerns, sought solutions that could reduce the production of scented-emissions, and installed a Regenerative Thermal Oxidizer. This device ceased the smell and strengthened our relationship with the local Quincy community.



TRT regularly participates in many community level programs. For example, Twin Rivers attends the Mayor's Economic Development Forum; is a member of the Local Emergency Response Committee (LEPC); has worked with the Quincy Parks Department for the Quincy Point Clubhouse rehabilitation project that supports renovations of the park, clubhouse, and ball fields both through volunteer efforts and donations.

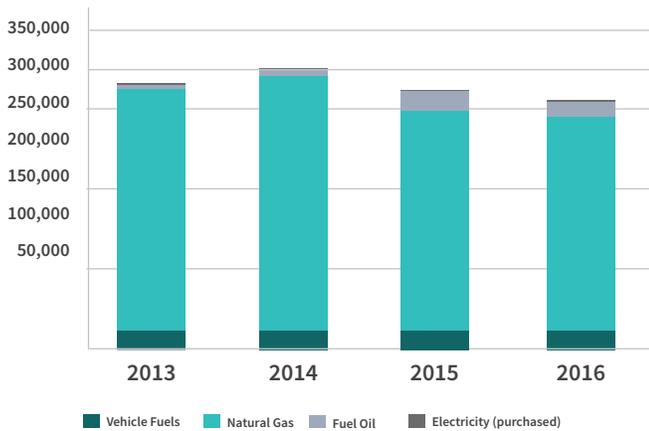
TRT also actively recruits from our surrounding community schools and local colleges such as Worcester Polytechnic Institute; MIT as well as the Massachusetts Maritime and U.S. Naval Academies.

Sustaining our success and commitment to sustainability involves thoughtful engagement with our employees, customers, and community. Our hope is to continuously develop and deepen positive relationships that result in meaningful contributions to our community and the overall satisfaction of our employees and customers.

# PLANET

We are constantly looking for ways to reduce our operations’ impacts on the environment. We do this through efforts in **energy efficiency, water conservation, responsible sourcing, and waste reduction**. Monitoring our environmental performance over time allows us to better understand our impacts on the planet and identify opportunities to improve in the future.

Year-on-Year Energy Use (MWh)



Twin Rivers was able to reduce energy from lighting by 60% in kilowatt hours (kWh) after the installation of motion sensors and highly efficient LED lighting. The lighting replacement project yielded over **580,000 kWh in energy savings** with \$78,000 of the annual savings during its first phase! Phase 2 is projected to have similar energy savings. This project is expected to have a payback period of less than two years. In addition, we installed a regenerative thermal oxidizer in 2015 that reduced process refinery volatile organic compounds (VOC) emissions by 15%.

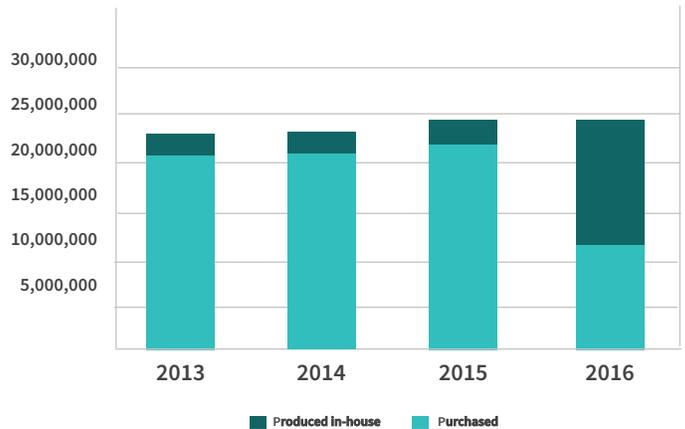
## Energy and Greenhouse Gas Emissions

Reducing energy use by proactively implementing conservation efforts at our facility is an important component of our efforts to reduce our environmental impacts and reduce cost. As a result, we achieved a 7% reduction of total energy consumption year-over-year.

# 7%

reduction of total energy consumption year-over-year

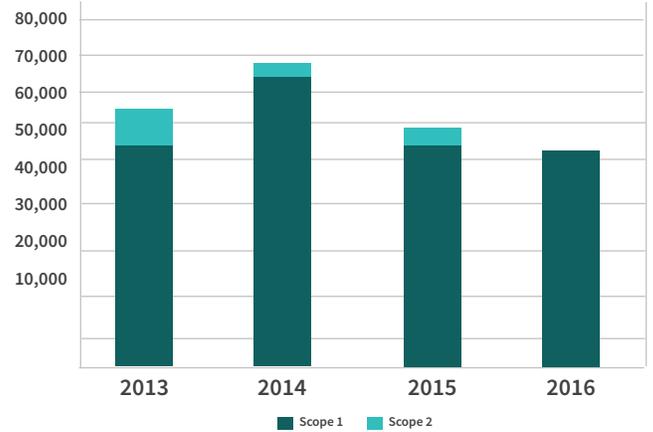
Electricity Consumption (kWh)



Over the past three years, Twin Rivers installed and commissioned a combined heat and power (CHP) unit that generates onsite electricity, captures heat that would otherwise be wasted, and uses that heat for space heating and hot water needs. After the system fully came online in 2015, **TRT produced over 48% of our total electricity demand in-house during the first and second quarters in 2016.** Our CHP unit is projected to save over \$1 million annually by producing 1.8 Mega-Watts (MW) of energy, which will ultimately reduce our overall external energy dependence by 15%.

**48%**  
of our total electricity demand produced in-house

GHG Emissions by Scope (MTCO2e)



Scope 1: Direct GHG emissions from sources owned by Twin Rivers (i.e. natural gas, vehicle fuels and refrigerants). Due to the biogenic differences between fossil fuels and biomass, the Scope 1 data is net of biogenic emissions. In 2014 and 2015 our biogenic emissions were 22 and 41,769 metric tons, respectively.

Scope 2: Energy indirect GHG emissions (i.e. purchased electricity, heating and cooling)

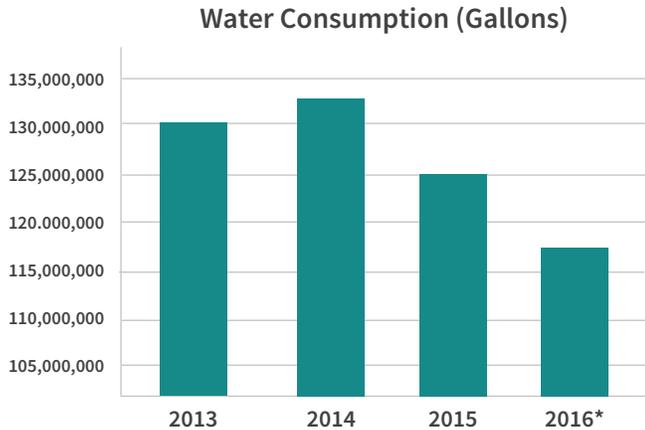
### Renewable Energy at Twin Rivers

Twin Rivers has performed feasibility studies to determine how to implement renewable energy initiatives at our manufacturing facility in Quincy. Pursuing clean energy sources such as wind and solar provides Twin Rivers with options for future opportunities to reduce our energy demand and greenhouse gas emissions.

Located on a 29 acre site in an active industrial marine terminal, the Quincy facility is bordered by the Weymouth Fore and the Quincy Town Rivers. Based on the results of a wind turbine feasibility study, the middle of the site near the Town River was considered viable for a commercial wind turbine generator. It was also determined that our Quincy site could implement a roof-mounted photovoltaic array. We will continue to consider opportunities as Twin Rivers explores renewable energy in the years ahead.

## Water Conservation

Water is a critical resource used in our production processes. We continuously explore ways to optimize our production systems to minimize our total water consumption and discharge. Conservation efforts that minimize the amount of water we consume per ton of product produced has been one of our key strategies.



An example of a recent water conservation project is a new regenerative thermal oxidizer (RTO) project. This project cut feed water supply from an antiquated system by 25 gallons per minute and prevented the same amount of wastewater from being discharged. This translates to over **13 million gallons of wastewater reduced per year, or a 20% reduction of our overall wastewater production.**

In addition to supporting our water conservation efforts, the RTO project has positively impacted the neighboring community by significantly improving odor control. Our wastewater discharge meets all local, state, and federal water conservation requirements.

The pursuit of near zero discharge is TRT's next major conservation effort. The design and development of a closed-loop pre-treatment system would prevent 58 million gallons of discharge and replace the same amount of feed water to our facility. This would not only help Twin Rivers, but would reduce demand on the Quabbin Reservoir, load on the MWRD Deer Island Plant, and by extension the Metro-Boston Commonwealth. This project has also led to our Glycerin System Segregation water conservation efforts, creating cost savings and a reduction in Biological Oxygen Demand (BOD) load. BOD load is an indirect measurement of the amount of organic pollution in a sample of water.

**13 MILLION**  
gallons of wastewater  
reduced per year

## Waste Reduction

Already classified as a Small Quantity Generator (SQG), Twin Rivers works hard to reduce and eliminate waste, an inherent component of our operations. As mentioned in our Performance chapter, the reuse of certain by-products of our processes has been an important step in reducing our overall waste production.

Due to the nature of our business, hazardous waste is a key area of concern at our facility. Twin Rivers has a longstanding commitment to reduce or eliminate the use of hazardous substances onsite. For example, we conducted a magnesium hydroxide study that helped us reduce onsite storage of hazardous materials and led to significant cost savings.

# PERFORMANCE

Twin Rivers is committed to providing high-quality, sustainable products using innovative processes with a high level of service. With the broadest manufacturing capabilities in our industry in the North American market, we continue to make capital investments in new technologies, allowing us to explore new ways to bring continued value to our customers.

## Responsible Sourcing and Sustainable Products

We manufacture a variety of fatty acid and glycerin-based products using many different starting materials. These materials include coconut oil, palm oil, palm kernel oil, soybean oil, and animal fats. TRT's responsibility is to provide the products that our customers request, while recognizing that each of the materials we require for manufacturing present unique environmental challenges. We are committed to upholding **responsible sourcing practices to reduce the environmental and social impacts associated with our products.**

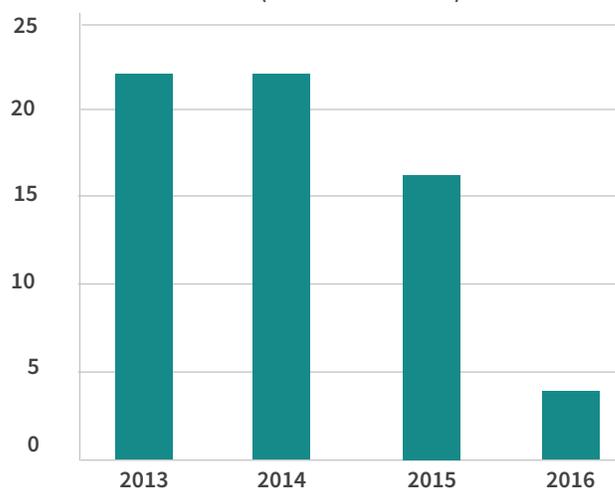
For example, as consumers become more aware of palm oil-related deforestation, Twin Rivers has taken strides to demonstrate its commitment to being a responsible partner. Inspired by a customer request, in 2013 we became certified by the Roundtable for Sustainable Palm Oil (RSPO), a multi-stakeholder initiative to reduce the negative impacts of palm oil cultivation on the environment and communities. Over 40% of our total production is coconut-based fatty acids and the majority of our products are palm oil-free. We remain the leader in our industry for renewable and certified-sustainable raw materials, with 13% of our product line offered as RSPO Certified Sustainability Mass Balance Fatty Acids. Moreover, in 2016 began offering both Kosher and Halal certified vegetable fatty acids for consumers with specific dietary or lifestyle requirements.

## Production Efficiency

Twin Rivers' first priority is to reduce our by-product generation. In doing so, we have discovered innovative opportunities to reduce by-products from our processes. For example, we are now creating animal feed from some of our by-products, allowing us to transform by-products into a marketable commodity, while reducing our environmental footprint at the same time.

**70%**  
decrease in by-product  
quantity in 2016

## By-Product Generation (Millions of Pounds)



*\*Estimates based on last year's actual numbers tied to a ratio measuring the changes in production and in utilities and applying a multiplier based on the average difference of the two.*

*\*In 2015, we achieved a 30% reduction in our by-product streams compared to 2013. As a result of our continued reutilization initiatives, we expect to achieve a 70% decrease in by-product quantity in 2016.*

# LOOKING AHEAD

Twin Rivers Technologies' goal is to be the sustainability leader within the oleochemical industry. Meeting today's, and more importantly, the future needs of our customers and stakeholders is of paramount importance. Looking forward, we will continue to undertake initiatives to improve our sustainability.

## In 2016 we initiated the following activities in our sustainability program:

- The second phase of our lighting project which has enabled us to achieve a reduction of over 570,000 kWh
- Installation of the new pH control system
- Engineering of the closed loop water reuse system
- All while continuing to generate a significant portion of our total electricity demand in-house via our CHP unit
- Expect to reduce our by-product quantity by 70%



Continuing to implement sustainability initiatives such as these will help Twin Rivers Technologies foster an engaged culture that consistently demonstrates integrity, dependability, and value.





**Twin Rivers  
Technologies**

Integrity, Dependability & Value

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