Zero Net Waste Program

The PLASTICS Zero Net Waste (ZNW) Program recognizes the companies that have taken steps to drive toward zero net waste in manufacturing. These companies have demonstrated leadership in landfill diversion, waste reduction, and most importantly a commitment to ensuring valuable resources go to the highest and best use. The ZNW program offers members the tools and resources that will help them successfully achieve their recycling and waste reduction goals. And as a Zero Net Waste program participant, they can broadcast those successes to their community, employees, and customers.

The concept of Zero Net Waste encompasses the idea that all byproducts of manufacturing and business can either be reduced or managed at end of life that creates a benefit that is higher than landfilling or incineration without energy recovery. While this program is a voluntary recognition program, qualification and ongoing verification is required for participation. This is not a third-party certification program. If successfully implemented, this program will compliment and help prepare companies for other third-party certification programs. Because certification programs can vary, it is advised that if certification is the end goal, participants should first understand which certification they would like to achieve so they can capture the proper metrics throughout their zero net waste journey.

Qualification and verification occur in two stages. In stage one, a company that commits to pursuing zero net waste as an office, manufacturing facility or at a corporate-wide level must fill out and submit the qualification document. Completion of this step indicates the company has performed the first steps to begin their journey to zero net waste. Once a company has documented successes in diversion, they may submit the verification checklist and supporting documents that demonstrates this success.

The Plastics Industry Association has created this work instruction to break down the beginning stages of zero net waste recognition.

Step 1: Facility Walk Through

The facility walk through is the beginning step in the zero net waste journey. The walk through is a visual activity that will answer a series of questions to help define the overall waste and recycling collection systems. This step will also help identify current gaps in collection and communication, which could easily boost diversion of certain materials. The walk through should be completed with the help of the facility manager, production managers, janitorial staff, and the sustainability team (if applicable). Make sure to review each area in the facility; offices, production floor, shipping/receiving, cafeteria, etc.

- o What goods or materials are being produced in the facility? What is the average production volume in one week?

- What other supplemental items are required for business? Example: Gloves or other personal protective equipment (PPE) may be used in a facility in high volumes but may be reduced or recovered.
- How and where are scrap materials being collected?
- Identify areas where waste is generated and collected. Is there an adequate amount of recycling containers to provide access to recycling?
- Could you reduce the number of garbage containers, or reduce them significantly in size to emphasize recycling behavior?
- Is placement of the containers for garbage and recycling optimized for ease of participation in recycling?
- How much contamination is in your current recycling streams?
- How much recyclables are ending up in the landfill bound garbage?
- Are there large amounts of any single material in the landfill bound garbage that could be good targets for recovery?
- Do you have any systems for special materials like post-industrial scrap, batteries, electronics, film, etc. that likely cannot be recovered through your traditional hauling services?
- Do you have material tracking systems in place? Weekly/monthly tracking? Enterprise resource planning (ERP) system?
- Is recycling communicated throughout the facility? Is standard and universal signage being used? Are employees educated on current recycling systems in place?

Step 2: Trash Can Waste Characterization

Walk through the facility and look in different waste bins. Create a list of all the different materials seen in the waste bins. This list will be used for waste sort categories. Nothing is too small to be included on the list! Typically, there are between 20-40 different categories. You will need to decide how detailed each category is. While some companies may just use "plastic" as a category, it is best to be as detailed as possible so that the material streams can be identified after the waste sort. Improved categories could be "Grades 2-7", "Polypropylene", "LDPE", etc. Remember, a category for "landfill" can be created. There will always be materials that cannot be separated into a recycling stream.

Step 3: 24 Hour Waste Sort/Material Characterization

A waste sort is designed to give companies a snapshot of current materials and recycling production. This will be the first large step in the zero net waste journey. A waste sort team should be assembled, and it should include employees from all different areas of the facility. First, ask and see if there is interest in participating. You may find that most employees are passionate about sustainability but may not know how to be involved in the program. This is a great start for them to see firsthand how the recycling

programs work and if they are being followed. Upper-level management should also be involved in the waste sort. Showing management the waste/recycling streams is important for company buy-in. This eye-opening activity will stress the importance of sustainability at any company. Designate one team member as the data recorder.

The waste sort will require 24 hours' worth of collected facility waste. The most effective way to complete this is to start with a completely empty dumpster/compactor. It is best to do this at the beginning of a business day so that your team can monitor the bin throughout the day. Do not inform the rest of the facility about the waste sort or the empty dumpster, so that results are not skewed. Contact your waste hauler to deliver an empty dumpster/compactor on the desired waste sort date. After 24 hours remove the dumpster and pull it aside to the sorting area.

The categories defined in the Trash Can Waste Characterization will be used as the categories in the waste sort. A sign and a bin will be needed for each category so that the sort team knows where to separate the different materials. Gaylords are a good receptacle for the waste sort categories. They are big enough to hold a large amount of material, and most plastic companies have a lot of empty ones on hand.

It is suggested to arrange the bins into a circular pattern so that waste can be separated in the center and then easily sorted. Tables should be placed in the center of the sort area so that trash bags can be cut open, emptied, and easily sorted. Remember, safety first! Provide the sort team with gloves, safety glasses, aprons, and any other tools that will keep them safe when sorting through the waste. This activity will be dirty! A large tarp should be placed under the sorting bins and area to minimize clean up.
A link to the waste sort work instruction can be found here.

Step 4: Data Collection and Diversion Rate Calculation
When the sample is completely sorted, weigh each container, and record the gross weight. Record zero for waste not found. The tare weight, which is the weight of the containers, should be recorded on the container sign and on the data sheet as well. The tare weight minus the gross weight equals the net or actual weight of the waste.

Step 5: Setting Goals
After completing the waste characterization, it is important to set a target goal for improved waste diversion. When setting the recovery goal, it is important to stretch, and yet be realistic. Even the most stringent third-party certification programs generally consider 90% recovery or above as varying levels of zero landfill success. It is widely recognized that there will likely be some residual non-finished commercial product materials that cannot be eliminated.

These two goals: reduction of unnecessary generation of potential waste materials and diversion of such produced materials, work together to be more efficient in business, and create revenue for unavoidable product scrap downstream.

The baseline calculation of waste diversion will follow this simple formula:

$$\frac{Weight\ of\ Recycling}{Weight\ of\ Recycling + Weight\ of\ Landfill\ Waste} \times 100$$

The baseline calculation can be completed after the waste sort is completed. The 24-hour waste weights can be expanded to reflect one year. In order to determine the weight of recycling, a material tracking system or ERP software is necessary in calculating this data.

Step 6: Qualification and Verification Checklist Completion

Qualification Checklist

Verification Checklist