DAIMLER TRUCK

North America

Metal Recycling and Scrap Optimization Project

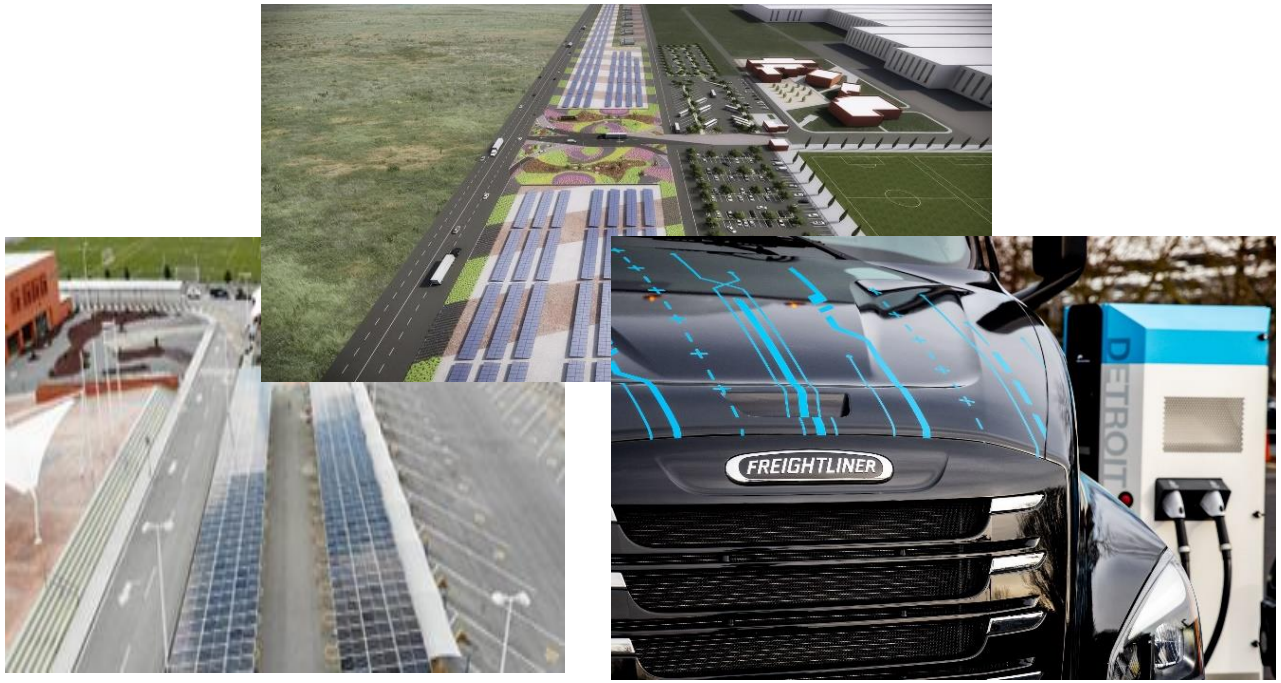
Daimler Truck North America – Gastonia
and Commercial Metals Corporation

2022 NCESI

Project Origins

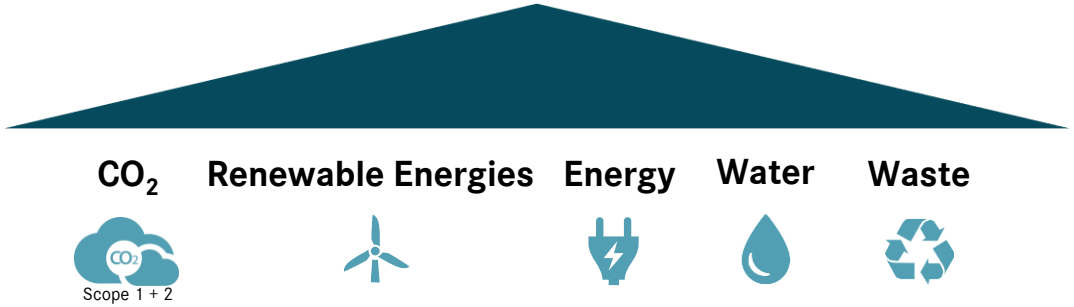
In 2020, Daimler Truck launched GreenProduction:

- This initiative is the reduction of energy, water, waste, and VOCs through 2030 to help drive a greater carbon neutral ambition.
- As part of this, the Gastonia team recognized that the recycling of metals as a significant impact due to the high volumes produced daily.



greenproduction 2030

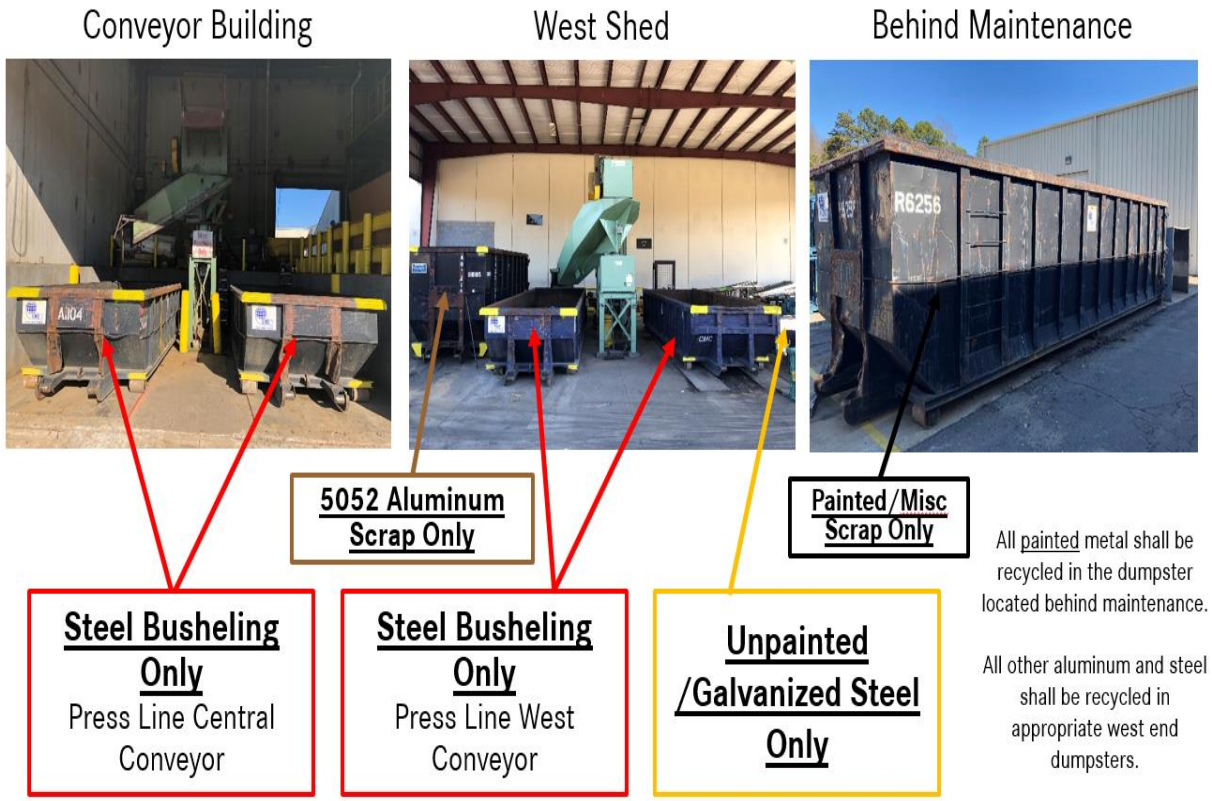
CO2 . VOC . Energy . Water . Waste .



Current vs. Future State

Due to the high volume of metal fabrication, Gastonia recycled on average 49 million pounds of scrap or 45% of purchased material. This material was poorly sorted and frequently required additional processing prior to being sent to mill for recycling.

Highly trained sorting was initiated to segregate metals by type and recycling process to ensure that recycling is optimized for maximum efficiencies and recoupment values.



Project Steps – Step 1

Gastonia partnered with Commercial Metals Corporation to assist with metal identification.

Determination made if material is:

scrap (material from no production activities or quality rejects) or

bi-product (material from production process)

Final identification was to determine what material can be transported direct to the kiln with no further processing (size, contamination, type)

Unplanned Collaboration of LEAN Project into a LEAN GREEN Event!

IP Inventory Management Lean Expert Project

Start condition

- Lack of visibility for in process work which causes IP inventory to be in black hole and not possible to determine where inventory is located
- IP inventory being located at docks for excessive timeframes after being picked
- No transparency for scrap tracking or unreported scrap
- Vendor gap traceability for non-usable material

Requirements

- Implementation of BarCloud scanning system to create visibility for real time transactions and location accuracy
- Set standard timeframe and allow BarCloud to heightened awareness of alloted timeframe for picked parts
- Identify reported scrap vs non-reported scrap
- Evaluate production downtime cost due to unusable

Targets

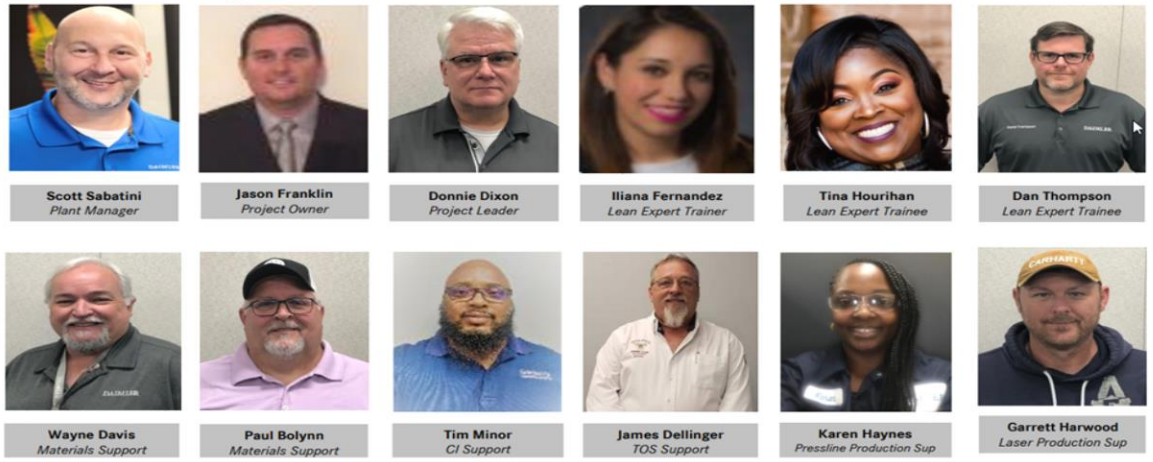
RESULT KPI

- Create 100% visibility for material live transactions.
- Create visibility for unreported scrap values.
- Vendor accountability of non-usable material

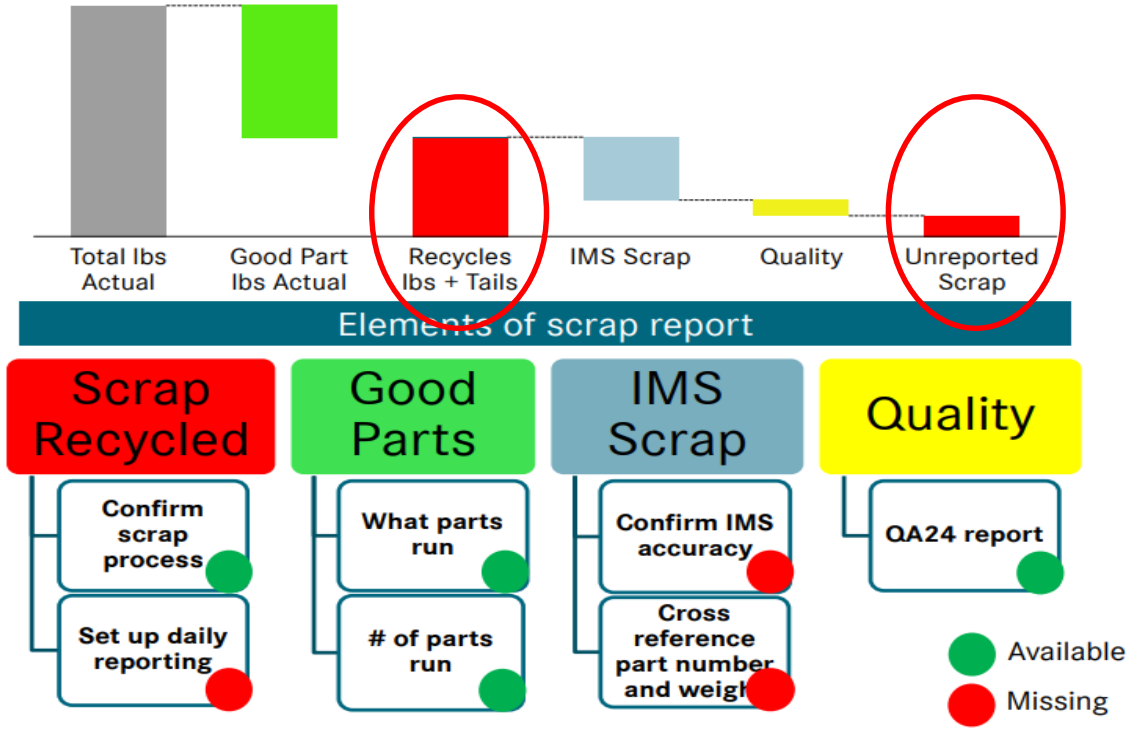
CONTROL KPI

- 100% visibility for real time transactions and location visibility
- Reduce Auditor time looking for parts from 40% to 20%
- Reduce sitting time of P parts coming from Fairview in average of 11 days to 3 days max
- Location and inventory accuracy of P parts at 95% or greater
- Daily tracking of recycled scrap, good parts, and scrap allowed in IMS
- Increase traceability percentage of non useable materials to increase vendor chargebacks

Project Core Team – IP Inventory Management



During the exploratory phase it was discovered that an existing LEAN Expert project would also benefit from the identification and sorting of material!



Unplanned Collaboration of LEAN Project into a LEAN GREEN Event!

Creating scrap report allows better inventory adjustments and defines a starting point for CI

Visibility Of Scrap

Before: No scrap reporting

After: Weekly / Monthly scrap reporting initiated

- Set up parts • Anything thrown away during set up
- Poor Quality • Parts that do not meet spec
- Tails • Beginning and ends of coils

Areas to investigate for CI of scrap reduction

Owner = Donnie Dixon
Owner back up = Paul Bolynn
Set Up Admin = Mark Moore
System = PowerBI
Automation = Yes
Frequency = 3rd Monday of every month
CMC Data = Jill Campbell

Roles and Responsibilities assignments

- Provides starting point for continuous improvement of main contributor of unreported scrap
- Weekly Go and See will help establish
- Ownership of Roles and Responsibilities established

This reporting now allows Gastonia to see what is included in the scrap and now focus on reduction efforts more effectively.

Initial estimates resulted in ~$100k monthly in savings on “scrap” material

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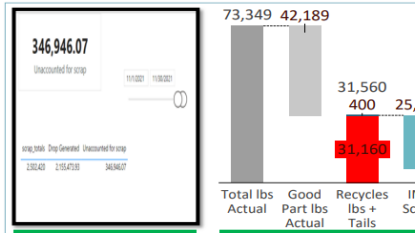
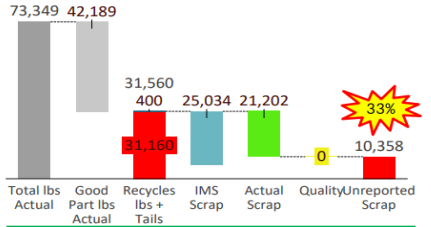
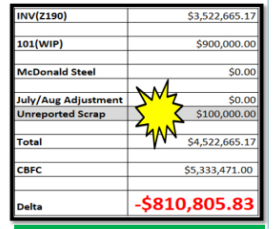


Automated scrap report



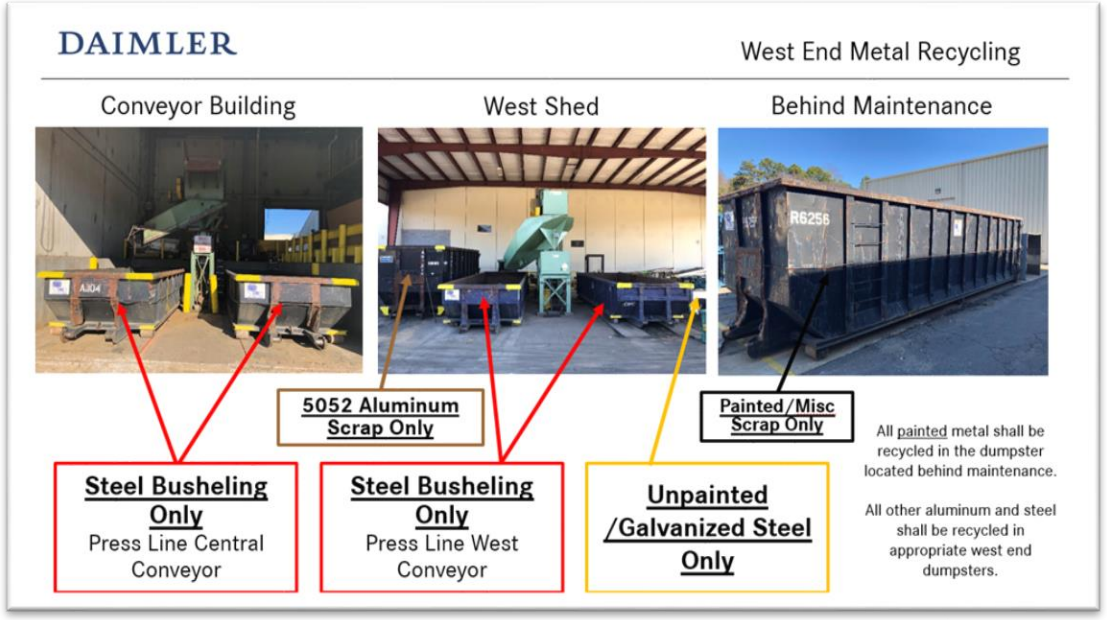
Breakdown of scrap



Inventory adjustments

- Automated scrap report
- Breakdown of how scrap report is created
- Provides information for inventory adjustment every month

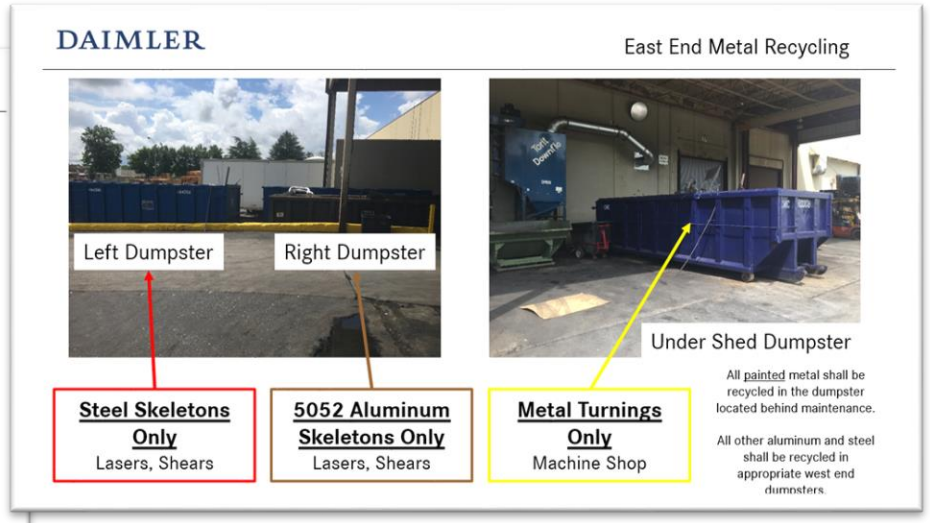
Project Steps – Step 2



TRAINING

To ensure that the material is properly collected, transported and sorted all employees needed to be trained on the process. They needed to understand the following key elements:

- Why do we need to do this
- Who is responsible
- How to identify materials
- How to collect in the appropriate sorting manner



Why do we recycle our metals

DTNA – Gastonia and Commercial Metals Corporation (CMC) have partnered in recycling of metal from our facility.

- This partnership allows DTNA – Gastonia the ability to maximize our metal recycling opportunity while earning maximum recoupment value for our material sent.
- This recoupment is realized through reduced handling to sort, reduce transportation costs, and earning mill pricing when shipped direct.

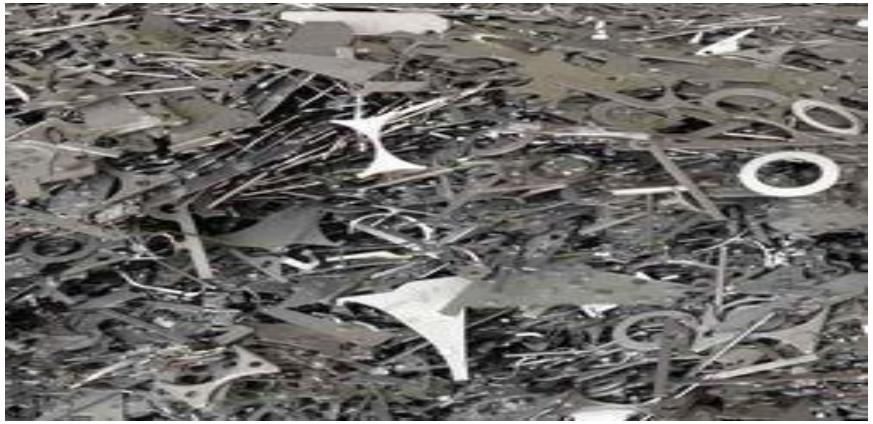
Roles and Responsibilities

It is all DTNA – Gastonia employee's responsibility to ensure that the disposal of waste or recycled materials must do so in accordance with company environmental requirements and government regulations. – *Gastonia Safety Rules Rev 9 1/2/2020*

What is Bi-Product vs Scrap

Bi-Product – this is the waste generated from the production process. Often, this waste is necessary in manufacturing and therefore difficult to eliminate through waste reduction efforts. Bi-product waste here at Gastonia would be:

- Trimmings from the press line operations
- Machine turnings from machine shop
- Laser/punch skeletons from plate shop



Scrap – this waste is made up of material that has previously had or manufactured for an intended use. This would be:

- Rejected parts
- Decommissioned equipment, workstation, tooling, etc.
- Any other maintenance or facility management metal waste

Sorting Standardization

A visualized method of sorting has been developed to help ensure the sorting process is conducted from the point of generation, through collection, and finally during transportation to the recycler.

Metal is sorted by:

Bi-Product

- Aluminum
  - 5052 Aluminum (Mostly coil aluminum)
  - Aluminum with plastic film
  - 3003 Aluminum Diamond plate
  - All other Aluminum (MLC)

- Steel
  - Conveyor Steel Busheling
  - Unprepared, banding, galvanized
  - Stainless Steel/Galvanized Steel

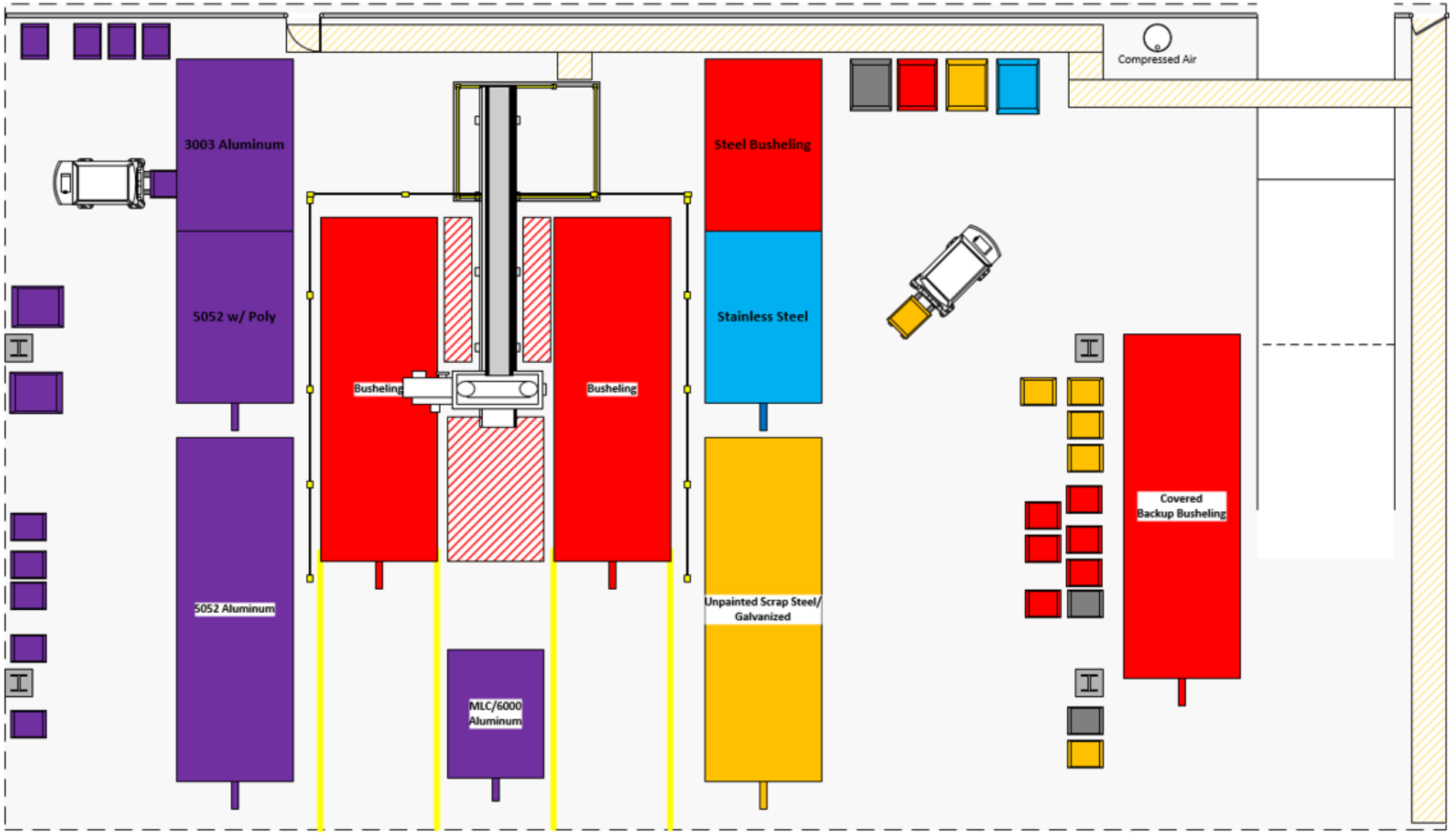
Scrap

- Aluminum
  - Rejected Aluminum parts
  - Aluminum waste (i.e. tooling, racks, etc.)

- Steel
  - Rejected painted/unpainted parts
  - Maintenance scrap steel
  - Decommissioned equipment, tooling, etc.

Sorting Standardization

West End Metal Recycling Shed:



Not pictured:

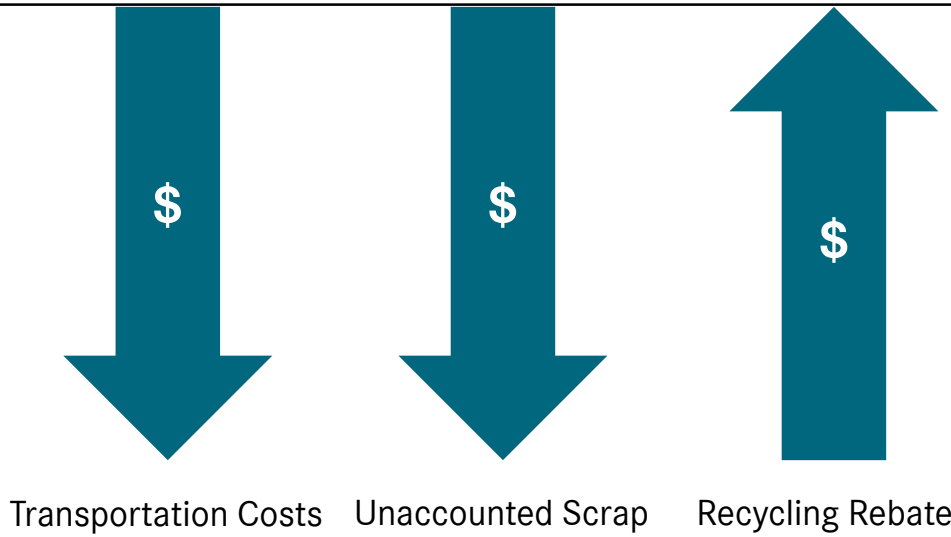
Behind Maintenance
- Scrap Metal

East End
- Steel Skeleton
- Aluminum Skeleton
- Machine Turnings

Aluminum Cans

Results

- Recycled metal rebates increased by 23%.
- Transportation reduction to/from recycler vendor



= **Savings to Customers**
Investment to other GP Initiatives

- Reduction in Toxic Release Inventory reporting
- Reduced CO_2 emissions from decreased transportation