

# Steel Manufacturer Simulation Reveals True Constraint of Truck Weighing Process

Global Steel Manufacturer

Success Story

Metals Manufacturing

ProModel Optimization Suite



## CHALLENGES

A 100-year-old global recycler, manufacturer, fabricator, and distributor of steel and related metal products, has corporate headquarters in the USA. One of their growing facilities in the south was uncertain that current truck weighing processes could easily handle future volume projections. They suspected the infrastructure and/or business practices needed to change to meet growing demand.

They asked ProModel Corporation to evaluate flow constraints associated with the current truck weigh-in and weigh-out infrastructure and procedures. This would help them better analyze the proposed addition of a new entry weigh-in location.

## OBJECTIVES

A simulation model that helps them answer a variety of predictive questions around their truck weighing processes:

- Identify the congestion/constraints of both the current-state and future-state processes
- Verify that the proposed capital plan will adequately address key constraints and/or improve the process
- Identify the true capacity of the current-state truck processing system



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## SOLUTION

A ProModel consultant worked with the team to construct an initial current state truck flow model. Scale report data was examined and company subject matter experts (SMEs) were interviewed to fill in data gaps. The model was populated with typical activity times and capacity constraints for scales, scrap unload, slag pick-up, finished goods loading, and tarping areas. A working model utilizing all of these inputs was tested and refined during validation and verification efforts. Next, some future state scenarios with an additional inbound scale (also changed the use of current inbound/outbound scales) were developed with additional scenarios experimenting with increases to finished goods truck volume.

The model allowed several scenario parameters to be experimented with.

- Future truck flow volumes with varying mix and schedule
- Loading and unload points processing times
- Tarping requirements
- Truck travel speeds
- Inserting additional scale location

There are five types of truck loads:

1 = Finished Goods, 2 = Scrap, 3 = Slag, 4 = Pre-Loads, & 5 = Internal



## VALUE PROVIDED

A reusable simulation-based decision support tool that allows them to measure and validate current weighing, loading, and unloading processes as well as test future scenarios. For example, 11 scenarios were tested and run for 30 unique one-month replications and compared to the baseline. These ranged from 20%-100% increase in truck volume with and without the additional scale. The results were insightful and not supportive of the initial capital planning estimated justification.

The model determined that adding another inbound scale would not reduce the typical total truck flow cycle time significantly, so the organization delayed this capital improvement indefinitely. This model insight prevented the organization from investing \$1.5 million in assets and modifications that would not have accomplished the desired outcomes. Furthermore, the model also showed that the bottleneck area was really in finished goods loading. In a follow-up engagement, ProModel modeled that area and validated specific capital upgrades that would improve capacity by 30% without affecting cycle times. It was also discovered that a significant reduction in average cycle times could not be achieved without specific scheduling initiatives.