

An Incremental & Coaching-Based Approach To Implementing Successful Inbound Pool Points



EXECUTIVE SUMMARY

Author

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in consultation with Jim Ludwig,
Orchard Supply Hardware (now part of Lowe's)

Summary of the Initiative

OSH management performed an analysis of TMS data and identified an opportunity for dramatic cost reductions.

They observed a high number of small volume, prepaid shipments from nationwide vendors to Orchard Supply Hardware's West Coast DC. Software modeling suggested that a network of pool points (cross-docking facilities) could yield substantial savings if they:

- (1) transitioned more vendors to Freight Collect and a sailing schedule
- (2) implemented inbound load consolidation, multi-stop truckloads and strategic use of intermodal

In practice, adding pool points to a transportation network is like changing the tires on a moving car. It seems impossible to do without disrupting the momentum of your business. Effecting the necessary changes required a combination of strong leadership, compelling financial projections, and cultivating a mindset of continuous improvement, rather than managing exceptions.

A successful Southern California pool point was followed by another in Chicago. Three more are coming online soon.

Innovation

The first innovation was working incrementally and breaking an ambitious project in multiple parts and phases, rather than outsourcing to consultants and attempting a larger simultaneous implementation. The second was to implement a sailing schedule, PO performance tracking, and an automated scorecard system to monitor adherence to the schedule by vendors. The third innovation was creating a cloud-based data warehouse to enable multi-year analysis of the savings from the project, and a platform for a set of new initiatives. But the greatest innovation was providing substantial coaching to the operations team such that once the pool points were configured, they could confidently manage MercuryGate's Mojo Optimization tool on a daily basis.

Impact

Year One savings generated by two inbound pool points:

- 697,632 Miles (41% of total freight spend in these regions)
- 76,814 Gallons of Diesel
- 1,719,104 Pounds CO₂ (780 metric tons)
- \$230,000 in Reduced Freight Costs (68% of total freight spend in these regions)

Applicability

Even shippers with regional distribution and high seasonal variability can take advantage of inbound pool points and reap significant savings. All shippers can benefit from taking an incremental and data-driven approach that builds a mindset of continuous improvement in their supply chain team.

This initiative was a true triple bottom line success, boosting company profits, advancing the skills and morale of the people involved, and reducing the company's carbon footprint.



year one
freight
savings

direct miles
without pool points

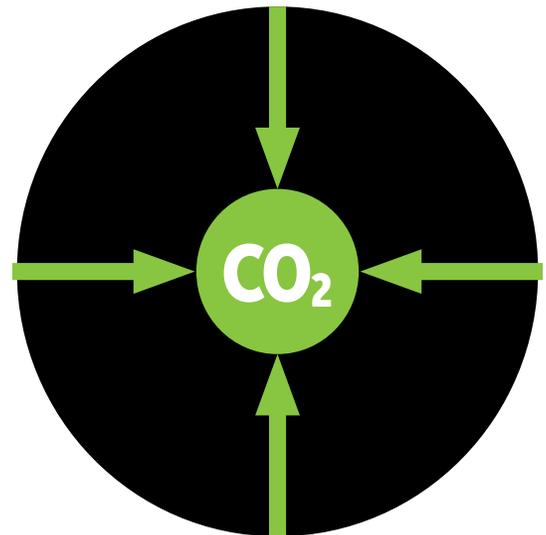
1,019,873



322,241

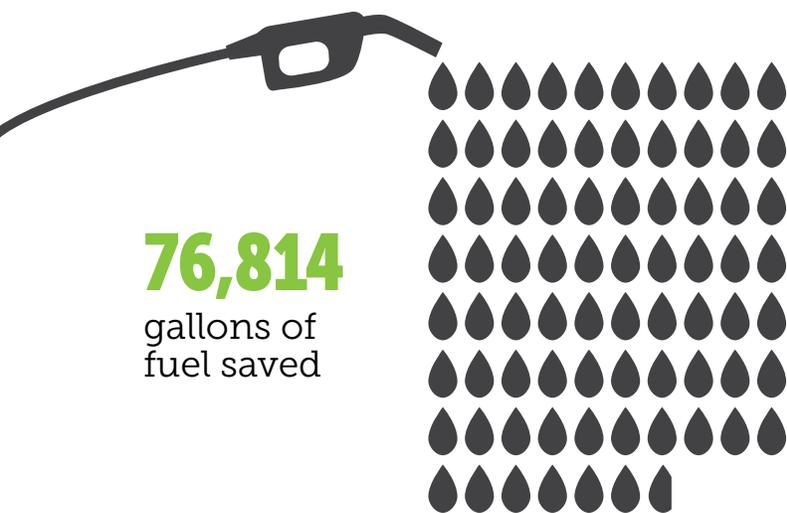
miles driven
using pool
points

68%
reduction in
carbon footprint



76,814

gallons of
fuel saved



An Incremental and Coaching-Based Approach To Implementing Successful Inbound Pool Points

As the old saying goes, if you want to get to Philadelphia, first you have to know where you're starting from. In 2012, the executive team at Orchard Supply Hardware (OSH) undertook an industry benchmarking exercise and thoroughgoing assessment of its transportation and warehouse operations, with the assistance of Supply Chain Coach, a California-based company. The assessment revealed advances by the competition and many significant opportunities for savings at OSH.

OSH's Operations Team then adopted Supply Chain Coach's structured, six step process that worked from data extraction to analysis, design, construction, implementation and iteration. Their first implementation was a pool point in Southern California that consolidated inbound but also took advantage of un-utilized fleet backhaul to the DC in Northern California. They immediately built on that success with a Midwestern pool point in Chicago, and are preparing for 3 more pool points east of the Mississippi. Along the way, they built capacity in the operations team, as well as an appetite for new challenges that could be described as a mindset of continuous improvement.

If You're Standing Still, You're Falling Behind

Some key findings of the benchmarking study:

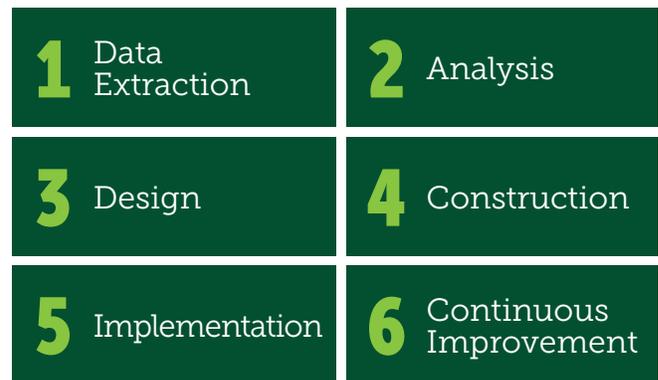
- OSH was using MercuryGate TMS but for a number of reasons had not fully implemented it for carrier selections or for effecting a meaningful volume of load consolidation. In short, incomplete implementation was preventing them from reaping the benefits of TMS on either a day-to-day or strategic level. The Establish/Davis Database as well as Logistics Management studies indicated that from 2010-2011, the average company's transportation costs had decreased 5%+, despite the gradually improving economy, the 28% average increase in gas/diesel prices, and TL/LTL price increases of 7-8%. But OSH's transportation costs were flat or increasing.
- From published case studies, OSH could determine that its far larger competitors (Home Depot, Lowe's, and Ace Hardware) were all using TMS to effectively manage their inbound transportation and take full advantage of their national networks of stores and distribution centers, with robust savings to the bottom line.

- OSH's retail footprint was regional (<100 stores on the West Coast and a single DC in Tracy, California), but their supplier network was national. OSH had annual sales of under \$200 million at the time, and like many companies of its size, being small and regional resulted in having relatively high transportation costs as a percentage of sales. OSH was going to have to work smarter to even the playing field with its larger competitors.

A Step-by-Step and Data-Driven Approach

Extracting historical data on inbound and outbound shipments is both an essential first step and a difficult one for most companies. Clean and accurate historical data is often hard to locate both internally and from the carriers who handle the freight. While it's tempting to settle for partial or shorter timeframe data, undertaking this sort of analysis without a 12- or 24-month period of shipments is like building a house without a real foundation.

OSH's Operations team, led by Jim Ludwig, followed Supply Chain Coach's 6-step disciplined approach.



Working side by side with analysts at Supply Chain Coach, they extracted OSH's data and used MercuryGate to conduct an analysis that would identify multiple opportunities for improvements to cost structure, visibility, and smoothing the receiving process.

What follows is a greatly condensed summary of the analyses conducted, and the findings that suggested a Southern California pool point as the first in a series of initiatives, each of which they would take on incrementally.

By taking projects in phases, the team would avoid the pitfalls of taking years to develop grand plans too complex for practical implementation within a system already at capacity.

STEP
1

Data Extraction

While the blended team (OSH and Supply Chain Coach) already had some ideas of what kinds of consolidation and optimization might be called for, they put these aside and approached the data objectively at first to see what approaches would present themselves. To establish a baseline for modeling, they populated the TMS with historical purchase order details such as origin, destination, weight/cube, freight cost, freight class (if LTL), mode, prepaid vs collect, and delivery date. OSH's outbound was handled by its own fleet, so this analysis looked exclusively at inbound freight

STEP
2

Developing a Freight Profile and Modeling Scenarios

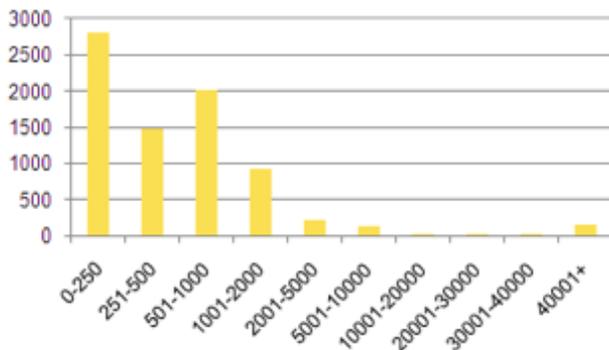
The next step was analyzing the shipment history to develop a freight profile. This consists of origin and destination maps and mode specifics used to determine which "what if" scenarios to focus on. The data would lead the team to consider these two scenarios:

- *What if OSH introduced one or more pool points in the Midwest to consolidate vendor direct-to-store and vendor-to-DC shipments? What would the impact be of consolidating collect with and without prepaid shipments? How much savings would be achieved by optimizing into multi-stop TL shipments without pool points?*
- *What if OSH leveraged their fleet's unused backhaul from serving their Southern California stores to bring inbound freight the Tracy DC via a SoCal pool point?*

The team used MercuryGate to create reports and visualizations (charts, plots and heat maps) that revealed these opportunities. They also used MercuryGate to model these scenarios and study the optimized results.

They began with the freight profile:

Vendor Direct to Store Weight Breaks



The Majority of Vendor Direct-to-Store Weight Breaks Was Less Than 1,000 lbs

Over a one-year period, the vast majority of Vendor Direct-to-Store loads was under 2,000 lbs, and a clear majority was under 1,000 lbs. This confirmed that there would be ample LTL shipments from multiple vendors that could be consolidated, if the right combinations of weight, cube and origin could be found.

Next: the significant volume of heavy shipments ranging from 5,000-20,000 (shown below, left) suggests that there would be an opportunity to consolidate these shipments with the lighter loads previously shipped direct-to-store.

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87% of Freight Collect Shipments Were in the 0–20,000 lb Range

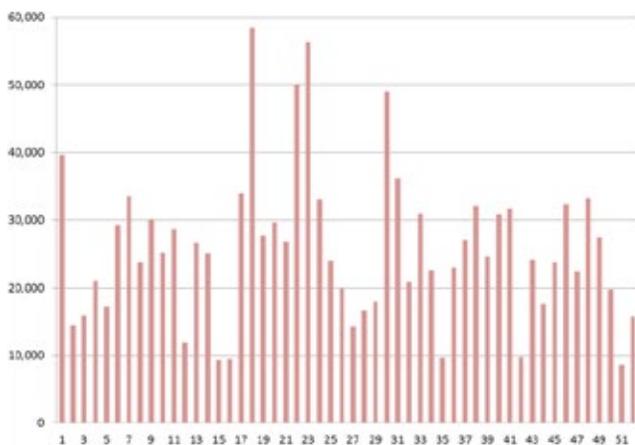
Already having some validation for implementing pool points, the team then looked at the subset of Collect shipments to the DC separately from the Prepaid, knowing that it would be easier to exert control over collect shipments. It was decided that transitioning vendors from Prepaid to Collect would be a project unto itself, best approached in a later phase. Rather than taking on too many initiatives simultaneously, they would break up ambitious projects into more quickly achievable units, beginning with those with the highest potential impact.

Having 90% of collect shipments in the 0-20,000 lb range and a high percentage <5,000 lbs pointed to pool points, where the smaller number of heavier loads could be combined with these numerous smaller loads to drive more LTL to Intermodal. Running these optimizations through MercuryGate made it possible to schedule pick up dates for hundreds of vendors to allow sufficient time for lower cost intermodal moves. At the same time, the total number of loads would be reduced sharply, which would reduce stress on the loading docks at OSH's single DC.

Collect Cube Per Week and Per Month Indicated High Variability Week to Week

Looking at Collect Cube and Weight per week, it became evident that loads were highly variable week to week, in addition to larger seasonal peaks during summer. The team considered whether only the weeks with higher cube and weight might be able to use the pool points. This kind of modeling is necessary to assess whether a meaningful volume of load consolidation will actually be possible. OSH would also need to find a cross-docking facility that would accept this week-to-week variability. Fortunately, the throughput of cube and weight per quarter were roughly equivalent. This further supported the working hypothesis that a third party cross-docking facility could be secured, and that pool points could be effective through a majority of the year.

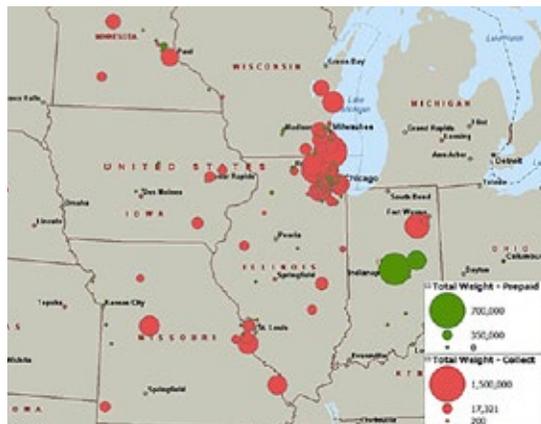
Collect Cube Per Week



Collect Shipments by Day & by Origin Pointed to Chicago for a Midwestern Pool Point

Reviewing the Collect and Prepaid shipments arriving at the DC by weight, cube and frequency, the team confirmed that the greatest concentration of loads were coming from Illinois and environs and that Chicago would be most likely to be an effective Midwestern pool point, even without the Prepaid (to be added later, as a second phase).

Vendor Ship From Locations Heavily Concentrated Around Chicago



A Southern California Pool Point Selected as the First Initiative

In 2012, OSH had 90+ stores, concentrated almost entirely in California, and managed store replenishment with its own fleet, which allowed it a great deal of visibility and control. But these trucks were returning to the Tracey DC empty. A California pool point could take advantage of this un-utilized fleet activity. The pool point would consolidate inbound freight from vendors, and OSH's fleet would backhaul it North to the Tracey DC after servicing the Southern California (SoCal) stores. By not returning to the DC empty, dramatic savings could be realized. In a second phase of improvement (to be undertaken later), the pool point could be used for direct to store service to the SoCal stores. Once again, rather than taking on too many changes simultaneously, the team worked incrementally and built on success.

STEP 3

Designing the Pool Point Network

From historical freight data the team could be confident that the SoCal and Chicago pool points would yield significant savings. Having identified the solution, there remained a substantial amount of groundwork to prepare for implementation. Rather than performing the work for OSH as traditional consultants do, Supply Chain Coach worked in parallel with the OSH Operations team through a series of phone meetings and screen-shares to ensure that OSH developed the skills and experience that would enable them to actively manage the pool point network as it grew and evolved through the already validated and planned phases to come.

What Would Success Look Like?

In this phase the blended team established the metrics by which they would measure success. Freight cost reduction would be primary, but they were also looking for ways to equalize the receiving schedule at the DC, which had too many shipments were arriving at the DC on Mondays, which created tension with carriers. If loads could be better distributed, loads could also be handled more safely and efficiently, with potential savings in labor management as well.

STEP
4

Construction

During the construction phase, OSH built the business rules that would support the initiative. This is where the complexity of pool points shows itself, because it would require the cooperation and collaboration of hundreds of vendors.

Creating a Sailing Schedule for Chicago that Hundreds of Vendors Could Accept

Orchard Supply Hardware was formed in 1931, in the midst of the Great Depression, as the Orchard Supply Farmers Co-operative. Thirty farmers and fruit tree ranchers each put up \$30 and formed a cooperative to buy essential farm supplies. If this inbound pool point initiative was going to succeed, OSH was going to have to tap into that spirit of cooperation. Instead of choosing the sailing schedule arbitrarily, they selected delivery dates that were aligned with the greatest number of vendors and loads already.

All shipments were expected to arrive at the pool point on Monday and Tuesday, such that they could be transferred to intermodal on Wednesday and reach the Tracy DC the following Tuesday. The majority of vendors were largely continuing as before, but load consolidation would be happening, and as an added bonus, the DC would receive fewer shipments overall, and far fewer on Monday.

Proposed Sailing Schedule, by Region



Configuring the Rules for Optimization and Pool Point Consolidation

Understanding both the business and the carriers is needed to utilize the Mojo tool to its greatest extent. When the parameters were originally configured, the delivery date was chosen as the key date for OSH. All of the other parameters were configured based on that assumption.

Over time, as OSH sought to generate more consolidation opportunities, the parameters had been tweaked in various ways until they were no longer functioning as intended. The parameters can also create loads that the carriers may not want to handle.

Once the parameters were adjusted properly, OSH could generate the consolidation opportunities and find carriers to execute the loads. What's more, OSH's operations team developed a deeper understanding of the logic behind the parameters, so they could make further adjustments as situations called for them.

STEP
5

Implementation

Use of these pool points would mean significant changes to business practices: All Chicago area vendors would have to ship on the same days of the week. OSH would load orders for next few days and run MercuryGate's Mojo, which would generate the least-cost solution for every shipment, according to the 35+ variables it considers. Mojo would assign the loads to the pool point when warranted.

STEP
6

Continuous Improvement through Iteration and Extension

At this point, OSH's operations team had gone through the entire process from data extraction to implementation, and had a team capable of regularly revisiting the data and proposing new solutions. At Supply Chain Coach's recommendation, the first post-implementation review was done about six weeks after implementation, when they had captured a complete set of data on operating results for the initiatives.

Tracking the Results via Custom Reporting

To support the process of continuous improvement, Supply Chain Coach set up a cloud-based data warehouse to facilitate reporting. Simply put, rather than querying MercuryGate's servers, a separate server would be utilized, hosting several years of OSH's MercuryGate transactional data. Then a custom transformation program was implemented to automatically generate specific custom reports. Having this data warehouse in place would also provide a platform for future projects under discussion, like an integrated dashboard for Carrier Tracking Links.

To Ensure Compliance with the Sailing Schedule, OSH Created PO Performance Reports & Vendor Report Cards

In addition to transitioning vendors from Freight Prepaid to Freight Collect, the team also used the data warehouse to generate PO Performance reports that answered the following questions:

*Did we get what we ordered when we wanted it? What was the requested Collect ship date from the vendor
When did the carrier actually pick up?
(Vendors tend to blame the carriers
Was it delivered on time?*

Shifting more shipments to Collect means that OSH has to wait for notification, which may come too late to keep the EDD. The use of this report and the following innovation enabled OSH to identify which more easily recognize whether it was a carrier or a vendor that was keeping loads from being properly optimized through the pool points. They could also measure the real cost of carriers and vendors straying from the sailing schedule, which they could communicate to these supply chain partners, improving accountability and ultimately, compliance.

Phase 2: Iteration of the Chicago Inbound Pool Point

While outside of the scope of this case study, additional phases of work continue through more robust iterations of the pool points. As mentioned earlier, more vendors are transitioning to Collect from Prepaid, and distribution to Southern California stores from the SoCal pool point will begin soon, extracting even more value from that initiative, while minimizing disruption.

Modeling of Prepaid Combined with Collect and Optimized with Pool Point (Chicago)

The chart below (left) shows the results of modeling and reveals the massive scale of freight cost reductions possible once Prepaid is combined with Collect and optimized with the Pool Point. A full integration would yield \$1,775,965 annually.

Phase 3: Extension to Additional Pool Points

The key to identifying and running a pool point is combining small shipments with a large shipment. As the success of the first pool points was well-established, the operations team could consider additional pool points in Kansas, Ohio, Georgia and Texas, where a significant percentage of shipments would be less than 2,000 lbs per pool point region. The team is also modeling and considering multi-stop loads with pickups at multiple pool points or vendors, integrated with delivering some shipment repackaged and ready for direct delivery to stores, bypassing the Tracey DC altogether. In short, the pool point network is becoming a platform for further incremental optimizations. The next step, direct to store, will yield considerable savings, as shipments bypass or are cross-docked direct to store.

Vendor Shipments to Tracy DC by Location and Weights



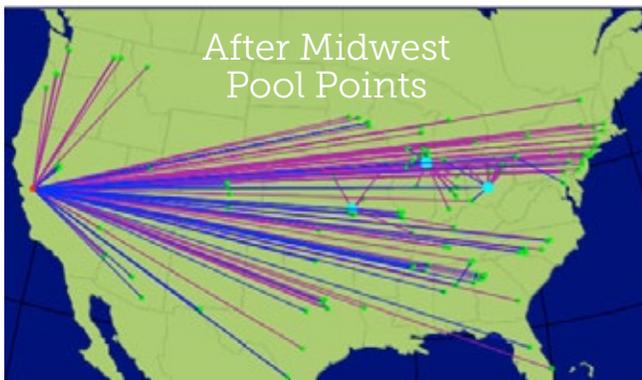
	Original Cost	Optimized Cost	Savings	Annualized Savings	% Savings
Collect (original consolidation & mode)	\$1,444,383				
Prepaid (no consolidation)	+ \$835,590				
Baseline Model Total Freight Spend	= \$2,279,973				
Collect (optimized)		\$1,132,339			
Prepaid (no consolidation)		+ \$835,590			
Total Freight Spend		= \$1,967,928	\$312,044	\$1,248,176	13.7%
Collect (optimized with pool points)		\$1,123,715			
Prepaid (no consolidation)		+ \$835,590			
Total Freight Spend		= \$1,959,305	\$320,667	\$1,282,669	14.1%
Collect and Prepaid Combined (optimized together)		\$1,912,977	\$366,995	\$1,467,982	16.1%
Collect and Prepaid Combined (optimized together with pool point)		\$1,835,981	\$443,991	\$1,775,965	19.5%

Before and After the Pool Point Implementation

This image below, generated with MercuryGate, depicts the inbound transportation network before the implementation of inbound pool points.



The image below shows the impact of implementing multiple (existing and planned) Midwestern pool points, simplifying the network and yielding significant savings.



24%
savings

Chicago Pool Point

Cost w/o Pool Points
\$100,000

Actual Thru Pool Point
\$76,000

SAVED \$24,000

45%
savings

SoCal Pool Point

Cost w/o Pool Points
\$463,000

Actual Thru Pool Point
\$256,000

SAVED \$207,000

Results for separate SoCal optimization run (not pictured).

CONCLUSIONS

Full Utilization of TMS is Rarer Than You Might Think

Orchard Supply Hardware distinguished itself as an organization by investing in its capacity, embracing a mindset of continuous improvement and extracting significant value from their TMS. Many larger companies don't. According to Dwight Klappich, research vice president at Gartner, only "roughly 50 percent of firms with \$100 million+ in revenues are currently using a TMS, while only about 10 percent of those in the \$25 million to \$100 million range are doing so." Of those current TMS owners, just 25 percent say they are "fully utilizing" their systems. "There are many shippers that are using pieces and parts of their transportation systems and aren't realizing the full benefits of their investments."

A Sailing Schedule is Key to Successful Implementation of Pool Points

Disruptions in store replenishment are magnified by the current lean inventory and just-in-time delivery environment. Running out of stock in retail locations cost sales but also customer loyalty. Building control and visibility by shifting more Prepaid to Collect, and building systems for accountability with vendors is key to actually driving more loads into the pool points and seeing the level of cost reduction seen with Orchard Supply Hardware.

Cost Of These Initiatives was a Small Fraction of Year One Savings

Because much of the work was completed by OSH's own operations team, and the scope was carefully controlled, the cost of these initiatives was less than 10% of Year One savings. Additional value was created through the coaching OSH received from Supply Chain Coach, which is enabling them to continue to pursue additional optimization opportunities.

Strong Results, Less Risk: An Incremental and Coaching-based Approach to Continuous Supply Chain Improvement

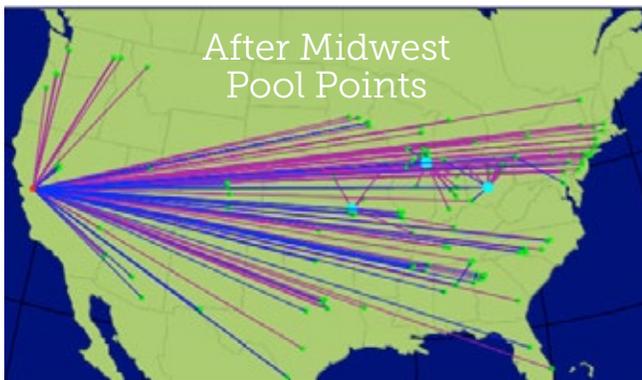
The reader of this case study might criticize the approach described as moving too conservatively. But we are all familiar with supply chain initiatives being dismissed as risky. Who hasn't heard a horror story about an over-ambitious project that went awry? By working incrementally in phases, each step pre-validated by modeling with MercuryGate Mojo, Orchard Supply Hardware was able to innovate without disruption, and cultivate a mindset and blueprint for continuous improvement.

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