Deloitte.

Making the case for inventory optimization

Overview

Inventory is not free. Chances are, you are holding more inventory than is in your rate base, possibly diminishing your earnings potential through regulatory lag and O&M carrying cost expense.

The days of inventory being considered an asset with expected rate recovery are long gone. Inventory investment is increasingly under scrutiny by both management and the utility commissions. The industry is learning that inventory needs to be effectively managed and budgeted.

Figure 1. Core ingredients of inventory excellence

GOVERNANCE
Align behavior and incentives to the desired inventory outcomes sought. You need to measure what you want to improve.

TOOLS
Enable the business with planning and management tools that support insight development and reflect operational realities.

VISIBILITY
Have the ability to "see" and continuously monitor inventory levels and targets, to sustain optimal levels.

INVENTORY STRATEGY
Have a formal inventory strategy tied to overarching business objectives.

ANALYTICS
Build ability to segment and diagnose the root-cause and effect relationships that drive inventory.

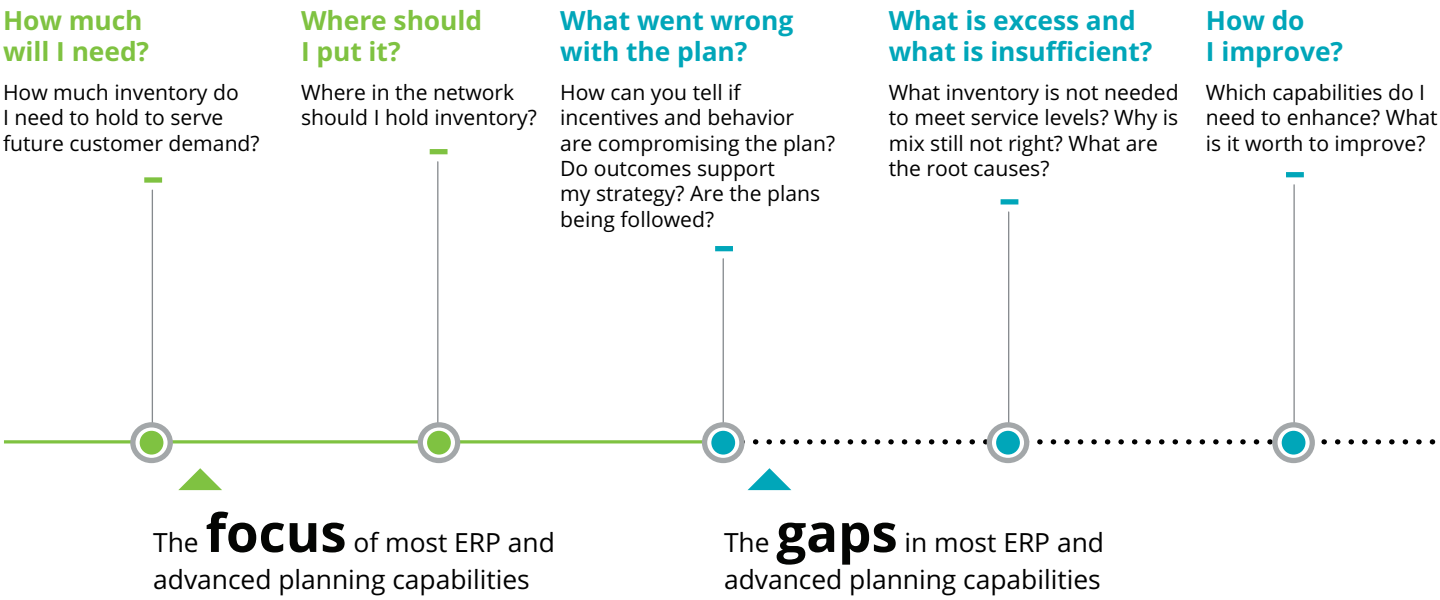
PROCESS
Inventory planning, monitoring, and rebalancing should be an integral part of overall supply planning and execution.

Chief among the cost of inventory is its ongoing carrying costs. This includes warehouse facility costs, labor costs associated with managing inventory, and recurring costs related to taxes and insurance. The typical inventory carrying costs are found to be within the 7%–16%[1] range, inclusive of the weighted average cost of capital. The variable components of the inventory carrying cost, taxes and insurance, represent a significant portion that is directly attributed to the inventory value.

A secondary impact on inventory is related to regulatory lag. Inventory balances are typically included in the original rate base during rate case filings. Unfortunately, as inventory balances grow, it is often not reflected in the current rates. The utility suffers a lag or delay in being able to recover these costs (if ever) in their rates. Furthermore, utility commissions are pushing back on increasing inventory levels related to future rate cases. This is due to the utilities' perceived lack of discipline in controlling the growth of inventory.

Figure 2. Focus on the gaps

Too often, companies look at inventory management as a "black box," hoping that their investment in planning systems will address all of these foundational ingredients.

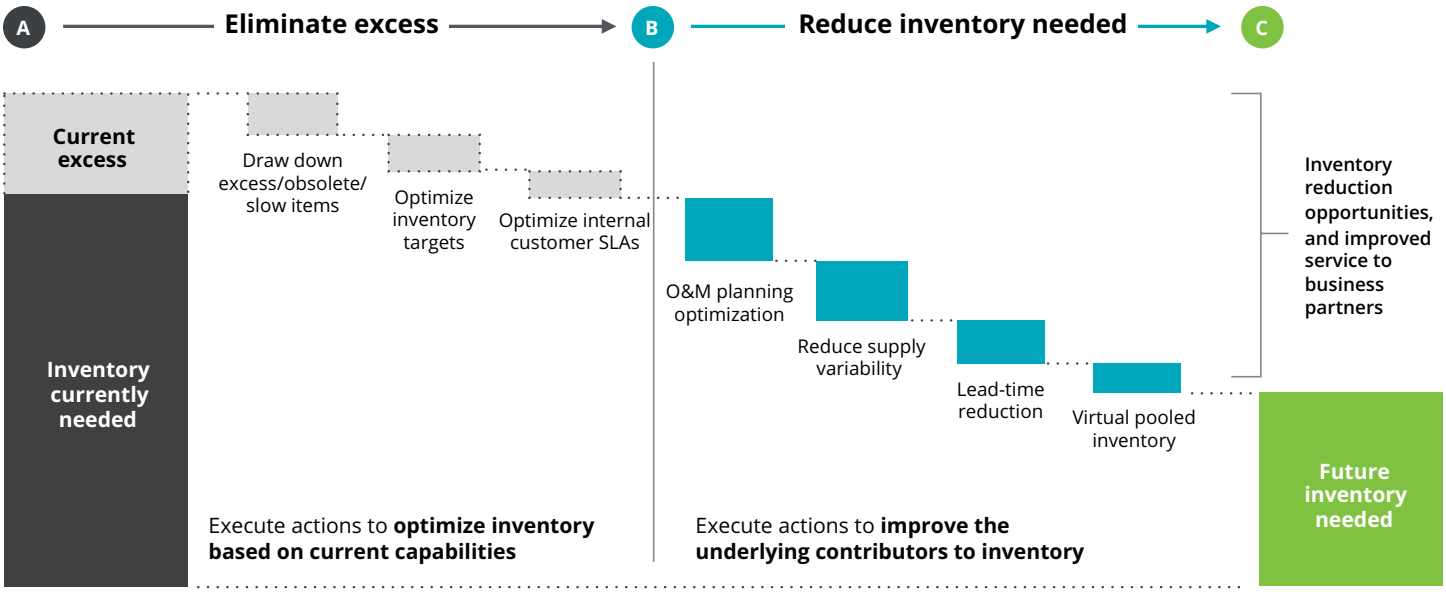


Perhaps the most worrisome costs are those that are unplanned and unforeseen. Many companies do not adequately budget for annual obsolescence of aging inventory that is no longer used and useful. Once inventory is identified as obsolete, it must be segregated from inventory, with the book value written off to an operations and maintenance expense account.

Most organizations assign obsolete inventory expenses directly to the business unit and asset base, and not at a corporate level. This practice may lead to disincentives on behalf of the business units to proactively assess their aging inventory. A best practice is to budget for obsolete inventory at 3%–5% value of your company's static inventory levels. Static may be defined as inventory that has been in stock for over five years with no goods movement (excluding critical spares).

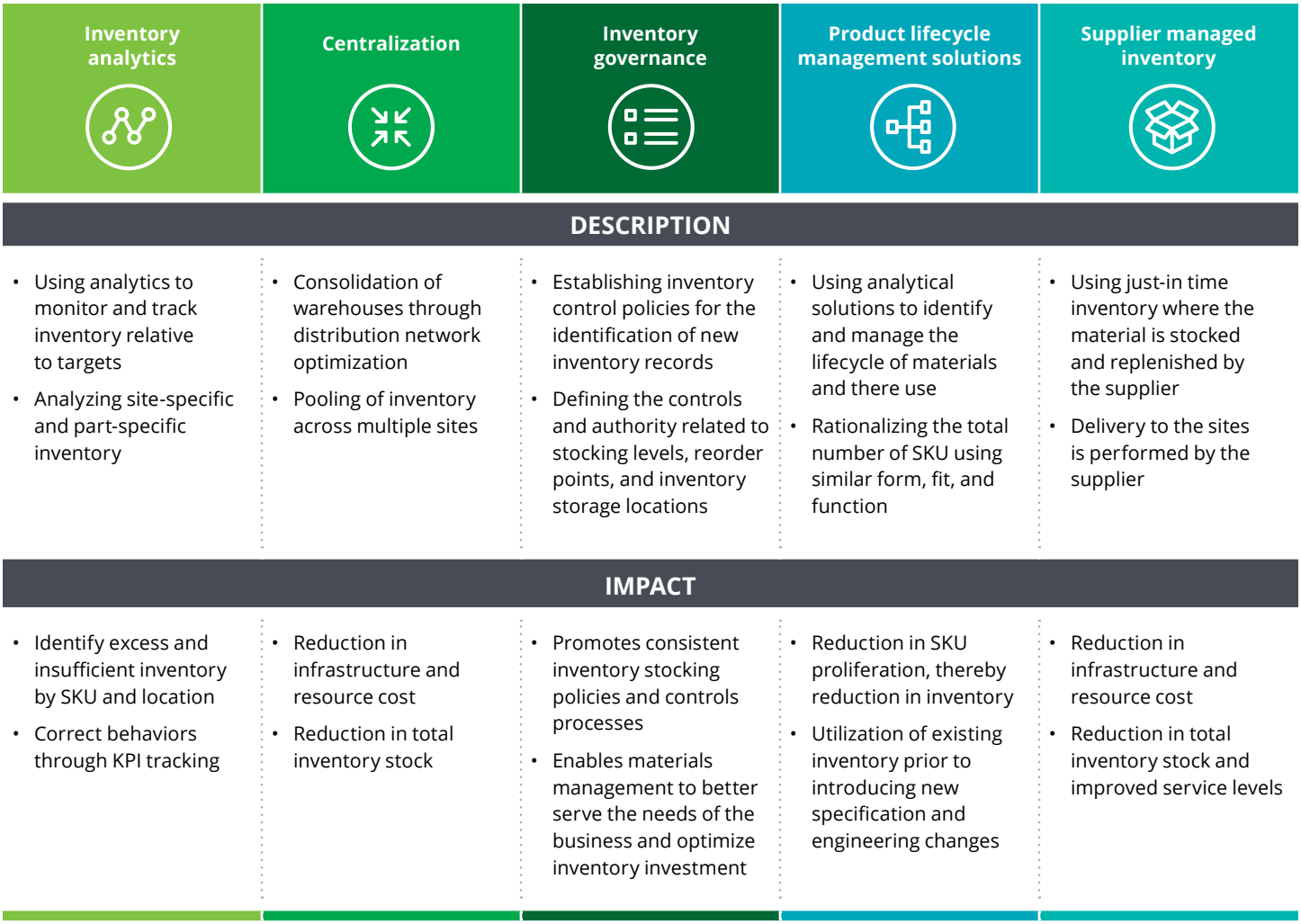
Figure 3. Insight driven change

This improvement approach is built upon the capability to derive and act on insights into how to both eliminate excess and ultimately reduce inventory needed.



Inventory management levers

Figure 4. Inventory management levers



Inventory analytics

The logical question most companies have is *"How much inventory should I own?"*

Benchmarking inventory value with peer utilities is a good place to start. There are several well-established inventory benchmarks based on an organization's asset portfolio. A common benchmark involves measuring the inventory value of maintenance and services (M&S) materials over megawatt hours of generation. This data is publicly available for FERC-regulated electric utilities through FERC Form 1 reporting, found at www.ferc.gov. Common metrics for transmission, distribution, and gas operators include the value of (M&S) inventory per customer and as a ratio of distribution line miles.

A company's stocking policies dictate how much inventory is stocked and where the inventory is held. This is typically defined by establishing minimum and maximum stocking levels and reorder points within the ERP systems. Many organizations establish reorder points in a decentralized manner, allowing each stocking location the authority to determine its preferred inventory stocking levels. These locations can be prone to confirmation bias in establishing stocking levels. Instead of using proven inventory optimization algorithms, stocking decisions are influenced by the painful memories of the last time a stock out was experienced.

Inventory stocking levels should consider demand for the item over its lead time. To say it another way, how much inventory will be used in the time it takes to get the materials from your suppliers. The lead time for many high-volume items may be less than a few days. Utilities should ask themselves, why carry a high inventory stocking level if your suppliers are already stocking it?

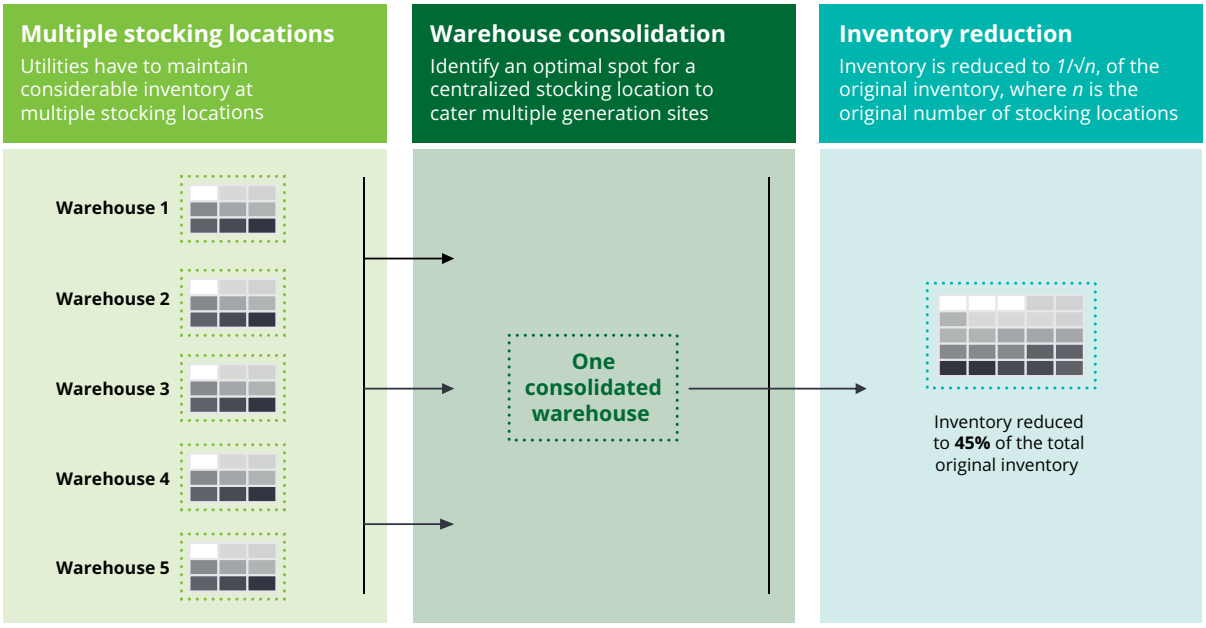
Advanced analytics can be an important capability for improving inventory optimization. Leveraging predictive inventory consumption models can enable the assessment of expected inventory usage and stocking policies. An example would be developing an analytical model to forecast the use of equipment and materials required for storm restoration. Historical consumption data from past storms in combination with storm severity forecasting can be modeled. This could provide valuable insights that lead to fewer stock outs and better use and placement of existing inventory. With the help of data analytics, utilities can determine what inventory is potentially needed, and then conduct a deep-dive into how and where to make improvements.

Centralization

Establishing central inventory stocking policies for common materials that are used across several locations can lead to improved optimization and lower inventory investment. Often each plant or operations center has independent stocking policies for the exact same items. This practice artificially increases the total required inventory value at an enterprise level, with limited benefits. Companies should consider establishing virtual, pooled inventory policies at an enterprise or regional level instead of having individual stocking locations.

Most work management and inventory management systems have the capability to plan and manage inventory on an enterprise basis across multiple stocking locations. This can provide significant benefits in enabling distribution network optimization for stocking materials at a virtual or central location. Demand for a material can then be fulfilled first through established distribution stocking locations, as opposed to initiating a one-off purchase order to the supplier. With the use of a market leading supply chain network optimization tool, utilities can optimize warehouse network, transportation, and inventory on a strategic basis.

Figure 5. Inventory reduction through warehouse consolidation[2]



Inventory governance

While governance is often overlooked, it could be one of the main drivers for improving inventory usage. Companies should consider establishing policies and guidelines for how they control inventory. Specifically:

- What materials will be stocked, and where will they be stocked?
- What level of inventory should be established for stocking policies?
- How should returns be accepted?
- How should obsolete inventory be determined?

A strong inventory control policy supported by system controls can help address many of these questions. Inventory decisions made independently by each location without centralized oversight may contribute to increased levels of inventory investment.

A leading practice is to establish a centrally managed team of experienced inventory professionals to be responsible for inventory governance. These professionals can evaluate requests to add items to inventory and to adjust inventory stocking levels. Additionally, a centralized team is often better positioned than local teams to make decisions related to accepting direct charge materials or returns into inventory. These decisions should be made on an analytical basis, free from local influence and bias.

Product lifecycle management solutions

Product Lifecycle Management (PLM) technology solutions can play a major role in optimizing inventory across the enterprise through the rationalization of SKUs. The creation of unique SKUs for materials that have the same fit, form, and function can lead to improved inventory balances. PLM solutions, such as Deloitte's DesignSource™, can be instrumental in identifying materials with common characteristics and facilitating SKU rationalization across the enterprise. Fewer SKUs lead to fewer inventory stocking requirements.

CASE STUDY 1:

Inventory reduction through SKU rationalization

Companies have reduced their direct cost and inventory on-hand by reducing SKU proliferation and promoting reuse.

Typical commodities for SKU rationalization:

HARDWARE
- Fasteners
- Bolts
- Anchor nuts
- Rivets
- Bearings

ELECTRONIC
- Capacitors
- Resistors
- Inductors
- Logic IC
- VLSI

ELECTROMECHANICAL
- Solenoids
- Motors
- Generators
- Pumps

OTHERS
- Raw materials
- Components
- End-use products

Value driving objectives:

- Rationalize parts with same or very similar attributes
- Harmonize suppliers and negotiate volume discounts and best part pricing; execute engineering change
- Realize purchased part cost reduction, improved productivity and inventory reduction in the short term
- Promote reuse by creating design standards and incorporating attribute data into PLM/ERP

DesignSource™

DesignSource™ is Deloitte's proprietary tool that has helped numerous clients quickly identify exact duplicate and identical parts, enabling savings through rationalization where no form, fit, or function difference occurs—minimizing parts proliferation while gaining value.

Company	Categories analyzed	Total direct cost savings
Global automotive OEM	Functional mechanical, decorative plastics, electrical	8–12%
Global medical device manufacturer	Functional mechanical, electrical	25%
Global industrial heavy equipment manufacturer	Functional mechanical, electrical	20%
Industrial product manufacturer	Functional mechanical, electrical	8–18%

Supplier managed inventory

The responsibilities for inventory optimization should extend beyond the company's organization to include its supply base. Suppliers can play a critical role in managing inventory levels within stocking locations through defined replenishment service levels. Additionally, suppliers may be called upon to maintain dedicated reserved stock at their distribution centers. This transfers the ownership of inventory back to suppliers until it is required.

Adopting a holistic view of inventory management, combined with the use of marketplace tools, can help utilities control their inventory growth and improve inventory utilization. Deloitte has engaged with numerous clients across industries to help companies pull one or more of the five levers of inventory management (see figure 4 on page 5).

CASE STUDY 2:

Inventory reduction through supplier managed inventory (SMI)

A large utility company used Supplier Managed Inventory (SMI) model to save over 20% of its baseline spend on electrical distribution equipment (EDE) and MRO products.

LEVER	IMPACT
Process efficiency	• Elimination of 1500 transactions annually • Reduction in the number of purchasers by 2 FTEs, due to process efficiency • Improvement in material availability from 93% to 97%+ • Reduction in payment to the vendor for material delivery services • Elimination of invoicing through EDI (electronic data interchange) enabled direct charge process
Volume consolidation	• A 6% reduction in the cost • 1% rebate on EDE (electrical distribution equipment) and MRO products • Supplier consolidation from 115 to 1 supplier
Inventory carrying cost	• 80% reduction in the total inventory of EDE and MRO products • Reduction in the number of warehouse personnel by 22 FTEs, due to outsourcing of warehouse function • Revenue gains from leasing of 50% of the warehouse space freed up by the reduction in company owned inventory

Contacts

To discuss one or more of such potential opportunities within your company, feel free to reach out to any of the contacts below.

Ian McCulloch
Managing Director
Power & Utilities | Supply Chain
Deloitte Consulting LLP
imcculloch@deloitte.com

Grant Poeter
Managing Director
Energy, Resources, and Industrials | Supply Chain
Deloitte Consulting LLP
gpoeter@deloitte.com

Ayush Prasad
Senior Manager
Energy, Resources, and Industrials | Supply Chain
Deloitte Consulting LLP
aprasad@deloitte.com

Endnotes

1. Marisa Brown, Director, Knowledge Center, APQC, Supply Chain Management Review July/August 2011, "Inventory Optimization: Show Me the Money."

2. Keely L. Croxton and Walter Zinn (2005), "Inventory Considerations in Network Design," *Journal of Business Logistics*, Vol. 26, No. 1, pp. 149–168.

Deloitte.