DRIVING SAVINGS VIA INBOUND LOGISTICS NETWORK DESIGN

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AGENDA

- Project Background
  - Objective
  - Context
  - Approach
- 3 Designs (Overview, Methodology, Key Results)
  - Consolidated Inbound and Outbound Shipments
  - Supplier Village
  - Reallocate Nearby-Site Flow and Storage
- Key Takeaways

KEY TAKEAWAYS

- There is an estimated 10% savings opportunity by consolidating inbound and outbound logistics.

- Supplier Village could yield further savings, analyzed from a total supply chain standpoint.

- Reallocating RM/PM with FG can be a decent saving opportunity, under certain constraints.

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PROJECT BACKGROUND

- **OBJECTIVE:** Find ways for the company to reduce inbound logistics costs

- **CONTEXT:**

  - The company is constantly evolving its supply chain

  - Primary focus had been on outbound logistics

  - Key opportunity to improve visibility and processes for inbound logistics

APPROACH

- **HYPOTHESES:**
  - The company can get savings by
    - Leveraging better economies of scale than their suppliers
    - Leveraging existing supply network design
- **ACTION PLAN:**
  - Identify 3 project sites
  - Identify existing opportunities to streamline inbound logistics for these sites
  - Create general models for evaluating these savings opportunities
  - Test general models on the test sites

CURRENT HYPOTHESES

| NETWORK DESIGN	SITE 1	SITE 2	SITE 3
Consolidated inbound and outbound shipments		X	X
Supplier Village		X	X
Reallocate Nearby-Site Flow and Storage	X		

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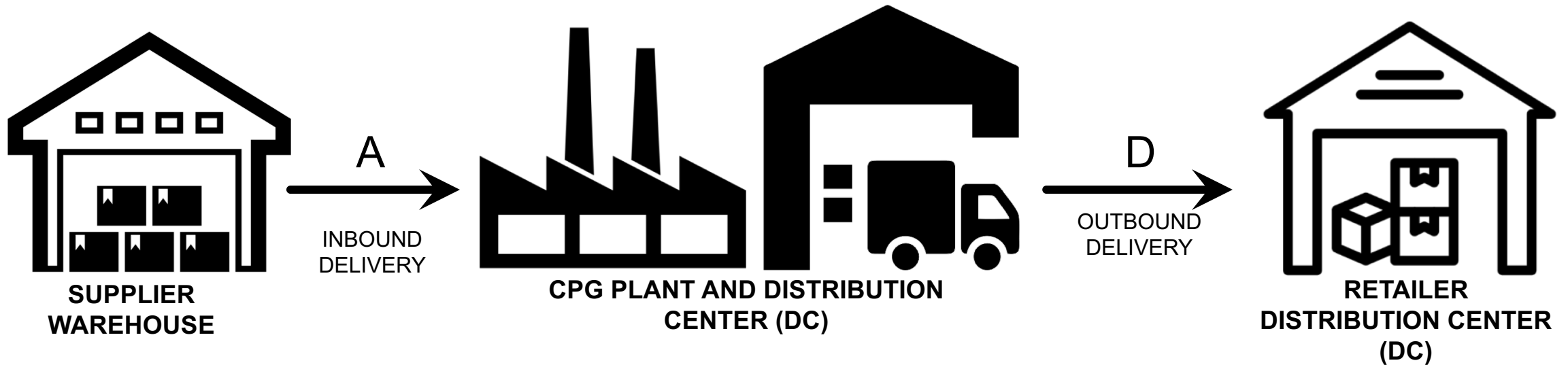 - Reallocate Nearby-Site Flow and Storage
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CONSOLIDATED INBOUND AND OUTBOUND SHIPMENTS

- Opportunity to reduce empty miles for carriers
- Results in opportunity to translate truckers' savings into discounts for the company
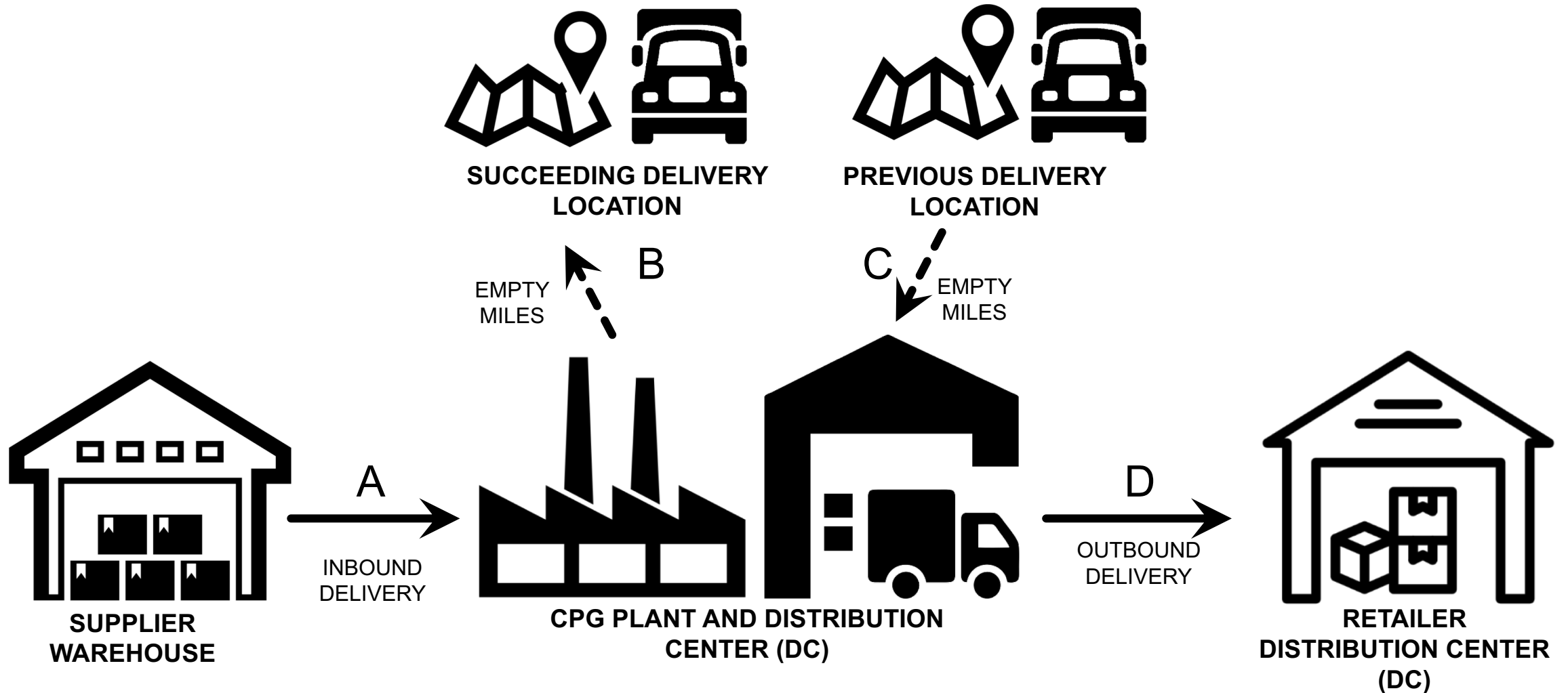
CONSOLIDATED INBOUND AND OUTBOUND SHIPMENTS

CONSOLIDATED INBOUND AND OUTBOUND SHIPMENTS

SUPPLIER WAREHOUSE

A

INBOUND DELIVERY

CPG PLANT AND DISTRIBUTION CENTER (DC)

D

OUTBOUND DELIVERY

RETAILER DISTRIBUTION CENTER (DC)

CONSOLIDATED INBOUND AND OUTBOUND SHIPMENTS

- Savings estimated to be within the range of 3 - 20%

  - 10% used as benchmark for the project

  - Savings are likely to be reflected in carrier's bid

  - Exact savings will still be dependent on multiple factors that go into carrier's bid; actual bidding and negotiation needed to refine savings value

CONSOLIDATED INBOUND AND OUTBOUND SHIPMENTS

- Simulation created to project savings value for the test site
  - Distribution of inbound trucks
  - Distribution of outbound trucks
  - Probability of sharing the truck
  - Potential % Savings
- Potential savings opportunity at $800k annually
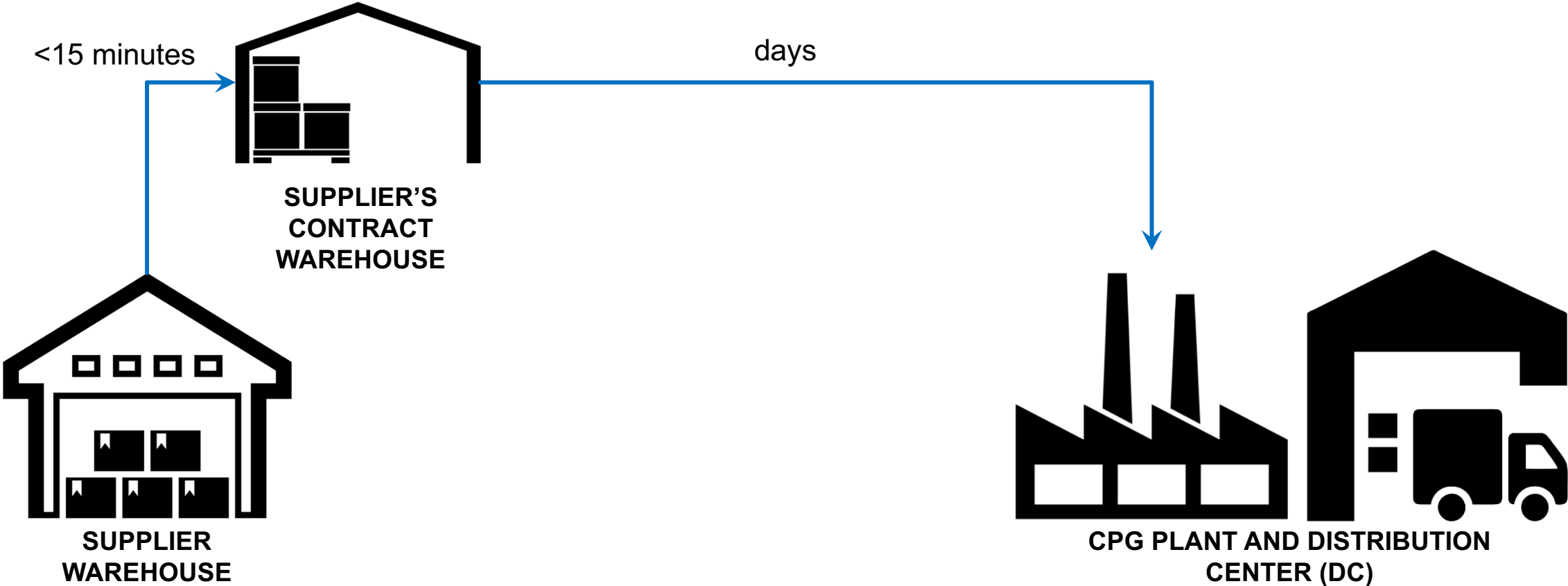
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SUPPLIER VILLAGE

- A method of streamlining the supply chain
  - Supplier and the company share one inventory pool
  - Inventory pool is placed near the company
  - Quantities are shipped from the Supplier Village (SV) warehouse to the company
    - Just-in-time for production
    - Right-sized for production

SUPPLIER VILLAGE

<15 minutes

days

**SUPPLIER'S
CONTRACT
WAREHOUSE**

**SUPPLIER
WAREHOUSE**

**CPG PLANT AND DISTRIBUTION
CENTER (DC)**

SUPPLIER VILLAGE

days

<15 minutes

**SUPPLIER VILLAGE
WAREHOUSE**

**SUPPLIER
WAREHOUSE**

**CPG PLANT AND DISTRIBUTION
CENTER (DC)**
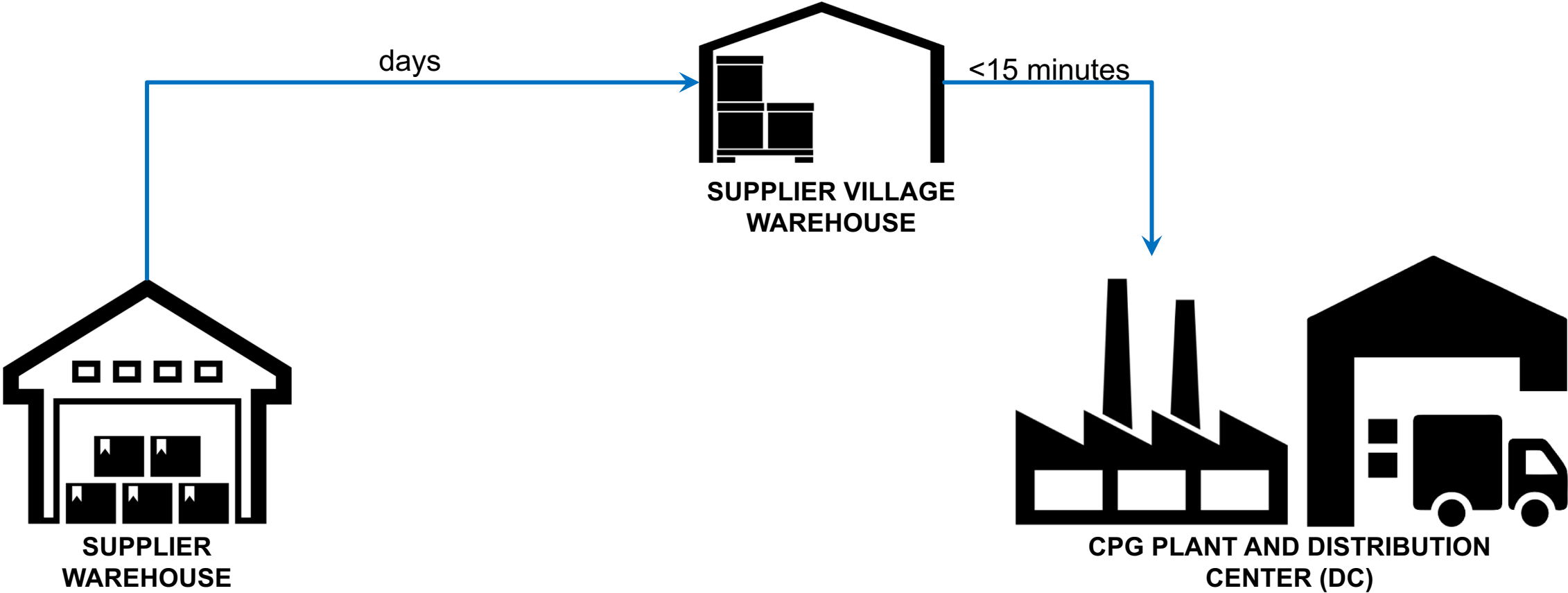
SUPPLIER VILAGE

- Calculate NPV of the project from a total supply chain standpoint
- Built a model to calculate total inventory at each stage for both the scenarios
- Model then calculates other associated costs :
  - Holding Cost
  - Handling Cost
  - Storage Cost
  - Transportation Cost
- Model used to find operating ranges

SUPPLIER VILLAGE

SUPPLY CHAIN COST COMPONENT	SAVINGS
Inventory Holding Cost	21% reduction
Storage Cost	21% reduction
TOTAL SAVINGS	**8% reduction**

Key Drivers: Savings of Supplier Village Model
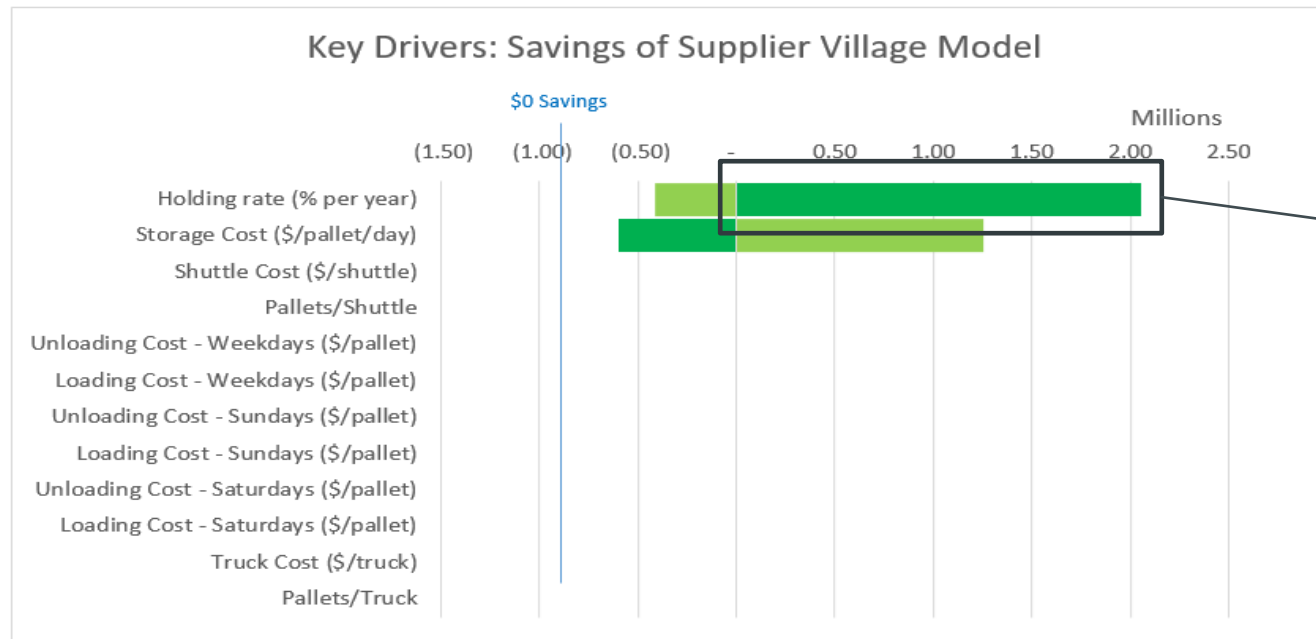
As holding cost increases, savings from SV model become significantly higher

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REALLOCATE NEARBY-SITE FLOW AND STORAGE

- Raw materials were consuming so much space in the plant

- Overflow warehouses required to store finished goods

- Limited space for direct delivery from warehouse

SUPPLIER WAREHOUSE 1

SUPPLIER WAREHOUSE 2

. . .

SUPPLIER WAREHOUSE n

RETAILER DISTRIBUTION CENTER (DC) 1

FG

RM/PM

RM/PM

RM/PM

FG

CONTRACT WAREHOUSE 1

FG

CPG PLANT

FG

FG

RETAILER DISTRIBUTION CENTER (DC) 2

. . .

FG

FG transferred to DC for storage

FG

FG shuttled from overflow warehouses to DC as needed for customer deliveries

FG

CONTRACT WAREHOUSE 2

FG

CPG DC

FG

RETAILER DISTRIBUTION CENTER (DC) n

Excess FG moved to overflow contract warehouse

SUPPLIER WAREHOUSE 1

SUPPLIER WAREHOUSE 2

SUPPLIER WAREHOUSE n

CONTRACT WAREHOUSE 1

CONTRACT WAREHOUSE 2

CPG PLANT

CPG DC

RETAILER DC 1

RETAILER DC 2

DC n

RM/PM

FG

REALLOCATE NEARBY-SITE FLOW AND STORAGE

OPPORTUNITY: Switch locations of RM/PM with FG to

1) generate savings via reduced touches

2) free up space in plant for direct shipment

REALLOCATE NEARBY-SITE FLOW AND STORAGE

- Mapped out RM, PM and FG flow for current scenario and proposed scenario

- Built a model to calculate the savings:

  - Shuttling Cost

  - Handling Cost

  - Plant-Direct Shipment Savings / Steady flow of deliveries
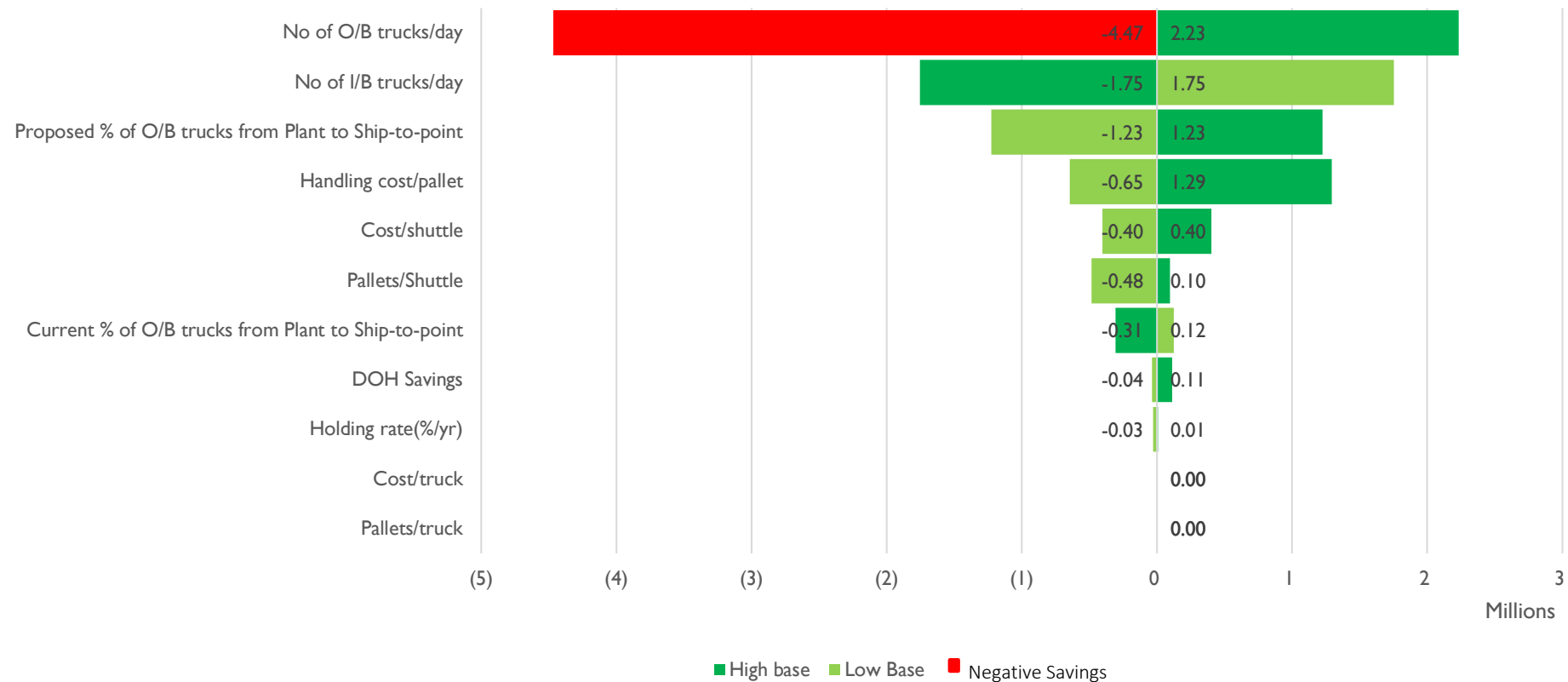
REALLOCATE NEARBY-SITE FLOW AND STORAGE

Plant Direct Shipment:

    1) generate savings via less inventory

    2) transportation savings via better contract prices

- Potential savings of ~ 8 %with Plant Direct Shipment
- Potential savings of ~ 5.6 %without Plant Direct Shipment

REALLOCATE NEARBY-SITE FLOW AND STORAGE

Key Drivers: Savings without plant-direct-shipment

Driver	Low value	High value
No of O/B trucks/day	-4.47	2.23
No of I/B trucks/day	-1.75	1.75
Proposed % of O/B trucks from Plant to Ship-to-point	-1.23	1.23
Handling cost/pallet	-0.65	1.29
Cost/shuttle	-0.40	0.40
Pallets/Shuttle	-0.48	0.10
Current % of O/B trucks from Plant to Ship-to-point	-0.31	0.12
DOH Savings	-0.04	0.11
Holding rate(%/yr)	-0.03	0.01
Cost/truck		0.00
Pallets/truck		0.00

Millions

■ High base   ■ Low Base   ■ Negative Savings

REALLOCATE NEARBY-SITE FLOW AND STORAGE

Key Drivers: Savings with plant-direct-shipment
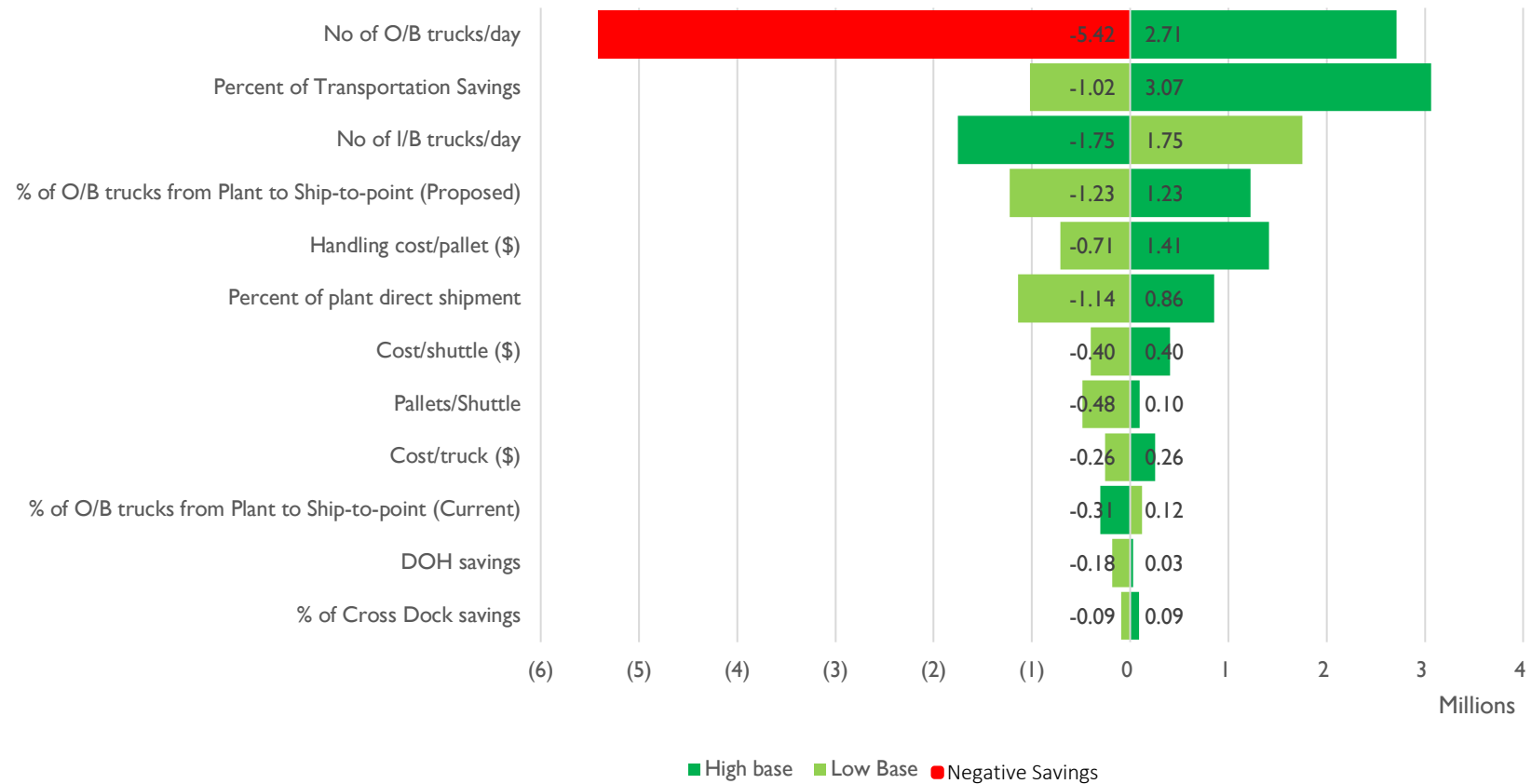
Driver	Low value	High value
No of O/B trucks/day	-5.42	2.71
Percent of Transportation Savings	-1.02	3.07
No of I/B trucks/day	-1.75	1.75
% of O/B trucks from Plant to Ship-to-point (Proposed)	-1.23	1.23
Handling cost/pallet ($)	-0.71	1.41
Percent of plant direct shipment	-1.14	0.86
Cost/shuttle ($)	-0.40	0.40
Pallets/Shuttle	-0.48	0.10
Cost/truck ($)	-0.26	0.26
% of O/B trucks from Plant to Ship-to-point (Current)	-0.31	0.12
DOH savings	-0.18	0.03
% of Cross Dock savings	-0.09	0.09

Millions

■ High base ■ Low Base ■ Negative Savings

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THANK YOU

Questions?