Shipment fulfillment strategy

(Bedding and textiles ecommerce company)

Built scenario-based **capacity planning model** to identify the **optimal fulfillment strategy** based on customer SLAs (Service-Level Agreements) and to meet **the growth projections for the next three years**.

fulfillment STRATEGY FOR AN ECOMMERCE FIRM

ABOUT THE CLIENT

Client is a U.S. based **bed and bath company** that sells luxury bedding - organic cotton bed linens, blankets and bath towels etc.

SITUATION

- Client was evaluating options to expand their current warehouse to meet their forecast for the next 3 years and were also considering dropshipping to the customer through dropshipping partners. Overall, they needed to **identify an optimal shipment strategy and understand the capacity requirements.**
- Merilytics partnered with the client to help define the **optimal fulfillment strategy based on customer SLAs and to meet the growth projections for the next three years**

VALUE ADDITION

- **Evaluated three fulfillment scenarios to identify optimal fulfillment strategy –** *expanding the current warehouse, adding a second warehouse or moving to a larger warehouse,* with their existing 3PL partner, to meet the growth projections with **better customer service levels and lower fulfillment costs** (inbound, operating & outbound)
- While adding a second warehouse was a more optimal option, given the operational efficiencies of a single warehouse, estimated the incremental fulfillment costs from the existing warehouse to get better service levels
- **Evaluated dropshipping strategy** for a few product categories and conducted a cost benefit analysis estimating the dropshipping costs to breakeven with the fulfillment costs through the existing 3PL provider
- Across strategies, provided the **capacity requirement (in sq. ft) for the next three years** so that the client can plan for the same accordingly

IMPACT

- Recommended warehouse option is estimated to provide ~**18% savings in the shipping spend**, translating to savings of **$9.7M** (over 3 years).
- Analyzed that the **current dropshipping costs are higher and would have to be reduced by ~30%** to break-even with the existing 3PL costs. This helped client strategize their dropshipping cost reduction.

APPROACH

Raw datasets

- Current demand distribution by order basket by state
- Future (next 3 years) growth projections by category
- UPS outbound rates (including all the surcharges) by weight by zone
- Service type distribution by order basket by state
- Boxes used for each order basket based on volume & category

Costs calculation

- Inbound costs for the demand
- Operating costs for the demand
- Outbound costs for the demand

→ Total fulfillment costs for a state by Warehouse

- Customer SLA (delivery time in days)

→ Customer SLA for a state by warehouse (delivery time)

Warehouse selection strategy

Strategy -1

Warehouse selection for state based on minimum fulfillment costs

Strategy -2

Warehouse selection for state based on least delivery time

Final outputs

- **Total fulfillment costs for all states to fulfill the demand**
- **Total costs for safety stock**
- **Overall Customer SLA (Delivery time)**
- **Overall Lead time**
- **Total required warehouse capacity (in pallets)**

APPROACH

Estimating fulfillment costs

- Leveraging the growth projections at a product category level, **estimated Inbound and operating costs for each of the warehouse options**.
- Using the future growth projections at a product category level and the current distribution of order baskets, **estimated the future distribution of order baskets**
- Using the current distribution of demand of order baskets by state and service type, **future projections are also estimated by state**
- Based on the order distribution, the **outbound costs are calculated for the order baskets** using the weight of the shipping boxes, surcharges, UPS zone and service type
- **Average delivery time is calculated** based on the warehouse location and service type leveraging the UPS maps for each of the potential warehouse option

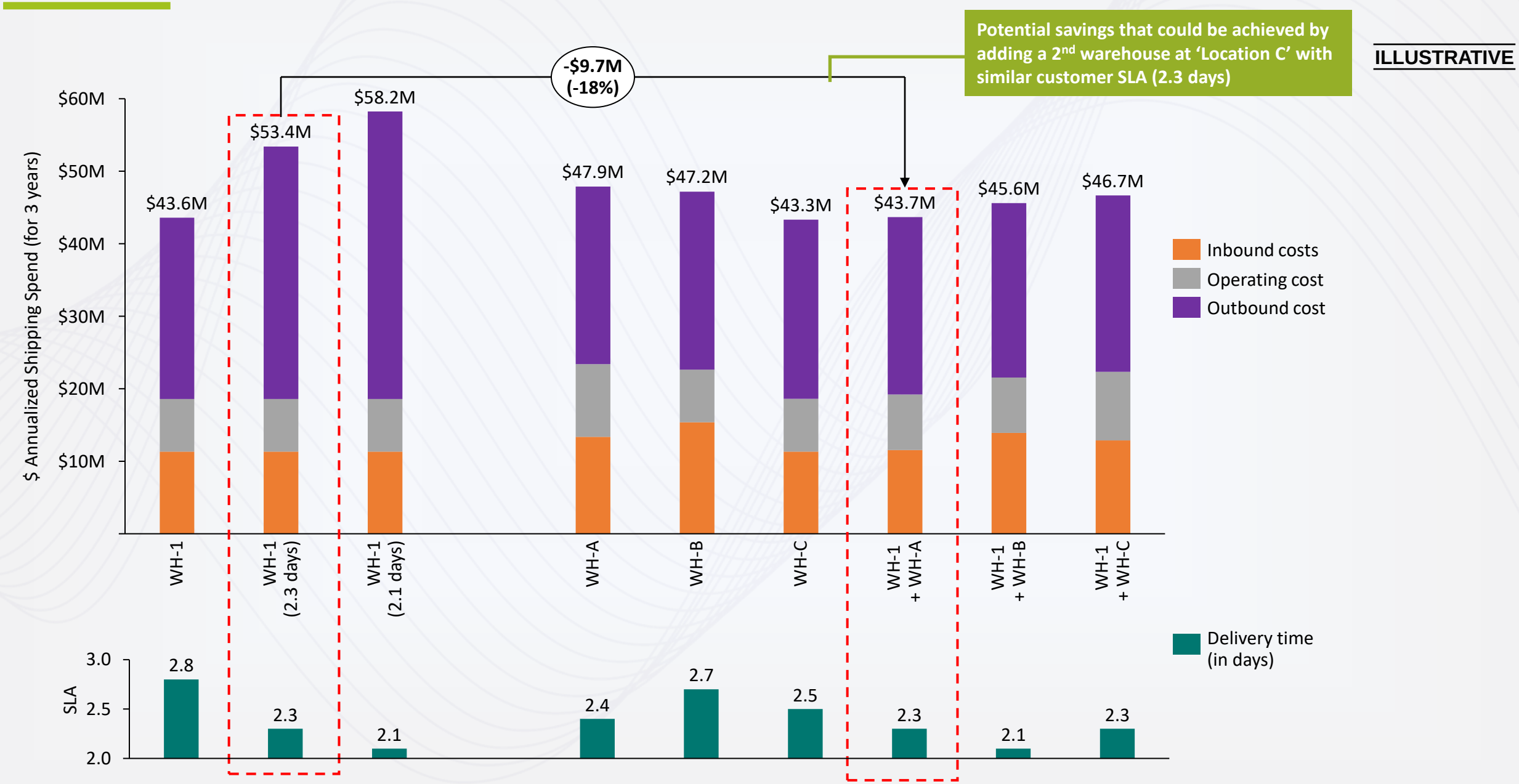
Identifying optimal warehouse at a state-level

- The **total fulfillment costs (*inbound + operating + outbound*) are calculated** at a state-level from each of the warehouse options to fulfill the entire demand to that state along with the delivery time
- **Identified the optimal warehouse to fulfil the demand** for each of the states based on two strategies – minimum fulfillment costs, minimum delivery time
- In the minimum fulfillment costs model, total fulfillment costs for each state from the current warehouse is compared with the new warehouse options and the **warehouse with minimum costs is selected for each state**
- In the minimum delivery time model, average delivery time for each state from the current warehouse is compared with the new warehouse options and the **warehouse with least delivery time is selected for each state**

Optimized distribution network

- In both the strategies, once the optimal warehouse is selected for each of the states, the total costs for all the states is aggregated to **calculate the costs incurred to fulfil the demand**
- Along with the total costs, **capacity is estimated** based on the total demand fulfilled from each of the warehouses by category
- Overall **average delivery time is also calculated** for both the strategies for each of the warehouse combinations
- Across all the scenarios, the **warehouse combination providing the best ROI for the incremental costs on delivery time is identified as the optimal shipment strategy**

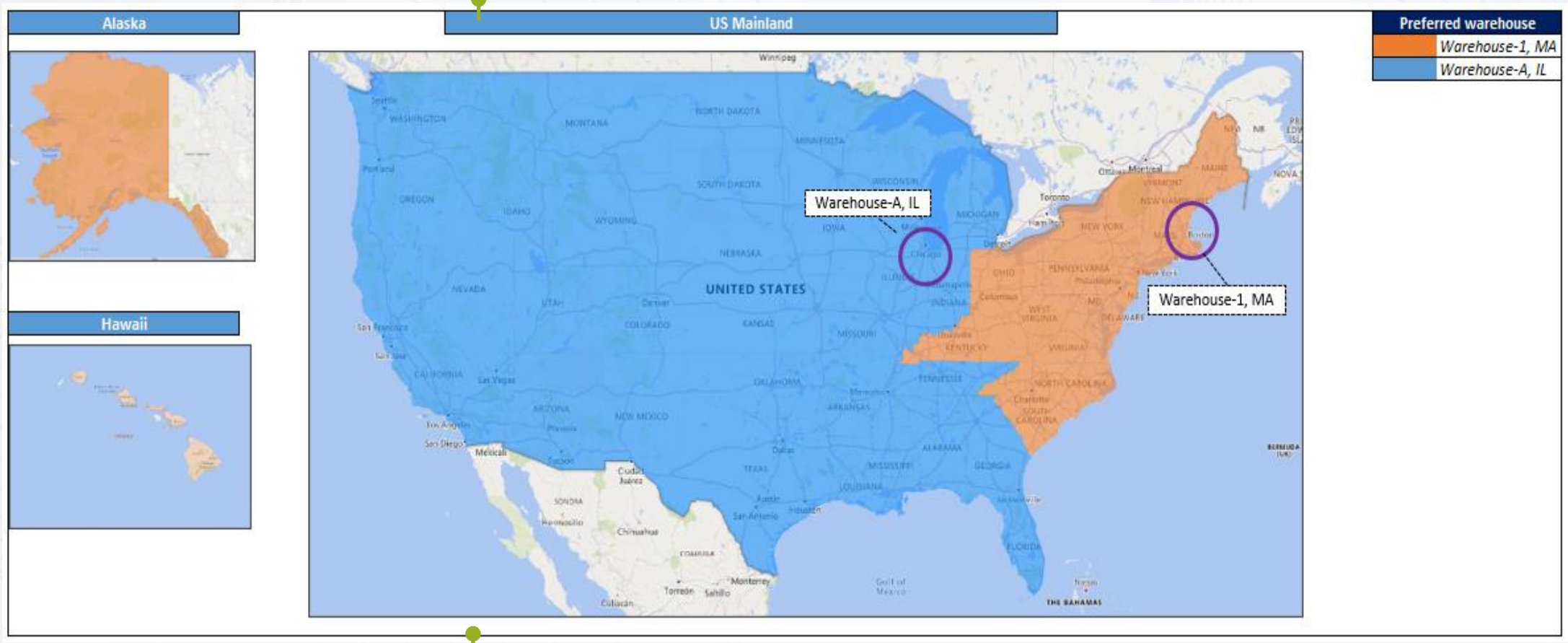
POTENTIAL SAVINGS WITH OPTIMAL STRATEGY



OPTIMAL FULFILLMENT STRATEGY

State demand fulfillment by warehouse based on minimum delivery time

ILLUSTRATIVE



Optimized distribution network with 2 warehouses