



# MOD Pizza: Walk-In vs Reach-In Refrigeration Assessment



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## PROJECT GOAL STATEMENT

To support MOD Pizza's transition from walk-in to reach-in refrigeration in future stores with data-driven analysis by delivering a business case that includes:

- 1) A tool to calculate the minimal number of reach-in units needed to sustain current store operations.
- 2) A set of recommendations that identify continuous improvement opportunities.

## BACKGROUND

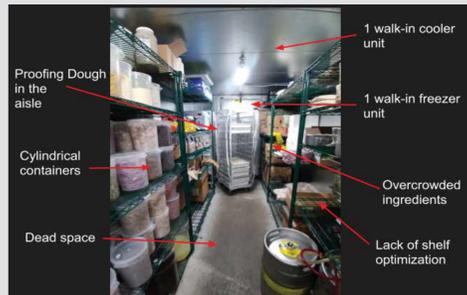
MOD Pizza is looking to transform their current method of refrigeration from using walk-in units to reach-in units.

Walk-in refrigeration is the **bottleneck** in designing new stores or operating existing stores.

**Bulky Permanent Costly Inefficient**

Can reach-in units store the same amount of ingredients needed to keep up with demand? Is it the **better** option?

## CURRENT STATE



## OPPORTUNITIES

Transitioning to reach-ins provides opportunities for:

- Store Design**
  - Flexibility in store design
  - Reduction of dead space
- Operations**
  - Prevent store closures due to unit failures
  - Optimal food organization
  - Better food handling standard temperature control
- MOD Squad Impact**
  - Improved working conditions: sanitation, ergonomics, less time in cold temperature
  - Improved worker flow/practices

## GM FEEDBACK SURVEY

### General Manager Survey Questions:

- We are proposing a switch from walk-in to reach-in refrigeration units for future stores...
1. How do you feel about that?
  2. Do you feel that you and/or the other employees spend too much time in the back, gathering items from the walk-in, during peak times?
  3. Does the walk-in feel unorganized to you?
  4. Do you think it would be useful to have see-through doors on the reach-ins?
  5. Do you have any complaints about the walk-ins?

**Support**

"It would **save room** in new stores, **save energy**... Items in a reach-in would be **more readily accessible**."

"The **walk-ins can feel crowded**, the passage is narrow down the middle... it can feel chaotic."

"Yes, it makes much more sense to have the **doors see-through**."

**Oppose**

"I like the ability to walk into an area and **see all of my product** and where would I put my **big stuff** like kegs and dough rack."

"I feel it might be **harder to stock**...I question how product would be **rotated** and worry it it would be **harder to pull** items to the front to put newer ones behind it."

## FEASIBILITY - STORAGE ASSESSMENT



The primary determinant of the feasibility of implementing reach-ins into future MOD Pizza stores was the active storage capacity. A reasonable number of reach-in coolers and freezers needs to be able to offer the same amount of active space as the traditional walk-in units.

Observations of the Lake Forest Park MOD Pizza store were made to determine the amount of Active Space in their 8' x 12' walk in and then scaled to the 8 x 16 walk in.

Relevant information shown in data table below.

	8 x 12 Walk-In Unit		8 x 16 Walk-In Unit	
	Cooler	Freezer	Cooler	Freezer
Active Space (in <sup>3</sup> )	315,951	124,721	420,214.83	165,878.93
Active Space per Reach-In (in <sup>3</sup> )	97780		97780	
Equivalent # of Reach Ins	3.2	1.3	4.3	1.7
<b>Total</b>	<b>4.5</b>		<b>6.0</b>	

## FEASIBILITY - FINANCIAL ASSESSMENT



After assessing storage capacity needs, a financial assessment was performed to compare the cost of walk-ins to equivalent number of reach-in units. Capital cost of each reach-in should not exceed 50% of existing cost for walk-in.

The capital cost of each cold storage scenario is shown in the table below.

Scenario	Units	Qty.	Cost/Unit	Installation *	Total	% Cost Reduction		
1	Walk-in (12' x 8')	1	\$18,150.00	\$11,750.00	\$29,900.00	26.20%		
	Reach-in cooler (2 DOOR)	3	\$3,686.00	N/A	\$22,066.00			
	Reach-in freezer (2 DOOR)	1	\$4,855.00					
	Reach-in cooler (1 DOOR)	1	\$2,771.00					
2	Kegerator	1	\$3,382.00			N/A	\$27,836.00	11.00%
	Walk-in (16' x 8')	1	\$19,526.00	\$11,750.00	\$31,276.00			
	Reach-in cooler (2 DOOR)	4	\$3,686.00	N/A	\$27,836.00			
	Reach-in freezer (2 DOOR)	2	\$4,855.00					
Kegerator	1	\$3,382.00						

\* \$10,000 for keg tap line trench construction and \$1,750 for walk-in unit construction

## REACH-IN UNITS CALCULATOR TOOL

### Objective

To calculate an optimal number of reach-in units, taking into account storage capacity needs and delivery frequency for MOD pizza locations that operate at low, medium, or high sales volume.

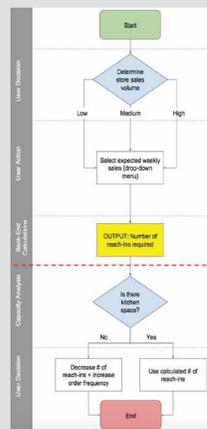
### Method

1. User Information  
User: Store Designer  
Requirements: Meet objective, ease-of-use
2. Collect Data: Compiled list of all refrigerated/frozen items, measurements of all unit item packs, weekly usage data, sales breakdown
3. Build Tool: Microsoft Excel spreadsheet
4. Validate: Run outputs with various scenarios
5. Iterate: Collect user feedback, test, revise

### Assumptions

- Compiled list of refrigerated/frozen items is common across all stores
- True brand refrigeration units limited to single-door and double-door
- Peak weekly usage data is maximum capacity
- Expected weekly sales breakdown is general across all locations
- Note: Sales breakdown based on 334 stores and related stores are from Western WA locations

### Algorithm Flow Chart



### User Interface

**User Input**  
Select expected weekly sales for store location

**User Flexibility**  
Adjust specifications for each category if necessary  
Fridge size: single or double door  
Deliveries per week: 1 to 5  
Buffer size: 0 to 50%

**Tool Output**  
Optimal number of cooler and freezer reach-in units

### Looking Ahead...

The tool is currently built upon order levels to base required storage capacity reach-in units need to be able to handle. In the future, calculated number of reach-in units should be based upon demand (reflected by sales and ingredient consumption for a given period of time). The back-end section of the tool is flexible to adjust to this shift.

## SIMIO MODEL OF LAKE FOREST PARK LOCATION



### MOD Store Designer Input

- "Designing around **reach-ins** would allow for **fewer design constraints** and **more variability**."
- "Floor plan must follow **adjacency rules**: refrigerators next to prep table, next to dish-washing sink."
- "Organizing the most frequently needed items closer to entrance **improves worker flow**."

### Transition Impact

Back-of-house layout with reach-in units is still able to meet the demands of a high volume store in storage capacity and kitchen operations. In fact, new designs increase amount of variable space afforded to MOD Store Designers.

Additional **78 sq. ft** or **50%** decrease in space allocated for non-variable equipment

- **Easier to design** for necessities of MOD stores
- **Flexibility in moving** reach-ins as needed
- **Less walking distance** to refrigeration compared to single walk-in storage

## MOD SQUAD IMPACT



### Morning Delivery Process Changes

- Inventory worker will have **more comfortable working conditions** during morning delivery.
- Each item receives a **permanent bin** in a specified reach-in that can be **easily located**
- Cold items must be **immediately stored** once delivery arrives, as the pallet can no longer be left in a walk-in temporarily.

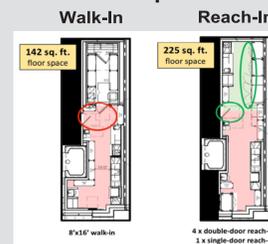
### Store Operations Process Changes

- **Freshly prepped items** can now be stored in a reach-in **closest to front** for kitchen workers who will need to replenish.
- Prepared pizza dough will be stored in **separate reach-in** instead of in the walk-in, **reducing cluttered space**

## RESULTS - NEWCASTLE STORE DESIGN

The MOD Store Design team moved forward with a preliminary design for a new store location in Newcastle, WA. The Store Designer created two blueprints: 1) a store designed around an 8'x16' walk-in refrigeration unit and 2) a store designed with reach-in refrigeration units. A comparative analysis of both designs validates the benefits with transitioning to reach-ins. This section highlights our findings.

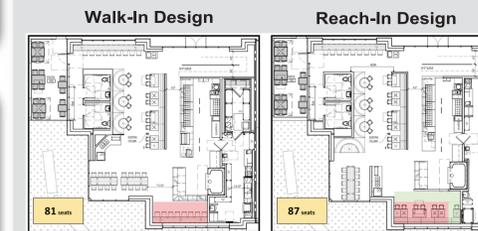
### Optimized Back-Of-House Space Allocation



Back-of-house design with reach-in units has an overall reduced foot print, but has an increase in free floor space and improved allocation of equipment for increased worker efficiency.

- Additional **83 sq. ft.** or **+53%** increase in back-of-house footprint.
- Potential **ramp up of capacity** (added floor space can be allocated for future units when demand is appropriate)
- **Increased walking space** with wider aislesway
- **Decreased congestion** of kitchen entry way
- **Flexibility in allocation** of equipment

### Higher Sales Capacity



Reduction of back-of-house footprint allows for expanded front-of-house footprint, opening up additional seats.

- **6 additional seats**
- projected additional **+\$35,320** annual sales during peak hours

### Calculation: Sales Capacity Increase

Time Periods	Sales Opportunity	
	Additional Customers	Additional Sales
Monthly	360	\$2,977.20
Annually (minus 10 holidays)	4260	\$35,230.20

- Assumptions:
- Typical customer spends 1 hour in seat.
  - 6 additional seats are at full capacity during 2 daily peak hours.
  - Typical customer orders 11-inch pizza, at \$9.27 each.

### Cost Savings

Expenses	Walk-In Design	Reach-In Design
Units	\$21,276.00	\$22,066.00
Installation	\$11,750.00	N/A
<b>Total</b>	<b>\$33,026.00</b>	<b>\$22,066.00</b>

**\$10,960** or **33%** cost savings

## CONTINUOUS IMPROVEMENT PROPOSALS

### Organization Tool: 6S

Sort	Straighten	Shine	Standardize	Sustain	Safety
• Prepared food stored together	• Shelving allocation determined by frequency of item use	• Clean glass doors	• A visual planogram attached to every reach-in depicting storage layout	• Inform all managers and MOD team how to maintain the reach-ins	• Each reach-in must have its own electrical outlet
• Dough stored together	• Store containers upright and directly next to one another	• Clean vents	• Routine deep-cleaning		• Heavy items stored on bottom shelves within easy reach
• Dedicated space for cooling items					

### Container Shape

**Square containers will add +17% or +36 quarts of utilized storage within a single door reach-in unit**

- 6 vertically = 216 quarts
- 7 vertically = 252 quarts

### Glass Doors

Employees can easily see which items have been prepped, how much, and where each item is.

Track ingredient consumption  
Transitioning GMs to data-driven ordering  
Use rectangular prep bins to save space

Swinging Door  
Can stay open for easy loading  
Both sides are accessible at the same time

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