

LERCH BATES

# *Vertical Transportation Back To Work Challenges*

Considerations for Organized  
Facility Redensification

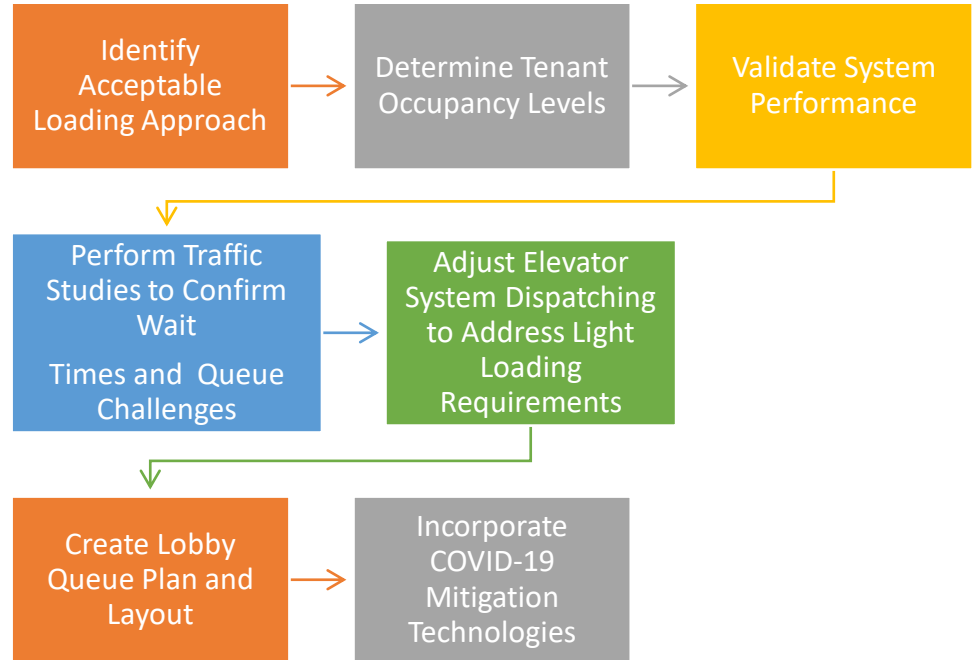
Chicago BOMA Lunch and Learn  
June 18, 2020



LERCH BATES

Building Insight

# Process for Executing an Effective Return to Work Program



# Local and National Regulatory Requirements

**Understanding of new local and national regulatory requirements is mandatory.**

- It is anticipated that social distancing requirements will include local criteria beyond the simple maintenance of a 6-foot boundary between pedestrians
- These new rules for social interaction will play a large role in the establishing best practices for Building Redensification
- To date, national standards for elevator loading **have not been identified** by ;
  - CDC
  - OSHA
  - BOMA
  - ASME
  - CTBUH
  - National Guidelines for “Opening Up America”

***Lerch Bates continues to monitor both national and local guidelines/requirements***

## Tenant Return to Work Plans

---

- Understanding of building specific protocols and tenant sensitivities must be addressed to accommodate a broad cross section of vertical transportation users.
- Each building will be required to develop a customized redensification plan and process
- Understand **tenant specific** populations by floor, arrival times, building movement patterns (inter-floor traffic requirements), and hours of operation (flex time opportunities).

# Tenant Return to Work Plans

---

- Important to fully understand tenant specific return to work plans, in order that we may accurately predict VT system performance
- Elevator loading will be far lighter than normal conditions (more on that later)
- **Fewer passengers per trip will directly result in longer lobby waits**
- Performing traffic analysis for projected floor by floor populations will allow ownership/operations to accurately convey VT system performance

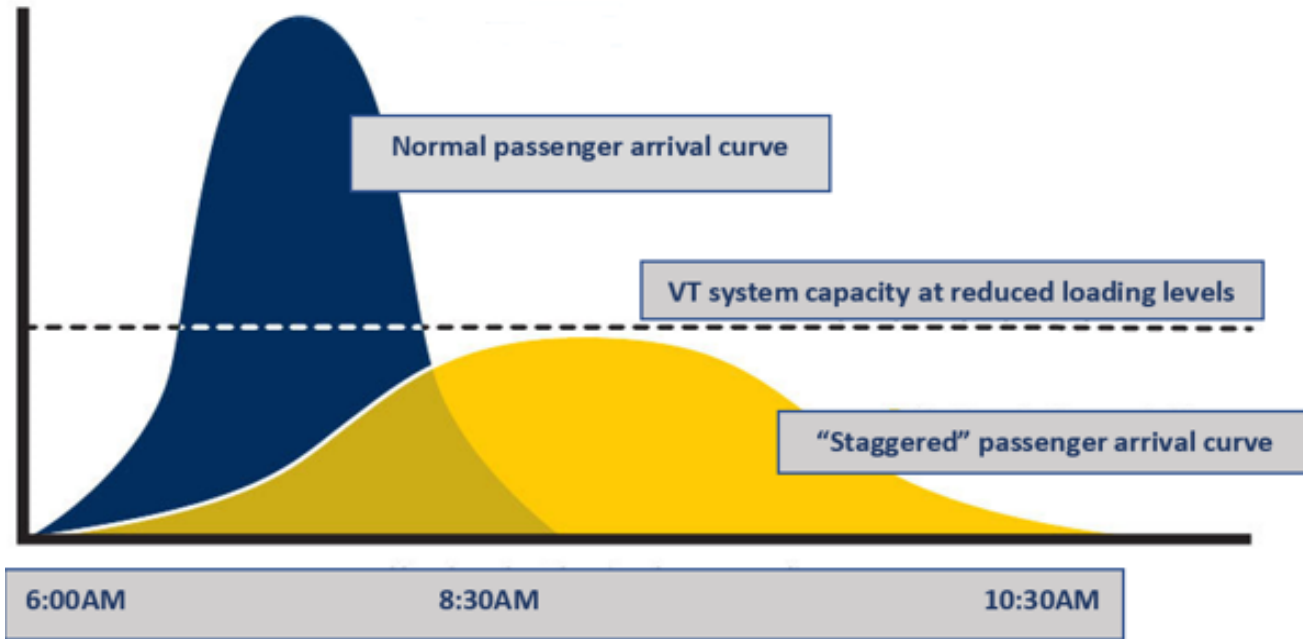
# Tenant Return Plans

- Staggering tenant arrival and departures times will be critical to controlling lobby overcrowding and optimizing elevator wait times

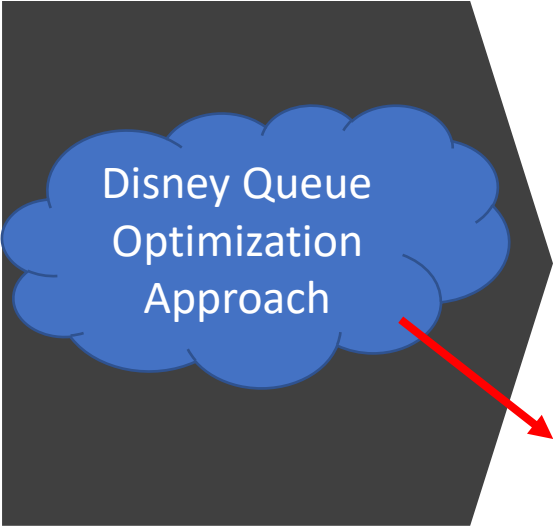


# Tenant Return to Work Plans

By “*Flattening the Tenant Arrival Rate Curve*” we are better able to accommodate *lower numbers of passengers per trip*



# Tenant Return to Work Plans



Tenant Name	ABC Financial
Tenant Floor Number	15
Normal Tenant Population	165
Projected Tenant Population May - July	25%
Projected Tenant Population August - Oct	45%
Projected Tenant Population Nov - Jan	75%
Tenant able to accommodate flex time Arrival/Departure	Yes
% Arrival from 6:30 - 7:00	20%
% Arrival from 7:00 - 7:30	20%
% Arrival from 7:30 - 8:00	30%
% Arrival from 8:00 - 8:30	15%
% Arrival from 8:30 - 9:00	15%



# Tenant Return to Work Plans

Template  
*Afternoon/Evening*  
Period

Tenant Name	ABC Financial
Tenant Floor Number	15
Normal Tenant Population	165
Projected Tenant Population May - July	25%
Projected Tenant Population August - Oct	45%
Projected Tenant Population Nov - Jan	75%
Tenant able to accommodate flex time Arrival/Departure	Yes
% Departure from 2:30 - 3:00	10%
% Departure from 3:00 - 3:30	10%
% Departure from 3:30 - 4:00	20%
% Departure from 4:00 - 4:30	20%
% Departure from 4:30 - 5:00	30%
% Departure from 5:00 - 5:30	20%

# Confirm Current System Performance Capabilities

- In order to perform accurate traffic analysis it will be important to document current VT system constraints and conditions;

- Elevator Interior Sizes/Capacities
- Elevator System Availabilities
- Actual Elevator Speed
- Landings Served
- Travel Distances
- Door Sizes
- Door Timing
- Floor to Floor Timing
- Confirm Control System Capabilities
- Confirm Capability To Retrofit Enhanced Hygiene Devices/Systems.

ELEVATOR INFORMATION					
TYPICAL FLOOR HEIGHT: 12'		BETWEEN FLOORS: 43 AND 44		DOOR OPERATOR SPEED: 2.5 FPS	
DOOR TYPE: SSSS		DOOR WIDTH: 42" AND HEIGHT: 84"		PRE-OPENING: NONE	
MEASURED	CAR EMPTY	TARGET CRITERIA	MEETS CRITERIA	COMMENTS	
SPEED UP ± 3%	501.37 FPM	485-515	YES		
SPEED DOWN ± 3%	503.14 FPM	485-515	YES		
PERFORMANCE UP	11.44 SEC	11.0 SEC	YES		
PERFORMANCE DOWN	10.71 SEC	11.0 SEC	YES		
STOPPING ZONE ± 1/4"	± 1/4"	± 1/4"	YES		
MEASURED	FRONT	REAR	CRITERIA FRONT / REAR	MEETS CRITERIA	COMMENTS
DOOR OPEN	3.31 SEC	SEC	2.3 SEC	SEC	NO
DOOR CLOSE	3.59 SEC	SEC	5.0 SEC	SEC	YES
SHORT HOLD OPEN (CAR CALL)	3.8 SEC	SEC	3.0-4.0 SEC	3.0-4.0 SEC	YES
INTERRUPTED RAY HOLD OPEN >>3.0 INITIAL, 5-1.5 SUBSEQUENT	.83 SEC	SEC	>3.0* SEC	>3.0* SEC	YES
NUDGING HOLD OPEN	40.5 SEC	SEC	20.0-25.0 SEC	20.0-25.0 SEC	NO
STALL PRESSURE	>30		30 MAX	30 MAX	YES
PREDICTIVE LANTERNS:	N/A	N/A	N/A	N/A	N/A

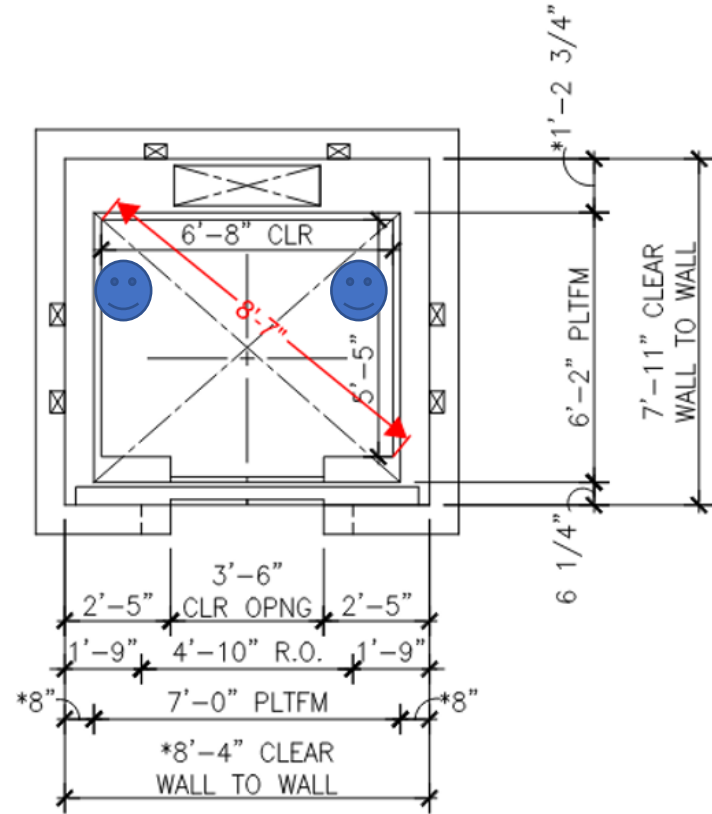
- Confirmation of current conditions, enhances the analysis deliverable

## Car Loading Options

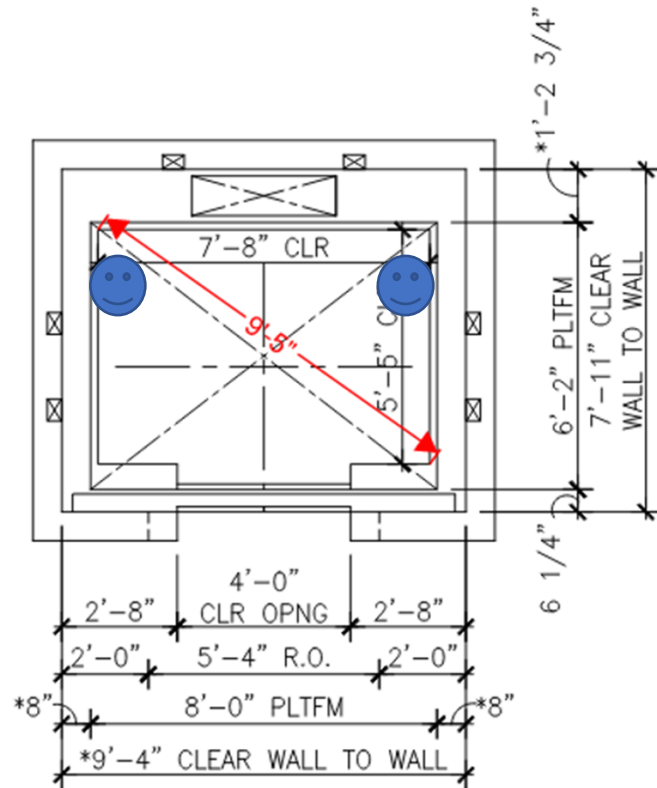
---

- Adhere to CDC Social Distancing Guidelines: Maintain 6 feet between people not equipped with PPE
- Adhere to State and local standards for cloth face masks to be worn in public settings where social distancing measures are difficult to maintain
- Load cars in accordance with published State and Local standards
- Monitor industry for best practices and continuously adjust for maximum benefit

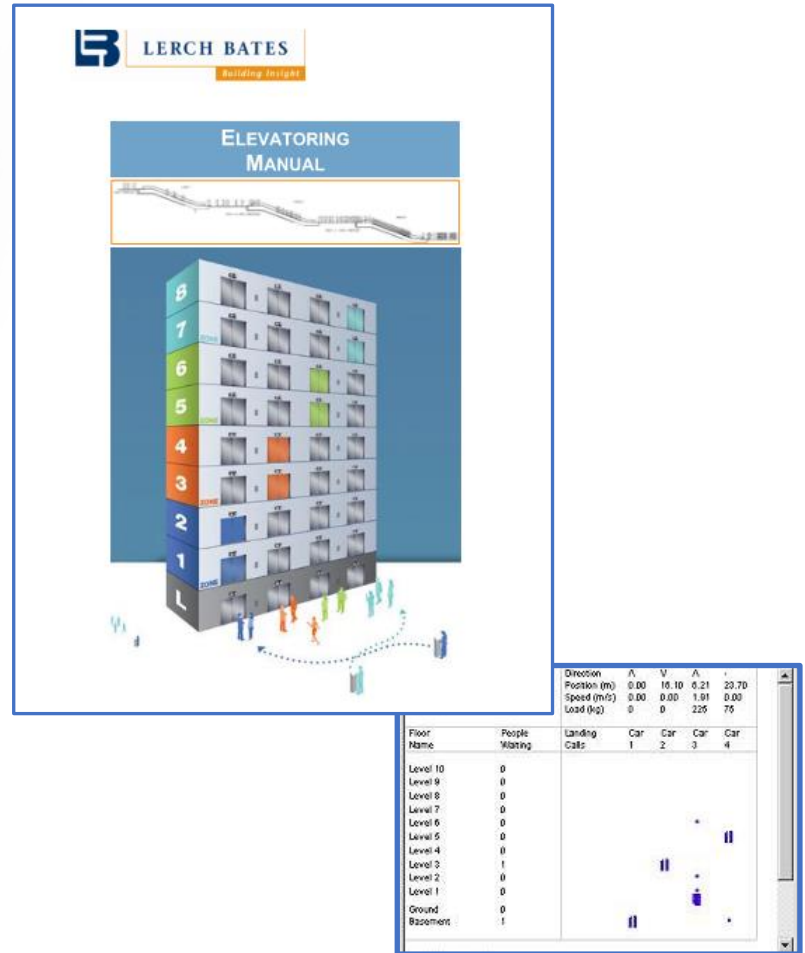
# STANDARD 3500LB PASSENGER CAB



# STANDARD 4000LB PASSENGER CAB



# Elevator Traffic Analysis



## Perform Traffic Simulations

---

- Using regulatory loading requirements (CDC Guidelines) and LB building specific discovery findings, analysis will be performed for multiple building loading scenarios and arrival/departure rates
- Perform Traffic Flow Simulations for morning arrival period
- Reports to provide potential Maximum Queue Lengths and associated performance values for varying loading levels and arrival time scenarios

# Sample Results from Simulations

## MAXIMUM 4 PASSENGERS PER ELEVATOR

90 Minute Arrival Period		Bank C	Bank D
Scenario 9 25% of Total Population	Max Que Length	1.6 People	2.0 People
	Avg Wait Time	0.1 Seconds	0.7 Seconds
	Avg time to Destination	26.2 Seconds	30.1 Seconds
Scenario 10 50% of Total Population	Max Que Length	4.6 People	7.2 People
	Avg Wait Time	1.3 Seconds	5.7 Seconds
	Avg time to Destination	29.6 Seconds	40.0 Seconds
Scenario 11 75% of Total Population	Max Que Length	7.0 People	15.2 People
	Avg Wait Time	2.8 Seconds	12.1 Seconds
	Avg time to Destination	33.8 Seconds	51.4 Seconds
Scenario 12 100% of Total Population	Max Que Length	14.0 People	84.2 People
	Avg Wait Time	7.6 Seconds	127.3 Seconds
	Avg time to Destination	39.3 Seconds	173.5 Seconds



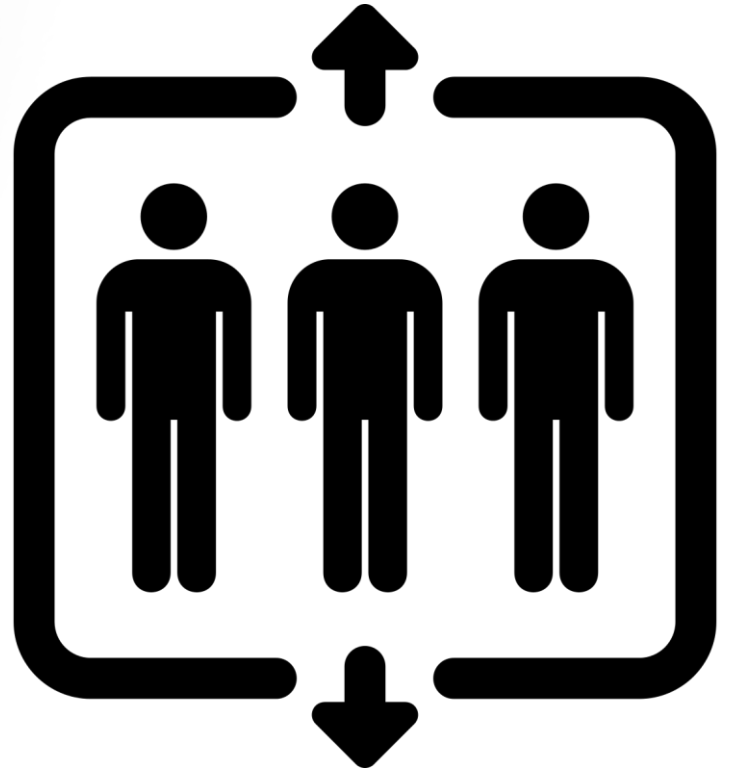
# Anticipated Recommendations

---

- Tenant level/Floor level flex time recommendations....Staggered arrivals and departures
- Recommendations on technology enhancements and elevator system usage which will enhance system operation
- Non-Peak visitor and guest building entry and elevator system usage
- Stairwells must be effectively utilized
  - Stairwells to be designated as UP Direction or Down Direction only, to avoid near contact scenarios
  - All inter-floor traffic to use stairwells...avoid using elevators for short floor to floor runs.
  - Stairwells to ease elevator system demand in low rise bank applications 1-10 floors
- Elevator system operation improvements
  - Adjust door times
  - Adjust floor to floor times
  - Adjust car speeds

# Operational Enhancements for Limited Cab Loading

---



# Operation Enhancements – Limited Loading



## *Destination Based Dispatching Systems*

- Reprogram car assignment to limit car loading
- Enable smart phone/key card interface (where available) to provide “touch free” operation.
- Use floor tape to designate riding areas and riding positions that riders should follow during transport

# Operation Enhancements – Limited Loading

## Destination Based Dispatching Systems (continued)

- Add Antimicrobial Self-Cleaning Films to all touchpad surfaces



- Owners are advised to confirm compatibility of this technology with the existing equipment

# Operation Enhancements – Limited Loading

---

## Conventional Two Button Dispatching Systems

- Utilize building personnel as elevator lobby “starters” to direct traffic to available cars and “police” car loading.... Lobby starters register all hall calls
- In the absence of remote call logging, lobby starters to register car call destinations on behalf of passengers.
- Use floor tape within elevator cabs to designate riding areas

# Operation Enhancements Limited Loading

---



## Conventional Two Button Dispatching Systems (Continued)

- Install Antimicrobial Elevator Button Covers
- Owners are advised to confirm compatibility of this technology with the existing equipment
- Use disinfecting wipes not spray on disinfectants on hall and car buttons.

# Operation Enhancements Limited Loading

---

## Conventional Two Button Dispatching Systems (Continued)

- Two Way and Down Peak Periods will be most problematic periods
- Elevators may continue to make multiple stops, after up to 4 passengers have already loaded the elevator, creating high system inefficiency
- Elevator maintenance contractor to address system features that will limit car assignments in down direction of travel:
  - Load Weigh Adjustments
  - Dispatch Assignment Software Modifications

# Further Considerations\*

\*Technology in the Marketplace is provided for consideration only. Lerch Bates neither endorses or recommends these product as the nature of this pandemic has not allowed us to review these products for efficacy, safety or code compliance.

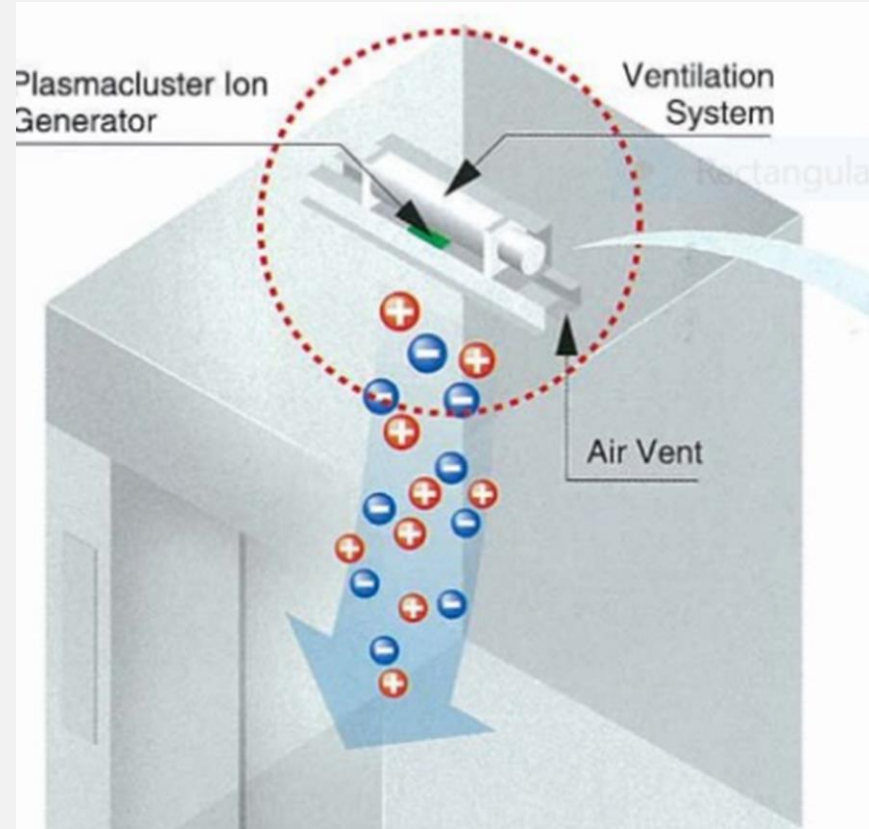
---





# Car Enclosure Air Purification Systems\*

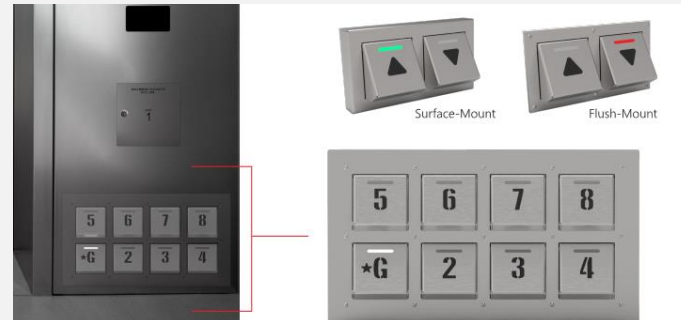
- Technology is referred to as Plasmacluster Ion Generation
- Purifies air by inactivating airborne molds and viruses
- Can be installed on existing elevators in conjunction with exhaust fan
- Owners are advised to confirm compatibility of this technology with the existing equipment



\*Technology in the Marketplace is provided for consideration only. Lerch Bates neither endorses or recommends these product as the nature of this pandemic has not allowed us to review these products for efficacy, safety or code compliance.

# Elevator Direction or Destination Input Devices\*

- Available from multiple sources
- Eliminates touching surfaces with hands/fingers
- Input registered via foot or holographic display
- Can be installed on existing elevator equipment



Owners are advised to confirm compatibility of this technology with the existing equipment.

\*Technology in the Marketplace is provided for consideration only. Lerch Bates neither endorses or recommends these product as the nature of this pandemic has not allowed us to review these products for efficacy, safety or code compliance.

# Elevator Preventative Maintenance Program

- Elevator systems to be under very heavy usage, due to greater numbers of trip per hour
- Maximizing equipment availability will be key
- Removing cars for routine PM during normal work hours will exacerbate delays
- Consider shifting PM activities to off peak/afterhours time frames
  - **This action will generate an operating expense impact**



# Property Management Tips

Continually clean and disinfect pushbuttons and handrails. When surfaces appear to be dirty, thoroughly clean prior to disinfection.

Use disinfecting wipes, to clean pushbutton and faceplate materials, to avoid damage to sensitive electrical components.

It is important to increase air circulation while performing cleaning activities. Keeping the doors in the open position will help alleviate accumulation of cleaning odors.

# Thank You.

---

## CONTACT INFORMATION

PHONE: 303.795.7956

EMAIL: [marketing@lerchbates.com](mailto:marketing@lerchbates.com)

