



## Occupant Evacuation Operation

We all know the golden rule if there is ever a fire in a building – don't use the elevators. The signs are posted by every elevator telling us to use the stairs in an emergency, but what if elevators were an option? With the emergence of technological advancements, Occupant Evacuation Operation (OEO) protocols for elevators have become a more relevant discussion when it comes to emergency egress. As buildings grow taller, the more time it takes for able-bodied occupants to evacuate via stairways. Keeping this view in mind, there is strong potential for a perspective shift in the elevator's role in occupant evacuation.

Traditionally, elevators have not been used in fire emergencies due to concerns that they will become inoperable and trap passengers in an environment that becomes untenable. With early elevators on automatic operation, users had no way to assess if the system was still viable or what building conditions were in other parts of the building. In the 1970s, ASME A17.1 Safety Code for Elevators and Escalators added a requirement for Phase I Firefighter Service for new elevators to automatically return units to a main floor and place them out of service when smoke is detected in a hoistway, lobby or machine room. Provisions were also provided to allow firefighters to use the elevators to carry equipment to upper floors to fight the fire and to evacuate people who were not able to use the stairs. The concept of using elevators to evacuate able bodied occupants was still not being considered.

So what has changed our thinking? Building design and elevator technology have advanced and changes to the codes help ensure that elevators can continue to operate in fire situations. These changes provide provisions to protect against the intrusion of smoke, fire and water into the hoistway, as well as providing for emergency power to the elevators. The building codes require protected elevator lobbies where there will be real-time messaging displays to provide information, such as availability and car estimated time of arrival, which the occupants can use to determine their best means of evacuation. Most of these changes are the result of several studies conducted after September 11, 2001 and the attack on the World Trade Center. For more detail on the history of the use of elevators in fires, please see the [March 17, 2015](#) edition of The Insider.

The use of OEO for elevators is still in its infancy, but there are obvious benefits to OEO. Chief among them is the ability to provide easier access to emergency routes for building occupants in an emergency. Higher buildings require additional stairs to descend and make it more difficult to evacuate a building. "We have to find a better way to evacuate people from high-rise buildings, including people with disabilities," said Edward

T. Ferrier, the deputy assistant chief of fire prevention for the New York City Fire Department, in a recent [New York Times article](#). “Elevators are really for the expedient evacuation from endangered floors to a safer location until the arrival of the Fire Department.”

The way OEO works is characteristically simple. Imagine being on the 78<sup>th</sup> floor of a high-rise building and you hear the fire alarm go off. Instead of taking 78 flights of stairs to exit, OEO enables you to simply walk to the lobby of your floor, catch the designated elevator to a safer floor and from there make an efficient exit, freeing up the elevator for other occupants to use. With innovation available today, that’s an increasing possibility the *NEII* member organizations are exploring with jurisdictions.

The advances in technology mean that OEO also affords greater opportunities to link the elevator operation into other building systems including fire prevention and security systems. The integration of these systems, which ultimately make buildings more intelligent, has become increasingly attractive to building developers and designers.

In addition, other benefits exist. The International Building Code (IBC) provides incentives for installing these types of elevators where a building exceeds 420 feet in height. For these applications, the current IBC would require one additional staircase unless OEO is provided. Therefore, by using OEO, more usable space may be available in the building.

So where does OEO development stand now? National Elevator Industry Inc. (*NEII*®) member companies, the major players in the elevator industry, are actively developing and refining the technology needed to create functional, efficient systems that will meet OEO standards. At the moment, there is testing in high-profile sites, including 4 World Trade Center in Manhattan where certain passenger cars can be used for occupant evacuation. “It was an idea we put into place even before the code was adopted,” said Serge Demerjian, the development manager at Silverstein Properties, to the *New York Times*. A similar system has also recently been approved for 181 Fremont, a high-rise mixed-use building in San Francisco.



If OEO is so beneficial, why isn’t this ability installed everywhere? According to the [New York Times](#), the NYFD’s attitude towards occupant-evacuation elevators was deemed “positive.” While OEO has made some major strides in becoming a reality for high-rise buildings, the implementation into both building systems and the psyche of riders is still a long way off. Educational programs and adoption of the latest code requirements by jurisdictions are necessary to ensure its safe use. However, with commercial buildings rising higher and housing more occupants, the focus on how to keep occupants safe is paramount in the elevator industry, so expect more OEO developments.

*Have a comment or question for the experts? Want to submit a topic for a future issue of the newsletter? Send us your thoughts at [theinsider@neii.org](mailto:theinsider@neii.org) to keep the conversation going!*

---

*NEII*® makes no warranty or representation as to the accuracy or completeness of the information provided. Neither *NEII*, nor its directors, officers, employees, or agents shall be responsible for the content or use of the information herein. To the fullest extent permitted by law, *NEII* disclaims all warranties express, implied, or statutory including but not limited to any warranties of merchantability, fitness for a particular purpose, and non-infringement.

---

## **National Elevator Industry, Inc.**

1677 County Route 64 | P.O. Box 838 | Salem, New York 12865-0838  
*NEII* and *NEII* logo • Registered, U.S. Patent and Trademark Office  
Copyright © 2016 National Elevator Industry, Inc., Salem, NY

Call: 518-854-3100  
Email: [info@neii.org](mailto:info@neii.org)  
[www.neii.org](http://www.neii.org)



Follow @NEII\_Tweets

Subscribe [here](#) to receive future editions of "The Insider" newsletter.