

# Paralyzed Veterans of America (PVA) Grant

This project was supported by an award from the Paralyzed Veterans of America Research Foundation

# Assistive Technology for Air Travel RESNA Standards

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# **Issue 1: Steep Jetway Slopes**

Airport terminal designs leads to steep jetways

Typically steeper than a standard ramp

Dangerous for Mobility Device users

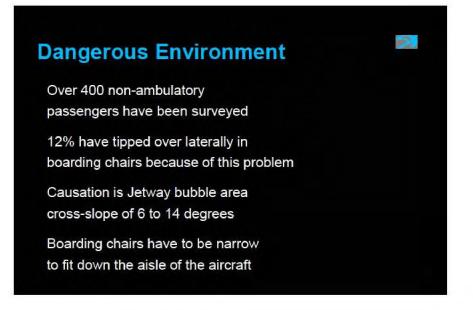
Exempt from ADA guideline ramp slopes





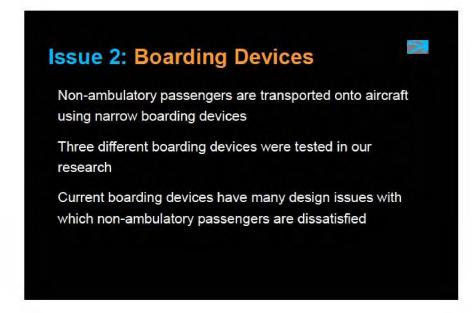






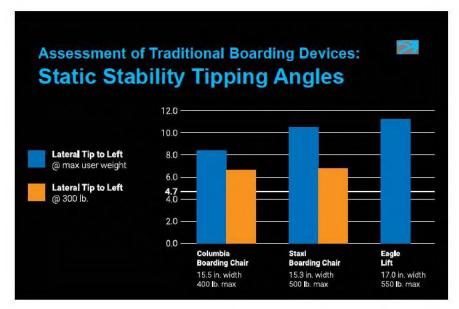
# Issue 1: Potential Solution Develop technologies to level the floor in the bubble area of jetways



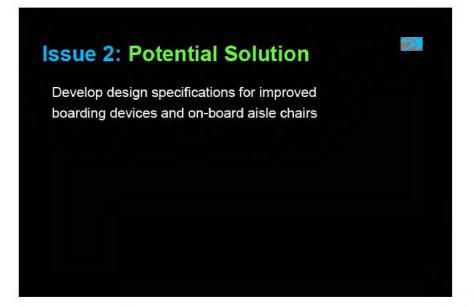












# Lack of standards for the minimum width of the aisle way in aircraft Leads to narrower and narrower aisle width in aircraft Boarding device manufacturers are unable to optimize the design of boarding devices for stability







## **Issue 3: Potential Solution**

Develop minimum clear width requirements for commercial aircraft

Require a minimum center aisle minimum clearane width of 18 inches at all heights to allow boarding device manufacturers to optimize the lateral stability of boarding devices



## Issue 4: Dangerous Transfer Methods

Passengers who are non-ambulatory and who are not able to independently transfer must be physically transferred to boarding chairs and then into AC seating

This results in back injuries to the contractors and skin injuries to the passengers







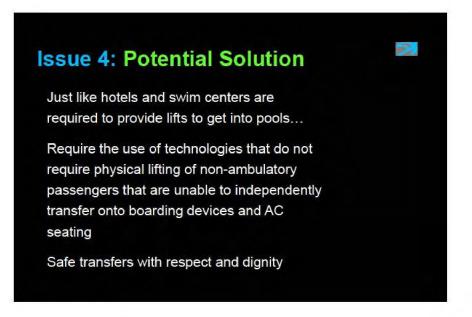




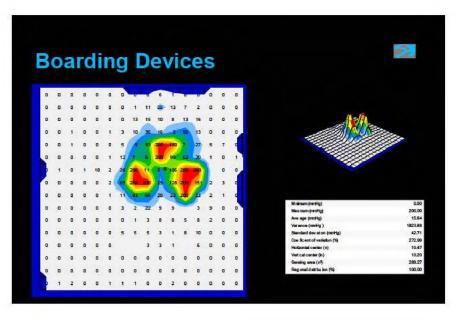




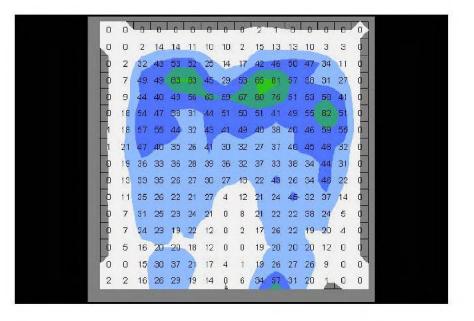




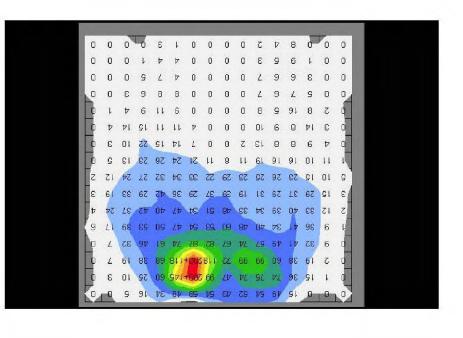
















### Issue 5: Potential Solution

Educate travelers without sensation to use pressure relief seating accessories when sitting in aircraft

Educate health-care professionals who serve travelers without sensation

# Issue 5: Lack of Accessible Bathrooms

Many non-ambulatory passengers can only fly 2-3 hours without bathroom access

Many non-ambulatory passengers dehydrate themselves for days to fly

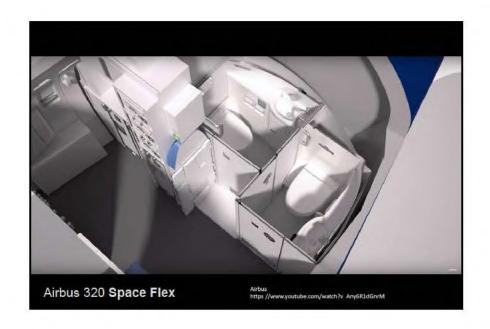
64% of people surveyed knew persons that need assistance in a bathroom

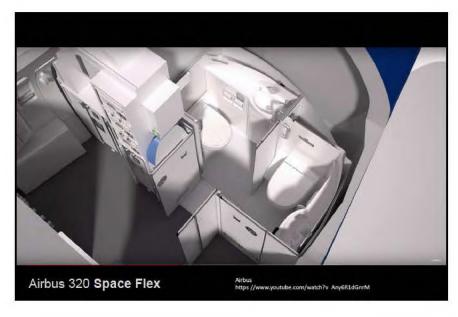
# Issue 6: Lack of Accessible Bathrooms

Passengers needing a personal caregiver are not accommodated by the current size of bathrooms

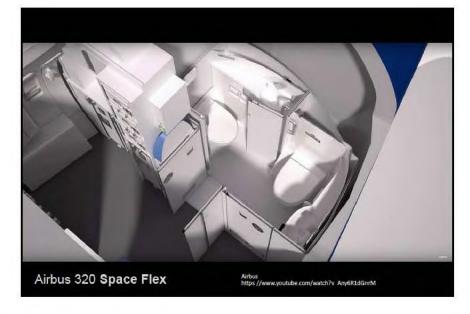
Including infants and older adults and non-ambulatory passengers that must use an on board aisle wheelchair







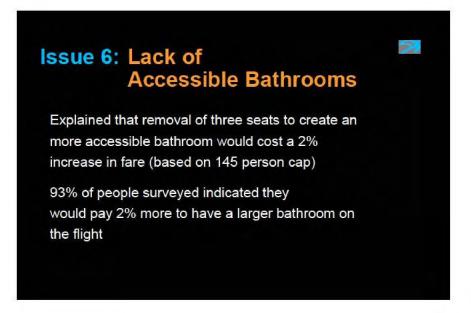












# **Issue 6: Potential Solution**



Provide one larger bathroom at the rear of the aircraft to accommodate passengers with different needs



# **Issue 7: Mobility Device Damage**



Currently, Powered and Manual Wheelchairs frequently sustain significant damage during air transport

Wheelchairs are typically stored with baggage

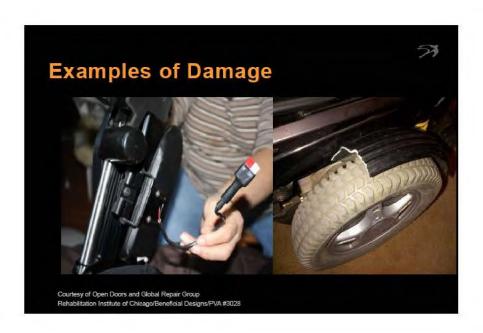


















# Develop Assistive Technology for Air Travel **Scope**

Powered mobility devices manual wheelchairs and power assist devices

Information gathering

Travel setup information

Labeling guidelines

Handling guidelines

Training procedures

Wheelchairs designed for air transport

### RESNA AT-1:2019 Volume 1:

# Requirements and Test Methods Related to Mobility Devices

Section 1 Vocabulary and Definitions for Assistive
Technology and Air Travel

Section 2 Information and Instructions for Preparing Wheelchairs to be
Stored and Transported in Commercial Aircraft

Section 3 Handling Procedures for PMDs to be Stored and Transported in Commercial Aircraft

Section 4 Labeling and Design Requirements for Wheelchairs Designed for Stowage and Transport in Commercial Aircraft

# **Committee Participation**

Airline carriers and manufacturers

Wheelchair manufacturers

Baggage handling contractors

Disability organizations

Wheelchair repair companies

Government agencies - DOT - FAA

Passenger boarding service companies

### RESNA AT-1:2019

## Section 1

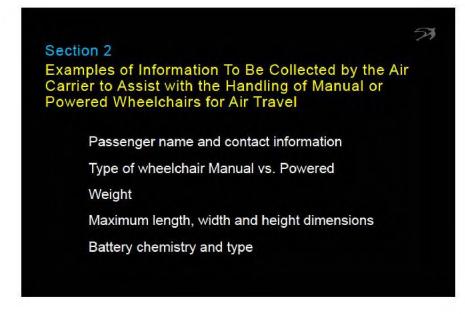
Vocabulary and Definitions for Assistive Technology and Air Travel

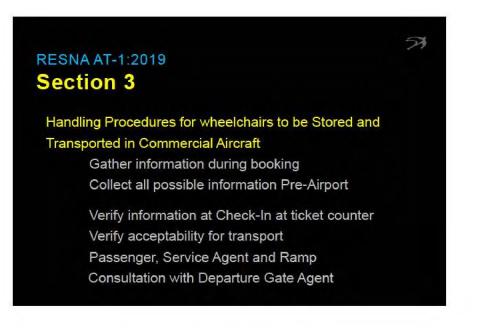
- 1 Scope
- 2 Normative References
- 3 Terms and Definitions



# RESNA AT-1:2019 Section 2 Information and Instructions for Preparing Wheelchairs to be Stored and Transported in Commercial Aircraft Information To Be Collected by the Air Carrier to Assist with the Handling of Manual or Powered Wheelchairs for Air Travel Information that the Air Carriers can Provide to their Customers to Prepare for Air Travel







# RESNA AT-1:2019 Section 3 (continued)

Prepare wheelchair for travel in the jetway
Remove components for storage in AC
Transfer of wheelchair to the tarmac
Lift wheelchair onto the belt loader
Transfer from belt loader into the baggage area
Secure wheelchair in baggage area
Unloading and return to jetway

### RESNA AT-1:2019

### **Section 4**

Labeling and Design Requirements for Wheelchairs Designed for Stowage and Transport in Commercial Aircraft

Specifications for design features that will enable mobility devices to be able to withstand the rigors of being loaded and unloaded from aircraft

## Development of

# **PMD Handler Training Procedures**

Experience of handling different types of PMDs may be infrequent for baggage handlers

Prevention of injury to handlers

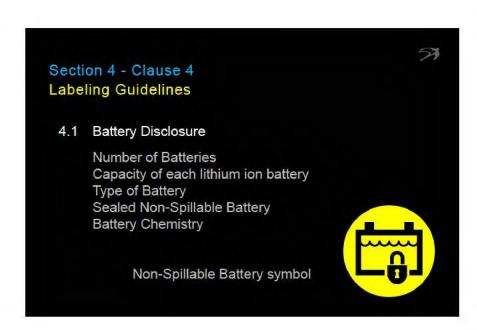
Prevent damage to PMDs

### Section 4 - Clause 1 Scope

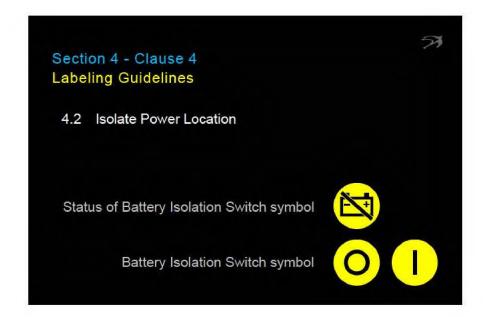
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This section is focused on manual and powered wheelchairs, including scooters and power assist devices specifically designed to be easier to store and transport in commercial aircraft.

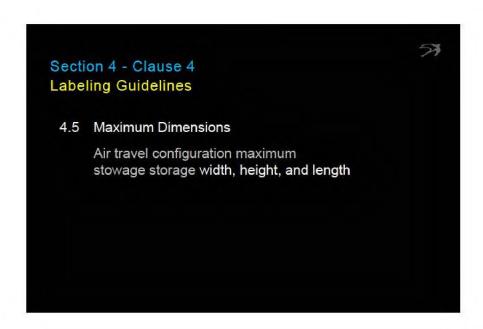


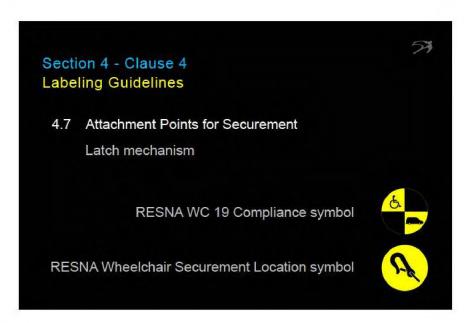


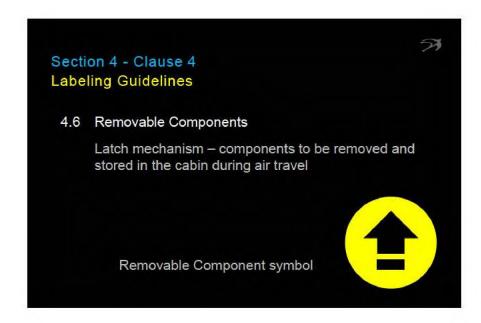




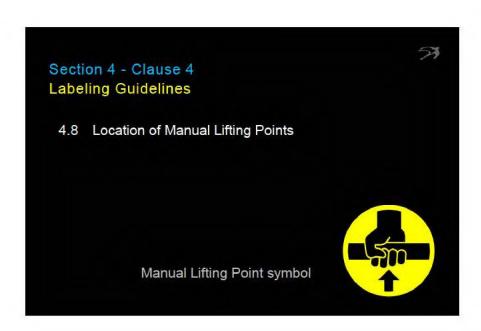


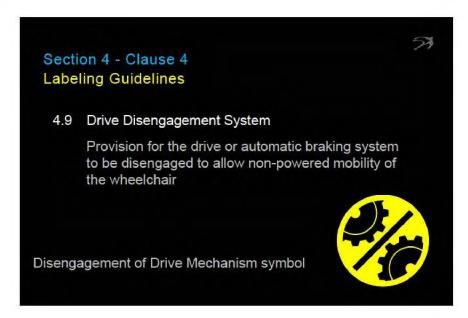






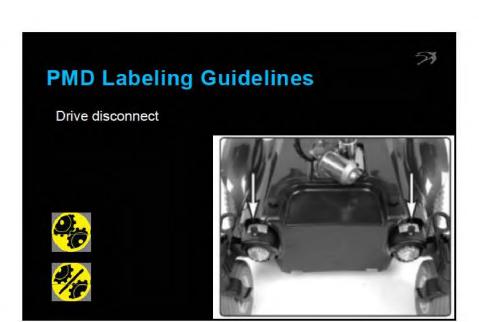


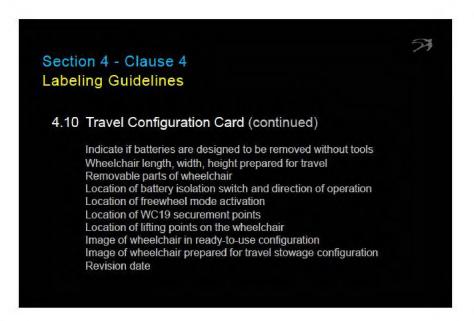


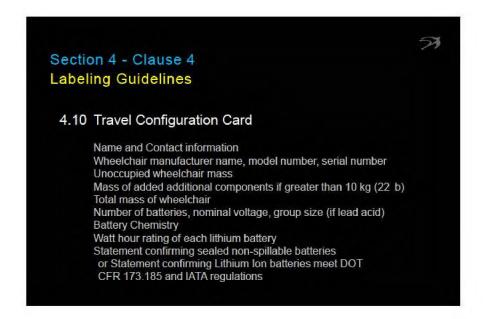


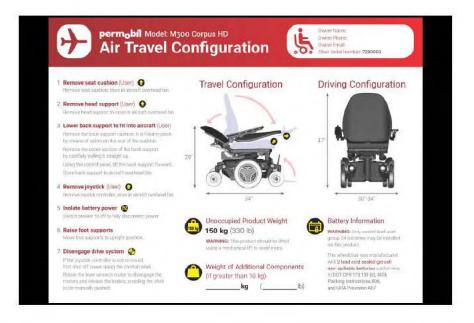




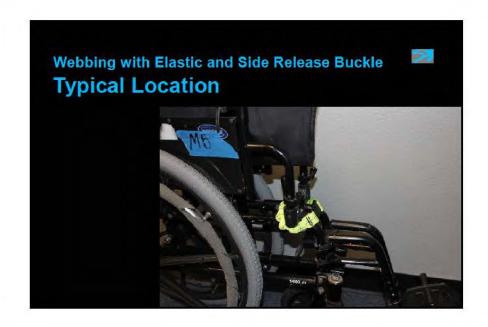


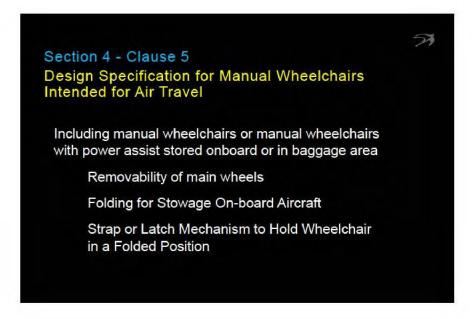


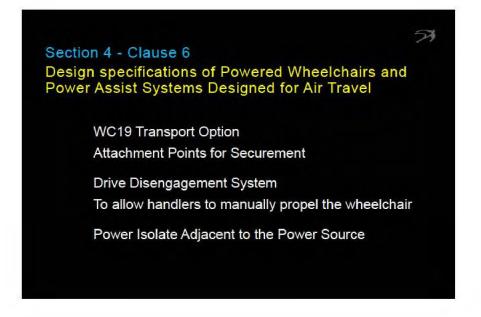




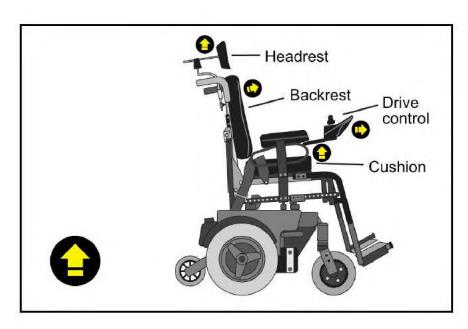




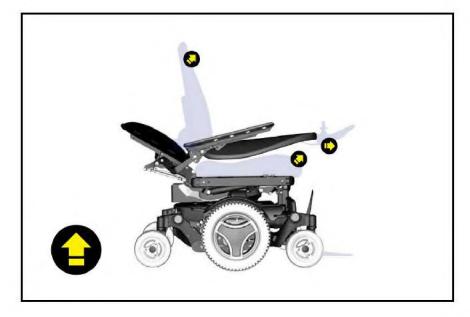












# Design Specifications for Air-Transportable PMDs Folding or removable back support to reduce height Height of typical baggage access door can be as short as 30 inches



