Agenda

• Introductions
• Piedmont Atlanta Tower Overview
• Use and Views of Existing Helipad
• Proposed Helipad Design
• Location of Existing and Proposed Helipads
• Rationale for Adding a Helipad
• Helicopter Noise and Abatement Procedures
  • Altitude
  • “Fly Friendly” Flight Paths
  • Immediate Disengagement of Blades/Rotors
  • Flight Technology
• Helicopter Arrival Source and Time of Day
• Rationale for Maintaining 2 Helipads
• Summary
# Piedmont Atlanta Tower Overview

## Phase I
**2017 - 2021**
- 6 Heart Operating Rooms
- 2 Hybrid Operating Rooms
- 2 General Operating Rooms
- 8 Catheterization Labs
- 4 Electrophysiology Labs
- 64 Critical Care Beds
- 68 Acute Care Beds
- Sterile Processing & Supply
- Central Energy Plant
- Clean Loading Dock
- Parking
- Retail Food Service
- Entire Building Construction

## Phase II
**2022 - 2026**
- Fit-up 3 General Operating Rooms
- Fit-up 84 Critical Care Beds
- Fit-up 192 Acute Care Beds
- Possible Central Energy Plant Expansion

### Budgets
- **$450 Million**
- **$138 Million**

### Key Features
- **903,671 Square Feet New Construction**
- **45,583 Square Feet of Renovation**
- **~390 Space Valet Parking Garage**
- **13 Story Tower – 16 Stories Total**

---

### Diagram
- **PHASE I**
  - 2018
  - 2020
  - 2021
- **PHASE II**
  - 2022
  - 2024
  - 2026

- **ACUTE BEDS (48)**
- **ACUTE BEDS (48)**
- **MECHANICAL**
- **ACUTE BEDS (48)**
- **ACUTE BEDS (48)**
- **CRITICAL CARE BEDS (42)**
- **CRITICAL CARE BEDS (42)**
- **CRITICAL CARE BEDS (42)**
- **CRITICAL CARE BEDS (42)**

- **MECHANICAL**
- **MECHANICAL**
- **LOBBY/RETAIL**
- **SURGERY**
- **GATH/EP**
- **ROOFTOP UNITS**
- **NEW FUTURE PATIENT/CLINICAL FLOOR**
- **PHASE II**
- **FUTURE PATIENT/CLINICAL FLOOR**
- **FUTURE MECHANICAL FLOOR**

### Locations
- **PLAZA**
- **PEACHTREE RD**
- **COOLING TOWER**
Use of Existing Helipad

- Transfers patients in need of tertiary/quaternary care from outlying facilities
- Most patients arriving by helicopter go to the Cath Lab, Operating Room, Intensive Care, and Emergency
- Piedmont Atlanta accepted 233 helicopter landings in the 12 months ended 11/30/2017, representing about **20 landings per month, including 3 per month between 10pm – 6am.**
- Approximately 70% of the landings are from other Piedmont facilities.
Photos from Existing Helipad

Facing North

Facing West

Facing South

Facing East
Proposed Helipad Design and Surrounding Structures
Helipad – Where?

<table>
<thead>
<tr>
<th>Helipad Heights</th>
<th>Feet above sea level</th>
<th>Feet above Building Level 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Helipad</td>
<td>1,014</td>
<td>89</td>
</tr>
<tr>
<td>Proposed Helipad</td>
<td>1,149</td>
<td>224</td>
</tr>
</tbody>
</table>

The Proposed Helipad is 135 feet higher than the existing helipad, which equates to approximately 13 stories of an office or apartment building.

“...noise measurements showed that increasing operational altitude does reduce noise from helicopters...”

- Report of the Federal Aviation Administration to the United States Congress Pursuant to Section 747 of the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century; December 2004
Why add a helipad?

- To get patients to their destination in the shortest amount of time, preserving lives
- Example Case: STEMI = ST-Elevation Myocardial Infarction = heart attack
- Every year, about 790,000 Americans have a heart attack.\(^1\)
- Every 40 seconds, someone in the United States has a heart attack.\(^1\)
- Unlike other muscles, heart muscle does not regenerate after injury
- Time to restoration of sustained blood flow is very important, as time is heart muscle.
- Sustained blood flow is generally best achieved by inflating a balloon in the blocked vessel, to make the vessel patent for blood flow
- Any delay in door-to-balloon time is associated with increased in-hospital mortality\(^2\)
- Proposed helipad shortens the distance and travel time from the helipad to the Cath Lab, where STEMI interventions are implemented


Baseline: Existing Helipad to Existing Cath Lab

<table>
<thead>
<tr>
<th>Distance</th>
<th>Time</th>
<th>Elevator Rides</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Helipad to Existing Cath Lab</td>
<td>583 feet</td>
<td>4 mins</td>
</tr>
</tbody>
</table>

Assumptions
- Travel Speed: 187.5 feet/min (75% of an average person walking)
- Elevator Ride takes 1 minute
### Existing Helipad to New Cath Lab

<table>
<thead>
<tr>
<th></th>
<th>Travel Distance (feet)</th>
<th>Travel Time (mins)</th>
<th>Elevator Rides</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Helipad to Existing Cath Lab</td>
<td>583</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Existing Helipad to New Cath Lab</td>
<td>1,003</td>
<td>8</td>
<td>2</td>
</tr>
</tbody>
</table>

**Assumptions**
- Travel Speed: 187.5 feet/min (75% of an average person walking)
- Elevator Ride takes 1 minute
Proposed Helipad to New Cath Lab

<table>
<thead>
<tr>
<th>Distance (feet)</th>
<th>Distance (feet)</th>
<th>Distance (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Helipad to Existing Cath Lab</td>
<td>583</td>
<td>4</td>
</tr>
<tr>
<td>Existing Helipad to New Cath Lab</td>
<td>1,003</td>
<td>8</td>
</tr>
<tr>
<td>Proposed Helipad to New Cath Lab</td>
<td>230</td>
<td>3</td>
</tr>
</tbody>
</table>

Assumptions
- Travel Speed: 187.5 feet/min (75% of an average person walking)
- Elevator Ride takes 1 minute
## Comparative Noise Levels

<table>
<thead>
<tr>
<th>Noise Source</th>
<th>Decibel Level</th>
<th>Decibel Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jet take-off (at 25 meters)</td>
<td>150</td>
<td>Eardrum rupture</td>
</tr>
<tr>
<td>Aircraft carrier deck</td>
<td>140</td>
<td></td>
</tr>
<tr>
<td>Military jet aircraft take-off from aircraft carrier with afterburner at 50 ft (130 dB).</td>
<td>130</td>
<td></td>
</tr>
<tr>
<td>Thunderclap, chain saw. Oxygen torch (121 dB).</td>
<td>120</td>
<td>Painful. 32 times as loud as 70 dB.</td>
</tr>
<tr>
<td>Steel mill, auto horn at 1 meter. Turbo-fan aircraft at takeoff power at 200 ft (118 dB). Riveting machine (110 dB); live rock music (108 - 114 dB).</td>
<td>110</td>
<td>Average human pain threshold. 16 times as loud as 70 dB.</td>
</tr>
<tr>
<td><strong>Jet take-off (at 305 meters), use of outboard motor, power lawn mower, motorcycle, farm tractor, jackhammer, garbage truck. Boeing 707 or DC-8 aircraft at one nautical mile (6080 ft) before landing (106 dB); jet flyover at 1000 feet (103 dB); Bell J-2A helicopter at 100 ft (100 dB).</strong></td>
<td>100</td>
<td>8 times as loud as 70 dB. Serious damage possible in 8 hr exposure.</td>
</tr>
<tr>
<td>Boeing 737 or DC-9 aircraft at one nautical mile (6080 ft) before landing (97 dB); power mower (96 dB); motorcycle at 25 ft (90 dB). Newspaper press (97 dB).</td>
<td>90</td>
<td>4 times as loud as 70 dB. Likely damage in 8 hour exposure.</td>
</tr>
<tr>
<td>Garbage disposal, dishwasher, average factory, freight train (at 15 meters). Car wash at 20 ft (89 dB); propeller plane flyover at 1000 ft (88 dB); diesel truck 40 mph at 50 ft (84 dB); diesel train at 45 mph at 100 ft (83 dB). Food blender (88 dB); milling machine (85 dB); garbage disposal (80 dB).</td>
<td>80</td>
<td>2 times as loud as 70 dB. Possible damage in 8 hour exposure.</td>
</tr>
<tr>
<td>Passenger car at 65 mph at 25 ft (77 dB); freeway at 50 ft from pavement edge 10 a.m. (76 dB). Living room music (76 dB); radio or TV-audio, vacuum cleaner (70 dB).</td>
<td>70</td>
<td>Arbitrary base of comparison. Upper 70s are annoyingly loud to some people.</td>
</tr>
<tr>
<td>Conversation in restaurant, office, background music, Air conditioning unit at 100 feet.</td>
<td>60</td>
<td>Half as loud as 70 dB. Fairly quiet.</td>
</tr>
<tr>
<td>Quiet suburb, conversation at home. Large electrical transformers at 100 feet.</td>
<td>50</td>
<td>One-fourth as loud as 70 dB.</td>
</tr>
<tr>
<td>Library, bird calls (44 dB); lowest limit of urban ambient sound</td>
<td>40</td>
<td>One-eighth as loud as 70 dB.</td>
</tr>
<tr>
<td>Quiet rural area.</td>
<td>30</td>
<td>One-sixteenth as loud as 70 dB. Very Quiet.</td>
</tr>
<tr>
<td>Whisper, rustling leaves</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Breathing</td>
<td>10</td>
<td>Barely audible</td>
</tr>
</tbody>
</table>

Further operational alternatives that mitigate noise should be explored. A number of operational alternatives, proposed by the public and industry, have the potential to mitigate urban nonmilitary helicopter noise and preserve the safe and efficient flow of air traffic. In particular, the FAA found:

- Noise reduction benefits can be achieved with higher altitude flight. With more conclusive demonstrations addressing safety, such noise mitigation approaches could be integrated within the ATC design planning in specific urban airspaces;

- Optimal helicopter route planning to avoid noise sensitive areas will require comprehensive evaluation for each specific region of concern;

- The promotion of noise abatement procedures should be pursued on two fronts – with helicopter pilots and air traffic control personnel. The FAA will continue training ATC personnel to increase awareness of noise abatement procedures that best mitigate noise over communities; and

- The use of advanced technologies, such as dGPS, aids in helicopter approach and departure procedures do show to be beneficial for noise abatement operations. Preliminary dGPS/noise research sponsored by the National Rotorcraft Technology Center (NRTC)/Rotorcraft Industry Technology Association (RITA) has indicated promising noise reductions using more precise procedures.

Source:
Report of the Federal Aviation Administration to the United States Congress Pursuant to Section 747 of the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (AIR-21); December 2004
“The rooftop location of this proposed helistop will help to reduce any noise footprint in the area because it is landing so far above ground level. This is also an increased safety benefit because the wind is more consistent and there are no obstructions by design around the helistop.”

- FEC Heliports (Helipad Designer)

“In general, an increased flight altitude (135 feet higher) above ground would reduce the flyover noise level by as much as 8 dB for a position directly under the path. As you move away from the overflight line, the reduction falls off down to about 1 dB at a sideline distance of 500 feet from the flight path. The concept that a higher operational altitude reduces noise is documented in the summary of a report to Congress on urban helicopter noise.”

- Merck & Hill Consultants (Acoustical Consultant)

Source:

Accessed from https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/20020051150.pdf
The third part of the FAA approach involved the acquisition of helicopter noise measurements to quantify noise levels in a densely populated metropolitan area. This was done by taking sets of noise measurements within the urban center of New York City. The FAA’s preliminary *in-situ* noise measurements showed that increasing operational altitude does reduce noise from helicopters (see Section 7.2 and Appendix G), corroborates operational noise measurements reported in the New York City Master Plan Report, and supports the industry’s voluntary operational guidance to “fly higher” altitudes.
Preferred Landing Approaches

“The most frequently used approach path is South to North putting the left side of the aircraft with easy access to the west ramp. Departure would be to the North. Any substantial wind might dictate an approach from any direction, but in most cases South to North is preferred.”

- Air Methods (Flight Crew)

“Approach departure paths are based on the prevailing winds in the area as well as the available clear space required by the FAA. Pilots will always use “Fly Friendly” protocol whenever possible while flying, this means they will fly over designated highways, rivers and interstates and avoid residential areas or schools and churches. It should be noted that it is always the Pilot’s call as to how to come and go from any location and that is based on the wind and other safety measures.”

- FEC Heliports (Helipad Designer)
Patient Unloading Process Supports Noise Mitigation

- **Helicopter lands**
- **Helicopter turns “off” and blades stop spinning**
- **Hospital team retrieves patient from helicopter and transports patient to destination**
- **Helicopter turns “on” and blades start spinning**
- **Helicopter departs**

Approximately 4 minutes

The helicopter does not leave the blades spinning after landing.
Where are the helicopters arriving from?

- North: 39%
- South: 29%
- West: 3%
- East: 25%
- Other (home, non-hospital location): 4%
When are the helicopters arriving?

- 15% of the landings are between 10pm – 6am
  - One night landing every 10 days

- Piedmont forecasts that 80% of landings will be directed to the new helipad
  - 15 landings per month = about one landing every other day
  - About 2 – 3 night landings per month
Why maintain 2 helipads?

Piedmont is proposing to **maintain 2 helipads in service** for 2 reasons:

- Existing helipad is **closest to Emergency**, enabling the helicopter to land in the location best suited to the patient’s needs
- In the event of a helicopter mechanical failure, fuel spill, or other incident, the other helipad could be used for patient transport
Agenda

• Introductions
• Piedmont Atlanta Tower Overview
• Use and Views of Existing Helipad
• Proposed Helipad Design
• Location of Existing and Proposed Helipads
• Rationale for Adding a Helipad
• Helicopter Noise and Abatement Procedures
  • Altitude
  • “Fly Friendly” Flight Paths
  • Immediate Disengagement of Blades/Rotors
  • Flight Technology
• Helicopter Arrival Source and Time of Day
• Rationale for Maintaining 2 Helipads
• Summary
Summary

• Piedmont Atlanta Tower Overview
  Piedmont Atlanta Tower will open in 2020. A special use permit has been submitted to add a helipad on the Tower to transfer patients in need of tertiary/quaternary care.

• Use of Helipad and Flight Volumes
  Most patients arriving by helicopter go to the Cath Lab, Operating Room, Intensive Care, and Emergency. In the 12 months ending 11/30/2017, Piedmont Atlanta accepted 233 helicopter landings, representing about 20 landings per month, including 3 per month between 10pm – 6am. Piedmont forecasts 80% of landings would arrive at the proposed helipad (about 1 landing every other day with 2-3 night landings per month).

• Rationale for Adding a Helipad
  The proposed helipad shortens the distance and travel time from the helipad to the Cath Lab and Operating Room, where interventions are implemented to save lives.

• Helicopter Noise Abatement Procedures
  • The proposed helipad brings helicopters closer to the Peachtree Road business district, with a helicopter landing area 135 feet higher altitude than existing helipad. Higher operational altitude reduces noise, as documented in the FAA Report to Congress. The higher altitude is also an increased safety benefit because the wind is more consistent and there are no obstructions by design around the helistop.
  • Pilots use “Fly Friendly” protocols that avoid residential areas, schools, and churches.
  • Helicopter blades are turned “off” for patient unloading. From landing to take-off takes approximately 4 minutes.

• Helicopter Arrival Source and Landing Approach
  Most of the helicopters arrive from the North (39%), South (29%), and East (25%). Landing approach is at the Pilot’s discretion and is based on prevailing winds and available clear space; the preferred approach is South to North, and preferred departure is to the North.

• Rationale for Maintaining 2 Helipads
  Piedmont is proposing to maintain 2 helipads in service since the existing helipad is closest to Emergency, and in the event of a helicopter mechanical failure, fuel spill, or other incident, the other helipad could be used for patient transport.
Piedmont Atlanta Tower: Coming September 2020
More Information at BetterPiedmont.org