



# Airport Shuttle Comparison Podcars vs. Shuttle Buses

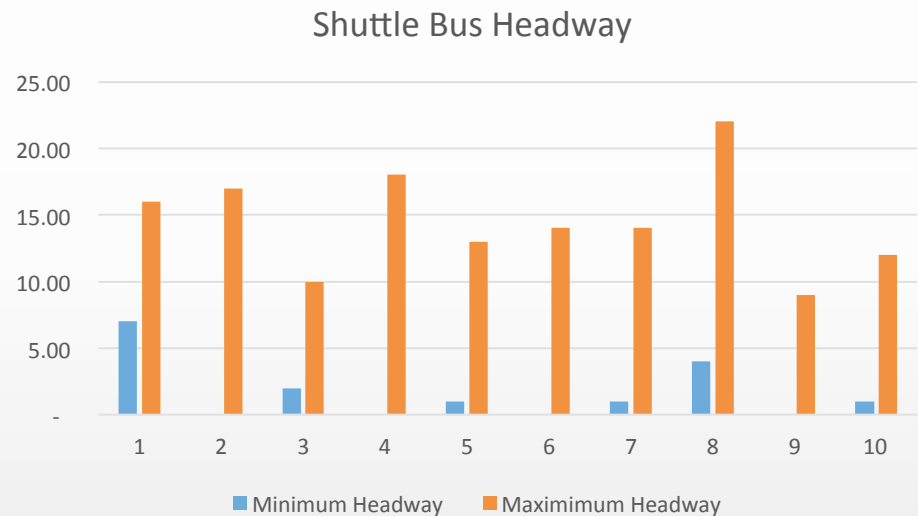
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# Agenda

- What is the problem with shuttle buses?
- Driverless shuttles
- Heathrow International Airport
- Greenville-Spartanburg International Airport
- Conclusions

# What's the problem with shuttle buses?

- Passenger service
  - Connect times
  - Reliability
  - Limited seats
  - Lifting/storing luggage
- Congestion
- Emissions
- Bus maintenance and operations



# Available PRT Systems



# Heathrow International Airport

- T-5 to Business Carpark
- 21 vehicles, 3 stations, 2.4 track-miles
- 1.2 M passengers since May 2011





# Increased Occupancy & Revenue

- 2012 lot occupancy doubled over 2011
- Rate increased 20% June 2011
- Lot being expanded and rebranded
  - “Pod Parking”



## Other Results

- Increased dwell time in departures
- Passengers love it - predictable
- Revenue from sponsorships
- Adjacent hotel use
  - 2,000 per month @ £5
- Replaced 70,000 annual bus trips
  - Reduced congestion
  - Reduced emissions







6 to 10 minute connect times

An aerial photograph of a campus. At the top is a large, multi-story white building. Below it is a central green area with a circular pond. To the right of the green area is a large parking lot. To the left of the green area is another parking lot. At the bottom is a large, rectangular parking lot. A yellow line is drawn on the left side of the image, starting from the top left and ending at the bottom left. A yellow line is also drawn on the right side of the image, starting from the top right and ending at the bottom right. The text '6 to 10 minute connect times' is centered in the image.



# Growing Parking Demand



500'

TERMINAL

GARAGE A  
(1046)

GARAGE C  
(1500)

ECONOMY LOT 2  
(1300)

GARAGE B  
(1483)

ECONOMY LOT  
(1440)

12 to 17 minute connect times

#### LEGEND

EXISTING PARKING

PROPOSED PARKING

PROPOSED ROAD

PROPOSED ROUTE 1

PROPOSED ROUTE 2

PROPOSED ROUTE 3

PROPOSED COMMON ROUTE

PROPOSED PICKUP POINT

PROPOSED DROPOFF POINT

ECONOMY LOT 3  
(1100)

Bus Solution





500'

TERMINAL

GARAGE A  
(1045)

GARAGE B  
(1483)

DAILY  
(367)

GSP DRIVE

ECONOMY LOT 2  
(1300)

5 to 7 minute connect times

ECONOMY LOT  
(1440)

AVIATION PARKWAY

LEGEND

EXISTING PARKING

PROPOSED PARKING

PROPOSED ROAD

PROPOSED GUIDEWAY (ELEVATED)

PROPOSED GUIDEWAY (AT GRADE)

PROPOSED STATION

PROPOSED MAINTENANCE FACILITY



ECONOMY LOT 4  
(1100)

ECONOMY LOT 3  
(1100)

PRT Solution

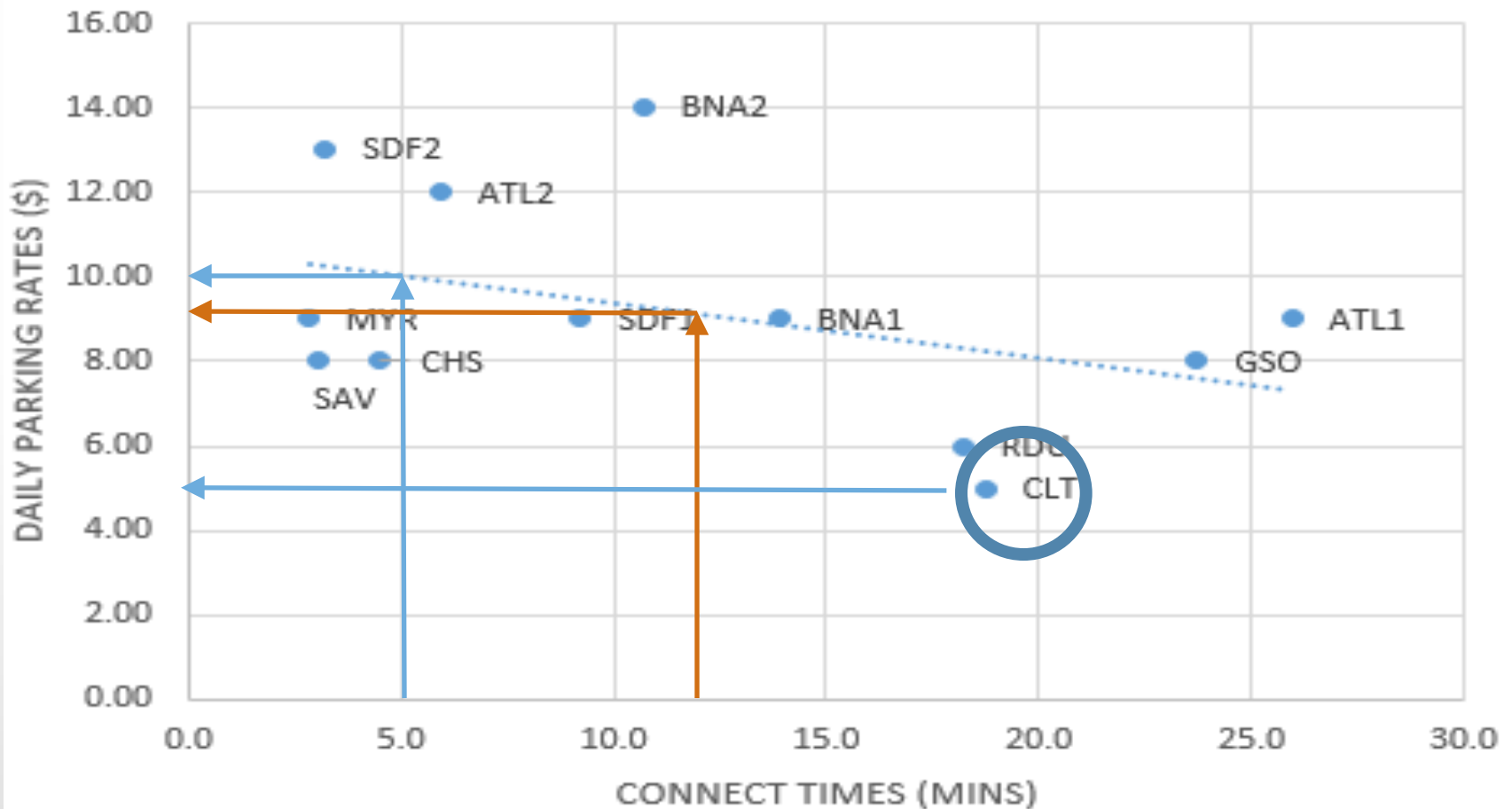


# 30-Year Life-Cycle Costs

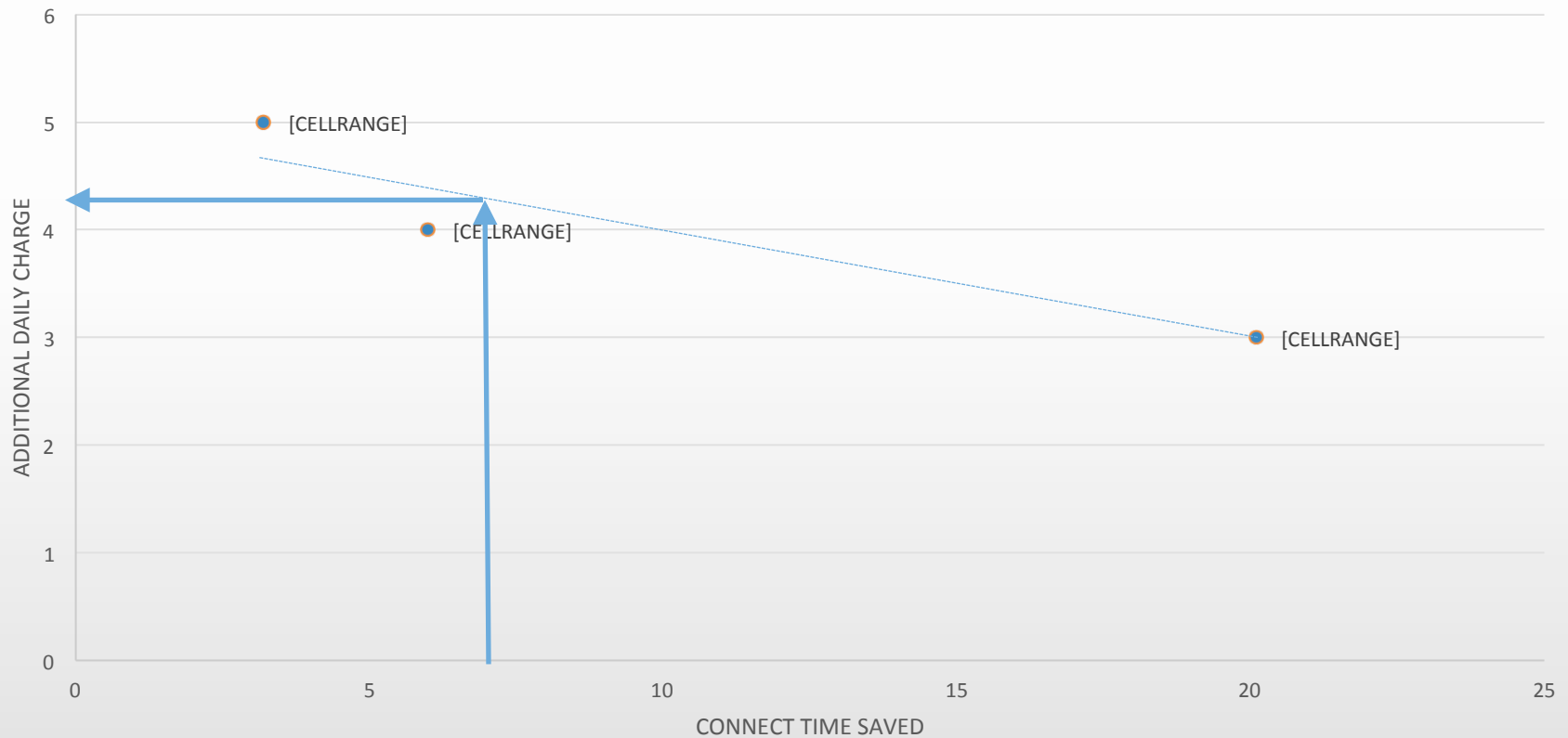
- PRT: \$181 M
- Bus: \$198 M

**PRT has lower costs**

# Parking Rates vs. Connect Times



# Additional Charge vs. Time Saved





# Rates Used for Comparison

- PRT: \$6.00 per day
- Bus: \$5.00 per day

# 30-Year Parking Revenue

- PRT: \$204 M
- Bus: \$201 M

**PRT has higher revenues**

PRT based on \$6.00/day  
Bus based on \$5.00/day

# GSP Summary

- Shuttle needed to maintain high level of service
- PRT is preferred to bus
  - Higher level of service
  - Lower capital costs
  - Higher revenues
  - Obviates need for parking structure
  - No disruption of surface traffic
  - No on-site emissions
  - Breaks even at \$6.00 daily rate



# GSP Initial System

- Connects existing economy lot to terminal
- 21 vehicles
- 0.88 track miles
- 3 at-grade stations
- 1 elevated station
- Maintenance/storage facility
- Cost about \$20 M
- Kickoff meeting next week for preliminary design

# Conclusions

- PRT can provide a much higher level of shuttle service
- It is cost effective at small and large airports
- Key airport parameters
  - Shuttle lot with more than 1,000 spaces
  - Employee lot shuttle buses
  - And/or rental car shuttle buses
  - Air quality non-attainment a bonus
  - Hotel connection a possibility

Thank you

