



WVU PRT Redefining Mobility

*Department of Transportation and Parking
West Virginia University
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Clement Solomon*



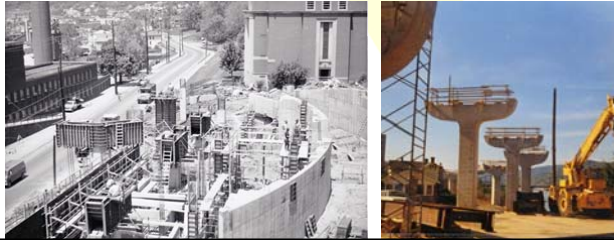
WVU Campus Transportation

- **Campus Location**
 - Three mile separation between campus extremes
 - Elevation change of 600 feet between downtown and HSC
- **2007 Transportation and Parking Plan**
 - Recognized university not provide parking for everyone
 - Downtown with over 3,000 space parking deficit
 - Emphasis on transportation over parking
- **2010 PRT Master Plan Recommendations**
 - Only public mass transit system to handle volume
 - Upgrade to automatic train controls, replacement of PRT vehicles, and power distribution needed
 - Salvage the existing infrastructure
 - Without major system investments
 - System will deteriorate to the point that it will not be able to operate
 - One of the greatest assets of the Morgantown



History Of PRT

- PRT concept has been around since the 1950's
- Direct origin-to-destination service
- Service on demand rather than fixed schedules
- WVU PRT designed by Boeing
 - Phase I started construction in 1972
 - Service in 1975 with phase II completed 1978
- Total project cost \$125 million (1970 dollars)



About the PRT

- 4.5 miles of parallel heated guideway with 10% grades
- 5 stations from Downtown to Health Sciences
- 71 electric powered vehicles
- 20 passenger capacity
- 11,000 lbs. empty weight
- 3 phase, 575 volt electric power
- Current operation funded by student transportation fee of \$97/semester (\$3.3 million)



The PRT Experience

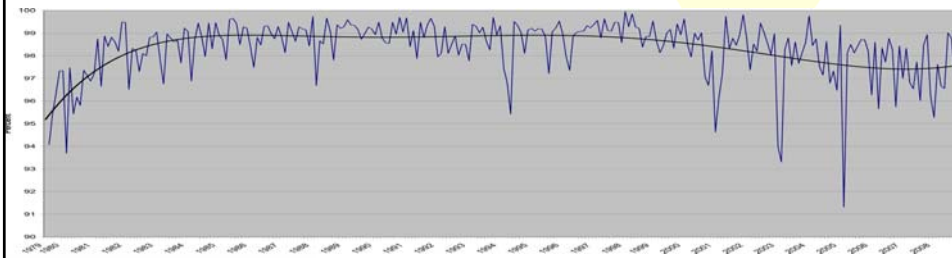
- Moves large volumes of people
- Highest single day ridership over 32,000 trips
- Average weekday of 15,000 trips
- 85% student, 8% F/S, 7% general public
- System can accommodate 6,700 passengers/hour
- 84 million accident free passenger milestone this week
- Integral part of mobility network
- Cost per trip \$2.01 – only New York and Boston lower for fixed guideway operations
- WVU icon


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The Need for Modernization

- Age of the system (38 years)
- Continual decline in reliability
- Current reliability rate in 90% range not satisfactory
- Outdated technology with no vendor support
- Dwindling/No market availability for parts
- Boeing built the system then left
- Viewed by students as antiquated and unreliable



PRT Modernization Plan

- Phase 1
 - Onboard vehicle computer control system
 - Propulsion project
 - Estimated cost \$15,000,000
- Phase 2
 - Replacement of automated train control system
 - Replacement of Four substations and electrical gear
 - Hospital Tunnel Repair
 - Estimated cost \$52,580,000
- Phase 3
 - Vehicle replacement project
 - Infrastructure inspection and repairs
 - Estimated cost \$34,300,000

Completed

2014 to 2016

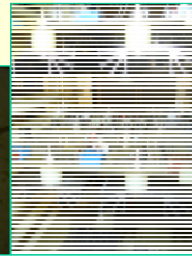
2017 to 2019

Phase 1 – On Board Vehicle Computer System and Propulsion

- New on-board computer system provides a 28% improvement in the PRT's performance
 - Controls vehicle functions according to location and status
 - Monitors and transmits vehicle information/location from the vehicle to the Central Computers
- New propulsion units reduce vehicle failures and increase car availability from 60% to over 80% of the fleet
 - Car availability will improve rider satisfaction by reducing wait time and system downtime
 - Allow for routine preventive maintenance
- Compatible with Phase 3 vehicle replacement

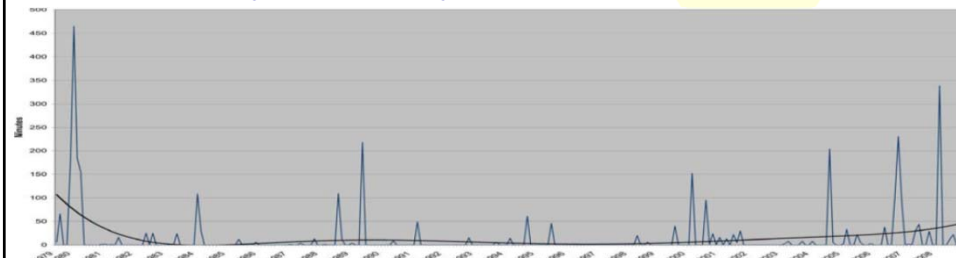
Phase 2 – Automated Train Control System

- Approximately 50% of the downtime due to train control system
- The design and installation of a new train controls system will include:
 - Passive guideway
 - New vehicle controllers
 - Wayside and station computer control equipment and central control equipment
 - Fare gates with new destination selection units
- Use radio frequency communications in lieu of current method
 - Can be overlaid with existing operation
- Reducing maintenance needs and vastly improving system availability



Phase 2 – Four substations/Electrical Gear

- Mechanical failure of the power collection assembly, an ongoing problem
- Replacing the substations/electrical gear will greatly reduce the frequency of maintenance
- Isolate and localize faults
 - Avoid a system wide shut down
 - Yield greater operational flexibility
 - Increase system availability



Phase 3 – Vehicle Replacement Project

- Vehicle mileages range from 250,000 to over 600,000 miles
- Empty weight of a PRT vehicle is approximately 10,000 pounds
- Nonconformity to industry standards
- Technical and mechanical support is nonexistent
- Design of new PRT vehicles envisioned will be:
 - Geometrically similar to the existing vehicles
 - Built using innovative materials and components
 - Yield a lower vehicle weight and components that can be easily procured
- Previous phases will be incorporated into the new vehicle design



Phase 3 - Infrastructure Inspection/Repair

- Overall structural integrity of the PRT guideway infrastructure is good
- Need to inspect, document and design the needed repairs for the PRT guideway
- Majority of the repairs will be related to the deterioration of the concrete pier pads
 - Degradation of these pads could yield elevation differences
 - Could cause failure of hydronic piping used to melt snow and ice on the guideway



Funding Strategy

- PRT modernization possible funding sources:
 - Federal Transit Administration (FTA) formula grants
 - External financing
 - WVU transportation fees
- Phase 1 funded through
 - Used bond proceeds, FTA Formula Grant Funds, and local funds to the tune of \$18.4 million
- Phases 2 and 3: WVU Funds



QUESTIONS?

Clement Solomon, PhD

Director of Transportation and Parking

Phone: 304 293-5502

Email: csolomon@wvu.edu

