WVU PRT
Redefining Mobility

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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

### 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- Outdated technology with no vendor support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

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?

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