Mobility Management: Bus Technologies

Community Relations Committee
February 7, 2018
Agenda Item 7
Bus Technologies

- Essential onboard technologies and systems innovations that improve performance, reliability, safety, and data mining of SamTrans bus transportation services.
  - The innovations that assist SamTrans to manage its bus transportation services
Onboard Technologies

• Farebox – Processes cash, tokens, and change-cards (magnetic)
• Clipper Card Readers – Processes electronic (encoded) fare media
Onboard Technologies

• MDT – Mobile Data Terminal interfaces with the Advanced Communication System (ACS)
  • Downloads schedule/trip data, canned messages, and maps for the Bus Operator
Onboard Technologies

- Computer Aided Dispatch and Automatic Vehicle Locater (CAD/AVL) – Monitors the geo-position of revenue vehicles.
  - Enhances safety features such as a silent alarm for the Bus Operator to report problems
  - Real time communication to respond to accidents, road closures, schedule deviation, onboard incidents or difficult passengers
• Automatic Passenger Counting (APC) – Tracks passengers entering and exiting the bus. APC data is used for the following activities:
  • Planning and scheduling
  • Validation of ridership (number of trips)
  • Inform service changes
Onboard Technologies

- **Multi-Plex System**
  - Input/Output (I/O) control system
  - Replaces mechanical relays and miles of electrical wires in the electrical circuits
    - Enables faster and more comprehensive information processing, i.e. door controls, lighting, engine controls, etc.
  - Provides for visual and computer-based diagnostics, and troubleshooting
Onboard Technologies

• Multi-Plex System (continued)
  • Reduces the number of components
  • Improves reliability of electrical systems
  • Provides the ability to combine system and sub-system functions, such as in the All-in-one Controller
    • Controls doors, bus kneeler, and the wheelchair ramp
Onboard Technologies

- Safety and Security System
  - Digital Cameras
    - Interior cameras – Multiple interior cameras with high definition
    - Exterior cameras – Street side and curbside
    - Forward facing camera
    - Larger hard drives for enhanced digital storage
Onboard Technologies

• Other bus systems with computers or electronic controls
  • Engine
  • Transmission
  • HVAC
  • Emission Controls
  • Engine Cooling System
  • Hybrid Drive
  • Door Controls
  • Destination Signs
  • Lighting
Onboard Technologies

• Emission Reductions

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<td>1,691 g/bhp-hr</td>
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• Strategic alternate fuel collaborations
  • VTA 2004 – 3 Hydrogen fuel cell buses
  • AC Transit 2007 – 12 Hydrogen hybrid fuel cell buses

• Battery Electric Buses (BEB) – zero emissions
Onboard Technologies

• Mobile Application
  • Trip planning, first and last mile connections
  • Next bus (predictive arrival)
  • Local and regional connectivity with transportation provider
  • Mobile ticketing
  • Detailed origin and destination data
Onboard Technologies

• Signal Prioritization
  • Improve travel time on ECR (El Camino Real)
  • Assist OTP along the ECR corridor