Technology Issues for a National Mileage-based Road User Charging System

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RUC Technology--Key Issues

Technology Decision Points

• Charge Accrual
• Charge Reporting
• Charge Payment
• Charge Enforcement
• Charge Apportionment

Cross-cutting Issues

• Ubiquity
• Cost/overhead
• Privacy
• Security
• Robustness
• Evasion
• Deployment/Phase-in
• Compatibility with other road-pricing initiatives
RUC Technology Issues

• Charge Accrual
  – GPS-based—on-board GIS
  – Compute charges in-vehicle
  – Need to support differential charge rates for different vehicle types/classes
  – GPS may not be accurate enough for measuring distance travelled
  – Probably need connection to vehicle diagnostic/data bus(es)
  – Need update mechanisms for changing charge rates, GIS changes, etc.
RUC Technology Issues

• Charge Reporting
  – Choices:
    • Wide-area wireless (e.g. cellular data link)
    • Wireless LAN (requires specific upload points and associated infrastructure)
    • Smart-card
    • VII (IntelliDrive) Infrastructure
  – Need to keep in mind that communication infrastructure will continue to evolve at a rapid rate

• Charge Payment
  – Options
    • Bill/Invoice (like a public utility usage fee)
    • Designated payment stations
    • At refueling points (what about electric vehicles, etc)
  – What about auditability?
  – What about “cash-only” drivers, transients, etc.
RUC Technology Issues

• Charge enforcement
  – How/when is non-payment detected
  – What is the leverage to induce payment

• Charge Apportionment
  – How are collected charged apportioned back to the appropriate jurisdictions?
  – Auditability?