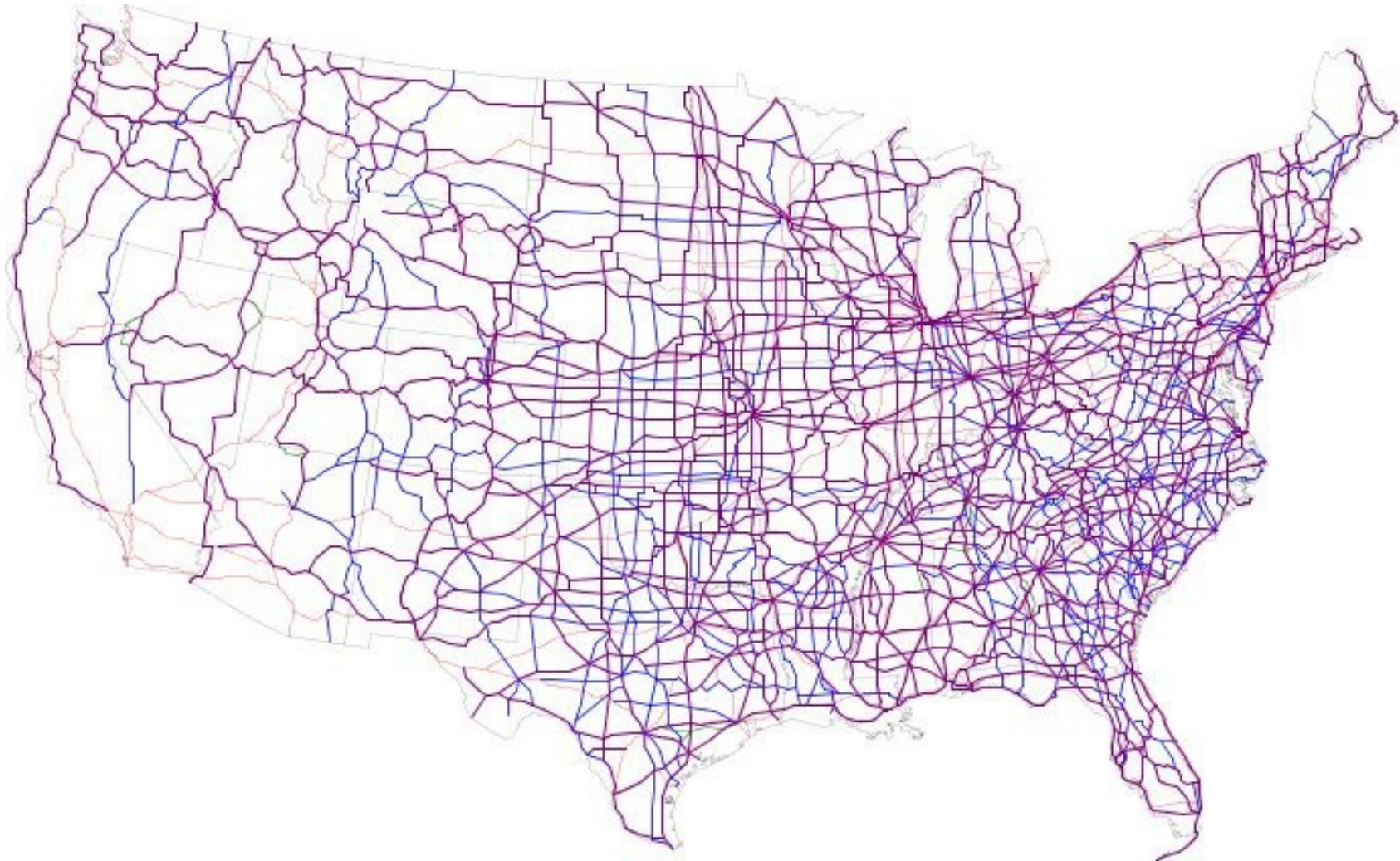


# Technology Issues for a National Mileage-based Road User Charging System

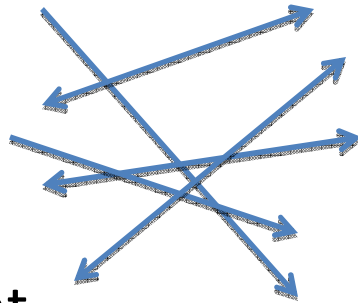
Jon Kuhl, The University of Iowa



# 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?