

FHWA Functional Classification Guidance Update

HIS Presentation
Thursday, November 17, 2011
Joseph Hausman, FHWA

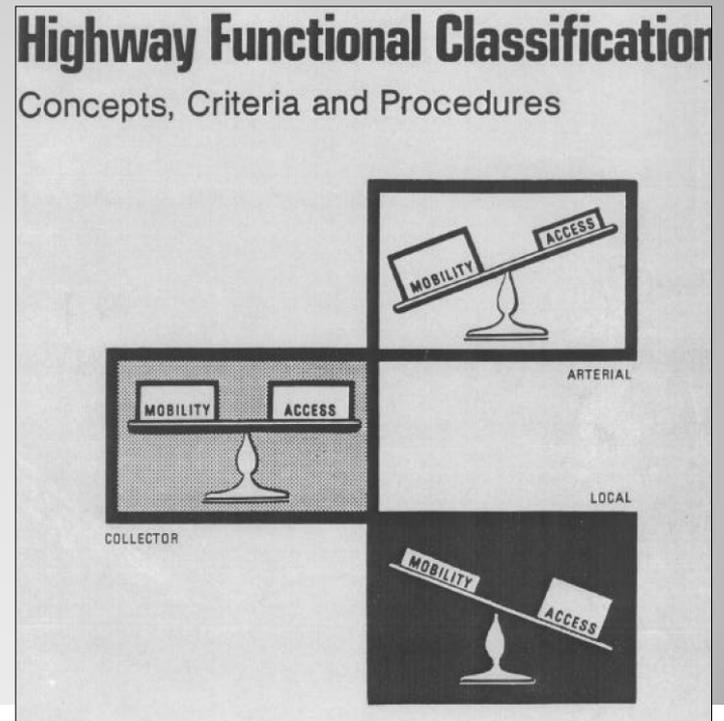


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Background

- Federal-Aid Highway Act of 1973 required the use of functional highway classification to update and modify the Federal-aid highway systems
- First complete guidance document published in 1971
- Partial update in 1989
- HPMS 2010+ and some revisions in 2008



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Current Process

- Functional Classification and Urban Area Boundaries updated after decennial Census
- Expectation is for a 3 year process
- FHWA Division office approves updates
- Many states share update responsibilities with MPOs



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Reasons for Update

- Federal interest
 - Rational system promotes efficient distribution of capacity and cost-effective use of resources
 - Consistency in treatment from state to state
 - Eligibility for funding
- Existing guidance dated
 - Does not account for 3C process
 - Decidedly “low-tech” – pre-GIS
- Guidance leading to more consistent functional classification assignments and urbanized area boundaries needed
- Create process more states can adhere to



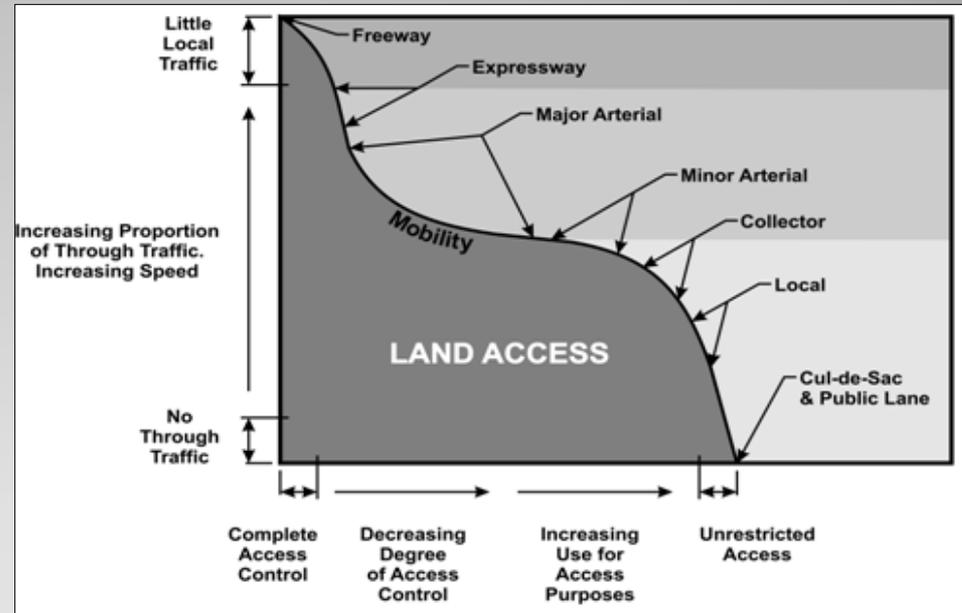
Current Study

- Update to existing guidance
- States – Is identification of Other Freeways and Expressways consistent?
- What's the difference between Minor Collectors in rural areas and small urban or urbanized areas?
- How does urban-rural neutrality affect guidance?
- Is different extent guidance needed?
- How can GIS be used ?



Existing Guidance

- Classifications based on the character of service roadways are intended to provide
- Mobility and land access noted as primary determinants of functional classification

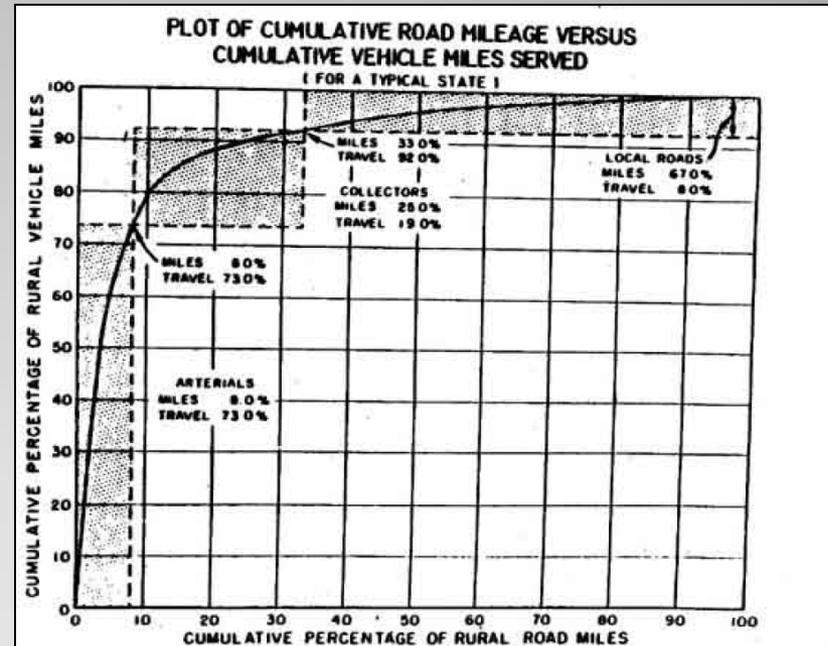


Existing Guidance

- Mileage and VMT stratifications recommended as system validation steps

Table II-3 -- Guidelines on extent of urban functional systems

System	Range (percent)	
	VMT	Miles
Principal arterial system	40-65	5-10
Principal arterial plus minor arterial street systems	65-80	15-25
Collector street system	5-10	5-10
Local street system	10-30	65-80

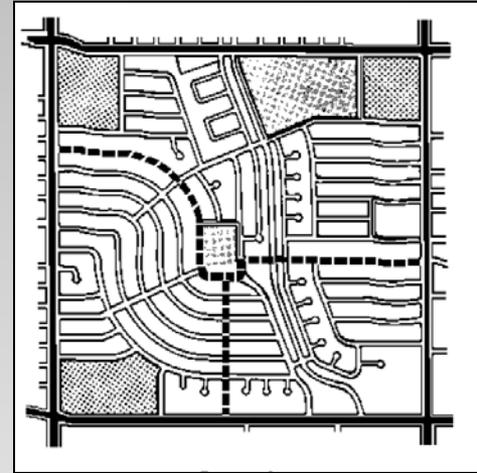


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Pros and Cons

- Functional Classification as foundation of a rational, hierarchical roadway system
- Criticized as emphasizing speed over livability/community needs



Current Study

- Task 2 – State of the Practice
 - Literature review
 - Data analysis
 - Interview/survey DOTs/MPOs
- Task 3 - PA/OFE Review
- Task 4 – Collector Review
- Task 5 – AADT Review
- Task 6 – Adjusted Urban Boundary Concepts
- Task 7 – Recommendations
- Task 8 - Final Report



Task 2 - HPMS Data Review

- How close are states to extent guidance?
- Is there a significant difference between urban and rural designations/classifications?
- Is there an obvious correlation between roadway attributes and functional classifications?

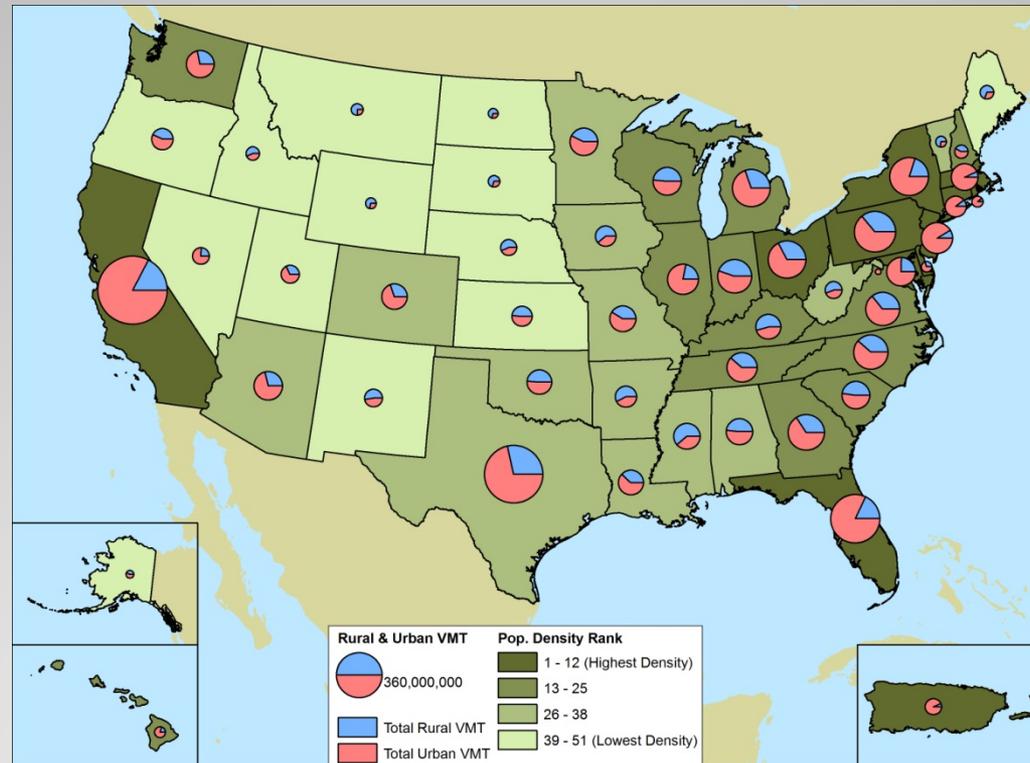


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Urban vs. Rural

- Urban VMT exceeds rural VMT in 38 states

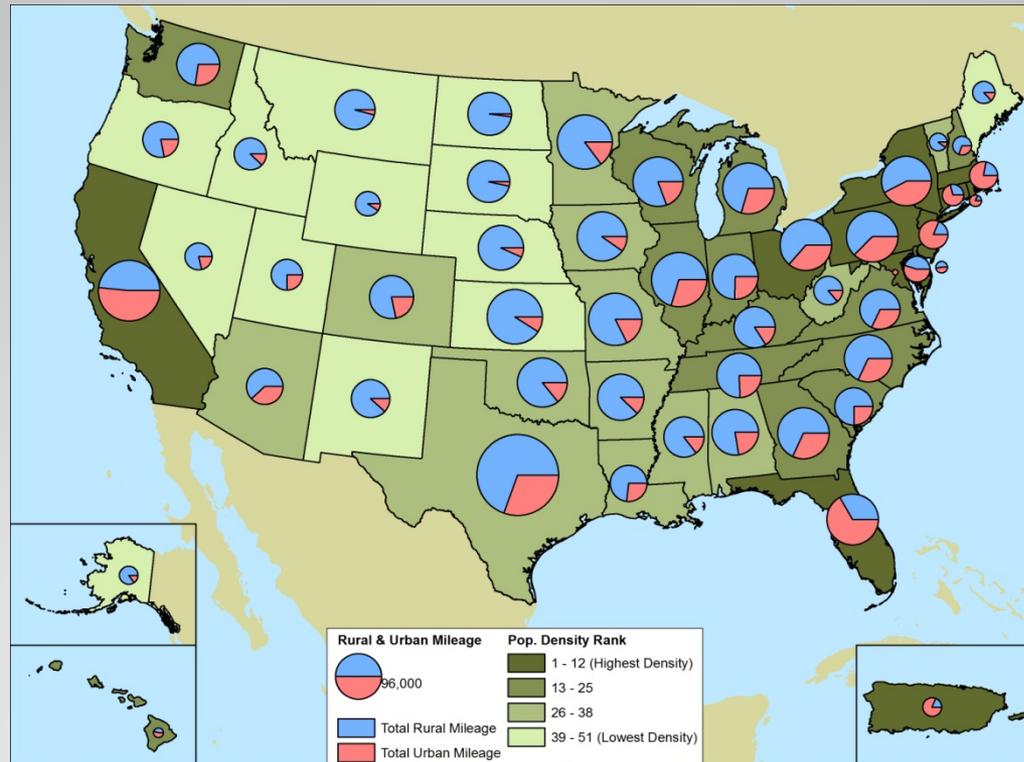


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Urban vs. Rural

- Rural mileage > urban mileage in all but 9 states (including the District of Columbia)

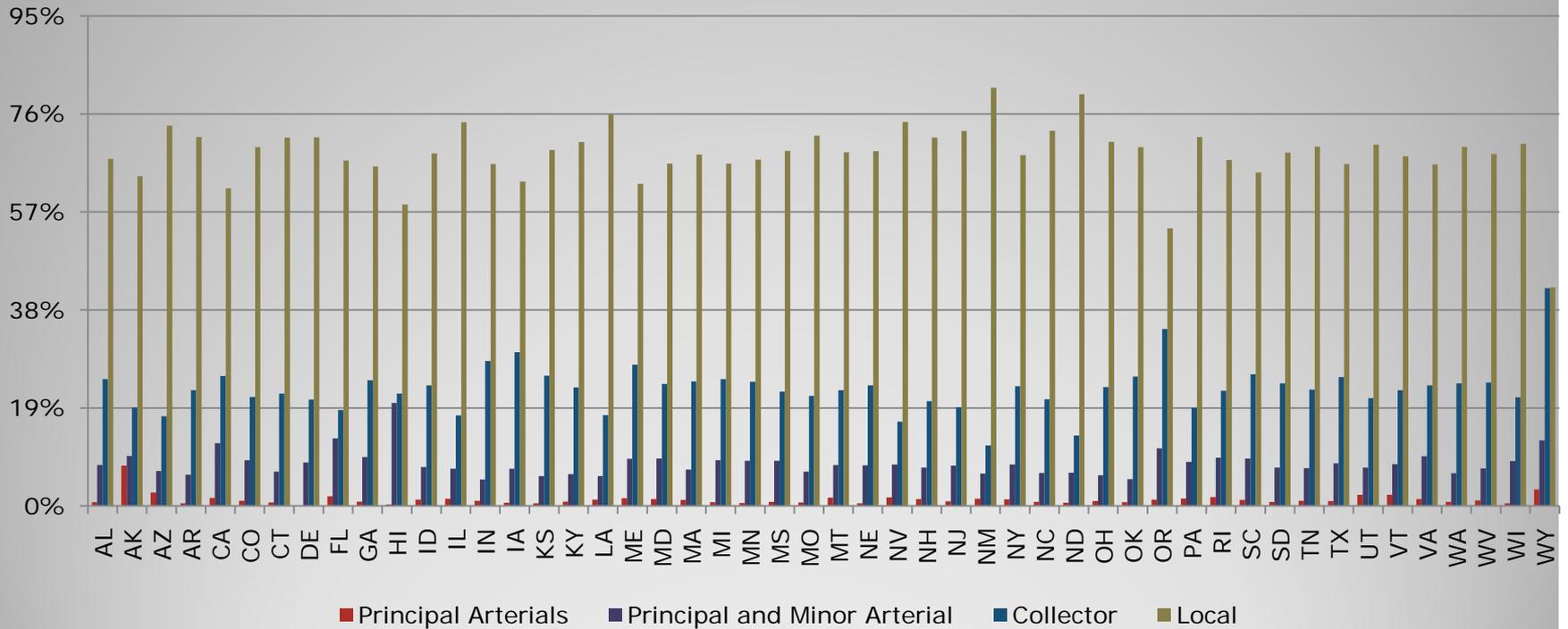


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Consistent Patterns

Mileage All Rural Functional System Groupings Percentages by State

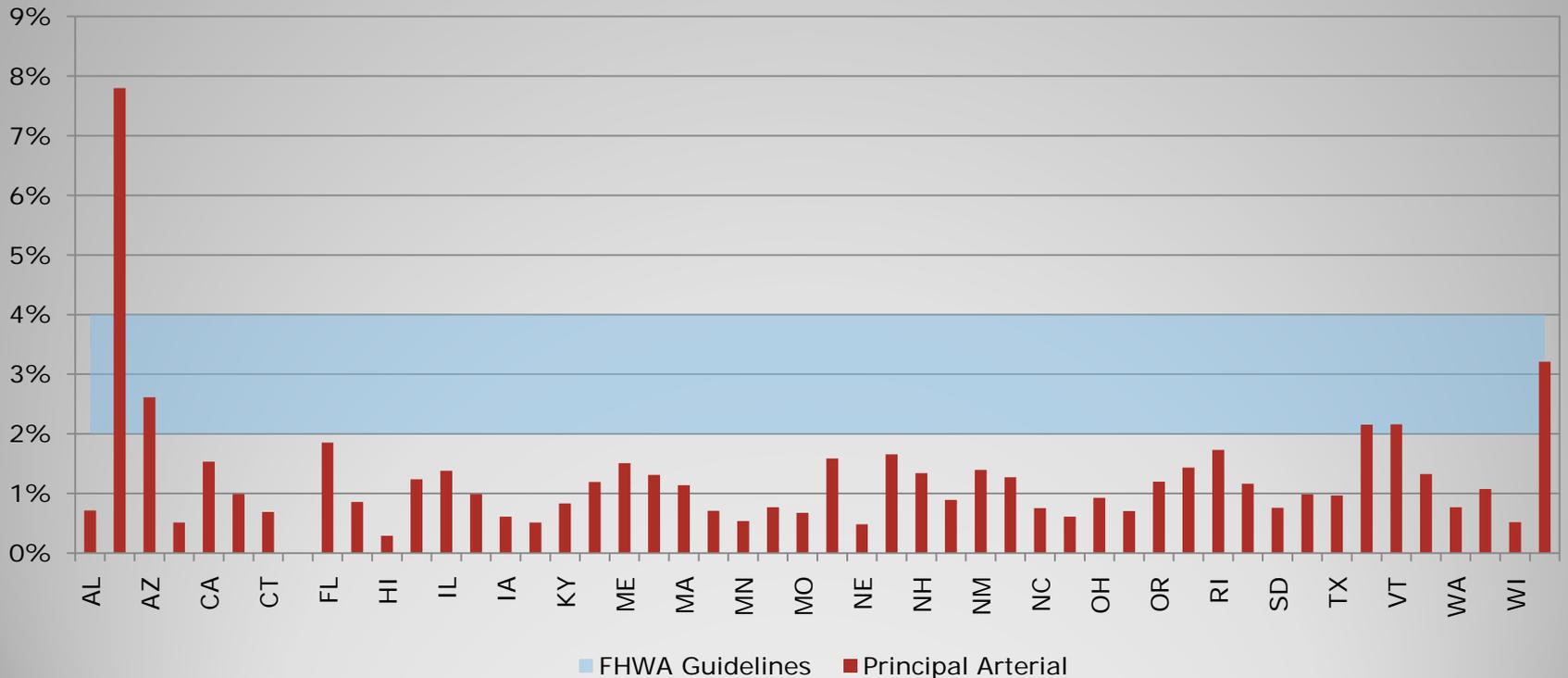


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Some Existing Guidelines Need Revision

Mileage Rural Principal Arterial System Percentages by State

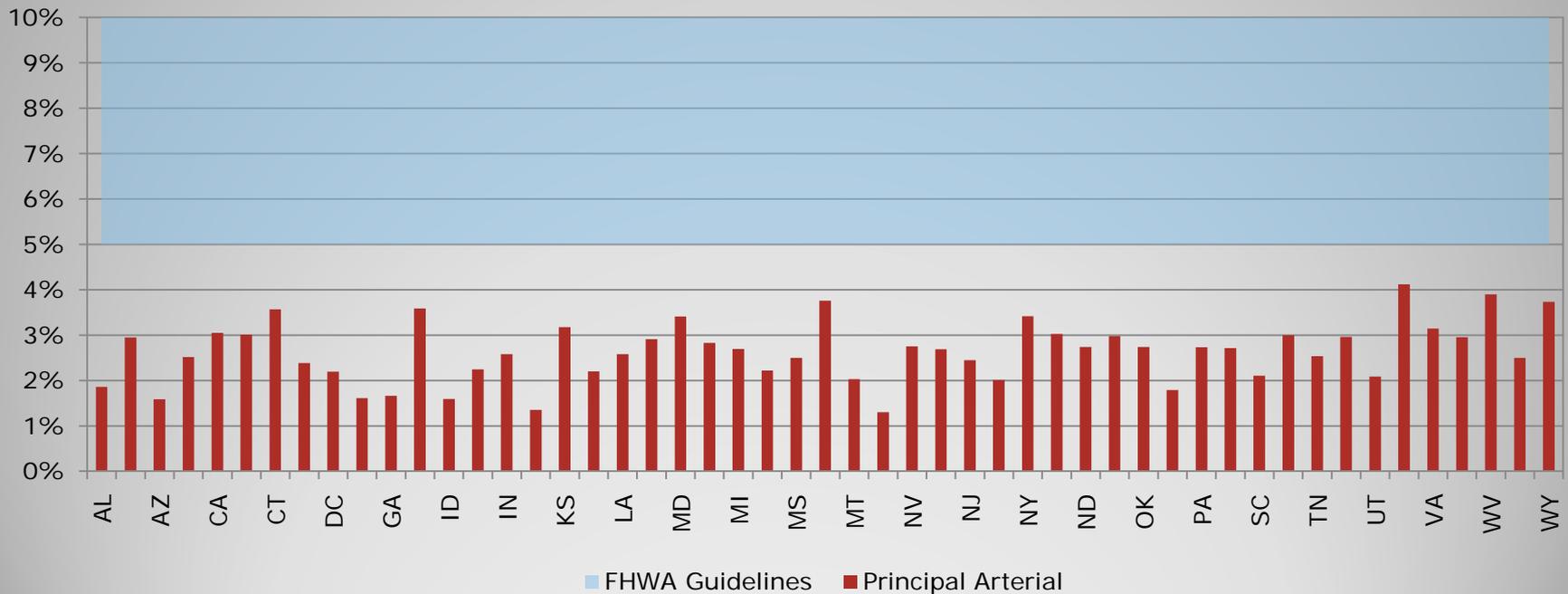


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Some Existing Guidelines Need Revision

Mileage
Urban Principal Arterial /Other Freeways and
Expressways
Percentages by State

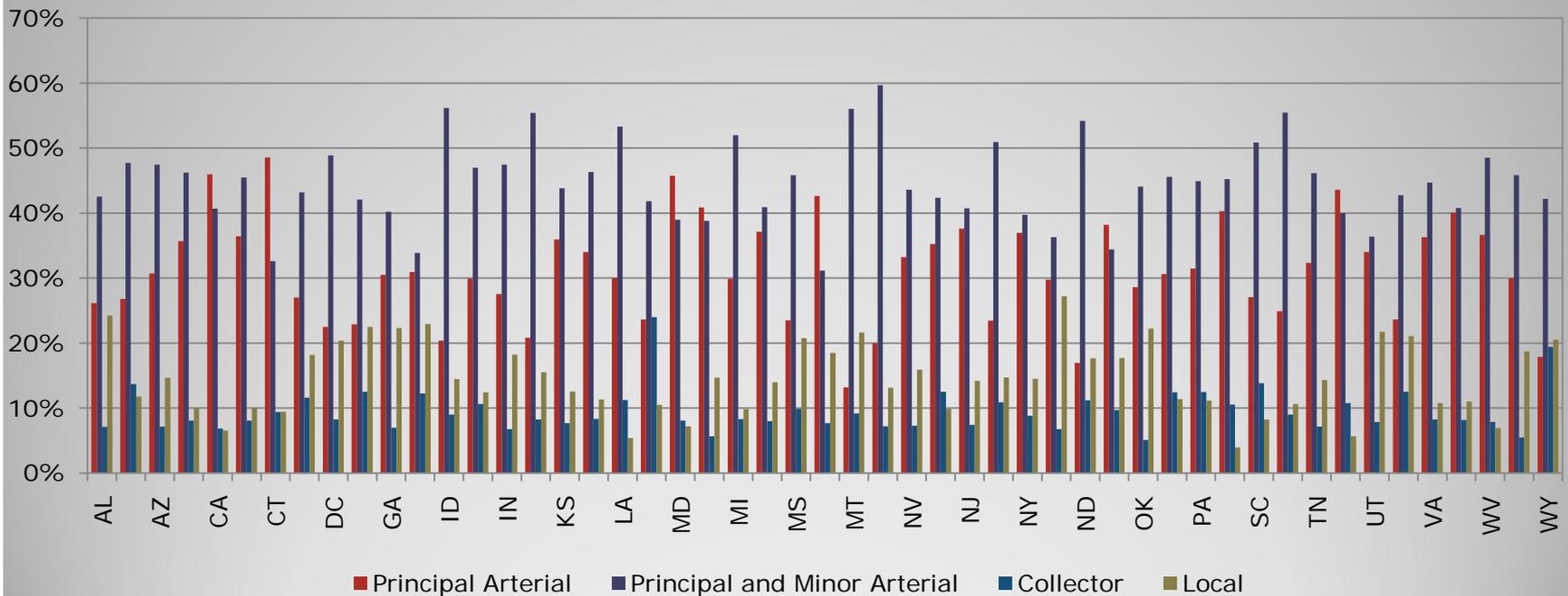


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VMT Shows Much Greater Variability than Mileage

VMT
All Urban Functional System Groupings
Percentages by State

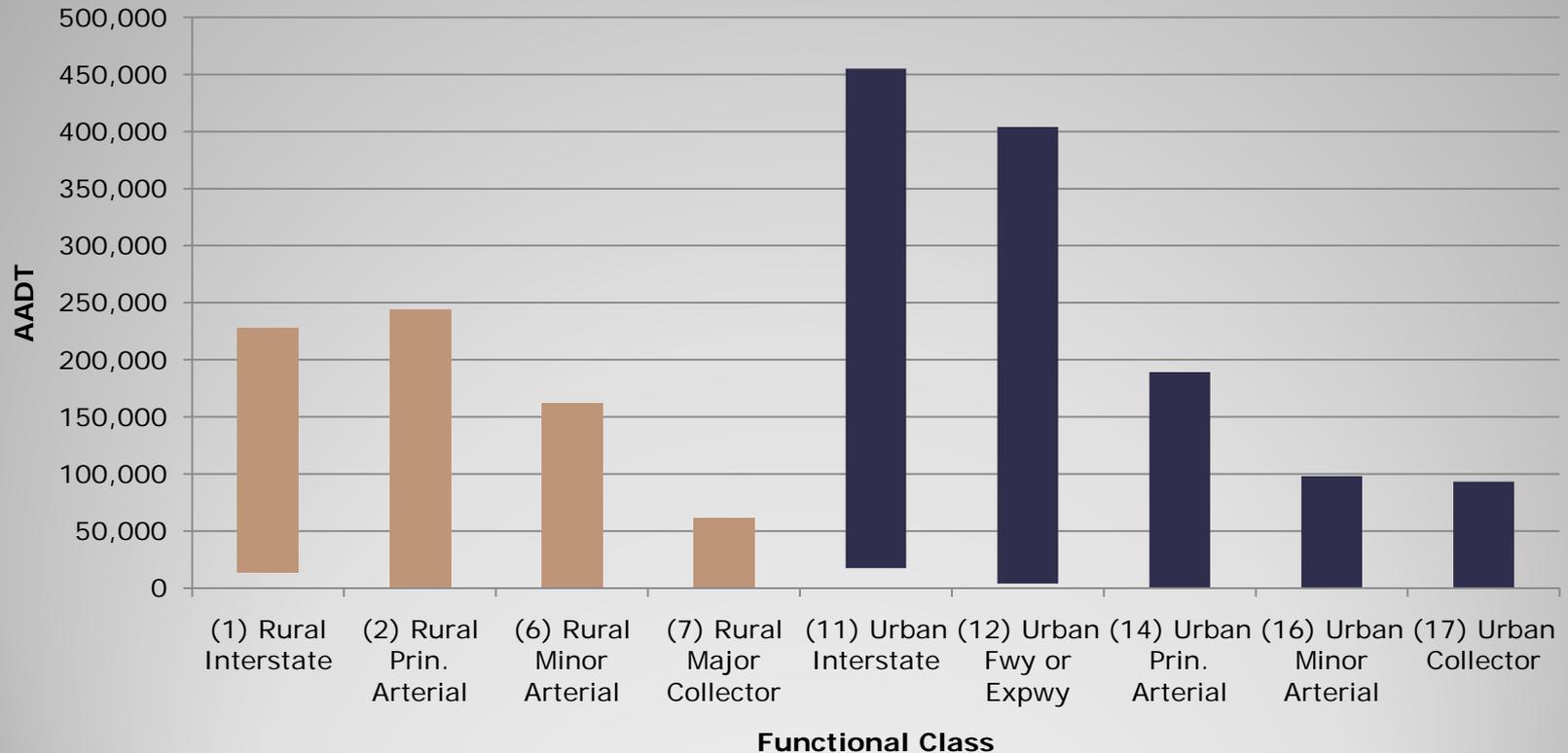


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AAADT Ranges Overlap

HPMS Future AADT Ranges by Functional Class California

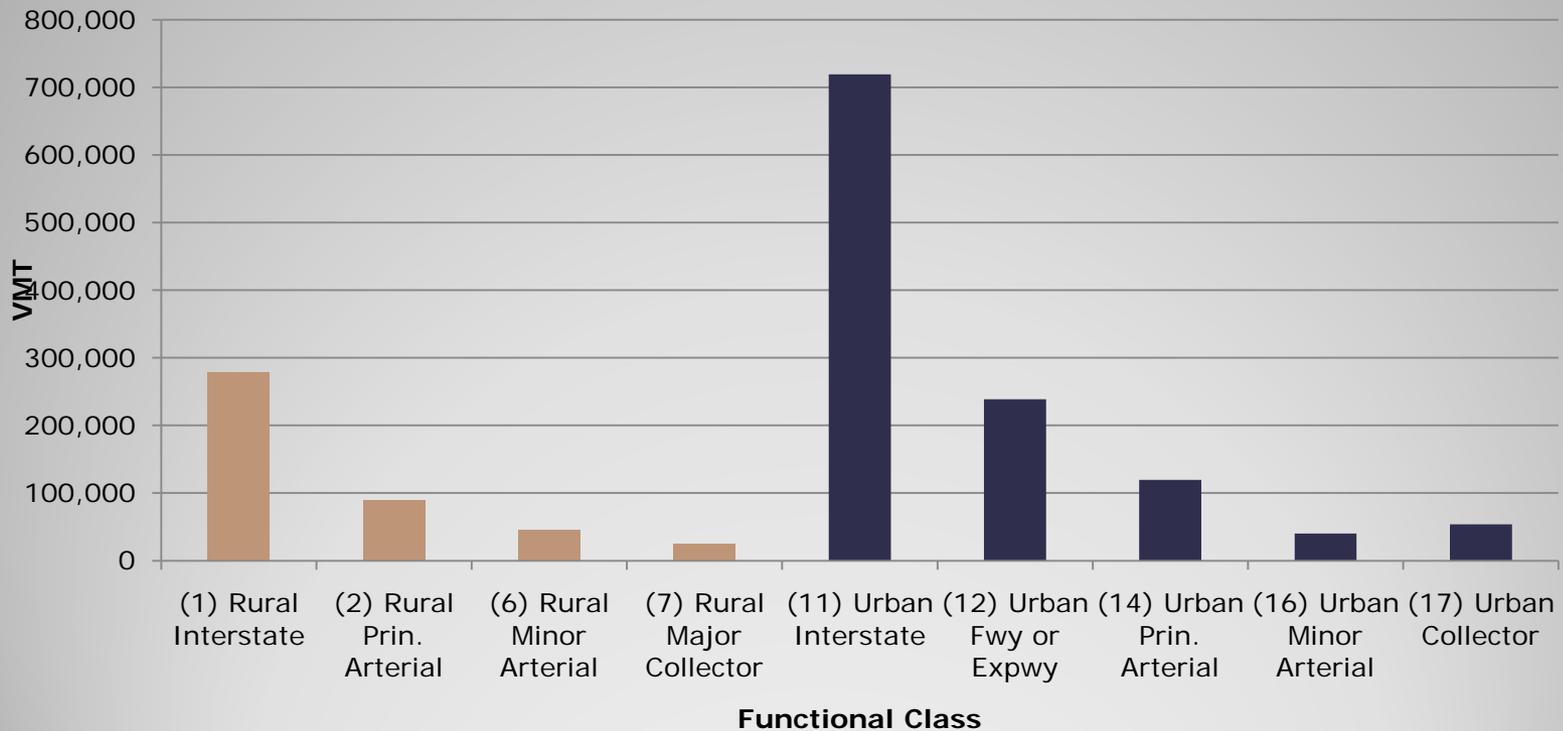


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VMT Minimum Ranges Overlap

HPMS VMT Ranges by Functional Class Illinois

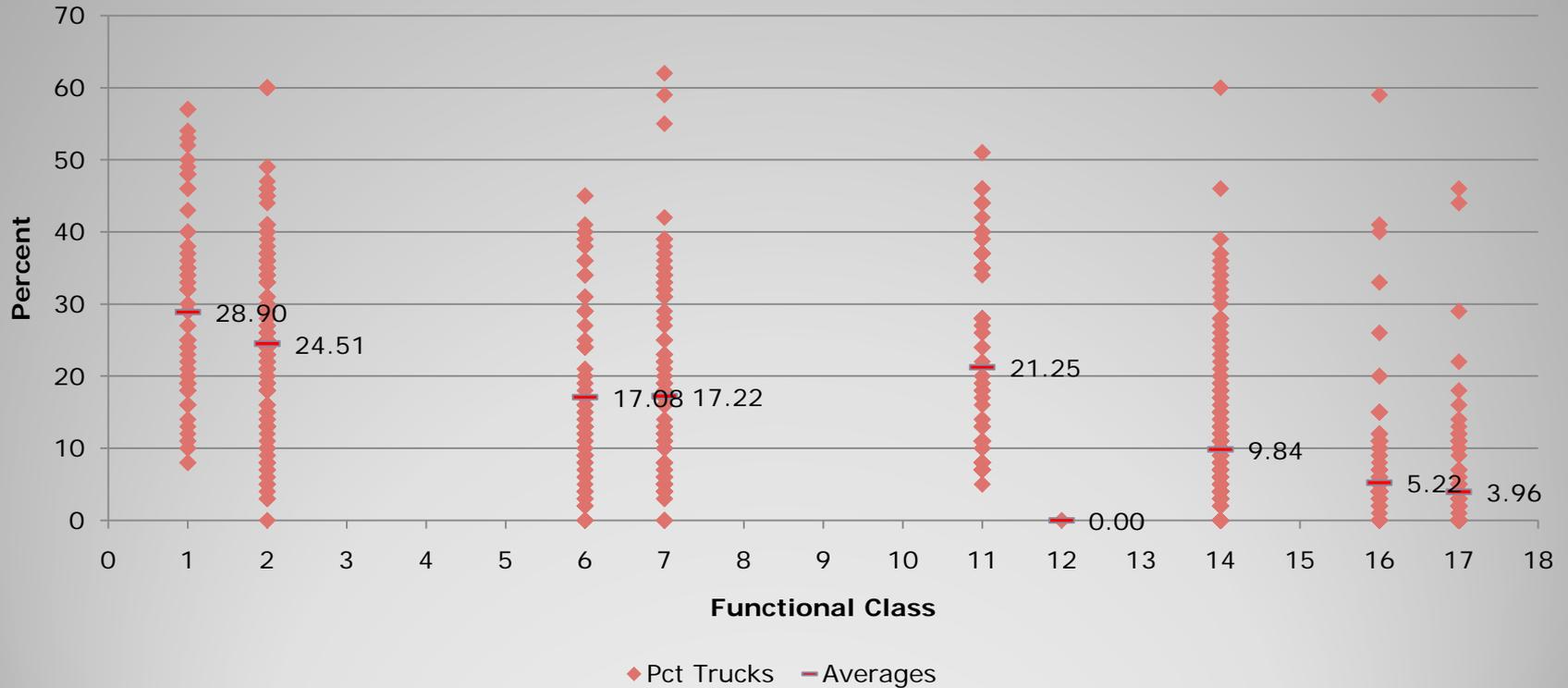


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Truck %'s Show Progression by FC

Truck Percentage New Mexico

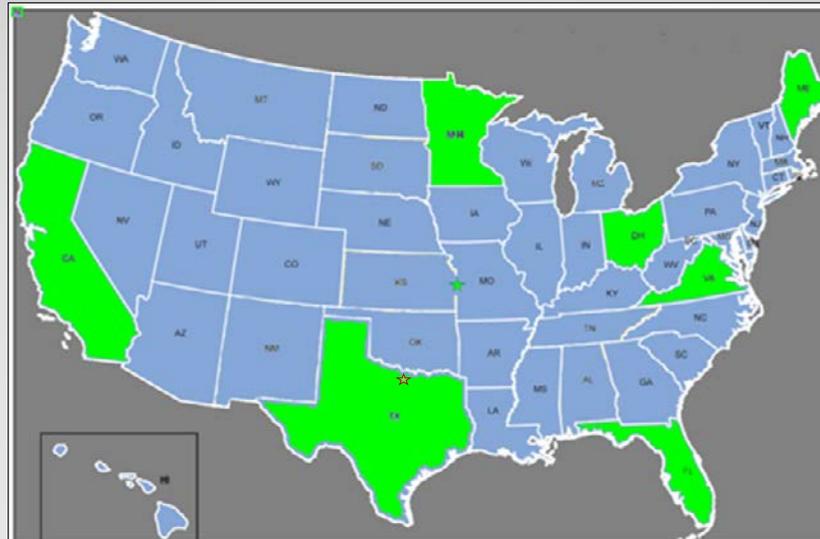


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Task 2 Interviews

- Current practices – process and technical
- Relevance and utility of functional classification
- Assignment of specific classifications
- Suggestions for more efficient procedures



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Urban Area Boundary Adjustments

- Timeline for last adjustment update
 - Start between fall 2002 to late 2004
 - FHWA approval spring 2003-2005
 - Only one agency required more than 2 years
- Challenges to on-time completion
 - Large number of urbanized areas
 - Newly created urbanized areas
 - Merging of urbanized areas
 - Lack of staff
 - Managing review and input process



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Urban Area Boundary Adjustments

- Work done mostly in-house
 - Two agencies use outside help
- What's challenging?
 - Really expanded boundaries
 - Applying consistent criteria, especially for large states
 - Inconsistent data formats
 - Transferring information from paper to GIS
 - Areas crossing state lines
 - Committing staff to task
 - Local Understanding of UAB use



Urban Area Boundary Adjustments

- Typical update done via multi-agency committee meetings, with paper maps
- How different in 2010 (from interviews)?
 - Use of more systematic process based on GIS
 - More paperless
 - Web-based mapping system – common workspace for agencies
 - Send out 2000 adjusted boundaries and 2010 Census boundaries
 - Ignore small urban areas



Functional Classification Updates

- Timeline for completion of last update
 - In general, much longer process than urban area boundaries (as late as 2010)
- Mostly done in-house, mostly paper updates
- Typical Process = FC Maps to MPOs then on to local agencies
- Data and quality issues typical
 - Missing roads
 - Local assignments - initial lack of consistency with FHWA guidelines
 - MPOs address - sometimes



Functional Classification Updates

- Process Challenges?
 - Lots of coordination necessary, “back and forth” really time consuming
 - Process gets political
 - Schedule too optimistic
- Technical Challenges?
 - Conversion from paper to electronic maps difficult
 - Different agencies using different databases



Functional Classification Updates

- Ongoing updates
 - Process well understood and procedures clear
 - Several states provide procedures/forms
- 2010?
 - Some unsure – need updated and clearer guidance
 - Some use 2000 process with more GIS
 - Some plan more coordination earlier
 - One DOT - online mapping tool – can complete entire process in 6-8 months
 - Paperless submittal process



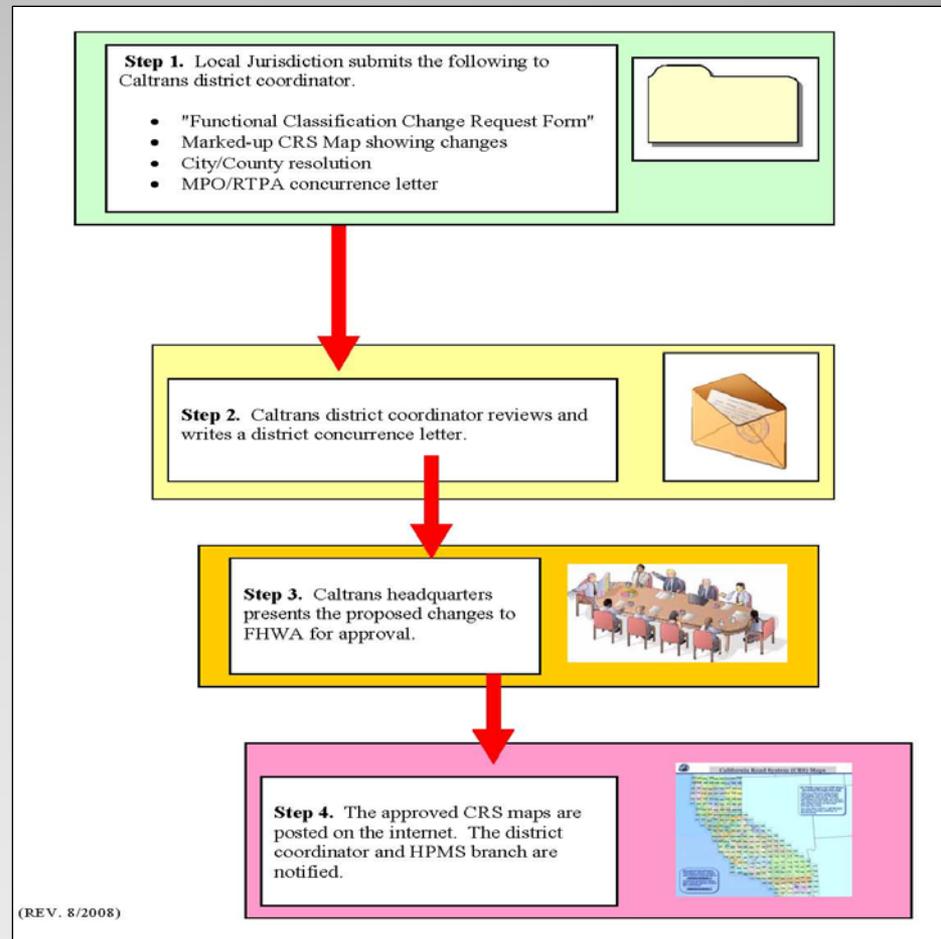
Functional Classification Updates

- Interview participants say they
 - Publish formal evaluation criteria
 - Use FHWA FCs for their own planning needs
 - Use FHWA FCs for statistical reporting (6/9), project prioritization (6/9), access management (5/9), emergency relief funding (5/9)
- Recommended changes to guidance?
 - Recognize differences in urban areas (e.g., suburban, CBD)
 - Freshen graphics {and provide more examples}
 - Add technical criteria for classification
 - Provide one “suggested procedures” section for all FCs



Task 2 – Literature Review

- Many states publish guidance on FC/UAB updates – process and criteria
- Some have schedule for annual requests (e.g., Utah)



State FC/UB Updates - Arizona

- Written request to MPO with map/data/justification
- Regional Planning Board considers mileage implications and offset – adopts via resolution or motion
- ADOT considers impacts on NHS, HPMS, development corridors, STIP, etc.
- FHWA division considers rationale/justification



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State FC Guidance

- Few states publish formal FC technical guidance
- Connectivity, traffic characteristics, trip lengths, roadway design, travel generators are factors cited
- Federal guidance borrowed/cited heavily



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State FC Guidance - Wisconsin

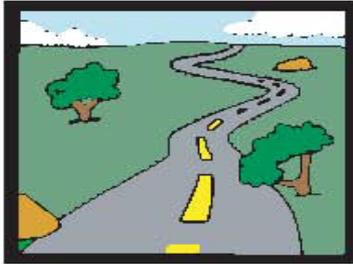
County Population Density	Basic Criteria – Must Meet Any 2 of the criteria below				Supplemental Criteria	Desirable Mileage % of System Range
	Population Service	Land Use Service	Spacing	Current ADT		
<43	Connect places: 1,000 – 4,999 to $\geq 50,000$ 5,000 – 49,999 to 5,000 – 49,999 1,000 – 4,999 to $\geq 50,000$ 1,000 – 4,999 to 5,000 – 49,999 or to principal arterials	Serve all traffic generating activities with an annual visitation of $\geq 300,000$, if not served by a principal arterial.	Maximum 30 miles between Arterials	$\geq 1,000$	1. Alternate population connection 2. Major river crossing – restrictive topography	4.0% - 8.0% statewide
> 43				$\geq 2,000$		



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State FC Guidance - Iowa



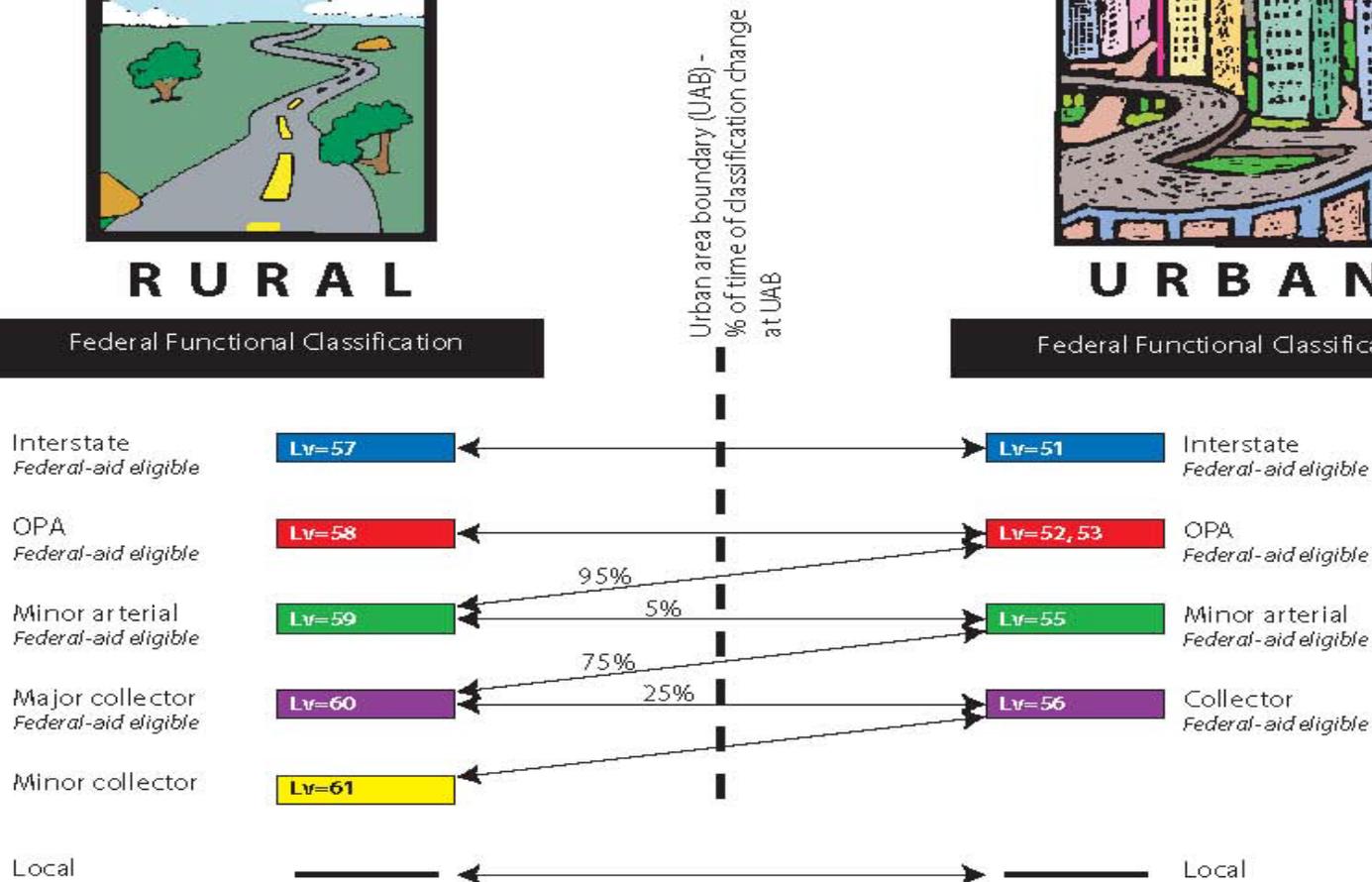
RURAL

Federal Functional Classification



URBAN

Federal Functional Classification

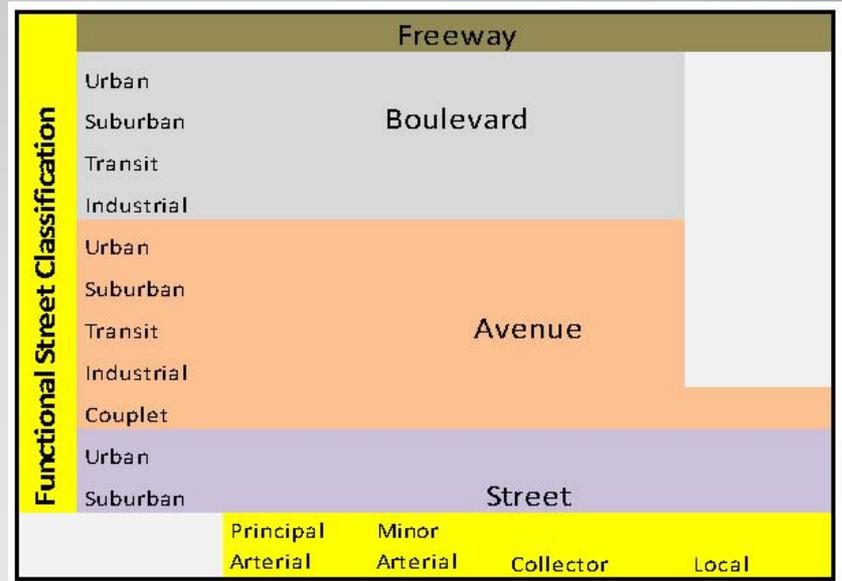


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Evolution of State FC Guidance

- Traditionally strong linkage between FC and design
- Some states introducing flexibility based on context/multimodal needs
- Montana – multimodal street classification
- Idaho – conform to surrounding environment



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Urban Area Guidance - Oregon

- Encompass entire UA, and use urban cluster or urban place boundaries as minimum
- Create continuous line, can include municipalities nearby and urban growth boundary
- Include traffic generators, terminals, boundary streets, rapidly developing areas



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Task 3 - PA/OFE Review

- No significant difference between rural and urban PA-OFE
 - Designation conforms to surrounding area
- Little impact on decision-making
- Should eliminating or clarifying distinction be considered?
- If retain distinction, perhaps refer to levels of access control



Task 4 - Major vs. Minor Collector Review

- Designation linked to likelihood of funding
- Little consistency in designation across states
- Distinction does not appear to be strongly warranted based on use, design, etc.
- Distinction between Major and Minor should be clarified



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Task 5 – AADT

- States refer to AADT and VMT ranges
- Most states do adjust FC distributions when they deviate
- Data suggests VMT guidance is much less relevant
- Urban Collector maximum of 10% no longer applicable
- Agencies not adjusting based on traffic forecasts



Potential New Guidance Features

- Different recommendations/procedures for different areas
 - Built-out (infill)
 - Developing (raw land)
- Describe how to use GIS in classification and boundary work
 - Measure access to population and activity centers
 - Measure linkage between urban areas and activity centers
 - Integral for procedures to smooth urban area boundaries
 - Use for analyzing change in demand over time





Potential New Guidance Features

- Clarify how to apply mileage/VMT guidelines
- Incentivize use of paperless process
- Focus on roads that need change in FC
- Recognize bottoms-up process
 - Develop document for local partners, not just states



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