Thurston Region System Architecture

Implementation Plan

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Thurston Regional Planning Council

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Executive Summary

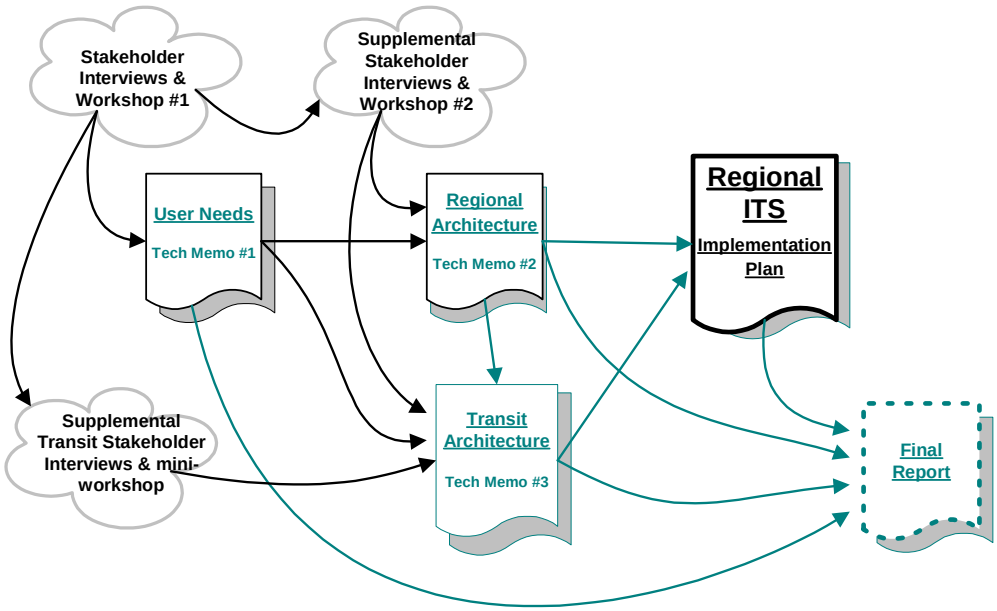
Introduction

This document is the fourth in a series of five that present the sequential results of the Thurston Regional Planning Council (TRPC) – Regional Intelligent Transportation Systems (ITS) Planning Project.

This document presents an overall Implementation Plan for the Thurston Region. This plan identifies ITS implementation strategies in the context of the region, the Metropolitan Planning Organization (MPO) – TRPC, together with consideration of the federal guidelines, and influences from Washington State DOT (WSDOT) and other regional ITS planning and deployment activities. Finally, this document offers recommendations for integration of ITS with the regional transportation planning and programming process.

This document and its predecessor products will be made available through the TRPC web site.

The following figure illustrates the relationship of this document to the others, and the uses of these documents:



Organization

Section 1 provides a brief Introduction and an overview of the Thurston Region.

Section 2 illustrates implementation strategies in the context of each ITS program area: Traffic and Transportation Management, Public Transportation, Traveler Information, Regional ITS Planning and Coordination, and Regional Data Management.

Section 3 describes the context for approaching ITS given the internal and external requirements and influences. This includes discussion on the relevance, considerations and responsibilities related to the federal ITS policies from FHWA and FTA for ITS projects.

Section 4 provides discussion and recommendations on how to integrate ITS into the regional transportation planning and budget programming processes.

Appendices A and B provide supporting detail in the form of excerpts and full-text of the (FHWA) Federal Rule and (FTA) Notice applicable to conformance with national policies for ITS architecture and standards programs.

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1.0 Introduction

This document is the fourth in a series of five that present the sequential results of the Thurston Regional Planning Council (TRPC) Regional Intelligent Transportation System (ITS) Planning Project. Figure 1-1 below illustrates the general relationship between this document and the other documents produced as part of the regional ITS planning project. ITS refers to the application of advanced technologies, including sensors, communications, and computers, to improve the effectiveness, efficiency and safety of the transportation system.

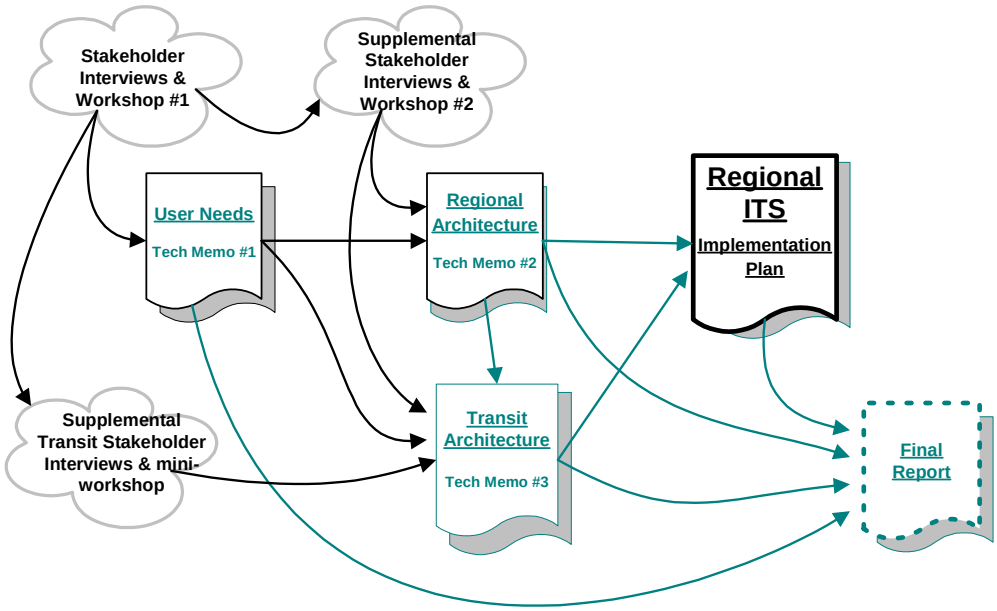

Figure 1-1: Thurston Region ITS Documents

A previous Technical Memorandum (TM #2) identified a "Thurston Region System Architecture," a framework that identifies how ITS is expected to be used in Thurston County, including the types of systems to be implemented and how the various systems and agencies will coordinate with one another. This report builds upon the system architecture, addressing the key question of "What next?" It identifies some specific ITS activities that can be pursued to address transportation needs, and thereby help realize the vision identified in the architecture. It also identifies ways to integrate ITS considerations into the existing regional planning and programming process.

Section 2.0 of this report identifies ITS strategies for the Thurston County Region. Section 3.0 discusses some of the considerations that impact the regional approach taken to ITS planning and programming. Section 4.0 presents the specific recommendations for ITS planning and programming in the Thurston Region.

2.0 ITS Implementation Strategies

This section presents specific ITS strategies that will implement the various ITS systems and strategies portrayed in the Thurston Region System Architecture, and which are consistent with the architecture. The strategies presented in this section focus on specific ITS functions or components. The broader regional ITS implementation process described in Section 4.0 will support the pursuit of the strategies identified here.

The regional architecture, which is presented in detail in Technical Memorandum #2, was developed by first identifying transportation needs in the region, then identifying the various technology systems needed to help address those needs, and how those systems will interrelate. The architecture depicts a composite view of the regional transportation technology landscape. This section identifies the individual strategies to be pursued for addressing identified transportation needs, and realizing the vision captured in the architecture.

2.1 Strategies vs. Projects

Strategies and projects are related, but distinct. A strategy isn't a project, and a project isn't a strategy--but a strategy influences the definition, prioritization and sequencing of one or more projects. Although in some cases a single project may fully implement a strategy, it is more typically the case that multiple projects will be needed to fully implement a given strategy; or that a single well-structured project will implement portions of multiple strategies. With some of the broader, multi-faceted strategies, a number of projects may be implemented over time, focusing on modal, functional, geographic or phasing-related elements of the strategy. The determination of how the strategies identified in this section are grouped into specific projects will depend on factors such as the on-going monitoring of need and urgency, funding opportunities, agency interest, and political and public support.

Another potential distinction between strategies and projects is that strategies generally imply on-going strategic vision and activity, whereas often a project is envisioned as a "one time" action. Pursuit of ITS strategies implies a continuous cycle of monitoring-implementing-evaluating-revision, and the on-going connotation of "strategies" underscores the operational nature of ITS investments.

As ITS related planning and coordination activities in the Thurston Region continue (see Section 4.0), individual agencies should consider how their needs and projects relate to fulfill the regional and agency strategies identified in the regional ITS architecture. From a regional perspective, agencies should continue the work initiated with the development of the architecture to further prioritize the strategies identified here and to identify specific projects for pursuing them.

2.2 Thurston Region ITS Strategies

Table 2-1 identifies ITS strategies for the Thurston Region in the following operational areas: traffic and transportation management (including incident management, traffic control and emergency management), public transportation, and traveler information; as well as in the areas of ITS planning and data management.

The strategies identified in Table 2-1 are not exhaustive, that is, there are additional strategies that could be consistent with regional ITS goals and the regional architecture. The strategies that are included in Table 2-1 are those that were of greatest interest to the stakeholders and/or address needs that were identified by stakeholders as being most urgent.

The public transportation strategies shown in Table 2-1 include the specific ITS investments identified in the Intercity Transit ITS Strategic Deployment Plan, developed in parallel with the Thurston Region System Architecture.

The traveler information strategies shown in Table 2-1 are organized around the four traveler information processes or linkages shown in Figure 2-1, as opposed to specific information dissemination systems or activities. Information sharing linkages illustrated as 1, 2 and 3 in Figure 2-1 are addressed largely through individual ITS project deployments, and as part of overall regional ITS coordination efforts. The fourth linkage, which involves consolidation of information at the regional level from a variety of sources, cannot be addressed solely through other individual ITS projects and will require a dedicated, separate effort.

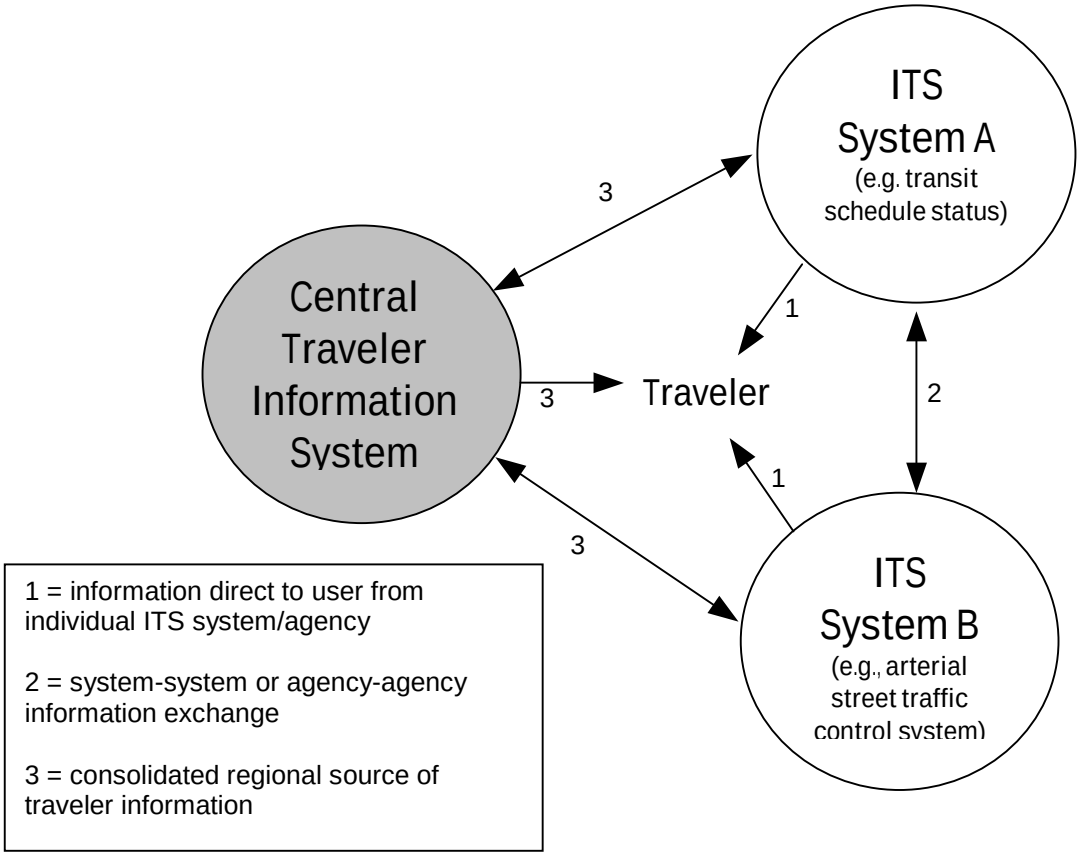

Figure 2-1: Traveler Information Linkages Reflected in ITS Implementation Strategies

Table 2-1: Thurston Region ITS Implementation Strategies

Program Area	Implementation Strategy	Summary
1.0 Traffic and Transportation Management	1.1 Establish regional traffic and incident management forum/working group	Establish a work group, task force or committee to address regional traffic and incident management issues on a continuing basis (see Section 4.2).
	1.2 Expand WSDOT freeway management system coverage	Geographically expand the coverage of the existing WSDOT freeway management system, including detection, surveillance and traffic advisory components. Investigate alternative approaches for interim "spot" communications systems (i.e.,alternatives to fiber optic cable).
	1.3 Formalize and expand freeway/local street integrated traffic management practices	Develop formal, coordinated (i.e., WSDOT and county/municipal) alternate route plans and supporting procedures. Identify and implement the signal timing plan, and any other critical arterial street traffic control or travel advisory elements, required to facilitate the most critical diversion routes. Investigate strategies and implement appropriate solutions at off-ramp traffic signals in order to better manage off-ramp back-ups
	1.4 Expand, enhance and formalize existing regional interjurisdictional traffic and incident/emergency management procedures	Based on existing and planned agency traffic, incident and emergency management activities, identify the need for enhanced coordination and identify strategies, including agreements and required supporting infrastructure. For example, sharing of traffic surveillance video images, improved coordination and data sharing among emergency management centers and between emergency management and traffic management agencies.
	1.5 Implement flood and ice detection and warning systems	Identify key locations and implement detection and warning systems, including electronic displays and alerts/linkages to traffic management agencies (with subsequent linkages to traveler information sources).
	1.6 Expand Road/Weather Information System (RWIS) coverage	Identify key locations and install additional RWIS sensing stations. Link to traffic management agencies (with subsequent linkages to traveler information sources both regional and statewide).
	1.7 Establish work zone/special event portable traffic management equipment resource pool	Inventory region-wide resources, including traditional and advanced technology (e.g., changeable message signs) portable traffic management resources. Establish procedures for sharing and rapid deployment of resources among regional traffic agencies.

Table 2-1: Thurston Region ITS Implementation Strategies

Program Area	Implementation Strategy	Summary
	1.8 Develop regional communications framework plan	Identify existing resources and existing and future communications needs to support ITS implementation. Individual analyses will focus on various modal areas (e.g., transit, arterial street traffic management, etc.), and will consider both wireless and wireline needs and options. However, the individual analyses will be integrated into a regional framework plan so as to insure that opportunities for resource sharing and economies of scale are realized. Recent agency/mode-specific communications study efforts should be considered and integrated within the overall framework plan.
	1.9 Government vehicles tracking system study	Study the need for, potential benefits and costs associated with equipping roadway maintenance vehicles, various emergency management agency vehicles (police, State Patrol, fire) and other government fleet vehicles with automatic vehicle location (AVL) technology. This effort should be coordinated with Intercity Transit's AVL implementation efforts and should be explicitly considered as part of the regional communications system plan. This effort should culminate in a set of requirements to be used in a procurement package.
	1.10 Phased implementation of computer-aided dispatch systems at emergency management agencies	Need, timing and potential economies of scale should be considered as part of regional communications plan analyses.
	1.11 Develop regional location referencing system and compatible electronic mapping systems	Develop a common electronic map, or set of compatible maps, to be used by traffic management , emergency management (e.g., 911) and potentially other public agencies in Thurston County, including transit. Initial steps include establishment of a common location referencing system among various agencies, especially in rural areas lacking cross-streets. Efforts should build upon Thurston County's and the TRPC's existing efforts to develop regional GIS data.
	1.12 Expand corridor traffic signal coordination	Improve signal progression and reduce delay, focusing on regionally significant corridors and on coordinating traffic signals across jurisdictional boundaries.

Table 2-1: Thurston Region ITS Implementation Strategies

Program Area	Implementation Strategy	Summary
	1.13 Continue to investigate need for and benefit of signal priority treatments for transit	In conjunction with Intercity Transit's implementation of ITS systems, including AVL, continue to assess the potential benefit to transit, and impacts on other traffic, of providing extra green time to selected transit vehicles at selected traffic signal locations. Consider traffic signal priority within the broader context of potential measures to improve transit travel times and schedule adherence, including internal transit agency strategies and physical roadway improvements to provide preferential treatment for transit. (May be one of the issues that are tracked through the regional traffic management working group/forum).
	1.14 Expand emergency vehicle traffic signal preemption	Monitor the need to implement emergency vehicle preemption at additional traffic signals, and as appropriate, implement systems.
	1.15 Expand and/or enhance railroad grade crossing warning systems	Evaluate the need for additional railroad grade crossing warning systems or enhancements to existing systems and implement as appropriate. Also consider strategies at adjacent traffic signals to improve safety and intersection operations.
2.0 Public Transportation	2.1 Establish regional public transportation technology forum/working group	Establish a committee, task force or working group to provide a forum for the on-going coordination of ITS planning, implementation and operation (see Section 4.2).
	2.2 Assess cumulative regional public transportation communication systems needs and potential strategies	One of the mode-specific analyses within the overall regional ITS communications framework plan (project 1.8). Incorporates Intercity Transit's radio system study and design effort (strategy 2.3). Based on the existing and planned technology systems and coordination strategies among area transportation providers, identify the potential for resource sharing/coordinated implementation of communication systems.
	2.3 Intercity Transit radio system study	Supports the identification of system requirements for use in Intercity Transit's CAD/AVL procurement. Coordinated with and provides inputs to the regional public transportation communications study (strategy 2.2).
	2.4 Intercity Transit CAD/AVL system with APC's and annunciators	Implement "core" ITS technologies at Intercity Transit, including computer-aided dispatch system (CAD), including with new radios: automatic vehicle location: automated passenger counters (APC) and automated stop annunciators (near-term project N-2 in Tech Memo #3).
	2.5 Intercity Transit Registering fare boxes	Implement new, more advanced fare boxes on Intercity Transit fixed-route vehicles. Will be capable of upgrading to support regional smart card fare payment system (near-term project N-3 in Tech Memo #3).

Table 2-1: Thurston Region ITS Implementation Strategies

Program Area	Implementation Strategy	Summary
	2.6 Regional demand-responsive passenger information/fare system	Identifies and implements a specific set of procedures and supporting infrastructure to improve the ability of operators to associate individual riders and trips with the various programs that will help pay for the trip, and an improved means for billing those programs (includes near-term project N-4 in Tech Memo #3).
	2.7 Intercity Transit real-time bus status information system and transfer coordination	Phased implementation of real-time bus estimated arrival information via customer service operators, the Internet, and either kiosks, monitors or changeable electronic signs at transit centers and key transfer locations. (near-term projects N-5 & mid-term project M-1, see Tech Memo #3).
	2.6 Intercity Transit automated trip planning system	Implements a system that will allow Intercity Transit riders to plan trips and obtain specific travel itineraries via the Internet and from Intercity Transit customer service operators (mid-term project M-2 in Tech Memo #3).
	2.7 Fixed-route integrated electronic fare payment system (e.g., Smart Card)	Building on the registering fare boxes implemented on Intercity Transit fixed-route vehicles, add a smart card reader and other required system components to support regional smart card fare payment. To be coordinated with both the regional demand-responsive system and the Puget Sound area integrated smart card system (mid-term project M-3 in Tech Memo #3).
	2.8 Enhanced communication and coordination with traffic and incident response agencies	Support activities to improve the level of communication and coordination between public transportation providers' dispatch centers and local and regional traffic and emergency management agencies. (includes mid-term project M-4 in Tech Memo #3).
	2.9 Enhanced demand-responsive service coordination	Conduct a study to identify, then implement specific procedures and supporting infrastructure to improve coordination of demand-responsive service among providers in Thurston County (mid-term project M-5 in Tech Memo #3).
	2.10 Intercity Transit traffic signal priority	Provides additional green time to behind-schedule Intercity Transit buses at selected traffic signals. Implementation hinges upon discussions with regional traffic signal agencies and completion of project 1.14 (mid-term project M-6 in Tech Memo #3).
	2.11 Intercity Transit on-board station and security monitoring	Implements video recording equipment for security purposes on Intercity Transit vehicles, and controllable closed-circuit television cameras for real-time monitoring at transit centers (Intercity Transit long-term strategy L-1 in Tech Memo #3).

Table 2-1: Thurston Region ITS Implementation Strategies

Program Area	Implementation Strategy	Summary
	2.12 Intercity Transit enhanced vehicle monitoring	Implements systems to collect and analyze a range of vehicle performance data so as to improve maintenance effectiveness and reduce costs (Intercity Transit long-term strategy L-2 in Tech Memo #3).
	2.13 Intercity Transit technology-enhanced flexible service	Implements a hybrid Intercity Transit fixed-route/demand-responsive type of service utilizing previous ITS investments, including AVL and computer-aided dispatch system (Intercity Transit long-term project L-3 in Tech Memo #3).
	2.14 Intercity Transit real-time on-board security monitoring	Provides the ability to monitor, in real-time, conditions on board Intercity Transit vehicles using surveillance cameras (Intercity Transit long-term project L-4 in Tech Memo #3).
3.0 Traveler Information	3.1 System/agency-to-system/agency data sharing (as part of other strategies)	In the course of implementing ITS improvements, consider the need and benefit to providing data to other regional agencies/ITS systems, and the utilization of information from those other agencies/ITS systems in the ITS improvement. Many of the specific ITS strategies for the Thurston Region focus on system/agency-system/agency information sharing and will include it as an integral and featured component. Consideration of this sort of data sharing will be explicitly included in the pursuit of strategies such as 1.2 and 1.3.
	3.2 Direct-to-user information dissemination (as part of other strategies)	In the course of implementing specific ITS improvements, consider the need and benefit of providing information directly to users as part of the project. For many ITS projects, the dissemination of information directly to users is an integral and featured part of the project, such as with freeway management which uses changeable message signs.
	3.3 Linkages between direct-to-user information dissemination systems (as part of other strategies)	In the course of disseminating information from a specific ITS system, consider the benefit of adding linkages to other sources of information provided through other ITS systems (e.g., if providing information on an Internet site, consider adding links to other sites with related information).
	3.4 Implement centralized source for region-wide, multi-modal traveler information	Evaluate alternatives, including integration with Puget Sound regional traveler information system and partnership(s) with private traveler information providers, and implement a regional traveler information system. System will receive and process information from a variety of sources and make information available directly to travelers, the media, and agencies through various mechanisms, such as an Internet web site or integrated 511 traveler information telephone system.

Table 2-1: Thurston Region ITS Implementation Strategies

Program Area	Implementation Strategy	Summary
4.0 Regional ITS Planning and Coordination	4.1 Develop standard ITS rule/policy compliance documentation for use in FHWA/FTA grant applications	The TRPC, working with regional ITS project implementors, will develop standard documentation materials that grantees can use in their federal grant applications to demonstrate compliance with the regional ITS architecture, and to demonstrate use of a systems engineering analysis in project design. (See Section 4.1.2.5)
	4.2 Incorporation of ITS in regional plans	Per requirements in TEA-21, the regional ITS architecture and ITS projects must be reflected in regional long-range transportation plans, transportation improvement programs and congestion management system plans. (See Section 4.4)
	4.3 Update and maintain the regional system architecture	The TRPC is recommended to insure on-going maintenance of the regional system architecture, including scheduled updates at least every four years and revisions as needed based on project development and implementation. (See Section 4.5)
5.0 Regional Data Management	5.1 Develop regional data management framework plan	Identify regional needs relative to the preservation and sharing of ITS system-produced, and other transportation data. Inventory existing practices and need/benefit of enhancements to promote data sharing or utilization. Identify data produced by planned ITS systems, and other transportation data, that should be preserved and made accessible for regional planning and coordination purposes.
	5.2 Implement regional data management and archival system	Based on the findings of the regional data needs assessment and following the recommendations of the regional data management framework plan, implement data management and archival systems and procedures.

3.0 Context for MPO Approaches to ITS

This section presents information that should be considered as the Thurston Region identifies a continuing approach to ITS planning and programming, including federal and state directives and guidance and emerging lessons learned from around the country.

3.1 Federal and State Regional ITS Requirements and Guidelines

3.1.1 Federal ITS Architecture Final Rule/Policy

The most significant "external" context that will shape how the Thurston Region addresses regional ITS planning and programming was established by the United States Department of Transportation (USDOT) in early 2001. On January 8, 2001 US DOT published both a Federal Highway Administration (FHWA) "Final Rule" and Federal Transit Administration (FTA) "Notice" of policy on ITS architecture and standards in the Federal Register. The final rule and notice of policy are very similar. Their differences reflect the processes by which FWHA and FTA administer projects.

In summary, the rule/policy require regions deploying ITS projects funded with Highway Trust Fund money (which includes transit projects funded from the Mass Transit Account) to prepare regional system architectures, consistent with the National ITS Architecture. Any ITS project designed to be consistent with the regional architecture, must be developed using a "systems engineering" approach, and must utilize any applicable ITS standards that have been adopted by USDOT. Full copies of both the FHWA Final Rule and the FTA Notice are included in Appendices A and B respectively.

Extensive information is available from USDOT regarding the development of system architectures. Guidance and training materials are in development that are intended to assist regions in complying with the rule/policy. However, the rule/policy do not dictate a specific approach, nor identify alternative approaches, for carrying out the rule/policy requirements. Generally, the rule/policy leaves considerable latitude to individual regions to develop their own approaches and processes--including the determination of what constitutes "the region." Regional strategies such as 1.1 or 2.1 (Table 2-1) address examples of how agencies can maximize regional cooperation for their mutual benefit.

So far no formal studies have been made of how various regions around the country are responding to the architecture rule/policy. Anecdotal information indicates that many of the regions that had already prepared system architectures are evaluating the need to update or enhance those architectures, and of course, regions lacking architectures are considering developing them. Approaches to insuring individual project compliance with both the regional architecture and the project systems engineering requirement vary, although a number of regions have opted to include these requirements in the project certification process associated with TIP (Transportation Improvement Program) development. Section 3.3 presents the results of one national study documenting successful general approaches to regional ITS planning, focusing on overcoming institutional barriers.

The information below further summarizes the FHWA rule/FTA policy on system architecture. Additional information, including copies of the rule/policy is included in the appendices to this plan.

3.1.1.1 Highlights of Federal Architecture Final Rule/Policy

The rule/policy implements section 5206(e) of the current national transportation act, Transportation Equity Act for the 21st Century (TEA-21), passed by Congress in 1997. Section 5206(e) requires that all ITS projects funded from the Highway Trust Fund (which includes transit projects funded from the Mass Transit Account) be in conformance with the National ITS Architecture and appropriate standards. This includes funds from such sources as the National Highway System (NHS) Program, Surface Transportation Program (STP), Congestion Management and Air Quality (CMAQ) Program, and Federal Transit Administration Program.

The Final Rule/Policy includes requirements associated with regional system architectures, and requirements associated with individual ITS projects. Each is summarized below.

Architecture Requirements

- If a region has or is deploying ITS projects, a regional ITS architecture must be developed by April 8, 2005, which is four years from the effective date of the Rule and Policy.

- If a region has not yet deployed an ITS project, a regional ITS architecture must be developed within four years after its first ITS project deployment.

- Modifications to existing systems in order to conform with the National ITS Architecture are not required by the Rule and Policy. It is anticipated that over time, however, regional ITS architectures will call for changes in existing legacy systems in order to support local desires for integration.

- The regional architecture shall include, at a minimum, the following:
  1. A description of the region;
  2. Identification of participating agencies and other stakeholders;
  3. An operational concept that identifies the roles and responsibilities of participating agencies and stakeholders in the operation and implementation of the systems included in the regional ITS architecture;
  4. Any agreements (existing or new) required for operations, including at a minimum those affecting ITS project interoperability, utilization of ITS related standards, and the operation of the projects identified in the regional ITS architecture
  5. System functional requirements;
  6. Interface requirements and information exchanges with planned and existing systems and subsystems (for example, subsystems and architecture flows as defined in the National ITS Architecture);
  7. Identification of ITS standards supporting regional and national interoperability; and
  8. The sequence of projects required for implementation.

- Prior to authorization of Highway Trust Funds, including Mass Transit Funds, for acquisition of implementation of ITS projects, compliance with the rule/policy will be demonstrated (in the case of the FTA Policy, it is specifically noted that grantees shall self-certify compliance). Compliance will be monitored under normal Federal-aid and FTA oversight procedures (in the case of the FTA Policy, to include annual risk assessments, triennial reviews, and program management oversight reviews as applicable).

Project and Policy Requirements

- Until a regional architecture is in place, all *major* ITS projects must have a project level architecture to ensure proper consideration of regional integration (a "major" ITS project is any ITS project that implements part of a regional ITS initiative that is multijurisdictional, multi-modal, or otherwise affects regional integration of systems.)

- Once a regional ITS architecture is in place, all subsequent ITS projects must be designed in accordance with the regional architecture (i.e., accommodate the interface requirements and information exchanges specified in that architecture).

- All ITS projects must be developed using a systems engineering approach. The systems engineering analysis shall include, at a minimum:
  - Identification of portions of the regional ITS architecture being implemented (or if a regional ITS architecture does not exist, the applicable portions of the National ITS Architecture);
  - Identification of participating agencies roles and responsibilities;
  - Requirements definitions;
  - Analysis of alternative system configurations and technology options to meet requirements;
  - Procurement options;
  - Identification of applicable ITS standards and testing procedures; and
  - Procedures and resources necessary for operations and management of the system.

- The Final Rule/Policy requires that federally funded ITS projects use ITS standards adopted by the USDOT. As of August 2001 no standards have been adopted, although over 80 ITS standards are in development, and many are published. As a standard matures and is utilized by vendors and implementers, USDOT may decide to adopt it through a separate formal rulemaking process.

- Any project that has advanced to final design by the effective date of the Final Policy/Rule (April 8, 2001) is exempt from the requirements relative to conformity to the regional architecture and use of standards. Some research projects and projects that entail an expansion of an ITS system in existence on the date of the enactment of TEA-21 may also be exempted from the Final Rule/Policy requirements.

3.1.2 Federal Guidance for Architecture Rule/Policy Compliance

For the most part, the ITS Architecture and Standards Rule/Policy contains few specific dictates relative to compliance. For example, no specific documentation nor roles and responsibilities are mandated relative to demonstration of compliance with the rule/policy. The only information on the compliance process that is included are the provisions that: (1) compliance will be self-certified by federal funding grantees, and (2) that monitoring of compliance will be done as part of normal oversight by FTA/FHWA.

The FTA has acknowledged that the four-year window for regional architecture development that is included in the policy is intended to serve two purposes. Not only does it provide local implementers time to organize their approaches to compliance, it: ***"allows FHWA and FTA to determine how best to engage in this process, meet with State and local officials to make sure they understand the rule/policy, agree on how and when it will be implemented in their regions and how FHWA/FTA will participate".*** In short, the agencies that developed the rule/policy are now, and will continue in the months and years ahead, deciding how it will actually be exercised.

In terms of the Thurston Region's overall approach to ITS architecture, and to compliance with the ITS Architecture and Standards rule/policy, it is important to understand and remember that the ITS community is only in the very early stages of what will be an evolving process. The rule/policy is a strong expression of Federal intent—it has identified the finish line—but exactly how the participants in the ITS process will get there is only now being determined. FHWA and FTA are now at work on a number of tools to aid in the interpretation and execution of the ITS Architecture and Standards Rule/Policy, including training courses, technical assistance and guidance materials (A listing of federal guidance and resources can be found at the FHWA ITS web site on architecture conformity: http:www.its.dot.gov/aconform/aconform.htm).

3.1.2.1 FTA ITS Architecture Consistency Guidance

The first of the Federal guidance documents on compliance with the architecture rule/policy was issued by the FTA as a "working document" in October 2001 (the document is in the process of being issued as an FTA Circular). That document, *"FTA National ITS Architecture Consistency Policy for Transit Projects"* includes much useful information on overall roles and responsibilities. The report also includes additional information on the self-certification process to be followed by federal ITS fund grantees and the oversight process to be followed by the FTA. Although some of the guidance in the FTA document will apply only to FTA projects, much of the information will either also directly apply to FHWA projects, or is useful in identifying the general direction that will likely be taken by the FHWA. (The FHWA is currently working on an overall guidance document for developing, using and maintaining regional architectures but does not have a document equivalent to the FTA project-level guidance).

The following are highlights of the guidance presented in the FTA working document on ITS architecture consistency for transit projects:

- Overall, grantee self-certification will follow the procedures and requirements established in the "FTA Master Agreement", and the "Annual List of Certifications and Assurances for Federal Transit Administration Grants and Cooperative Agreements". (pg. 4)

- In general, the Federal Role is to offer guidance and assistance on meeting the Architecture conformity requirements, though some oversight integrated with the normal FTA oversight procedures will also be carried out. The transit agency/grantee is responsible for working with it's regional partners to develop a regional architecture and meet the other project level requirements (e.g., agreements, systems engineering analysis). (pg. 6)

- ITS projects should be accounted for in FTA grant applications and procedures as the regional ITS architecture is developed and the projects move from planning to development and finally implementation. This includes:

  - Accounting for the Policy and other requirements in the FTA self certification, annual assurances and certifications, and Cooperative Agreements.
  - Incorporating Transit ITS activities into the Metropolitan Planning Program Grants and Urban Planning Work Program (UPWP) process
  - Including Transit ITS in the Transportation Plan (LRP), Transportation Improvement Program (TIP) and Statewide Transportation Improvement Program (STIP)
  - Documenting ITS projects and the status of policy conformity in FTA grant applications using TEAM.
  - Addressing Transit ITS in other Federal processes/requirements including the FTA Major Transit Investment (New Start) Process, the Congestion Mitigation and Air Quality (CMAQ) Program, the annual Federal ITS Service-Plan, and ITS Deployment Program Earmarks. (pg.19-20)

- A separate memorandum describing capturing ITS projects within TEAM (Transportation Electronic Award and Management) has been prepared and should be consulted for detailed guidance. In summary, grantees are expected to self-certify compliance with all requirements for ITS Architecture Conformity as described in TEA-21 and the FTA Policy, including status relative to conformity with a regional architecture and the type of ITS to be implemented: ITS Fleet Management, ITS Electronic Fare Payment, ITS Traveler Information, or ITS Architecture Development. (pg. 23)

- There are several FTA/FHWA programs that are likely to fund ITS projects and/or activities with specific procedures or regulations in addition to the general grant application requirements found in TEAM. These include:

  - <u>Section 5309 Capital Grants, especially FTA Major Investment (New Start) Projects</u>. It is important that the benefits and costs of the ITS elements be incorporated into the criteria calculation, the financial analysis, and the ability to implement and operate the ITS systems be part of the project management plan and PMO review. Transit agencies must work to fulfill both the New Start and ITS Conformity requirements for these projects.

FTA Regional Offices must work to make agencies aware of the requirements, and to identify ITS elements within proposed New Start project early in their development.

- The Congestion Mitigation and Air Quality (CMAQ) program.
- The ITS Integration Program. Once the earmarks have been made each year specific guidelines are also issued by FTA/FHWA on how they should be further defined and submitted for approval. (pg. 24)

- Overall, the level of detail in documenting compliance with the Policy, and the level of oversight to be conducted by FTA, will vary depending on the scope of the ITS project. A major ITS project that requires the cooperation, agreement, sharing of information and data, and coordinated operations of several agencies will require much more analysis and supporting documentation, and will receive more oversight than one that is implemented within a single agency for its own use. Examples of efforts that may need more development, documentation, and analysis include:
  - A corridor or regional Transit Signal Priority System that operates in several municipalities, and on routes used by more than one agency;
  - An electronic payment system that will provide the first part of a regional electronic fare system, and later an integrated transportation payment system (tolls, parking and transit, etc.);
  - A coordinated communication backbone and radio system for the region that will provide shared communications for transit agencies, emergency service providers, and public safety agencies. (pg. 25)
- Examples of projects that must still meet the requirements, but may need less documentation are: a transit agency GIS and advanced scheduling system; an expansion of an existing AVL and computer aided dispatch system by the single transit agency in the region; a vehicle maintenance, or station security system. (pg. 26)

In addition to the above guidance, the FTA working document on architecture policy compliance identifies roles and responsibilities for major stakeholders, including the Federal Transit Administration, transit agencies/grantees, and other participants, including Metropolitan Planning Organizations. This information is presented in Table 3-1.

Table 3-1: ITS Architecture and Standards Rule/Policy Compliance: Stakeholder Roles and Responsibilities

Stakeholder	Roles and Responsibilities
Federal Transit Administration (Field and Headquarters)	• Become familiar with the Policy and its requirements • Establish roles, responsibilities, and communications channels among Regional staff, Headquarters, and other Federal partners (e.g. FHWA, FRA) for Policy support/oversight • Participate in applicable training • Ensure grantees, transit agencies, and other state and local entities: - Are aware and knowledgeable of the Policy/Rule, its requirements, and FTA/FHWA processes for their implementation - Understand the benefits of conformance with the ITS Architecture - Are aware of appropriate training and other available resources • Provide support to grantees/transit agencies at the **regional level** of ITS development. - Assist in assuring that grantees/transit agencies are aware of ITS activities in their region that may affect them. - Help assure that grantees/transit agencies have the opportunity to participate in regional ITS architecture development and are represented in other Federal efforts (e.g. service plan development, ITS Deployment (Earmark) project definition) as appropriate. - Provide coordination/facilitation among other grantees/transit agencies, State DOT's, other local operating entities, and other Federal offices as needed to ensure transit is represented, its interests are met and ITS regions are defined to account for transit service areas. - Identify regions that are "at risk" and provide oversight and review of regional architecture development through the planning certification, risk assessment, and other Federal oversight activities • Provide support to grantees/transit agencies at the **project level** of ITS development. - Assist grantees/transit agencies in resolving applicability of the Policy requirements. Is the project an ITS project or a Major ITS project? Do any of the applicability exceptions apply? What is the appropriate level of analysis and documentation? - Provide assistance in awareness/coordination/facilitation of other ITS activities and architectures that impact the project (parallel major ITS projects, state and inter-urban travel corridor activities). - Identify needs for oversight and technical assistance and training to successfully complete the project and conform to the Policy requirements. Assist in obtaining the required support. - Incorporate ITS oversight in FTA oversight activities to help identify grantees/transit agencies that are at risk and ensure compliance with the Policy. Review TEAM applications and Section 5309 New Start development efforts for ITS content. Include ITS in annual risk assessments, quarterly project reviews, triennial reviews and other efforts • Commit adequate staffing to accomplish the above
Transit Agency/Grantee	• Become familiar with the Policy and its requirements • Ensure that agency staff are trained as necessary to understand how to meet the Policy requirements and successfully implement/operate the ITS components within their systems. • Participate in **regional** ITS activities including the development of the regional ITS architecture. - Work with all transit agencies and providers within the area to develop integrated and coordinated transit ITS systems as appropriate - Participate in the development of the regional ITS architecture and it's inclusion of all transit ITS components - Help define the ITS regional boundaries - Adopt inter-agency agreements to ensure the successful implementation and operation of the regional ITS architecture

Table 3-1: ITS Architecture and Standards Rule/Policy Compliance: Stakeholder Roles and Responsibilities

Stakeholder	Roles and Responsibilities
	• Meet the **project** level requirements of the Policy - Identify the project's ITS elements and determine the Policy applicability (ITS Project, Major ITS Project, exempt). - Identify portion's of the regional ITS architecture, or if a regional ITS architecture does not exist yet, the National ITS Architecture, that are applicable. Identify other overlapping state and inter-urban corridor architectures that may be relevant. - Work to update architectures or develop a project architecture as appropriate. - Perform a Systems Engineering Analysis on the ITS components of the project - Include ITS project in TEAM grant submittal (description, and assurances) - Adopt inter-agency agreements to ensure the successful implementation and operation of the project's ITS components • Commit adequate staffing to accomplish the above
Other Participants (e.g. MPO, State, other organizations)	• Become familiar with the Policy and its requirements • Participate in applicable training • Work with grantees/transit agencies, Federal participants, and others to: - Determine regional boundaries acceptable to all stakeholders - Integrate transit and other stakeholders into ITS development procedures - Identify local champions and key participants for advancing/implementing ITS - Identify roles and responsibilities for developing and maintaining the regional ITS architecture - Develop and establish processes and procedures for creating and maintaining the regional ITS architecture - Incorporate systems engineering analysis, ITS system sequencing, and need for agreements into project development and programming procedures - Perform continuous process review to refine procedures • Commit adequate staffing to accomplish the above

Source: *"FTA National ITS Architecture Consistency Policy for Transit Projects – Working Document"*, October 2, 2001, Federal Transit Administration, pg. 6-8.

3.1.3 Other Federal ITS Planning and Programming Direction

The original USDOT intention was to issue, along with the architecture rule/policy described above, a rule focusing on statewide and metropolitan transportation planning. That rule was intended to include requirements related to ITS, and would reference and support the requirements in the architecture rule/policy. The planning rule is being developed according to a different schedule and will be issued separately.

So far, the only information relative to how ITS should be treated in statewide and metropolitan transportation planning lies in the ITS Architecture and Standards Rule/Policy, in the TEA-21 legislation, and in the FTA ITS Architecture and Standards Policy Consistency Policy guidance described in the previous section.

The general direction includes the following:

- Development of the regional ITS architecture should be consistent with the transportation planning process for Statewide and Metropolitan Transportation Planning.

- All projects receiving Federal Funds must be reflected in the applicable Metropolitan and Statewide Transportation Plans (LRP), and Transportation Improvement Programs (TIP and STIP) that are financially constrained and meet air quality conformity requirements.

- The regional and project ITS architectures must also be incorporated into the applicable LRPs, TIPs, STIPs, and Congestion Management System (CMS) Plans, and be consistent with the National ITS Architecture.

The FTA policy guidance document offers the following guidance regarding organizational roles relative to ITS and regional planning:

> **"Transit Operators and MPOs** should work to ensure that all ITS projects and their characteristics: are reflected in the applicable Long Range Plans and Transportation improvement programs; their impacts are reflected in the financial capacity, air quality conformity, and project selection/evaluation/phasing processes. The regional ITS architecture's project phasing must also be reflected in these documents. Inter-agency agreements should also be in place to provide continuous coordination of the regional ITS architecture with the overall planning process as it advances.
>
> **Transit Operators, Traffic Operations, and other "system operators"** should also coordinate during the development of the initial Regional ITS Architecture to ensure that all "Major ITS Projects" are identified and their Project ITS Architectures are coordinated. The projects in the LRP with regional significance and/or corridor/subarea studies that include ITS are one potential source of likely "Major ITS Projects" that need coordination.
>
> **FTA and FHWA Field and Headquarters staff** should work with the local agencies to provide technical assistance and guidance on evaluation methods, and coordination of projects that they are aware of. For metropolitan areas with populations 200,000 or greater, the incorporation of ITS in the local planning processes will be assessed as part of the Planning Process Certification carried out every 3 years. Other areas may be reviewed as deemed necessary by the complexity of the transportation problems in their regions, or lack of air quality conformity." (pg. 22, *"FTA National ITS Architecture Consistency Policy for Transit Projects – Working Document"*, October 2, 2001, Federal Transit Administration).

3.1.3 Washington State Department of Transportation

The Washington State Department of Transportation (WSDOT) has not developed any formal materials that recognize, or identify recommended approaches for responding to the FHWA Final Rule and FTA Final Policy on architecture and standards conformance. Generally, individual Metropolitan Planning Organizations (MPOs) such as TRPC should identify their own

approaches for dealing with the federal direction, based on understanding of their local conditions. This approach is consistent with the approach that WSDOT has taken relative to the development of a statewide ITS system architecture, where the intention is to assemble, and augment as necessary, the regional architectures developed by individual MPOs.

3.1.3.1 The Puget Sound Model

The Washington State Department of Transportation has encouraged MPO's to consider the approaches developed by the Puget Sound region as they develop their own procedures for ITS planning and system architecture. The Puget Sound approaches are documented in two reports. The *"Guidance for Complying with Federal Requirements for ITS Projects in the Puget Sound Region"* report (Puget Sound Regional Council, June 26, 2001) focuses directly on the federal requirements, and is written to a local ITS project sponsor audience. This report describes procedures for conducting a "systems engineering analysis" as part of ITS project design, the key federal requirement effecting individual project proponents. The report further identifies procedures relative to the seven elements of the systems engineering process.

The second Puget Sound report, *"Mainstreaming ITS Into the Transportation Planning Process"* (Puget Sound Regional Council, May 31, 2001) focuses on how the Puget Sound Regional Council—the MPO for the region—will respond to the federal ITS architecture directives and more generally address ITS. That report recommends:

- incorporation of ITS elements into the regional long-range transportation plan;
- maintenance and updating of the regional system architecture; and
- incorporation of ITS Rule Conformity into the Regional Transportation Improvement Program (TIP) Development Process.

The Puget Sound documents were reviewed closely as part of the development of recommendations for the Thurston Region.

3.2 National MPO Experience with ITS

So far no national studies have been conducted focusing specifically on how regions have carried out the direction contained in the FHWA rule/FTA policy on system architecture and ITS projects. However, a study has been performed of the successful broader approaches to incorporating ITS solutions into the metropolitan transportation planning process, focusing on overcoming institutional barriers ("*Incorporating ITS Solutions Into the Metropolitan Transportation Planning Process: Overcoming Institutional Barriers*", USDOT, November 2000).

The study included interviews with 25 representatives from ten MPOs, seven state departments of transportation, and three transit agencies. The metropolitan areas represented are: Albany, Chicago, Dallas-Fort Worth, Denver, Los Angeles, Miami, Milwaukee, Seattle, Washington, D.C. and Winston-Salem. In-depth case studies were made of four areas: Chicago, Dallas-Fort-Worth, Los Angeles and Miami.

The study generated findings in two areas. First, three positive conditions were identified that are associated with areas where ITS solutions have successfully been "brought into the metropolitan transportation planning process":

Condition 1: Endorsement of ITS by Elected Officials and Transportation Managers

It is important for elected officials and transportation professionals to support ITS products and services, and especially to publicly endorse them to their peers and the general public. This demonstrates to all regional players that ITS is accepted as a tool to solve transportation problems and will be seriously considered as a funding option in a metropolitan area's transportation planning process. Elected officials are key supporters since they make funding decisions and can influence support by other stakeholders, while upper-level transportation managers are key supporters since they inform elected officials and guide funding decisions within their respective transportation organizations.

Condition 2: Improved Communication and Coordination Across Geographic Boundaries and Between Agencies

ITS technologies can be most useful when planned and deployed with a regional perspective that cuts across geographic boundaries, agencies and transportation modes. This requires elected officials and staff within and across agencies to communicate and coordinate with one another.

Condition 3: Collection of Data and Use of Information

Collecting, sharing and turning ITS-generated data into useful information helps policy makers improve their decisions in a multitude of ways. These data can be used to estimate the benefits and costs of ITS projects before and after deployment, estimate operational costs of ITS systems, assess the operational health of the transportation system, and improve the design of future systems.

("*Incorporating ITS Solutions Into the Metropolitan Transportation Planning Process: Overcoming Institutional Barriers*", USDOT, November 2000, pp. 3-4)

The second set of findings of the study consisted of a set of strategies that were found to be successfully applied by various MPO's in creating the three conditions described. The first four strategies are those most frequently cited:

1. Create an ITS committee involving regional stakeholders

ITS-related committees can serve a variety of purposes, such as educating members, influencing policy, and improving communication across jurisdictions and modes on regional needs and specific projects.

2. Educate elected officials and transportation executives

Elected officials and transportation managers need to be provided with information that defines ITS products and services, explains how the technologies are used, and details the benefits that can be realized.

3. Include ITS in MPO planning documents

Including ITS solutions in metropolitan planning documents demonstrates to transportation professionals that ITS solutions will seriously be considered as solutions when addressing transportation problems. In addition, being involved with the development of an ITS strategy, or a regional transportation plan that includes ITS, can educate transportation providers on ITS.

4. Develop a program of regional ITS projects

A regional ITS program can help improve communication and coordination of ITS plans and projects across a defined region, especially if the planning effort is supported by transportation executives from the region or with dedicated transportation funds.

5. Educate MPO staff

An MPO staff that is educated on ITS products and services can develop a regional vision for ITS applications and promote that vision to the region's transportation organizations and local jurisdictions.

6. Educate other stakeholders

Support for and coordination with ITS programs and projects from non-traditional stakeholders is an outgrowth from efforts to educate them on the existence and benefits of ITS technologies. These non-traditional stakeholders include private transportation providers, public safety agencies, freight operators, seaports, airports and toll authorities.

7. Educate the general public on specific ITS projects

The success of some ITS projects, such as variable message signs or ramp meters, can hinge on public support. The public should be educated as much as possible before an ITS project becomes operable so that they understand its purpose, mechanics, and expected benefits.

8. Use ITS advocates in the region

A regional network of ITS advocates and experts can provide support for ITS-related policy initiatives and technical assistance for particular projects, especially in areas where few in-house staff are dedicated to work on ITS.

9. Utilize the National ITS Architecture to develop a regional architecture

A regional ITS architecture provides a framework for regional ITS planning that encourages stakeholders to coordinate with one another and optimizes the opportunities for integration of ITS products and services.

10. Use peer-to-peer networking

Peer-to-peer networking enables planners to learn from the experiences of other planners across the nation. It provides a rich source of information that planners can use when considering the benefits and costs of ITS technologies.

11. Involve academia in regional ITS planning

University talent can be used for a range of studies, from project-specific feasibility studies to conceptualizing how regional ITS data should be gathered and stored.

12. Determine data collection needs for planning purposes

ITS technologies supply data that can be used as inputs into the planning process. The challenge is culling out the data that are useful for planning from the huge amounts that potentially can be generated.

13. Determine the most efficient and effective ways to distribute and apply ITS-generated data

Creating a standard process for routine distribution of ITS data ensures that it will reach the user in a timely manner and be available to use toward improving operations as well as for longer term planning purposes.

("*Incorporating ITS Solutions Into the Metropolitan Transportation Planning Process: Overcoming Institutional Barriers*", USDOT, November 2000, pp. 7-8)

3.3 Sizing the ITS Approach to Match Regional Conditions

It's important that the scale and complexity of the institutional approach to regional ITS planning and programming matches the needs and characteristics of the region. An elaborate, "over-blown" approach is not only wasteful, but will alienate ITS stakeholders and the public. Over it's relatively short life as a distinct discipline, ITS has already suffered from accusations of being "pie in the sky", "solutions in search of problems" and of being over-hyped. So, it's especially important to scale regional ITS institutional structures to local conditions.

Obviously, the objective is to provide only the structure needed to insure that ITS objectives can be successfully accomplished. In determining how much structure may be needed, the following three factors should be considered:

1. **Complexity of the ITS environment** – e.g., the number of jurisdictions involved or potentially involved in ITS and the number of existing and planned ITS systems

2. **Severity/urgency of transportation problems**

3. **Pace of change** – including changes in transportation demand and rate of proliferation of ITS

Regions with many ITS participants, many ITS projects, urgent and severe transportation problems to be addressed through ITS, and with rapidly changing transportation system conditions probably require more structure to support regional ITS planning and programming. Smaller regions with less severe problems and a more slowly changing transportation system should require less structure.

It is important to note that the above considerations pertain specifically to the extent of institutional structure for ITS, including committees, rules, processes, etc. The extent of structure should not be confused with the overall importance or attention given to ITS. For example, in an area with limited ITS deployment and moderate transportation concerns, a relatively low level of structure may be warranted. However, it is exactly this type of environment where it may be most important to take action to promote a regional dialogue and process to educate decision-makers on ITS—to begin to create those conditions identified in Section 3.3 as being associated with successful MPO ITS approaches.

3.3.1 "World 1" Vs "World 2" ITS Environments

An ITS Practitioners Guide now being drafted as part of the National Cooperative Highway Research Program describes the considerations relative to regional ITS structure in similar terms as those above. The report ("*Integrated Planning (Management & Operations, ITS, Infrastructure) Practitioner's Guide*", DRAFT, July 2000, National Cooperative Highway Research Program (NCHRP) Project 8-35 FY 98) uses the concepts of "World 1 and World 2 ITS environments" to represent the ends of a continuous scale. The World 1 and World 2 dichotomy is similar to the "complex/severe/changing" vs. "simple/moderate/stable" dichotomy discussed in the previous section.

The World 1 and World 2 dichotomy is used to describe how regional conditions impact the need to move towards an "integrated framework" of planning for operations (i.e., ITS) and infrastructure expansion using a single process. The broader concept of an "integrated framework" and its implications for TRPCs approach to ITS is discussed further in Section 4.2. In this section, the World 1 vs. World 2 considerations are presented here in order to broaden and reinforce the understanding of how regional characteristics can impact ITS planning and programming approaches.

The report describes World 1 environments, including most small towns and rural areas, as having "relatively stable system needs and low congestion." Where system expansion is needed (primarily to connect points), "right-of-way is often available, and conflicts between the transportation system expansion and other public objectives can often be resolved relatively easily." Conversely, World 2 environments are those where "the thrust of the decisions facing the transportation community has shifted away from infrastructure expansion and toward preservation and management"; "the transportation network is for the most part complete and connected." In World 2 environments "expansion is difficult due to conflicts with the built environment surrounding the transportation system and competing community interests" and "responding to non-recurrent conditions and correcting for breakdowns in performance start to dominate the concerns of the transportation community."

The draft NCHRP report suggests that in regions with World 2 conditions, ITS (and therefore operations and management) should play a more predominant role in regional transportation processes. That is, an "integrated framework" should be used that addresses both near-term operations and management (ITS) and long-term infrastructure planning. Figure 3-1 graphically illustrates the relationship between World 1 and World 2 environments and the need for the integrated framework. The report indicates that other factors, in addition to those strictly associated with the World 1/World 2 dichotomy, influence the need for an integrated framework (i.e., embrace ITS planning) approach. These factors include the need for traveler information, due to a high volume of unfamiliar travelers or long distances, and high variability in the system due to incidents, accidents, and unusual weather.

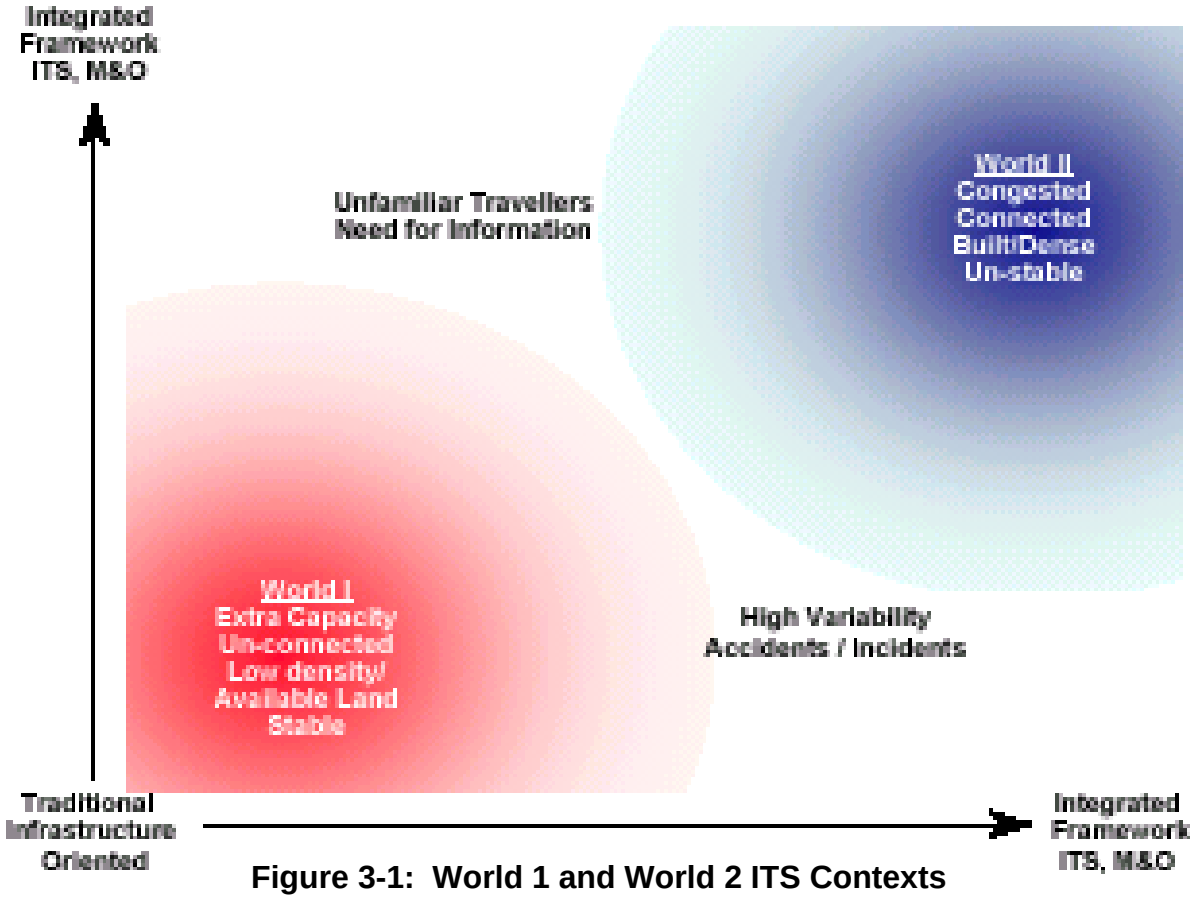

Figure 3-1: World 1 and World 2 ITS Contexts

3.3.2 Implications for the Thurston Region

The Thurston Region has an expanding but still relatively non-complex ITS environment, moderately severe/urgent transportation problems and a transportation environment that is relatively stable. In the World 1/World 2 terms of the draft NCHRP report, the Thurston Region is somewhere in the middle, although probably closer to the World 2 environment given the constraints to road-building and widening. These considerations suggest that a relatively simple institutional structure for ITS is appropriate, and at the same time reinforce the importance of continuing, and increasing, integration of ITS into the overall regional transportation strategy. The specific recommendations presented in Section 4.0 are based on those conclusions.

4.0 Recommendations for Integrating ITS Into the Regional Transportation Planning and Programming Process

This section presents specific recommendations for incorporating ITS into the TRPC planning and programming process. The recommendations are responsive to the FHWA/FTA ITS Architecture and Standards Rule/Policy and the emerging federal guidance relative to conforming to the rule/policy. The recommendations also generally reflect the conclusions presented at the end of Section 3.0, that initially, a relatively simple institutional structure will best serve the region's needs, but that continued integration of ITS into the overall regional transportation strategy should be supported.

The recommendations in this section are divided into three groups. The first set of recommendations pertains directly to the activities required to insure compliance with the federal ITS architecture and standards rule/policy, described in Section 3.1. The second set of recommendations describe additional activities that will support advancement of ITS in the region overall, as well as help insure that the rule/policy compliance activities are successful. The third area of recommendations focus on the long-term approach to regional ITS planning.

Ultimately, regardless of the specific approach taken to structuring regional ITS planning and programming processes in the short term, the approach taken in the Thurston Region should, as with the other elements of the regional process, be responsive to changing conditions, and should be expected to evolve.

4.1 Responding to the Federal Rule/Policy

The recent FHWA Rule and FTA Policy on ITS architecture and standards include, essentially, two key requirements relevant to regional transportation planning and programming. First, a regional ITS architecture must be developed. Second, ITS projects must be designed in conformance to the regional architecture and must be developed using a systems engineering process.

4.1.1 System Architecture Related Requirements

By developing a regional architecture the Thurston Region has satisfied the first of the federal architecture requirements. As discussed in Section 4.2, on-going monitoring and updating of that architecture will be required to insure its continued applicability.

4.1.2 ITS Project Related Requirements

The project related requirements of the federal rule/policy include three elements:

1. Determining applicability – is the project in question an ITS project?
2. Certifying project conformance with the regional architecture
3. Certifying use of a systems engineering analysis project development process

The recommended approach for complying with these requirements is based on the direction contained within the rule/policy itself, and the emerging federal guidance, as summarized in Sections 3.1.1.1 and 3.1.2.1. Recommendations are outlined below, first from an overall, summary perspective, and then in terms of more detailed procedures.

4.1.2.1 Overview of Architecture Rule/Policy Compliance Procedures for the Thurston Region

The overall approach to architecture rule/policy compliance in the Thurston Region features self-certification by federal ITS funding grantees, as required by the FHWA and FTA, but includes the TRPC as a facilitator and supporting resource. The recommended TRPC role is consistent with emerging federal guidance and the emerging role of the TRPC as regional facilitator of the development and maintenance/updating of the regional architecture.

The architecture rule/policy compliance process features the following major steps:

1. Project grantee planning stage consultation with TRPC – the project sponsor or grantee first consults with the TRPC to determine:

a. whether, and which of, the architecture rule/policy requirements apply:
   - is it an ITS project?
   - will it qualify for an exemption from the rule/policy?
   - will Highway Trust Funds be utilized?

b. is the project included in the regional ITS architecture, and if not, should the architecture be revised, and how?; and

c. given the scale of the project, what is the appropriate approach to the systems engineering analysis?

2. Development of federal funding grant application and supporting rule/policy compliance documentation – after making the appropriate determinations in the planning consultation with the TRPC, the grantee will complete the federal funding grant application materials, including rule/policy compliance documentation. The TRPC will facilitate and assist in this process.

3. Submittal of funding grant application

4. Project grantee design stage consultation with TRPC – once federal funding has been secured for the ITS project and the design of the project is underway, the grantee will again consult with the TRPC, to:

- Verify that the systems engineering process has been applied
- Identify any changes in the project that have occurred since the planning consultation that warrant any changes to the regional architecture, or that warrant any other regional coordination.

Additional information supporting some of the major steps in this process is provided below.

4.1.2.2 Determination of Federal Requirement Applicability

Is it an ITS Project? Section 940.3 of the FHWA ITS architecture and standards rule defines an ITS project as: "any project that in whole or in part funds the acquisition of technologies that provide or significantly contribute to the provision of one or more ITS user services as defined in the National ITS Architecture." An alternative approach to this determination is to consider whether a given project includes ITS elements, with ITS being defined as "electronics, communications, or information processing used singly or in combination to improve the efficiency or safety of a surface transportation system."

A definitive and consistent interpretation of what constitutes an ITS project will only emerge through time and experience, as precedent is established. Although it should be expected that "reason will prevail", a fairly broad interpretation should be expected. It is anticipated that a list of "exempted" transportation technology projects will emerge from national experience fairly quickly and will aid in interpretation at the local level.

Will the ITS project qualify for an exemption? There are some instances where even though a project uses funds from the Highway Trust Fund and it is an ITS project that the Policy may not be applicable. These exemptions and exceptions depend on when the ITS systems that are involved became operational and the amount/type of change the project introduces. They are shown in Table 4-1.

Table 4-1: Exemptions and Exceptions to Policy Requirements

Date	Type	Exemption / Exception
Systems in existence on 9 June 1998[1]	Operations and Maintenance of ITS	All Policy Provisions
Systems in existence on 9 June 1998[1]	Upgrades and Expansions of Existing ITS	U.S. Secretary of Transportation authorized Exemptions if: • Consistent with goals of TEA-21 Subtitle C on ITS • Within usable life of ITS components being modified • Is cost effective compared to options that will meet conformity
Systems in Final Design on 8 April 2001	All ITS components	Section VI Policy requirements on Project Implementation: • Systems Engineering Analysis • Major ITS Project Architectures.
Proposed Systems	Research Projects to meet TEA-21 Section 5204	U.S. Secretary of Transportation authorized Exemptions

[1] Date of TEA-21 Enactment

Source: "*FTA National ITS Architecture Consistency Policy for Transit Projects – Working Document*", October 2, 2001, Federal Transit Administration, pg. 11.

The FHWA and FTA will determine exemptions/exceptions on a case by case basis. If it is the determination of the grantee and the TRPC that the project qualifies for an exemption/exception, they must consult with the FTA or FHWA regional ITS contact to determine the level of justification required and to obtain the U.S. Secretary of Transportation authorization.

Will Highway Trust Funds be used? The rule/policy applies to all ITS projects using Highway Trust Funds, which includes the Mass Transit Account and virtually all other funds distributed by the FHWA and FTA, including (pg. 9, "*FTA National ITS Architecture Consistency Policy for Transit Projects – Working Document*", October 2, 2001, Federal Transit Administration):

FHWA grant program

- ITS Deployment Program (Earmarks)
- Congestion Mitigation and Air Quality
- Surface Transportation Program
- National Highway System
- Interstate Maintenance Program
- Federal Lands Program

FTA grant programs

- USC 5303 Metropolitan Planning
- USC 5313 State Planning & Research
- USC 5314 National Planning & Research
- USC 5307 Urbanized Area Formula
- USC 5311 Nonurbanized Area Formula
- USC 5312 Research Development & Demonstration
- USC 5309 Capital Program
- New Starts
- Fixed Guideway Modernization
- Bus and Bus Related Facilities
- USC 5310 Elderly/Persons with Disabilities
- TEA-21 3037 Job Access

Other federal program funds may, or may not, come from the Highway Trust Fund. If a grantee uses other federal funds, and no funds from the above it is recommended that the grantee consult with the federal Agency administering the program in question to verify if Highway Trust Funds are/are not used.

4.1.2.3 Project Inclusion in the Regional Architecture

In addition to the applicability of the rule/policy, the planning consultation with the TRPC will determine whether the ITS project is included in the regional architecture, and if not, whether the regional architecture, or the project, should be revised. Neither the FHWA nor the FTA has provided specific guidance to support the determination of a project's consistency with a regional architecture, leaving this determination to the regional stakeholders. For the Thurston Region, it is recommended that this determination should begin with the identification of which ITS market packages would be implemented through the project and whether these market packages are included in the regional architecture. The project's depiction, or lack thereof, in the high-level "physical" architecture diagrams (Figures 2-2, 2-3 and 2-4 in the Regional Architecture; TM #2) should also be noted.

The Thurston Regional architecture is fairly extensive, and includes a very wide range of ITS elements. Therefore, it is not likely that a project concept would be found to be "inconsistent" with the regional architecture per se. Rather, it is more likely that the project specific details and concept may not be reflected in the higher-level regional architecture at all. In either case, the project sponsor and TRPC will work together to modify the architecture and/or adjust the project as necessary to reach consensus on project-architecture consistency.

The ability to ***modify the regional architecture to accommodate a particular project*** is a critical feature of the federal ITS requirements, and one that should address many of the potential concerns of project sponsors.

4.1.2.4 Approach to Systems Engineering Analysis

The rule/policy requires that ITS projects must undergo a "systems engineering analysis", which is a structured process for arriving at a final design of a system, and that the scale of the analysis should "be on a level commensurate with the project scope" (see Section 3.1.2). The systems engineering analysis evaluates a number of alternatives for the configuration of the ITS and communications systems associated with the project and ways to meet the design objectives considering total life-cycle costs, technical merit and reliability, and relative value of each option. It also helps identify risks and develop contingencies to overcome them.

During the planning level consultation with the TRPC, the project sponsor should work with the TRPC to determine what level of analysis is necessary, referencing each of the required steps in the analysis (see Section 3.1.1.1 and 3.1.2). An overall plan for the analysis should be sketched out including a preliminary identification of what agencies may need to participate in the analysis.

Guidance and considerations relative to some of the major steps in the systems engineering process are presented in Table 4-2.

4.1.2.5 Development of Federal Grant Application and Supporting Documentation

The TRPC will support grantee's efforts to produce the documentation necessary, as part of the federal funding grant application, to demonstrate compliance with the rule/policy. The rule/policy does not specify the type of documentation required to demonstrate project compliance. As noted in Section 3.1.2, the FTA published a "working document" version of guidance for project compliance that does include some discussion of documentation procedures, within the context of existing FTA grant processes ("FTA National ITS Architecture Consistency Policy for Transit Projects – Working Document", October 2, 2001, Federal Transit Administration). That document also references a separate memorandum describing capturing ITS projects within the FTA Transportation Electronic Award Management system. No equivalent guidance is currently available from the FHWA. The Thurston Region ITS strategy recommendations in Section 2.0 include an effort to develop, consistent with FHWA and FTA requirements, standard rule/policy compliance forms. This effort is recommended to be led by the TRPC.

4.1.2.6 Verification of Systems Engineering Analysis and Final Architecture Check

The final step in the Thurston Region architecture rule/policy compliance process involves a second consultation between the grantee (federal funding recipient who is implementing the ITS project) and the TRPC. In this consultation, the grantee and TRPC should verify that an appropriate systems engineering process has been performed and should identify whether any changes have been made in the project since the planning consultation that warrant changes to the regional system architecture. This step will insure that if and when FHWA or FTA examine project compliance with the rule/policy, as part of standard oversight procedures, compliance can

be demonstrated. The TRPC should continue to provide support to grantees if and when FHWA or FTA review indicates a concern regarding compliance.

Table 4-2: Considerations for Selected Steps in the Systems Engineering Process

Step in the Process	Considerations
Identification of participating agencies roles and responsibilities	Any necessary agreements, such as memoranda of understanding that will be needed to support the life cycle for implementation, operation and maintenance of the project, should be identified at this stage. The development of those agreements should be performed as part of the project design.
Requirements definitions	Requirements provide the basis for a project design by identifying, in a detailed, discrete manner, what is to be accomplished by the project (functions), how the functions must be executed (performance) and what equipment and standards will be required (technical).
Analysis of alternative system configurations and technology options to meet requirements	The effort associated with this step is highly dependent on the scope of the project being implemented: small, simple projects of a type that have been implemented many times before may require minimal analysis, whereas large, complicated projects of a type that has not been implemented before may warrant more careful consideration alternative configurations and technologies. The pro and con of various system configurations should be considered, and the relative strengths and weaknesses of available alternative technologies should be weighed, considering issues such as cost effectiveness, operations and maintenance impact, and expandability.
Procurement options	Unlike "traditional" road building and transportation capital facilities procurements, many ITS projects, due to the uncertainty involved, do not lend themselves to traditional "low bid" procurement. There is existing federal guidance stating that agencies should definitely avoid using low bid procurement for ITS software projects. Project sponsors are encouraged to consider the full range of procurement options available to them.
Identification of applicable ITS standards and testing procedures	ITS standards define how different ITS technologies interconnect and interoperate. Table 5-1 of the Thurston regional architecture identifies the standards that apply to various components of the architecture. None of the over 80 ITS standards that have been developed and published, or are being developed, have yet been formally adopted by the USDOT. Therefore, usage of the standards is as yet recommended rather than required. During project design, as part of the systems engineering process, the specific tests that will be conducted as part of the design and implementation process should be identified. The identification of these tests is a natural extension of the thinking that generates the system requirements needed for project design. Acceptance testing is a critical component of ITS projects—these tests describe the procedures that will be used to demonstrate that the operational requirements can be met with the system, and that any specification for the use of ITS standards has also been met.
Procedures and resources necessary for operations and management of the system	Almost by definition, the operational and management cost component of ITS projects is more significant than for traditional roadway projects. In the case of ITS, merely providing the infrastructure does not produce the desired benefits; the infrastructure must be actively utilized

Table 4-2: Considerations for Selected Steps in the Systems Engineering Process

Step in the Process	Considerations
	within the context of a specific operational strategy that makes sense. Experience to date with ITS systems has often been that the operational component of ITS, including exactly how the tools will be used, to what ends, and the resources required to operate them, is often under-planned, under-staffed and under-budgeted. As a result, some deployed ITS components, with variable message signs being one example, have been under-utilized in some areas and have attracted considerable public and media criticism. The importance of fully articulating ***why*** and ***how*** the specific ITS application will be utilized, and allocating sufficient resources to support that plan, can not be over-emphasized. Some of the issues to be considered include: staffing, training, maintenance (skills required, spare parts, equipment) and replacement costs.

4.2 Other Recommended Regional ITS Activities

In addition to the activities associated with ensuring conformance with the federal ITS rule/ policy, a number of additional regional activities, to be undertaken directly or coordinated by the TRPC, are recommended. These activities are summarized below.

4.3 Regional ITS Committee(s)/Working Groups

It is recommended that the TRPC establish an ITS committee. The responsibilities and purposes of the committee would include:

- Provide a forum for continued dialog and coordination on all ITS related issues
- Monitor and provide input to the ITS project conformity process
- Identify the need for and coordinate the development of regional agreements in support of ITS activities
- Oversee regional systems architecture maintenance and updating
- Monitor ITS standards development and identify approaches to regional application of standards
- Coordinate specific regional ITS projects, and the interface between localized projects and regional ITS systems
- Facilitate liaison with neighboring region ITS activities (e.g., Puget Sound region) and state ITS activities
- Coordinate the activities of any ITS-oriented subcommittees or working groups (see below)

Many regions around the country have ITS committees. In larger regions it is not uncommon to have both an overall ITS committee and more specific ITS sub-committees or working groups, focusing on specific issues such as transit or traffic signals. It is important that any subcommittees or working groups evolve in response to a clear need and have a clear purpose. For this reason, given the early stage of the Thurston Regional ITS experience, no specific subcommittees or working groups are recommended. However, the need for such groups should be monitored closely and it should be expected that one or more subgroups would form naturally to meet evolving needs. At least initially, it should be expected that subgroups will be created on a temporary basis, focusing on a specific activity, and dissolving once the activity is completed, as with a “Tiger Team” or task force effort.

Based on the experiences of other regions, and on the specific circumstances of the Thurston Region, it is likely subcommittees or working groups focusing on the following issues may be needed as regional ITS activities advance:

4.3.1 Communications Working Group

Communications is one of the areas where regional, system-level issues should be considered, including shared-use arrangements, either among public agencies or between public agencies and private organizations. Significant efficiencies can be realized when communications needs and solutions are considered on a regional, multi-jurisdictional and multi-agency basis. For example, fiber optic cable installed to support freeway instrumentation or traffic signal integration could also support other agency uses, or agreements could be executed with private cable companies to allow public use in exchange to right-of-way access. In another example, in the course of the development of the system architecture, it became clear that there might be shared-use opportunities associated with Thurston County's new radio system, such as with Intercity Transit, who is also replacing their system. A working group devoted to regional communications issues could coordinate these issues to the mutual benefit of all regional ITS projects.

4.3.2 Public Transportation Working Group

The recommended ITS investment strategy that has been developed for Intercity Transit as part of the regional architecture effort, as well as the public transportation-related ITS implementation strategies identified in Section 2.0, both included references to the need to work together at a regional level in some specific areas. These sorts of activities could be coordinated through a public transit subgroup associated with the Regional ITS Committee and its peer-to-peer working groups.

4.3.3 Traffic and Incident Management Working Group (including traffic signals)

Traffic management, and especially incident management, is an area where additional effort is warranted beyond what can be accomplished within the brief and constrained confines of a regional architecture development effort. In developing the Thurston Region ITS architecture, regional traffic management and incident management needs were identified, and an architecture was developed that embodied a number of long-term, relatively high-level strategies. Although the architecture now serves as an excellent framework, considerable detail work remains to identify the specifics of those strategies, including fine-tuning roles and responsibilities and procedures. Such activities could be coordinated on a regional basis through a traffic/incident management work group.

It should be noted that separate ITS specific subgroups or working groups should not be created when existing groups or forums exist that could take on additional ITS related coordination duties. For example, if an existing traffic signal group or public transportation group exists, the activities and memberships of those groups could be modified slightly, including providing for a linkage back to the regional ITS Committee, to address the relevant ITS issues.

4.4 Inclusion of ITS in the Long-Range Transportation Plan

It is recommended that ITS be formally included in the regional long-range transportation plan, as a separate element or section.

The architecture that has been developed identifies an overall long-range target, and framework for integrating ITS elements in the region. The implementation strategies presented in Section 2.0 of this report identify some initial activities needed to advance some of the more critical and near-term components of the architecture. However, there remains a need to identify a specific program of ITS projects, and how they relate to other planned regional transportation investments.

The ITS component of the regional long-range transportation plan need not be a separate listing of separate ITS projects. An ITS element of the plan could be structured as an "overlay" to the other elements of the plan (e.g., transit, roadways, etc.), indicating how the various ITS activities in the other elements relate to the regional ITS architecture and long-range ITS vision. An alternative approach would be to include an ITS, or "technology considerations" component to each individual, modal element of the long-range plan. Each of these sections would identify the role of technology, and system architecture considerations, associated with the element.

4.5 Regional System Architecture Update and Maintenance

Regional system architecture depicts a view of the future based on current understanding and interpretation of conditions. As current conditions or interpretations change, the view of the future should be modified as appropriate. In the case of ITS, conditions are changing rapidly, with new applications being developed and "state of the practice" emerging for more established applications (i.e., the jury is coming in). Like any other regional planning tool, the Thurston Region ITS architecture will require periodic reassessment and updating. The need to update the architecture will depend in large part on the pace of ITS related implementation in the region, and lessons-learned from similar state or national projects and architectures.

It is recommended that the TRPC be responsible for monitoring and maintaining the regional ITS architecture. The architecture should be monitored on an on-going basis. As circumstances and plans change, the impact of those changes on the architecture should be assessed. Significant changes to the architecture should not be required frequently, however, minor modifications, or occasional significant modifications, should be expected. It is recommended that minor periodic updates to the architecture be conducted as needed and updates be conducted at least every four years. This activity is part-and-parcel of the regional engagement in the long term "ITS architecture process."

In addition to monitoring and periodic updates, another critical justification for modifying the Thurston Regional System Architecture will be in response to specific architecture-inconsistent ITS projects. The federal rule/policy states "if the final design of the ITS project is inconsistent with the regional ITS architecture, then the regional ITS architecture shall be updated as provided in the process defined in Section 940.9(f) to reflect the changes" (Section 940.9(f) merely specifies that those who develop the regional architecture will decide how to maintain it).

This provision is a critical and sometimes under appreciated aspect of the rule/policy. Simply stated, if a project doesn't "fit", you don't have to change the project, you can change the architecture to accommodate the project. The National ITS Architecture, and the regional architectures that are based on it, aim to promote integration without dictating specific project designs and therefore will accommodate a wide range of specific project approaches without the need for modification of either the project or the architecture. The "first generation" architectures now being developed around the country are often left particularly open and flexible. On the other hand, it is expected that the projects themselves will often help resolve issues left unspecified in the regional architectures, and result in project stimulated refinements to the architecture.

Depending on how frequently and how substantially the Thurston Regional ITS Architecture is revised or updated, it may be desirable to form a task force, or establish a working group, devoted to regional architecture and standards issues. This group could be convened strictly on an as-needed basis, such as in response to a project grantee-TRPC determination that a proposed ITS project with significant regional implication is not adequately included or supported by the architecture. In these cases, consultation with a formal body of regional stakeholders may be appropriate.

4.6 Outreach and Education

While ITS projects face many challenges, project programmatic and technical issues are not the major challenges in deployment of ITS--"institutional issues" have long been acknowledged as the most significant barriers to successful ITS implementation and operation. The process to develop the Thurston Region System Architecture is a critical first step in establishing the understanding and support among agency stakeholders and technical staff that will be needed to implement ITS. Additional efforts oriented to technical staff will be needed, and more significantly, ITS support building must extend to elected officials and other policy makers, as well as the general public. In Section 3.2, endorsement of ITS by elected officials and senior transportation staff was identified as one of the three conditions critical to regional ITS success, thus the outreach and education to engage these individuals is one of the critical strategies for success of ITS.

The TRPC should plan to continue the ITS outreach and education process started with the development of the system architecture. The role of ITS as "one of the tools in the tool box" should be emphasized within the context of all existing outreach and education activities. In addition, ITS specific presentations and information packages should be developed both to support the efforts of individual project sponsors in generating support with their decision-making bodies, but also to be used directly by TRPC with regional decision makers and the public.

Outreach and education on the regional architecture will be especially important for potential project sponsors, who will be responsible for "self-certifying" that their project design is consistent with the regional architecture.

4.7 Long-Term Considerations: Toward an Integrated Planning-Operations Framework

The clear trend in recent federal direction is to encourage incorporation of ITS into regional transportation planning activities. A strong argument can be made that ITS inherently deals with transportation operations and management, indicating the need for an improved linkage between operations and planning activities. This linkage, and expansion of the traditional long-range planning focus on roadways, comes at the same time that the USDOT is encouraging an increased overall emphasis on operations and system performance, e.g., through the National Dialog on Operations.

A Draft ITS Practitioner's Guide has been developed as part of the National Cooperative Highway Research Program ("*Integrated Planning (Management & Operations, ITS, Infrastructure) Practitioner's Guide*," DRAFT, July 2000, National Cooperative Highway Research Program (NCHRP) Project 8-35). The report argues that the currently separate operations and transportation planning processes should be integrated, at least in areas where the focus has shifted from road-building to system management (see the World 1 versus World 2 discussion in Section 3.4).

The TRPC is encouraged to consider the recommendations of the Draft Practitioner's Guide, and more generally, to consider how an expanded role in regional operations planning, and an improved linkage between long-range regional "infrastructure-oriented" planning and operations may be appropriate to the region.

Appendix A

FHWA Final Rule:
Intelligent Transportation System Architecture
and Standards

Appendix A

This appendix includes both a synopsis and the full text of the FHWA Final Rule applicable to ITS architecture and standards.

1. The synopsis was obtained from the **National ITS Architecture and Standards Conformity Resource Guide** website at http://www.its.dot.gov/aconform/wholetext.htm.

2. The full text of the Federal Register was obtained from a related location on that same website at http://www.its.dot.gov/aconform/Policy.htm; by following the link to: **FHWA Rule on Intelligent Transportation Systems Architecture and Standards (PDF Version).**

Intelligent Transportation System Architecture and Standards

AGENCY: Federal Highway Administration (FHWA), DOT.

ACTION: Final rule.

Sections:

940.1 **Purpose**
940.3 **Definitions**
940.5 **Policy**
940.7 **Applicability**
940.9 **Regional ITS Architecture**
940.11 **Project Implementation**
940.13 **Project Administration**

Section:

940.1 Purpose

This regulation provides policies and procedures for implementing section 5206(e) of the Transportation Equity Act for the 21st Century (TEA-21), Public Law 105-178, 112 Stat. 457, pertaining to conformance with the National Intelligent Transportation Systems Architecture and Standards.

940.3 Definitions

Intelligent Transportation System (ITS) means electronics, communications, or information processing used singly or in combination to improve the efficiency or safety of a surface transportation system.

ITS project means any project that in whole or in part funds the acquisition of technologies or systems of technologies that provide or significantly contribute to the provision of one or more ITS user services as defined in the National ITS Architecture.

Major ITS project means any ITS project that implements part of a regional ITS initiative that is multi-jurisdictional, multi-modal, or otherwise affects regional integration of ITS systems.

National ITS Architecture (also "national architecture") means a common framework for ITS interoperability. The National ITS Architecture comprises the logical architecture and physical architecture which satisfy a defined set of user services. The National ITS Architecture

is maintained by the United States Department of Transportation (DOT) and is available on the DOT web site at http://www.its.dot.gov.

Project level ITS architecture is a framework that identifies the institutional agreement and technical integration necessary to interface a major ITS project with other ITS projects and systems.

Region is the geographical area that identifies the boundaries of the regional ITS architecture and is defined by and based on the needs of the participating agencies and other stakeholders. In metropolitan areas, a region should be no less than the boundaries of the metropolitan planning area.

Regional ITS architecture means a regional framework for ensuring institutional agreement and technical integration for the implementation of ITS projects or groups of projects.

Systems engineering is a structured process for arriving at a final design of a system. The final design is selected from a number of alternatives that would accomplish the same objectives and considers the total life-cycle of the project including not only the technical merits of potential solutions but also the costs and relative value of alternatives.

940.5 Policy

ITS projects shall conform to the National ITS Architecture and standards in accordance with the requirements contained in this part. Conformance with the National ITS Architecture is interpreted to mean the use of the National ITS Architecture to develop a regional ITS architecture, and the subsequent adherence of all ITS projects to that regional ITS architecture. Development of the regional ITS architecture should be consistent with the transportation planning process for Statewide and Metropolitan Transportation Planning.

940.7 Applicability

a. All ITS projects that are funded in whole or in part with the highway trust fund, including those on the National Highway System (NHS) and on non-NHS facilities, are subject to these provisions.
b. The Secretary may authorize exceptions for:
    1. Projects designed to achieve specific research objectives outlined in the National ITS Program Plan under section 5205 of the Transportation Equity Act for the 21dt Century (Pub. L. 105-178, 112 Stat. 457), or the Surface Transportation Research and Development Strategic Plan developed under section 508 of Title 23, United States Code; or
    2. The upgrade or expansion of an ITS system in existence on the date of enactment of the TEA-21, if the Secretary determines that the upgrade or expansion:
        i. Would not adversely affect the goals or purposes of Subtitle C (Intelligent Transportation Systems Act of 1998) of the TEA-21;

ii. Is carried out before the end of the useful life of such system; and
iii. Is cost-effective as compared to alternatives that would meet the conformity requirement of this rule.

c. These provisions do not apply to funds used for operations and maintenance of an ITS system in existence on June 9, 1998.

940.9 Regional ITS Architecture

a. A regional ITS architecture shall be developed to guide the development of ITS projects and programs and be consistent with ITS strategies and projects contained in applicable transportation plans. The National ITS Architecture shall be used as a resource in the development of the regional ITS architecture. The regional ITS architecture shall be on a scale commensurate with the scope of ITS investment in the region. Provision should be made to include participation from the following agencies, as appropriate, in the development of the regional ITS architecture: highway agencies; public safety agencies (e.g., police, fire, emergency/medical); transit operators; Federal lands agencies; State motor carrier agencies; and other operating agencies necessary to fully address regional ITS integration.
b. Any region that is currently implementing ITS projects shall have a regional ITS architecture by [Insert date 30 days after publication in the Federal Register plus 48 months].
c. All other regions not currently implementing ITS projects shall have a regional ITS architecture within four years of the first ITS project for that region advancing to final design.
d. The regional ITS architecture shall include, at a minimum, the following:
    1. A description of the region;
    2. Identification of participating agencies and other stakeholders;
    3. An operational concept that identifies the roles and responsibilities of participating agencies and stakeholders in the operation and implementation of the systems included in the regional ITS architecture;
    4. Any agreements (existing or new) required for operations, including at a minimum those affecting ITS project interoperability, utilization of ITS related standards, and the operation of the projects identified in the regional ITS architecture;
    5. System functional requirements;
    6. Interface requirements and information exchanges with planned and existing systems and subsystems (for example, subsystems and architecture flows as defined in the National ITS Architecture);
    7. Identification of ITS standards supporting regional and national interoperability; and
    8. The sequence of projects required for implementation.
e. Existing regional ITS architectures that meet all of the requirements of paragraph (d) of this section shall be considered to satisfy the requirements of paragraph (a) of this section.
f. The agencies and other stakeholders participating in the development of the regional ITS architecture shall develop and implement procedures and responsibilities for maintaining it, as needs evolve within the region.

940.11 Project Implementation

a. All ITS projects funded with highway trust funds shall be based on a systems engineering analysis.
b. The analysis should be on a scale commensurate with the project scope.
c. The systems engineering analysis shall include, at a minimum:
    1. Identification of portions of the regional ITS architecture being implemented (or if a regional ITS architecture does not exist, the applicable portions of the National ITS Architecture);
    2. Identification of participating agencies roles and responsibilities;
    3. Requirements definitions;
    4. Analysis of alternative system configurations and technology options to meet requirements;
    5. Procurement options;
    6. Identification of applicable ITS standards and testing procedures; and
    7. Procedures and resources necessary for operations and management of the system.
d. Upon completion of the regional ITS architecture required in §§ 940.9(b) or 940.9(c), the final design of all ITS projects funded with highway trust funds shall accommodate the interface requirements and information exchanges as specified in the regional ITS architecture. If the final design of the ITS project is inconsistent with the regional ITS architecture, then the regional ITS architecture shall be updated as provided in the process defined in § 940.9(f) to reflect the changes.
e. Prior to the completion of the regional ITS architecture, any major ITS project funded with highway trust funds that advances to final design shall have a project level ITS architecture that is coordinated with the development of the regional ITS architecture. The final design of the major ITS project shall accommodate the interface requirements and information exchanges as specified in this project level ITS architecture. If the project final design is inconsistent with the project level ITS architecture, then the project level ITS architecture shall be updated to reflect the changes. The project level ITS architecture is based on the results of the systems engineering analysis, and includes the following:
    1. A description of the scope of the ITS project;
    2. An operational concept that identifies the roles and responsibilities of participating agencies and stakeholders in the operation and implementation of the ITS project;
    3. Functional requirements of the ITS project;
    4. Interface requirements and information exchanges between the ITS project and other planned and existing systems and subsystems; and
    5. Identification of applicable ITS standards.
f. All ITS projects funded with highway trust funds shall use applicable ITS standards and interoperability tests that have been officially adopted through rulemaking by the DOT.
g. Any ITS project that has advanced to final design by [Insert the effective date of this rule] is exempt from the requirements of paragraphs (d) through (f) of this section.

940.13 Project Administration

a. Prior to authorization of highway trust funds for construction or implementation of ITS projects, compliance with § 940.11 shall be demonstrated.
b. Compliance with this part will be monitored under Federal-aid oversight procedures as provided under 23 U.S.C. 106 and 133.

Federal Register

Monday
January 8, 2001

Part IV

Department of Transportation

Federal Highway Administration

23 CFR Parts 655 and 940
Intelligent Transportation System Architecture and Standards; Final Rule

Federal Transit Administration

Federal Transit Administration National ITS Architecture Policy on Transit Projects; Notice

[Insert paper copy of printed .pdf for **FHWA** here; pp. 1446-1454.]

Federal Register

Monday,
January 8, 2001

Part IV

Department of Transportation

Federal Highway Administration

23 CFR Parts 655 and 940
Intelligent Transportation System Architecture and Standards; Final Rule

Federal Transit Administration

Federal Transit Administration National ITS Architecture Policy on Transit Projects; Notice

DEPARTMENT OF TRANSPORTATION

Federal Highway Administration

23 CFR Parts 655 and 940

[FHWA Docket No. FHWA–99–5899]

RIN 2125–AE65

Intelligent Transportation System Architecture and Standards

AGENCY: Federal Highway Administration (FHWA), DOT.

ACTION: Final rule.

SUMMARY: The purpose of this document is to issue a final rule to implement section 5206(e) of the Transportation Equity Act for the 21st Century (TEA–21), enacted on June 9, 1998, which required Intelligent Transportation System (ITS) projects funded through the highway trust fund to conform to the National ITS Architecture and applicable standards. Because it is highly unlikely that the entire National ITS Architecture would be fully implemented by any single metropolitan area or State, this rule requires that the National ITS Architecture be used to develop a local implementation of the National ITS Architecture, which is referred to as a ''regional ITS architecture.'' Therefore, conformance with the National ITS Architecture is defined under this rule as development of a regional ITS architecture within four years after the first ITS project advancing to final design, and the subsequent adherence of ITS projects to the regional ITS architecture. The regional ITS architecture is based on the National ITS Architecture and consist of several parts including the system functional requirements and information exchanges with planned and existing systems and subsystems and identification of applicable standards, and would be tailored to address the local situation and ITS investment needs.

EFFECTIVE DATE: February 7, 2001.

FOR FURTHER INFORMATION CONTACT: *For technical information:* Mr. Bob Rupert, (202) 366–2194, Office of Travel Management (HOTM–1) and Mr. Michael Freitas, (202) 366–9292, ITS Joint Program Office (HOIT–1). *For legal information:* Mr. Wilbert Baccus, Office of the Chief Counsel (HCC–32), (202) 366–1346, Federal Highway Administration, 400 Seventh Street, SW., Washington, DC 20590. Office hours are from 8 a.m. to 4:30 p.m., e.t., Monday through Friday, except Federal holidays.

SUPPLEMENTARY INFORMATION:

Electronic Access and Filing

You may submit or retrieve comments online through the Docket Management System (DMS) at: *http//dmses.dot.gov/submit.* Acceptable formats include: MS Word (versions 95 to 97), MS Word for Mac (versions 6 to 8), Rich Text Format (RTF), American Standard Code Information Interchange (ASCII) (TXT), Portable Document Format (PDF), and WordPerfect (version 7 to 8). The DMS is available 24 hours each day, 365 days each year. Electronic submission and retrieval help and guidelines are available under the help section of the web site.

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Background

A notice of proposed rulemaking (NPRM) concerning this rule was published at 65 FR 33994 on May 25, 2000, and an extension of the comment period to September 23, 2000, was published at 65 FR 45942 on July 26, 2000.

In the NPRM on this rule, the FHWA had proposed that the regional ITS architecture follow from the ITS integration strategy proposed in another NPRM entitled ''Statewide Transportation Planning; Metropolitan Transportation Planning'' published at 65 FR 33922 on May 25, 2000. That rule is being developed according to a different schedule and will be issued separately. For this reason, all references to the proposed integration strategy have been removed from this rule. However, it is still the intent of this rule that regional ITS architectures be based on established, collaborative transportation planning processes. The other major changes to the final rule relate to options for developing a regional ITS architecture and the time allowed to develop such an architecture. Additional changes to the final rule largely deal with clarification of terms, improved language dealing with staging and grandfathering issues, and clarification of use of ITS standards.

Intelligent Transportation Systems represent the application of information processing, communications technologies, advanced control strategies, and electronics to the field of transportation. Information technology in general is most effective and cost beneficial when systems are integrated and interoperable. The greatest benefits in terms of safety, efficiency, and costs are realized when electronic systems are systematically integrated to form a whole in which information is shared with all and systems are interoperable.

In the transportation sector, successful ITS integration and interoperability require addressing two different and yet fundamental issues; that of technical and institutional integration. *Technical integration* of electronic systems is a complex issue that requires considerable up-front planning and meticulous execution for electronic information to be stored and accessed by various parts of a system. *Institutional integration* involves coordination between various agencies and jurisdictions to achieve seamless operations and/or interoperability.

In order to achieve effective institutional integration of systems, agencies and jurisdictions must agree on the benefits of ITS and the value of being part of an integrated system. They must agree on roles, responsibilities, and shared operational strategies. Finally, they must agree on standards and, in some cases, technologies and operating procedures to ensure interoperability. In some instances, there may be multiple standards that could be implemented for a single interface. In this case, agencies will need to agree on a common standard or agree to implement a technical translator that will allow dissimilar standards to interoperate. This coordination effort is a considerable task that will happen over time, not all at once. Transportation organizations, such as, transit properties, State and local transportation agencies, and metropolitan planning organizations must be fully committed to achieving institutional integration in order for integration to be successful. The transportation agencies must also coordinate with agencies for which transportation is a key, but not a primary part of their business, such as, emergency management and law enforcement agencies.

Successfully dealing with both the technical and institutional issues requires a high-level conceptual view of the future system and careful, comprehensive planning. The framework for the system is referred to as the *architecture.* The architecture defines the system components, key functions, the organizations involved, and the type of information shared

between organizations and parts of the system. The architecture is, therefore, fundamental to successful system implementation, integration, and interoperability.

Additional background information may be found in docket number FHWA–99–5899.

The National ITS Architecture

The Intermodal Surface Transportation Efficiency Act of 1991, Public Law 102–240, 105 Stat. 1914, initiated Federal funding for the ITS program. The program at that time was largely focused on research and development and operational tests of technologies. A key part of the program was the development of the National ITS Architecture. The National ITS Architecture provides a common structure for the design of ITS systems. The architecture defines the functions that could be performed to satisfy user requirements and how the various elements of the system might connect to share information. It is not a system design, nor is it a design concept. However, it does define the framework around which multiple design approaches can be developed, each one specifically tailored to meet the needs of the user, while maintaining the benefits of a common approach.

The National ITS Architecture, Version 3.0 can be obtained from the ITS Joint Program Office of the DOT in CD–ROM format and on the ITS web site *http://www.its.dot.gov*. The effort to develop a common national system architecture to guide the evolution of ITS in the United States over the next 20 years and beyond has been managed since September 1993 by the DOT. The National ITS Architecture describes in detail what types of interfaces should exist between ITS components and how they will exchange information and work together to deliver the given ITS user service requirements.

The National ITS Architecture and standards can be used to guide multi-level government and private-sector business planners in developing and deploying nationally compatible systems. By ensuring system compatibility, the DOT hopes to accelerate ITS integration nationwide and develop a strong, diverse marketplace for related products and services.

It is highly unlikely that the entire National ITS Architecture will be fully implemented by any single metropolitan area or State. For example, the National ITS Architecture contains information flows for an Automated Highway System that is unlikely to be part of most regional implementations. However, the National ITS Architecture has considerable value as a framework for local governments in the development of regional ITS architectures by identifying the many functions and information sharing opportunities that may be desired. It can assist local governments with both of the key elements: technical interoperability and institutional coordination.

The National ITS Architecture, because it aids in the development of a high-level conceptual view of a future system, can assist local governments in identifying applications that will support their future transportation needs. From an institutional coordination perspective, the National ITS Architecture helps local transportation planners to identify other stakeholders who may need to be involved and to identify potential integration opportunities. From a technical interoperability perspective, the National ITS Architecture provides a logical and physical architecture and process specifications to guide the design of a system. The National ITS Architecture also identifies interfaces where standards may apply, further supporting interoperability.

Transportation Equity Act for the 21st Century

As noted above, section 5206(e) of the TEA–21, Public Law 105–178, 112 Stat. 457, requires ITS projects funded from the highway trust fund to conform to the National ITS Architecture, applicable or provisional standards, and protocols. One of the findings of Congress in section 5202 of the TEA–21, is that continued investment in systems integration is needed to accelerate the rate at which ITS is incorporated into the national surface transportation network. Two of the purposes of the ITS program, noted in section 5203(b) of the TEA–21, are to expedite the deployment and integration of ITS, and to improve regional cooperation and operations planning for effective ITS deployment. Use of the National ITS Architecture provides significant benefits to local transportation planners and deployers as follows:

1. The National ITS Architecture provides assistance with technical design. It saves considerable design time because physical and logical architectures are already defined.

2. Information flows and process specifications are defined in the National ITS Architecture, allowing local governments to accelerate the process of defining system functionality.

3. The architecture identifies standards that will support interoperability now and into the future, but it leaves selection of technologies to local decisionmakers.

4. The architecture provides a sound engineering framework for integrating multiple applications and services in a region.

ITS Architecture and Standards NPRM

Discussion of Comments

The FHWA received 105 comments on this docket from a wide range of stakeholders, including major industry associations, State departments of transportation, Metropolitan Planning Organizations (MPOs), and local agencies. The comments were generally favorable about the scope and content, but requested additional clarification and guidance on implementation of specific items. On many issues, some commenters wanted more specific requirements, while others wanted more flexibility. Most commenters, including major industry associations and public sector agencies, agreed with the overall scope, but some felt that the specifics might be difficult to implement and asked for clarification of key terms. A few commenters wanted the FHWA to reduce the number of requirements or convert the rulemaking into a guidance activity until more ITS deployment experience is gained.

In summary, the FHWA received a large number of generally favorable comments about the NPRM that suggested minor specific changes and expressed a need for further guidance on implementation. Since the general tenor of the comments was positive, the FHWA has kept the scope of the NPRM and made appropriate clarifications to the text of the final rule to address concerns raised in comments. In response to the many comments requesting it, starting in early 2001, the FHWA will also provide a program of guidance, training, and technical support to assist with the implementation of this rule. The following is a detailed discussion of the comments and their disposition, organized by subject matter.

Section 940.3 Definitions

ITS Project. There were 34 comments submitted to the docket concerning the definition of an ITS project. Many of the commenters felt the definition was not clear enough, was too broad, or was too subject to interpretation. Some comments questioned how much of a project's budget would have to be spent on ITS before a project would be considered an ITS project. Some suggested specific language to more narrowly define an ITS project by

focusing on the portion of the overall project that is actually ITS or by suggesting language that would narrow the definition of an ITS project to only include projects which introduce new or changed integration opportunities.

Since the intent of this rule and the supporting legislation is to facilitate the deployment of integrated ITS systems, it is the position of the FHWA that the definition of an ITS project must be fairly broad to include any ITS system being funded with highway trust fund dollars. It is only by properly considering all planned ITS investments in the development of a regional ITS architecture that the integration opportunities and needs can even be identified. This consideration should be carried out in the development of an architecture prior to the specific project being advanced. If, in the development of a regional ITS architecture, it is determined that a specific planned project offers no real integration opportunities for the region, then the impact of this rule on that specific project is minimal.

As a response to the comments concerning the clarity of the definition, the definition of an ITS project has been slightly modified to remove the examples since they were considered misleading. The FHWA recognizes that any definition will be subject to interpretation by the stakeholders and acknowledges the need for guidance in this area to ensure clear and consistent interpretation of this rule. Guidance on what constitutes an ITS project (including examples) will be developed to assist the various stakeholders, including the FHWA Division Offices, to better understand what projects should be considered ITS projects.

Region. There were 26 comments submitted related to the definition of a region. Seven comments supported the open definition provided in the NPRM, arguing that the possible integration opportunities in an area should define the region and that there were too many possible variations to allow a restrictive definition. Six commenters who expressed concern over varying conditions interpreted the definition to mean Metropolitan Planning Area (MPA). Five comments suggested an MPA was too restrictive. Eight other comments indicated that the proposed definition of a region did not clearly identify what entity would have the lead in developing a regional ITS architecture or thought the definition implied the MPO should have the lead. Nine comments suggested various limits or boundaries to fit specific situations. Ten comments expressed a need for greater clarification of the definition for a region.

The intent of the proposed definition was to allow considerable flexibility on the part of the stakeholders in defining the boundaries of a region to best meet their identified integration opportunities. While there was no intent to generally restrict the definition to MPAs or States, the FHWA determined that regional ITS architectures should be based on an integration strategy that was developed by an MPO or State as part of its transportation planning process.

Given that the final rule does not require or reference an integration strategy, the FHWA feels a need to provide more specific guidance on the definition of a region. As such, the definition of a region has been revised to indicate that the MPA should be the minimum area considered when establishing the boundaries of a region for purposes of developing a regional ITS architecture within a metropolitan area. This should not be interpreted to mean that a region must be an MPA, or no less than an MPA, but the MPA and all the agencies and jurisdictions within the MPA should be at least considered for inclusion in the process of developing a regional ITS architecture within a metropolitan area. This rule is silent on other possible limits or minimum areas for defining a region, relying on the flexible nature of this rule to accommodate those special circumstances. The FHWA also acknowledges it is possible that overlapping regions could be defined and overlapping regional ITS architectures be developed to meet the needs of the regions.

Other Definitions. There were 20 comments suggesting that other terms used in the NPRM be defined. These included ''interoperability,'' ''standards,'' ''concept of operations,'' ''conceptual design,'' and ''integration strategy.'' Several of these are no longer used in the final rule and, therefore, were not defined. Other terms, such as ''interoperability'' and ''standards,'' were determined to be common terms whose definition did not effect the implementation of the final rule. Furthermore, language regarding standards conformity has been clarified in the body of the final rule.

Section 940.5 Policy

Twenty-eight commenters addressed the issue of consistency between the two related FHWA notices of proposed rulemaking (23 CFR parts 940 and 1410) and the Federal Transit Administration's (FTA) notice (FTA Docket No. FTA–99–6417) on National ITS Architecture published at 65 FR 34002 on May 25, 2000. The comments revealed a lack of understanding about the relationship between the regional ITS architecture and the integration strategy proposed as part of the revisions to FHWA's transportation planning rules. There were five comments suggesting a single DOT rule addressing how all ITS projects would meet the National ITS Architecture conformance requirements of the TEA–21 instead of an FHWA rule for highway projects and an FTA policy for transit projects. Four other comments acknowledged the need for two policies, but recommended they articulate the same process.

A final transportation planning rule is being developed on a different schedule than this rule, and comments regarding the portions of the National ITS Architecture conformity process included in the transportation planning rule will be addressed as it proceeds toward issuance. The FHWA and FTA have chosen to go forward with policies that have been developed cooperatively to implement the National ITS Architecture conformance process. This FHWA rule and the parallel FTA policy have been developed without reference to the proposed changes to the transportation planning process, including no mention of the development of an integration strategy. However, the policy statement of this rule notes a link to established transportation planning processes, as provided under 23 CFR part 450. This rule fully supports these collaborative methods for establishing transportation goals and objectives, and does not provide a mechanism for introducing projects outside of the transportation planning processes.

This final rule on National ITS Architecture conformance and the FTA policy on the same subject have been developed cooperatively and coordinated among the agencies to ensure compatible processes. Any differences between this rule and the parallel FTA policy are intended to address differences in highway and transit project development and the way the FHWA and the FTA administer projects and funds.

Fifteen commenters questioned the need for an integration strategy, and the relationship between the strategy and the regional ITS architecture.

Given the fact that proposed revisions to the FHWA's transportation planning rules are being developed according to a different schedule, this rule has been revised to remove any references to an integration strategy. Comments regarding the integration strategy will be addressed in the final transportation

planning rule, and the discussion of the regional ITS architecture in § 940.9 has been revised to clarify its content.

Section 940.7 Applicability

A few commenters noted that the proposed rule had not addressed the TEA–21 language that allows for the Secretary to authorize certain exceptions to the conformity provision. These exceptions relate to those projects designed to achieve specific research objectives or, if three stated criteria are met, to those intended to upgrade or expand an ITS system in existence on the date of enactment of the TEA–21. The legislation also included a general exemption for funds used strictly for operations and maintenance of an ITS system in existence on the date of enactment of the TEA–21.

The FHWA acknowledges this omission and has included the appropriate language in this section of the rule.

Section 940.9 Regional ITS Architecture

Several comments were received related to the way the proposed rule referred to developing regional ITS architectures. Eight comments, from State agencies and metropolitan planning organizations, supported an incremental approach to developing regional ITS architectures, starting with project ITS architectures and building them together. Four other comments, from metropolitan planning organizations and industry associations, noted that an ad hoc regional ITS architecture developed incrementally through projects would result in an architecture less robust than if there were a single, initial effort to develop it.

Also, thirteen comments from the Association of American State Highway and Transportation Officials (AASHTO) and a number of States recommended extending the time for developing regional ITS architectures, as the proposed two year implementation would be too short. Ten of the commenters preferred four years in order to acquire the necessary resources for developing regional ITS architectures.

Most commenters were in agreement with the content of the regional ITS architecture as defined in the proposed rule. However, there were 19 comments that dealt with confusion over the definition of both ''conceptual design'' and ''concept of operations.'' In addition, there were 17 other comments on the makeup of the stakeholders, involvement of the private sector, and the need and desirability of ''agreements'' between stakeholders.

The comments indicated confusion regarding the development of regional ITS architectures, and especially so in discussing the period of time for their development. Therefore, the final rule has clarified the time period for developing regional ITS architectures by adopting the proposed extension to four years subsequent to beginning to deploy ITS projects (§ 940.9(c)), or four years from the effective date of this rule for those areas that are currently deploying ITS projects (§ 940.9(b)). In clarifying the time for development, this rule has eliminated any references to specific methods for developing regional ITS architectures. By not prescribing any methods, the rule provides flexibility to a region in deciding how it should develop its regional ITS architecture. Guidance and information related to developing regional ITS architectures is available from FHWA Division Offices and from the ITS web site, *http://www.its.dot.gov*, and will be expanded to provide assistance in meeting the intent of the rule.

Both the terms ''conceptual design'' and ''concept of operations'' have been deleted from the final rule. In their stead are descriptions of the content that is expected to form the basis for a regional ITS architecture. This content has not significantly changed from that defined in the NPRM but is now contained in § 940.9(d). The level of detail required is to the architecture flow level as defined in the National ITS Architecture. The regional ITS architecture must identify how agencies, modes, and systems will interact and operate if the architecture is to fulfill the objective of promoting ITS integration within a region.

The relevant stakeholders for a region will vary from region to region. The list articulated in § 940.9(a) is representative only and not meant to be inclusive or exclusive. On the specific issue of private sector participation, if the private sector is deploying ITS systems in a region or otherwise providing an ITS-based service, it would be appropriate to engage them in the development of a regional ITS architecture. Because of these variations from region to region, the FHWA felt it inappropriate to attempt to define an all inclusive list of stakeholders. The group of relevant stakeholders will be a function of how the region is defined and how transportation services are provided to the public. Section 940.9(d)(4) specifies that in the development of the regional ITS architecture, it shall include ''any agreements (existing or new) required for operations.'' The formalization of these types of agreements is at the discretion of the region and participating stakeholders.

There were 14 comments from a broad range of organizations questioning how existing regional ITS architectures, strategic plans or ITS Early Deployment Plans would be treated under this rule. It is the intent of the FHWA that any existing ITS planning documents should be used to the extent practical to meet the requirements of this rule. If a regional ITS architecture is in place, is up to date, and addresses all the requirements of a regional ITS architecture as described in this rule, there is no requirement to develop a ''new'' one. If the existing regional ITS architecture does not address all the requirements of the rule, it may be possible to update it so that it meets the regional ITS architecture requirements of this rule. What is necessary is that the end result is an architecture that meets the requirements of this rule and properly addresses the ITS deployments and integration opportunities of that region. This issue is specifically addressed in § 940.9(e) of this rule.

There were five comments related to the impact of this rule on legacy systems (*i.e.*, ITS systems already in place) and requesting some sort of ''grandfathering'' for them. The language in § 940.11(g) of the final rule clarifies the grandfathering or staging aspects of the process. The final rule does not require any changes or modifications to existing systems to conform to the National ITS Architecture. It is very likely that a regional ITS architecture developed by the local agencies and other stakeholders would call for changes to legacy systems over time to support desired integration. However, such changes would not be required by the FHWA; they would be agreed upon by the appropriate stakeholders as part of the development of the regional ITS architecture.

There were 15 comments dealing with the maintenance process and status of the National ITS Architecture. Two comments suggested the need for the FHWA to formally adopt the National ITS Architecture. Four other comments also supported the formalization of a process for maintaining or updating it with the full opportunity for public input.

Conformance with the National ITS Architecture is interpreted to mean the use of the National ITS Architecture to develop a regional ITS architecture, and the subsequent adherence of all ITS projects to that regional ITS architecture. This rule requires that the National ITS Architecture be used as a resource in developing a regional ITS architecture.

As a technical resource, it is important that the National ITS Architecture be maintained and updated as necessary in response to user input or to add new user services, but formal adoption of the National ITS Architecture is not necessary. However, the FHWA recognizes the need to maintain the National ITS Architecture and to establish an open process for configuration control that includes public participation. The process currently used by the DOT to maintain the National ITS Architecture is very rigorous and involves significant public participation. That process is currently being reviewed by the DOT with the intent of establishing a configuration management process that engages the public at key stages and ensures a consensus for updating the National ITS Architecture.

Four comments suggested that this rule should not be implemented until the National ITS Architecture was complete. The National ITS Architecture will never stop evolving since there always is a potential need to regularly update it as more is learned about ITS deployment. The FHWA believes the National ITS Architecture is developed to a stage where it can be used as a resource in developing regional ITS architectures, as required by this rule.

Seventeen comments asked the FHWA to define the agency that is responsible for the development and maintenance of the regional ITS architecture; specifically MPOs and/or the State as those entities that are already responsible for the planning process.

The FHWA did not define the responsibility for either creating or maintaining the regional ITS architecture to a specific entity because of the diversity of transportation agencies and their roles across the country. It is recognized that in some regions traditional State and MPO boundaries may not meet the needs of the traveling public or the transportation community. This is also why the FHWA did not rigidly define a region. The FHWA encourages MPOs and States to include the development of their regional ITS architectures as part of their transportation planning processes. However, the decision is best left to the region to determine the approach that best reflects their needs, as indicated in § 940.9. It is clear that the value of a regional ITS architecture will only be realized if that architecture is maintained through time. However, in accepting Federal funds under title 23, U.S.C., the State is ultimately responsible for complying with Federal requirements, as provided in 23 U.S.C. 106 and 133.

Four commenters noted that the proposed rule did not adequately address planning for, or committing to, a defined level of operations and maintenance.

The final rule addresses this concern on two primary levels, in the development of the regional ITS architecture and the development of individual projects. Section 940.9(d)(4) specifies that in the development of the regional ITS architecture, it shall include ''any agreements (existing or new) required for operations.'' The formalization of these types of agreements is at the discretion of the region and participating stakeholders.

Also, relative to operations and management at a project level, § 940.11(c)(7) specifies that the systems engineering analysis (required of all ITS projects) includes ''procedures and resources necessary for the operations and management of the system.''

Section 940.11 Project Implementation

In addition to the comments on regional ITS architecture development noted above, the docket received 86 comments on systems engineering and project implementation. These comments revealed that the structure of the NPRM in discussing regional ITS architecture development, project systems engineering analysis, and project implementation was confusing and difficult to read.

To clarify these portions of the rule, the systems engineering and project implementation sections of the NPRM have been combined into § 940.11, Project Implementation. Also, paragraphs that were in the regional ITS architecture section of the NPRM that discussed major ITS projects and the requirements for developing project level ITS architectures have been rewritten to clarify their applicability. Since these paragraphs deal with project development issues, they have been moved to § 940.11(e). A definition for ''project level ITS architecture'' was added in § 940.3 and a description of its contents provided in § 940.11(e).

The docket received 33 comments regarding systems engineering and the systems engineering analysis section of the proposed rule. Most of the comments related to the definition, the process not being necessary except for very large projects, and confusion as to how these requirements relate to existing FHWA policy.

In response to the docket comments, the definition of systems engineering in § 940.3 has been clarified and is more consistent with accepted practice. In order to provide consistency in the regional ITS architecture process, the systems engineering analysis detailed in §§ 940.11(a) through 940.11(c) must apply to all ITS projects regardless of size or budget. However, the analysis should be on a scale commensurate with project scope. To allow for the greatest flexibility at the State and local level, in § 940.11(c), a minimum number of elements have been clearly identified for inclusion in the systems engineering analysis. Many of those elements are currently required as provided in 23 CFR 655.409, which this rule replaces. Recognizing the change in some current practices this type of analysis will require, the FHWA intends to issue guidance, training, and technical support in early 2001 to help stakeholders meet the requirements of the final rule.

Fifty-three comments were submitted regarding ITS standards and interoperability tests. The commenters expressed concern about requiring the use of ITS standards and interoperability tests prematurely, the impact on legacy systems of requiring ITS standards, and confusion regarding the term ''adopted by the DOT.''

In response to the comments, the FHWA has significantly modified the final rule to eliminate reference to the use of standards and interoperability tests prior to adoption in § 940.11(f). Section 940.11(g) addresses the applicability of standards to legacy systems. It is not the intent of the DOT to formally adopt any standard before the standard is mature; and also, not all ITS standards should, or will, be formally adopted by the DOT. Formal adoption of a standard means that the DOT will go through the rulemaking process, including a period of public comment, for all standards that are considered candidates for adoption.

The DOT has developed a set of criteria to determine when a standard could be considered for formal adoption. These criteria include, at a minimum, the following elements:

1. The standard has been approved by a Standard Development Organization (SDO).

2. The standard has been successfully tested in real world applications as appropriate.

3. The standard has received some degree of acceptance by the community served by the standard.

4. Products exist to implement the standard.

5. There is adequate documentation to support the use of the standard.

6. There is training available in the use of the standard where applicable.

Therefore, the intent of the rule is to require the use of a standard only when these criteria have been met, and there has been a separate rulemaking on adoption of the standard.

The only interoperability tests that are currently contemplated by the DOT are those associated with the Commercial Vehicle Operations (CVO) program. These tests are currently being used by States deploying CVO systems and will follow a similar set of criteria for adoption as those defined for standards.

Section 940.13 Project Administration

There were nine comments related to how conformity with the final rule would be determined, and by whom. There were 11 comments about how conformity with the regional ITS architecture would be determined, and by whom. Six comments specifically suggested methods for determining conformance, including a process similar to current Federal planning oversight procedures. Six other commenters suggested that determination be made by the MPO or State. For either case, the comments reflected a lack of clarity as to what documentation would be necessary. There were six related comments suggesting the level of documentation be commensurate with the scale of the planned ITS investments in the region.

In § 940.13 of the final rule, the FHWA has attempted to clarify the process for determining conformance. Conformance of an ITS project with a regional ITS architecture shall be made prior to authorization of funding for project construction or implementation as provided in 23 U.S.C. 106 and 133. We do not intend to create new oversight procedures beyond those provided in 23 U.S.C. 106 and 133, but in those cases where oversight and approval for ITS projects is assumed by the State, the State will be responsible for ensuring compliance with this regulation and the FHWA's oversight will be through existing processes.

There were 14 comments concerning the documentation requirements of the proposed rule and generally suggesting they be reduced. Certainly the development of a regional ITS architecture and evidence of conformance of a specific project to that regional ITS architecture implies some level of documentation be developed. However, to allow flexibility on the part of the State or local agency in demonstrating compliance with the final rule, no specific documentation is required to be developed or submitted to the FHWA for review or approval. The FHWA recognizes the need to be able to scale the regional ITS architecture and the associated documentation to the needs of the region. Section 940.9(a) of the final rule contains specific language allowing such scaling.

Summary of Requirements

I. The Regional ITS Architecture

This final rule on the ITS Architecture and Standards requires the development of a local implementation of the National ITS Architecture referred to as a regional ITS architecture. The regional ITS architecture is tailored to meet local needs, meaning that it does not address the entire National ITS Architecture and can also address services not included in the National ITS Architecture. The regional ITS architecture shall contain a description of the region and the identification of the participating agencies and other stakeholders; the roles and responsibilities of the participating agencies and other stakeholders; any agreements needed for operation; system functional requirements; interface requirements and information exchanges with planned and existing systems; identification of applicable standards; and the sequence of projects necessary for implementation. Any changes made in a project design that impact the regional ITS architecture shall be identified and the appropriate revisions made and agreed to in the regional ITS architecture.

Any region that is currently implementing ITS projects shall have a regional ITS architecture within four years of the effective date of this rule. All other regions not currently implementing ITS projects shall have a regional ITS architecture within four years of the first ITS project for that region advancing to final design. In this context, a region is a geographical area that is based on local needs for sharing information and coordinating operational strategies among multiple projects. A region can be specified at a metropolitan, Statewide, multi-State, or corridor level. Within a metropolitan area, the metropolitan planning area should be the minimum area that is considered when establishing the boundaries of a region for purposes of developing a regional ITS architecture. A regional approach promotes integration of transportation systems. The size of the region should reflect the breadth of the integration of transportation systems.

II. Project Development

Additionally, this rule requires that all ITS projects be developed using a systems engineering analysis. All ITS projects that have not yet advanced to final design are required to conform to the system engineering requirements in § 940.11 upon the effective date of this rule. Any ITS project that has advanced to final design by the effective date of this rule is exempt from the requirements of § 940.11. When the regional ITS architecture is completed, project development will be based on the relevant portions of it which the project implements. Prior to completion of the regional ITS architecture, major ITS projects will develop project level ITS architectures that are coordinated with the development of the regional ITS architecture. ITS projects will be required to use applicable ITS standards and interoperability tests that have been officially adopted by the DOT. Where multiple standards exist, it will be the responsibility of the stakeholders to determine how best to achieve the interoperability they desire.

Rulemaking Analyses and Notices

Executive Order 12866 (Regulatory Planning and Review) and DOT Regulatory Policies and Procedures

The FHWA has determined that this action is not a significant regulatory action within the meaning of Executive Order 12866 or significant within the meaning of the Department of Transportation's regulatory policies and procedures. It is anticipated that the economic impact of this rulemaking will be minimal. This determination is based upon preliminary and final regulatory assessments prepared for this action that indicate that the annual impact of the rule will not exceed $100 million nor will it adversely affect the economy, a sector of the economy, productivity, jobs, the environment, public health, safety, or State, local, or tribal governments. In addition, the agency has determined that these changes will not interfere with any action taken or planned by another agency and will not materially alter the budgetary impact of any entitlements, grants, user fees, or loan programs. Copies of the preliminary and final regulatory assessments are included in the docket.

Costs

The FHWA prepared a preliminary regulatory evaluation (PRE) for the NPRM and comments were solicited. That analysis estimated the total costs of this rule over 10 years to be between $38.1 million and $44.4 million (the net present value over 10 years was between $22.3 million and $31.2 million). The annual constant dollar impact was estimated to range between $3.2 million and $4.4 million. We believe that the

cost estimates as stated in the PRE are negligible. The FHWA received only one comment in response to the PRE. That commenter, the Capital District Transportation Committee of Albany, New York suggested that our cost estimates were too low, but provided no further detail or rationale which would cause us to reconsider or increase our cost estimates in the initial regulatory evaluation.

These 10-year cost estimates set forth in the PRE included transportation planning cost increases, to MPOs ranging from $10.8 million to $13.5 million, and to States from $5.2 million to $7.8 million associated with our initial requirement to develop an ITS integration strategy that was proposed as part of the metropolitan and statewide planning rulemaking effort. The agency now plans to advance that proposed ITS integration strategy in the planning rule on a different time schedule than this final rule. Thus, the costs originally set forth in the PRE for the ITS integration strategy have been eliminated from the final cost estimate in the final regulatory evaluation (FRE) for this rule.

In the FRE, the agency estimates the cost of this rule to be between $1 million an $16 million over ten years, which are the estimated costs of this rule to implementing agencies for the development of the regional ITS architectures. These costs do not include any potential additional implementation costs for individual projects which are expected to be minimal and were extremely difficult to estimate. Thus, the costs to the industry are less than that originally estimated in the agency's NPRM.

Benefits

In the PRE, the FHWA indicated that the non-monetary benefits derived from the proposed action included savings from the avoidance of duplicative development, reduced overall development time, and earlier detection of potential incompatibilities. We stated that, as with project implementation impacts, the benefits of the rule are very difficult to quantify in monetary terms. Thus, we estimated that the coordination guidance provided through implementation of the rule could provide savings of approximately $150,000 to any potential entity seeking to comply with the requirements of section 5206(e) of the TEA–21 as compared with an entity having to undertake compliance individually. The costs may be offset by benefits derived from the reduction of duplicative deployments, reduced overall development time, and earlier detection of potential incompatibilities.

In developing a final regulatory evaluation for this action, we did not denote a significant change in any of the benefits anticipated by this rule. This is so notwithstanding the fact that our planning costs for the ITS integration strategy have been eliminated from the final cost estimate. The primary benefits of this action that result from avoidance of duplicative development, reduced overall development time, and earlier detection of potential incompatibilities will remain the same.

In sum the agency believes that the option chosen in this action will be most effective at helping us to implement the requirements of section 5206(e) of the TEA–21. In developing the rule, the FHWA has sought to allow broad discretion to those entities impacted, in levels of response and approach that are appropriate to particular plans and projects, while conforming to the requirements of the TEA–21. The FHWA has considered the costs and benefits of effective implementation of ITS through careful and comprehensive planning. Based upon the information above, the agency anticipates that the economic impact associated with this rulemaking action is minimal and a full regulatory evaluation is not necessary.

Regulatory Flexibility Act

In compliance with the Regulatory Flexibility Act (5 U.S.C. 601–612), the FHWA has evaluated, through the regulatory assessment, the effects of this action on small entities and has determined that this action will not have a significant economic impact on a substantial number of small entities. Small businesses and small organizations are not subject to this rule, which applies to government entities only. Since § 940.9(a) of this rule provides for regional ITS architectures to be developed on a scale commensurate with the scope of ITS investment in the region, and § 940.11(b) provides for the ITS project systems engineering analysis to be on a scale commensurate with the project scope, compliance requirements will vary with the magnitude of the ITS requirements of the entity. Small, less complex ITS projects have correspondingly small compliance documentation requirements, thereby accommodating the interest of small government entities. Small entities, primarily transit agencies, are accommodated through these scaling provisions that impose only limited requirements on small ITS activities. For these reasons, the FHWA certifies that this action will not have a significant impact on a substantial number of small entities.

Unfunded Mandates Reform Act of 1995

This action does not impose unfunded mandates as defined by the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4, March 22, 1995, 109 Stat. 48). This rule will not result in an expenditure by State, local, and tribal governments, in the aggregate, or by the private sector, of $100 million or more in any one year.

Executive Order 13132 (Federalism)

This action has been analyzed in accordance with the principles and criteria contained in Executive Order 13132, dated August 4, 1999, and the FHWA has determined that this action does not have sufficient federalism implications to warrant the preparation of a federalism assessment. The FHWA has also determined that this action does not preempt any State law or State regulation or affect the State's ability to discharge traditional State governmental functions.

Executive Order 12372 (Intergovernmental Review)

Catalog of Federal Domestic Assistance Program Number 20.205, Highway planning and construction. The regulations implementing Executive Order 12372 regarding intergovernmental consultation on Federal programs and activities apply to this program.

Paperwork Reduction Act of 1995

This action does not contain information collection requirements for the purposes of the Paperwork Reduction Act of 1995, 44 U.S.C. 3501–3520.

Executive Order 12988 (Civil Justice Reform)

This action meets applicable standards in sections 3(a) and 3(b)(2) of Executive Order 12988, Civil Justice Reform, to minimize litigation, eliminate ambiguity, and reduce burden.

Executive Order 13045 (Protection of Children)

We have analyzed this action under Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks. This rule is not an economically significant rule and does not concern an environmental risk to health or safety that may disproportionately affect children.

Executive Order 12630 (Taking of Private Property)

This rule does not effect a taking of private property or otherwise have taking implications under Executive Order 12630, Government Actions and Interference with Constitutionally Protected Property Rights.

National Environmental Policy Act

The agency has analyzed this action for the purposes of the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321–4347), and has determined that this action will not have any effect on the quality of the environment.

Regulation Identification Number

A regulation identification number (RIN) is assigned to each regulatory action listed in the Unified Agenda of Federal Regulations. The Regulatory Information Service Center publishes the Unified Agenda in April and October of each year. The RIN contained in the heading of this document can be used to cross reference this proposed action with the Unified Agenda.

List of Subjects

23 CFR Part 655

Design standards, Grant programs-transportation, Highways and roads, Incorporation by reference, Signs and symbols, Traffic regulations.

23 CFR Part 940

Design standards, Grant programs-transportation, Highways and roads, Intelligent transportation systems.

Issued on: January 2, 2001.

Kenneth R. Wykle,

Federal Highway Administrator.

In consideration of the foregoing, the FHWA amends Chapter I of title 23, Code of Federal Regulations, as set forth below:

PART 655—[AMENDED]

1. The authority citation for part 655 continues to read as follows:

Authority: 23 U.S.C. 101(a), 104, 109(d), 114(a), 217, 315, and 402(a); 23 CFR 1.32, and 49 CFR 1.48(b).

Subpart D—[Removed and reserved]

2. Remove and reserve subpart D of part 655, consisting of §§ 655.401, 655.403, 655.405, 655.407, 655.409, 655.411.

3. Add a new subchapter K, consisting of part 940, to read as follows:

Subchapter K—Intelligent Transportation Systems

PART 940—INTELLIGENT TRANSPORTATION SYSTEM ARCHITECTURE AND STANDARDS

Sec.
940.1 Purpose.
940.3 Definitions.
940.5 Policy.
940.7 Applicability.
940.9 Regional ITS architecture.
940.11 Project implementation.
940.13 Project administration.

Authority: 23 U.S.C. 101, 106, 109, 133, 315, and 508; sec 5206(e), Public Law 105–178, 112 Stat. 457 (23 U.S.C. 502 note); and 49 CFR 1.48.

§ 940.1 Purpose.

This regulation provides policies and procedures for implementing section 5206(e) of the Transportation Equity Act for the 21st Century (TEA–21), Public Law 105–178, 112 Stat. 457, pertaining to conformance with the National Intelligent Transportation Systems Architecture and Standards.

§ 940.3 Definitions.

Intelligent Transportation System (ITS) means electronics, communications, or information processing used singly or in combination to improve the efficiency or safety of a surface transportation system.

ITS project means any project that in whole or in part funds the acquisition of technologies or systems of technologies that provide or significantly contribute to the provision of one or more ITS user services as defined in the National ITS Architecture.

Major ITS project means any ITS project that implements part of a regional ITS initiative that is multi-jurisdictional, multi-modal, or otherwise affects regional integration of ITS systems.

National ITS Architecture (also ''national architecture'') means a common framework for ITS interoperability. The National ITS Architecture comprises the logical architecture and physical architecture which satisfy a defined set of user services. The National ITS Architecture is maintained by the United States Department of Transportation (DOT) and is available on the DOT web site at *http://www.its.dot.gov.*

Project level ITS architecture is a framework that identifies the institutional agreement and technical integration necessary to interface a major ITS project with other ITS projects and systems.

Region is the geographical area that identifies the boundaries of the regional ITS architecture and is defined by and based on the needs of the participating agencies and other stakeholders. In metropolitan areas, a region should be no less than the boundaries of the metropolitan planning area.

Regional ITS architecture means a regional framework for ensuring institutional agreement and technical integration for the implementation of ITS projects or groups of projects.

Systems engineering is a structured process for arriving at a final design of a system. The final design is selected from a number of alternatives that would accomplish the same objectives and considers the total life-cycle of the project including not only the technical merits of potential solutions but also the costs and relative value of alternatives.

§ 940.5 Policy.

ITS projects shall conform to the National ITS Architecture and standards in accordance with the requirements contained in this part. Conformance with the National ITS Architecture is interpreted to mean the use of the National ITS Architecture to develop a regional ITS architecture, and the subsequent adherence of all ITS projects to that regional ITS architecture. Development of the regional ITS architecture should be consistent with the transportation planning process for Statewide and Metropolitan Transportation Planning.

§ 940.7 Applicability.

(a) All ITS projects that are funded in whole or in part with the highway trust fund, including those on the National Highway System (NHS) and on non-NHS facilities, are subject to these provisions.

(b) The Secretary may authorize exceptions for:

(1) Projects designed to achieve specific research objectives outlined in the National ITS Program Plan under section 5205 of the TEA–21, or the Surface Transportation Research and Development Strategic Plan developed under 23 U.S.C. 508; or

(2) The upgrade or expansion of an ITS system in existence on the date of enactment of the TEA–21, if the Secretary determines that the upgrade or expansion:

(i) Would not adversely affect the goals or purposes of Subtitle C (Intelligent Transportation Systems Act of 1998) of the TEA–21;

(ii) Is carried out before the end of the useful life of such system; and

(iii) Is cost-effective as compared to alternatives that would meet the conformity requirement of this rule.

(c) These provisions do not apply to funds used for operations and maintenance of an ITS system in existence on June 9, 1998.

§ 940.9 Regional ITS architecture.

(a) A regional ITS architecture shall be developed to guide the development of ITS projects and programs and be consistent with ITS strategies and projects contained in applicable transportation plans. The National ITS Architecture shall be used as a resource in the development of the regional ITS architecture. The regional ITS architecture shall be on a scale commensurate with the scope of ITS investment in the region. Provision should be made to include participation from the following agencies, as appropriate, in the development of the regional ITS architecture: Highway agencies; public safety agencies (*e.g.,* police, fire, emergency/medical); transit operators; Federal lands agencies; State motor carrier agencies; and other operating agencies necessary to fully address regional ITS integration.

(b) Any region that is currently implementing ITS projects shall have a regional ITS architecture by February 7, 2005.

(c) All other regions not currently implementing ITS projects shall have a regional ITS architecture within four years of the first ITS project for that region advancing to final design.

(d) The regional ITS architecture shall include, at a minimum, the following:

(1) A description of the region;

(2) Identification of participating agencies and other stakeholders;

(3) An operational concept that identifies the roles and responsibilities of participating agencies and stakeholders in the operation and implementation of the systems included in the regional ITS architecture;

(4) Any agreements (existing or new) required for operations, including at a minimum those affecting ITS project interoperability, utilization of ITS related standards, and the operation of the projects identified in the regional ITS architecture;

(5) System functional requirements;

(6) Interface requirements and information exchanges with planned and existing systems and subsystems (for example, subsystems and architecture flows as defined in the National ITS Architecture);

(7) Identification of ITS standards supporting regional and national interoperability; and

(8) The sequence of projects required for implementation.

(e) Existing regional ITS architectures that meet all of the requirements of paragraph (d) of this section shall be considered to satisfy the requirements of paragraph (a) of this section.

(f) The agencies and other stakeholders participating in the development of the regional ITS architecture shall develop and implement procedures and responsibilities for maintaining it, as needs evolve within the region.

§ 940.11 Project implementation.

(a) All ITS projects funded with highway trust funds shall be based on a systems engineering analysis.

(b) The analysis should be on a scale commensurate with the project scope.

(c) The systems engineering analysis shall include, at a minimum:

(1) Identification of portions of the regional ITS architecture being implemented (or if a regional ITS architecture does not exist, the applicable portions of the National ITS Architecture);

(2) Identification of participating agencies roles and responsibilities;

(3) Requirements definitions;

(4) Analysis of alternative system configurations and technology options to meet requirements;

(5) Procurement options;

(6) Identification of applicable ITS standards and testing procedures; and

(7) Procedures and resources necessary for operations and management of the system.

(d) Upon completion of the regional ITS architecture required in §§ 940.9(b) or 940.9(c), the final design of all ITS projects funded with highway trust funds shall accommodate the interface requirements and information exchanges as specified in the regional ITS architecture. If the final design of the ITS project is inconsistent with the regional ITS architecture, then the regional ITS architecture shall be updated as provided in the process defined in § 940.9(f) to reflect the changes.

(e) Prior to the completion of the regional ITS architecture, any major ITS project funded with highway trust funds that advances to final design shall have a project level ITS architecture that is coordinated with the development of the regional ITS architecture. The final design of the major ITS project shall accommodate the interface requirements and information exchanges as specified in this project level ITS architecture. If the project final design is inconsistent with the project level ITS architecture, then the project level ITS architecture shall be updated to reflect the changes. The project level ITS architecture is based on the results of the systems engineering analysis, and includes the following:

(1) A description of the scope of the ITS project;

(2) An operational concept that identifies the roles and responsibilities of participating agencies and stakeholders in the operation and implementation of the ITS project;

(3) Functional requirements of the ITS project;

(4) Interface requirements and information exchanges between the ITS project and other planned and existing systems and subsystems; and

(5) Identification of applicable ITS standards.

(f) All ITS projects funded with highway trust funds shall use applicable ITS standards and interoperability tests that have been officially adopted through rulemaking by the DOT.

(g) Any ITS project that has advanced to final design by February 7, 2001 is exempt from the requirements of paragraphs (d) through (f) of this section.

§ 940.13 Project administration.

(a) Prior to authorization of highway trust funds for construction or implementation of ITS projects, compliance with § 940.11 shall be demonstrated.

(b) Compliance with this part will be monitored under Federal-aid oversight procedures as provided under 23 U.S.C. 106 and 133.

[FR Doc. 01–391 Filed 1–5–01; 8:45 am]

BILLING CODE 4910–22–P

Appendix B

FTA Notice:

National ITS Architecture Policy

on Transit Projects

This appendix includes the full text of the FTA Notice applicable to their policy on ITS architecture and standards.

1. The full text of the Federal Register was obtained from the U.S. DOT ITS website at http://www.its.dot.gov/aconform/Policy.htm; by following the link to: **Federal Transit Administrator National ITS Architecture Policy on Transit Projects (PDF Version).**

Federal Register

Monday
January 8, 2001

Part IV

Department of Transportation

Federal Highway Administration

23 CFR Parts 655 and 940
Intelligent Transportation System Architecture and Standards; Final Rule

Federal Transit Administration

Federal Transit Administration National ITS Architecture Policy on Transit Projects; Notice

[Insert paper copy of printed .pdf for **FTA** here; pp. 1455-1459]

DEPARTMENT OF TRANSPORTATION

Federal Transit Administration

Federal Transit Administration National ITS Architecture Policy on Transit Projects

AGENCY: Federal Transit Administration (FTA), DOT.

ACTION: Notice.

SUMMARY: The Federal Transit Administration (FTA) announces the FTA National ITS Architecture Policy on Transit Projects, which is defined in this document. The National ITS Architecture Policy is a product of statutory changes made by the Transportation Equity Act for the 21st Century (TEA–21) (Pub. L. 105–178) enacted on June 9, 1998. The National ITS Architecture Policy is also a product of the Request for Comment on the National ITS Architecture Consistency Policy for Project Development that was published in the **Federal Register** on May 25, 2000. Because it is highly unlikely that the entire National ITS Architecture would be fully implemented by any single metropolitan area or State, this policy requires that the National ITS Architecture be used to develop a local implementation of the National ITS Architecture, which is referred to as a ''regional ITS architecture.'' Therefore, conformance with the National ITS Architecture is defined under this policy as development of a regional ITS architecture within four years after the first ITS project advancing to final design, and the subsequent adherence of ITS projects to the regional ITS architecture. The regional ITS architecture is based on the National ITS Architecture and consists of several parts including the system functional requirements and information exchanges with planned and existing systems and subsystems and identification of applicable standards, and would be tailored to address the local situation and ITS investment needs.

DATE: *Effective Date:* This policy is effective from February 7, 2001.

ADDRESSES: For FTA staff, Federal Transit Administration, Department of Transportation (DOT), 400 Seventh Street, SW., Washington, DC 20590.

FOR FURTHER INFORMATION CONTACT: *For Technical Information:* Ron Boenau, Chief, Advanced Public Transportation Systems Division (TRI–11), at (202) 366–0195 or Brian Cronin, Advanced Public Transportation Systems Division (TRI–11), at (202) 366–8841. *For Legal Information:* Richard Wong, Office of the Chief Council (202) 366–1936. The policy is posted on the FTA website on the Internet under http://www.fta.dot.gov.

Electronic Access: An electronic copy of this document may be downloaded using a computer, modem and suitable communications software from the Government Printing Office's Electronic Bulletin Board Service at (202) 512–1661. Internet users may reach the Office of the Federal Register's home page at: *http://www.nara.gov/fedreg* and the Government Printing Office's web page at: *http://www.access.gpo.gov/nara.*

Internet users may access all comments received by the U.S. DOT Dockets, Room PL–401, for the Request for Comment that was issued on May 25, 2000 which were used to clarify this Policy, by using the universal resource locator (URL): *http://dms.dot.gov.* It is available 24 hours each day, 365 days each year. Please follow the instructions online for more information and help. The docket number for the Request for Comment was FTA–99–6417.

SUPPLEMENTARY INFORMATION:

I. Background

The Federal Transit Administration (FTA) published a Request for Comment on May 25, 2000, to implement section 5206(e) of the Transportation Equity Act for the 21st Century (TEA–21) (Pub.L. 105–178), which was enacted on June 9, 1998.

Section 5206(e) of TEA–21 requires that the Secretary of the DOT must

> Ensure that intelligent transportation system projects carried out using funds made available from the Highway Trust Fund, * * * conform to the national architecture, applicable standards or provisional standards, and protocols developed under subsection(a).

The objectives for the FTA's National ITS Architecture Policy for Transit Projects are to:

- Provide requirements for ITS project development for projects implemented wholly or partially with highway trust funds.
- Achieve system integration of ITS projects funded through the highway trust fund with other transportation projects planned for the region, which will thereby enable electronic information and data sharing for advanced management and operations of the ITS infrastructure.
- Engage stakeholders (state DOT's, transit agencies, public safety agencies, other transportation operating agencies) in the project development and implementation process.
- Facilitate future expansion capability of the ITS infrastructure.
- Save design time through use of the National ITS Architecture requirements definitions and market packages.

FTA has developed this policy to meet the TEA–21 requirement contained in Section 5206(e) and the DOT/FTA goal to encourage effective deployment of ITS projects. Additionally, DOT and FTA encourage the coordination of local ITS strategies and projects to help meet national and local goals for mobility, accessibility, safety, security, economic growth and trade, and the environment.

The National ITS Architecture documents were developed by the US DOT, and are updated on an as-needed basis. Current work to update the National ITS Architecture is the Archive Data User Service, which provides the ability to store and process data over an extended period of time. FTA is pursuing the addition of a Rail ITS program for travel management, vehicles, and users. New versions of the documents, when they are issued, will be available from the US DOT on the DOT website at *www.its.dot.gov.* Version 3.0 is the latest version of the National ITS Architecture.

The first section of this policy contains a complete analysis of and response to the comments provided to the docket. The remainder of the Notice contains the FTA National ITS Architecture Policy for Transit Projects.

II. Public Comments

Eighteen comments were submitted to the FTA National ITS Architecture Consistency Policy for Project Development docket by the September 23, 2000, close of the comment period. Comments were submitted by transit operators (3), state and local governments (5), metropolitan planning organizations (4), industry associations (3), and consultants (3). As indicated earlier, a complete analysis and response to the docket comments is provided. In order to facilitate focused comments, FTA asked a series of questions about the policy. The public comment section is organized first by analysis and response to the specific questions asked; second by responses to comments not specifically related to one of the nine questions; and finally by an explanation of other changes. In general, the comments received were positive. Therefore, the FTA has kept the scope of the policy and made appropriate clarifications to the text of the policy to address concerns raised in comments. In response to the many comments requesting it, the FTA, in association with the ITS Joint Program Office, in the Federal Highway Administration (FHWA) will also provide a program of guidance, training, and technical

support to assist with the implementation of this policy.

Questions

1. Do reviewers understand the definition of a major ITS investment as defined in Section IV, ''Regional ITS Architecture,'' or is more clarification needed, and if so please explain?

Comments: Nine commenters submitted responses to this question. In general, commenters found the definition confusing, and did not understand why major ITS projects need to be called out over other ITS projects. One commenter noted that small dollar projects can have a major impact on future development, while an expensive system may have no impact. Another commenter was unclear about the term ''supporting national interoperability.''

Response: Of specific concern to the agency is the timing in which requirements for this policy are enacted. As such, the terms ''major ITS investment'' and ''major ITS project'' were provided so as to distinguish between projects that will require immediate correlation to the regional ITS architecture and those that do not. The term ''major ITS investment'' was also found to be redundant to ''major ITS project'' and was removed from the policy. Guidance on the classification of ''ITS projects'' and ''major ITS projects'' will be provided upon enactment of the policy.

2. Do reviewers understand the definition of an ITS project, or is more clarification needed, and if so please explain?

Comments: Nine commenters submitted responses to this question. Commenters found this term less confusing than ''major ITS investments,'' but requested more clarification. Some commenters proposed alternative language or asked for clarification on particular examples.

Response: The agency has clarified the definition by deleting the potentially ambiguous examples provided and will develop guidance material that provides examples of projects that will be considered ITS projects and those that will not be considered ITS projects. In general, unless a technology project is implementing one of the ITS user services defined in the National ITS Architecture, it would not be considered an ITS project.

3. Do reviewers understand the difference between a ''major ITS investment,'' and an ''ITS project'', or is more clarification needed, and if so please explain?

Comments: Eight commenters submitted responses to this question. Commenters had mixed responses, as some commenters found the differences to be clear, while others requested that guidance material be provided to further explain the differences. Commenters did suggest that a ''project'' is a ''project'' and should not be quantified in terms of dollar amounts.

Response: As described in the response to question 1, the agency has removed the term ''major ITS investment'' and will provide guidance on the term ''ITS project.''

4. Are the requirements for development of a Regional ITS Architecture clear? If not, what is not clear about the requirement?

Comment: Nine commenters provided responses to the question. Most commenters found the requirements to be unclear and/or did not agree with the requirements. One commenter suggested that a region will have different definitions. One commenter noted that a concept of operations and conceptual design are normally conducted at the project level. One commenter requested clarification as to the appropriate place to program projects, in the regional ITS architecture, or in the planning process.

Response: Of specific concern to the agency is providing a flexible policy that allows the transportation stakeholders to define their region and the roles and responsibilities of each stakeholder during the development of a regional ITS architecture. As such, the agency has clarified the requirements of a regional ITS architecture and also removed the specific requirements for a Concept of Operations and a Conceptual Design. Instead, the agency has listed the specific requirements for a regional ITS architecture and has left the development, documentation, and maintenance of the regional ITS architecture to the stakeholders involved. Also, the region is defined as ''a geographical area that is based on local needs for sharing information and coordinating operational strategies among multiple projects.'' A region can be specified at a metropolitan, Statewide, multi-State, or corridor level. Additional guidance on this topic will be provided after enactment of the policy.

5. What additional guidance, if any, is required to explain how to implement this proposed policy?

Comments: Ten commenters provided responses to this question. All the comments called for additional guidance on the specifics of implementing this policy. Commenters requested guidance on the definition of a ''region,'' the ownership of the regional ITS architecture, determination of stakeholders, regional ITS architecture maintenance, certification and simplification of definitions. One commenter requested that the policy be limited to only the ITS Integration Requirements defined in the Metropolitan and Statewide Planning NPRM.

Response: The agency will provide guidance materials to address the comments suggested. The ITS Integration Strategy, as defined in the NPRM, is part of the planning process and as such does not satisfactorily address project level requirements.

6. The proposed rule allows regions to develop a Regional Architecture as a separate activity, or incrementally, as major ITS investments are developed within a region. Do reviewers anticipate particular difficulties with implementing and documenting either approach?

Comments: Nine commenters provided responses to this question. Commenters largely did not favor one approach over the other. One commenter suggested that a regional ITS architecture with a twenty year time horizon is impractical and infeasible. One commenter suggested that either approach would require additional staff resources.

Response: The agency was concerned about the time horizon and development process needed to create a regional ITS architecture within the time period required and as a result suggested both an incremental and initial comprehensive approach. Based on the responses, the agency has modified the policy to be silent on the approach used to develop the regional ITS architecture. Instead, the agency focused on the products included in the regional ITS architecture, the effective date of the requirements, and the catalyst for requiring the development of a regional ITS architecture.

7. Do reviewers understand the relationships between the Integration Strategy, the Regional ITS Architecture, and the ITS Project Architecture?

Comment: Seven commenters provided a response to this question. In general, commenters did not understand the relationship between the Integration Strategy, regional ITS architecture, and the ITS Project Architecture. One commenter suggested that flexibility in application of project architecture must be maintained to accommodate legacy systems and to take advantage of technological innovation, while maintaining the outcome of interoperability, where applicable.

Response: The Agency is concerned with linkage between the planning process and the project development process. However, this policy only deals with the project level requirements.

Planning level requirements, including the Integration Strategy, will be explained as the Metropolitan and Statewide Planning Process rulemaking process is advanced. This policy only requires that the regional ITS architecture should be consistent with the transportation planning process. A definition for a project level ITS architecture has been added to the policy.

8. What additional guidance, if any, is required regarding phasing of this rule?

Comments: Six commenters submitted responses to this question. In general, the commenters stated that the phasing was clear. However, one commenter requested a three-year phase-in period. Several commenters requested that existing projects be exempt from the policy.

Response: The agency has clarified the policy statements that refer to the project status and the applicability of this policy. Projects that have reached final design by the date of this policy are exempt from the policy requirements. The agency has extended the time period for regional ITS architecture development to four years. Any region that is currently implementing ITS projects shall have a regional architecture within four years of the effective date of the final policy. All other regions not currently implementing ITS projects shall have a regional ITS architecture in place within four years of the first ITS project for that region advancing to final design.

9. Are the oversight and documentation requirements clear? If not, what is not clear about the requirements?

Comments: Eight commenters submitted responses to this question. Commenters in general requested more guidance from FTA on oversight and documentation requirements, but few provided suggestions to clarify the requirements. One commenter suggested that checklists to verify consistency requirements will be needed. Other commenters suggested that self-certification should be allowed, but also needs to be clearly defined.

Response: The agency will continue to use normal existing oversight procedures to review grantee compliance with FTA policies and regulations. Normal oversight procedures include the annual risk assessment of grantees performed by regional office staff, triennial reviews, planning process reviews, and project management oversight reviews, as applicable. In TEA–21, FTA was granted authority to use oversight funds to provide technical assistance to grantees in which oversight activities suggested non-compliance with agency policies and regulations. FTA is using oversight funds to specifically hire contractors with ITS experience who will monitor and assist grantees who are at risk of NOT meeting the National ITS Architecture Policy requirements. Additional guidance on oversight and documentation requirements will be provided.

Additional Comments

One commenter suggested that the proposed guidance circular requires that all of the agencies in a region agree before a project can be implemented, thus conferring ''veto'' power over the project. The agency does not intend for the policy to halt ITS deployment in areas where agencies cannot agree on project designs. As part of the regional ITS Architecture development, the agencies can agree to disagree, however, the regional ITS architecture should include a representation of the stand-alone ITS deployments.

One commenter suggests that the proposal infers that existing agreements between agencies will now need to be amended or redone, which would result in a halt in operations of successful ITS projects and prevent the completion of other ITS projects. In response to the comment, the agency has clarified the regional ITS architecture requirements to specify that existing agreements that address the regional ITS architecture requirements are sufficient and that new agreements are not necessarily required.

One commenter noted that a definition of ITS was not included in the policy. The commenter suggested that the definition provided in TEA–21 section 5206(e) should be included in the policy. The agency agrees and has added the definition of ITS to the list of definitions. However, the legislative definition of ITS is broad and other commenters have suggested that if the policy is written to include every new piece of electronics or hardware, then the policy would be too limiting. As a result, the policy is intended to apply only to projects meeting the definition of an ''ITS project'' listed in the ''Definitions'' section of the policy.

One commenter suggested that DOT should ensure that the Federal Highway Administration's (FHWA's) regulation and the FTA policy have the same statutory standing and that their requirements in ITS planning and deployment be consistent if not identical. The FTA and FHWA have different processes and procedures for project development. Therefore, the FHWA has issued a regulation, and FTA has issued the policy. The policy language in each document is consistent and will be carried out in a coordinated fashion, as applicable under FTA and FHWA project management and oversight procedures. FTA and FHWA planning procedures are a joint regulation and as such will be identical.

FTA received some comments regarding the use of standards. Several comments concern the premature use of required standards and interoperability tests, their impact on legacy systems, and confusion regarding the term ''adopted by the USDOT.''

In response to the comments, FTA has significantly modified the final policy to eliminate reference to the use of standards and interoperability tests prior to adoption through formal rulemaking. It is not the intent of the USDOT to formally adopt any standard before the standard is mature; also, not all ITS standards should, or will, be formally adopted by the USDOT. The only interoperability tests that are currently contemplated by the USDOT are those associated with the Commercial Vehicle Operations (CVO) program. These tests are currently being used by States deploying CVO systems and will follow a similar set of criteria for adoption as those defined for standards.

Other Changes

Several commenters expressed concern about linkages to the planning rule and the integration strategy. Comments regarding the portions of the National ITS Architecture conformity process included in the proposed transportation planning rule will be addressed as that rule proceeds to its issuance. The FHWA rule and the parallel FTA policy have been developed without direct reference to the proposed changes to the transportation planning process, including no mention of the development of an integration strategy. However, the policy statement of this guidance notes a link to transportation planning processes, and fully supports those collaborative methods for establishing transportation goals and objectives.

Policy Contents

I. Purpose
II. Definitions
III. Policy
IV. Applicability
V. Regional ITS Architecture
VI. Project Implementation
VII. Project Oversight
VIII. FTA Guidance

I. Purpose

This policy provides procedures for implementing section 5206(e) of the Transportation Equity Act for the 21st

Century, Public Law 105–178, 112 Stat. 547, pertaining to conformance with the National Intelligent Transportation Systems Architecture and Standards.

II. Definitions

Intelligent Transportation Systems (ITS) means electronics, communications or information processing used singly or in combination to improve the efficiency or safety of a surface transportation system.

ITS project means any project that in whole or in part funds the acquisition of technologies or systems of technologies that provide or significantly contribute to the provision of one or more ITS user services as defined in the National ITS Architecture.

Major ITS project means any ITS project that implements part of a regional ITS initiative that is multi-jurisdictional, multi-modal, or otherwise affects regional integration of ITS systems.

National ITS Architecture (also ''national architecture'') means a common framework for ITS interoperability. The National ITS Architecture comprises the logical architecture and physical architecture which satisfy a defined set of user services. The National ITS Architecture is maintained by U.S. DOT (Department of Transportation) and is available on the DOT web site at *http://www.its.dot.gov.*

Project level ITS architecture is a framework that identifies the institutional agreement and technical integration necessary to interface a major ITS project with other ITS projects and systems.

Region is the geographical area that identifies the boundaries of the regional ITS architecture and is defined by and based on the needs of the participating agencies and other stakeholders. A region can be specified at a metropolitan, Statewide, multi-State, or corridor level. In metropolitan areas, a region should be no less than the boundaries of the metropolitan planning area.

Regional ITS architecture means a regional framework for ensuring institutional agreement and technical integration for the implementation of ITS projects or groups of projects.

Systems engineering is a structured process for arriving at a final design of a system. The final design is selected from a number of alternatives that would accomplish the same objectives and considers the total life-cycle of the project including not only the technical merits of potential solutions but also the costs and relative value of alternatives.

III. Policy

ITS projects shall conform to the National ITS Architecture and standards in accordance with the requirements contained in this part. Conformance with the National ITS Architecture is interpreted to mean the use of the National ITS Architecture to develop a regional ITS architecture in support of integration and the subsequent adherence of all ITS projects to that regional ITS architecture. Development of the regional ITS architecture should be consistent with the transportation planning process for Statewide and Metropolitan Transportation Planning (49 CFR part 613 and 621).

IV. Applicability

(a) All ITS projects that are funded in whole or in part with the Highway Trust Fund (including the mass transit account) are subject to these provisions.

(b) The Secretary may authorize exceptions for:

1. Projects designed to achieve specific research objectives outlined in the National ITS Program Plan under section 5205 of the Transportation Equity Act for the 21st Century or the Surface Transportation Research and Development Strategic Plan developed under section 5208 of Title 23, United States Code; or

2. The upgrade or expansion of an ITS system in existence on the date of enactment of the Transportation Equity Act for the 21st Century if the Secretary determines that the upgrade or expansion—

a. Would not adversely affect the goals or purposes of Subtitle C (Intelligent Transportation Systems) of the Transportation Equity Act for the 21st Century and

b. Is carried out before the end of the useful life of such system; and

c. Is cost-effective as compared to alternatives that would meet the conformity requirement of this rule

(c) These provisions do not apply to funds used for Operations and Maintenance of an ITS system in existence on June 9, 1998.

V. Regional ITS Architecture

(a) A regional ITS architecture shall be developed to guide the development of ITS projects and programs and be consistent with ITS strategies and projects contained in applicable transportation plans. The National ITS Architecture shall be used as a resource in the development of the regional ITS architecture. The regional ITS architecture shall be on a scale commensurate with the scope of ITS investment in the region. Provision should be made to include participation from the following agencies, as appropriate, in the development of the regional ITS architecture: Highway agencies; public safety agencies (*e.g.,* police, fire, emergency/medical); transit agencies; federal lands agencies; state motor carrier agencies; and other operating agencies necessary to fully address regional ITS integration.

(b) Any region that is currently implementing ITS projects shall have a regional ITS architecture February 7, 2005.

(c) All other regions not currently implementing ITS projects shall have a regional ITS architecture within four years of the first ITS project for that region advancing to final design.

(d) The regional ITS architecture shall include, at a minimum, the following:

(1) A description of the region;

(2) Identification of participating agencies and other stakeholders;

(3) An operational concept that identifies the roles and responsibilities of participating agencies and stakeholders in the operation and implementation of the systems included in the regional ITS architecture;

(4) Any agreements (existing or new) required for operations, including at a minimum those affecting integration of ITS projects; interoperability of different ITS technologies, utilization of ITS-related standards, and the operation of the projects identified in the regional ITS architecture;

(5) System functional requirements;

(6) Interface requirements and information exchanges with planned and existing systems and subsystems (for example, subsystems and architecture flows as defined in the National ITS Architecture);

(7) Identification of ITS standards supporting regional and national interoperability;

(8) The sequence of projects required for implementation of the regional ITS architecture.

(e) Existing regional ITS architectures that meet all of the requirements of section V(d) shall be considered to satisfy the requirements of V(a).

(f) The agencies and other stakeholders participating in the development of the regional ITS architecture shall develop and implement procedures and responsibilities for maintaining the regional ITS architecture, as needs evolve within the region.

VI. Project Implementation

(a) All ITS projects funded with mass transit funds from the highway trust

fund shall be based on a systems engineering analysis.

(b) The analysis should be on a scale commensurate with the project scope.

(c) The systems engineering analysis shall include, at a minimum:

(1) Identification of portions of the regional ITS architecture being implemented (or if a regional ITS architecture does not exist, the applicable portions of the National ITS Architecture).

(2) Identification of participating agencies' roles and responsibilities;

(3) Requirements definitions:

(4) Analysis of alternative system configurations and technology options to meet requirements;

(5) Analysis of financing and procurement options;

(6) Identification of applicable ITS standards and testing procedures; and

(7) Procedures and resources necessary for operations and management of the system;

(d) Upon completion of the regional ITS architecture required in section V, the final design of all ITS projects funded with highway trust funds shall accommodate the interface requirements and information exchanges as specified in the regional ITS architecture. If the final design of the ITS project is inconsistent with the regional ITS architecture, then the regional ITS architecture shall be updated as per the process defined in V(f) to reflect the changes.

(e) Prior to completion of the regional ITS architecture, any major ITS project funded with highway trust funds that advances to final design shall have a project level ITS architecture that is coordinated with the development of the regional ITS architecture. The final design of the major ITS project shall accommodate the interface requirements and information exchanges as specified in this project level ITS architecture. If the project final design is inconsistent with the project level architecture, then the project level ITS architecture shall be updated to reflect the changes. The project level ITS architecture is based on results of the systems engineering analysis, and includes the following:

(1) A description of the scope of the ITS project

(2) An operational concept that identifies the roles and responsibilities of participating agencies and stakeholders in the operation and implementation of the ITS project;

(3) Functional requirements of the ITS project;

(4) Interface requirements and information exchanges between the ITS project and other planned and existing systems and subsystems; and

(5) Identification of applicable ITS standards

(b) All ITS projects funded with Mass Transit Funds from the Highway Trust Funds shall use applicable ITS standards and interoperability tests that have been officially adopted through rulemaking by the United States Department of Transportation (US DOT).

(c) Any ITS project that has advanced to final design by (effective date of policy) is exempt from the requirements of VI.

VII. Project Oversight

(a) Prior to authorization of Mass Transit Funds from the Highway Trust Fund for acquisition or implementation of ITS projects, grantees shall self-certify compliance with sections V and VI. Compliance with this policy shall be monitored under normal FTA oversight procedures, to include annual risk assessments, triennial reviews, and program management oversight reviews as applicable.

(b) Compliance with the following FTA Circulars shall also be certified:

- C5010.1C, Grant Management Guidelines
- C6100.1B, Application Instructions and Program Management Guidelines

VIII. FTA Guidance

FTA will develop appropriate guidance materials regarding the National ITS Architecture Consistency Policy.

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Nuria I. Fernandez,

Acting Administrator.

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