

Table of Contents

<u>SECTION & DESCRIPTION</u>	<u>PAGE</u>
E.0 Executive Summary	E-1
E.1 ITS Overview	E-1
E.2 Vision for ITS Deployment	E-7
E.3 Highlights of the ITS Strategic Plan for the San Joaquin Valley.....	E-14
E.3.1 Valleywide Strategic Direction	E-14
E.3.2 Priority Projects in Fresno County	E-16
E.3.3 Priority Projects in Kern County	E-16
E.3.4 Priority Projects in Kings County	E-17
E.3.5 Priority Projects in Madera County.....	E-17
E.3.6 Priority Projects in Merced County.....	E-17
E.3.7 Priority Projects in San Joaquin County.....	E-17
E.3.8 Priority Projects in Stanislaus County.....	E-17
E.3.9 Priority Projects in Tulare County.....	E-18
E.4 Deployment Initiatives	E-18
E.5 Benefits of the ITS Strategic Plan	E-19
E.6 A Focus on Implementation	E-20
1.0 Introduction	1-1
1.1 Project Background and Goals.....	1-1
1.2 Benefits of ITS.....	1-5
1.3 ITS Planning Process	1-5
1.4 Stakeholder Participants.....	1-6
1.5 Relationship to Fresno and Kern County ITS Plans.....	1-8
1.6 Benefits of an ITS Strategic Deployment Plan	1-9
1.7 Will ITS Actually Happen?	1-10
1.8 Plan Development Methodology.....	1-11
1.8.1 Development of the ITS Strategic Deployment Plan	1-11
1.9 Strategic Deployment Plan Elements.....	1-14
1.10 Project Consultants	1-14
2.0 Vision Statement	2-1
2.1 Purpose of the ITS Vision.....	2-1
2.2 Vision Elements	2-1
2.2.1 Freeway Management.....	2-1
2.2.2 Traffic Signal Systems.....	2-1
2.2.3 Incident Management	2-2
2.2.4 Public Transportation	2-2
2.2.5 Traveler Information.....	2-2
2.2.6 Agency Coordination and Systems Integration	2-2
2.2.7 Commercial Operations	2-4
2.2.8 Travel Demand	2-4
2.2.9 Emergency Management	2-4
2.2.10 Air Quality.....	2-4
2.2.11 Intermodal and Multi-Modal Cooperation.....	2-4
2.2.12 Configuration Management/Systems Integration	2-5
2.3 San Joaquin Valley ITS Principles.....	2-5
2.4 San Joaquin Valley ITS Goals and Objectives.....	2-7
2.5 Interregional Relationships	2-10
3.0 Regional User Needs and Related User Services	3-1
3.1 Overview.....	3-1
3.3 General Opportunities.....	3-6



Table of Contents

<u>SECTION & DESCRIPTION</u>	<u>PAGE</u>
3.3.1 Fresno County Opportunities	3-7
3.3.2 Kern County Opportunities.....	3-7
3.3.3 Kings County Opportunities	3-8
3.3.4 Madera County Opportunities	3-8
3.3.5 Merced County Opportunities	3-8
3.3.6 San Joaquin County Opportunities	3-9
3.3.7 Stanislaus County Opportunities	3-9
3.3.8 Tulare County Opportunities	3-10
3.4 User Services	3-10
3.4.1 What are User Services?.....	3-10
3.4.2 Why Follow National ITS Architecture Standards?	3-11
3.4.3 Travel and Transportation Management.....	3-12
3.4.4 Public Transportation Operations	3-14
3.4.5 Electronic Payment.....	3-15
3.4.6 Commercial Vehicle Operations.....	3-15
3.4.7 Emergency Management	3-17
3.4.8 Advanced Vehicle Safety Systems	3-17
3.4.9 Information Management	3-18
3.5 Selecting and Prioritizing User Services for Local/Regional Application.....	3-19
3.5.1 Selecting User Services	3-19
3.6 San Joaquin Valley ITS User Services	3-20
3.6.1 Selection of San Joaquin Valley User Services.....	3-20
3.7 San Joaquin Valley ITS User Services	3-27
4.0 Market Packages and Functional Requirements	4-1
4.1 General Definition of Market Packages.....	4-1
4.1.1 Additional Terminology Defined.....	4-2
4.1.2 Market Packages Summary	4-3
4.1.3 Market Package Descriptions	4-3
4.2 Market Packages and User Services.....	4-7
4.3 Market Package Selection	4-10
4.3.1 Development of the Candidate Market Package Master List.....	4-11
4.3.2 Initial Market Package Selection and Relative Prioritization	4-11
4.3.3 Assessment of the Need for Additional Market Packages	4-16
4.3.4 Market Package Screening Evaluation	4-16
4.3.5 Adjustments to Initial Market Package Prioritization	4-20
4.3.6 Final San Joaquin Valley ITS Market Packages.....	4-22
5.0 Regional System Architecture	5-1
5.1 Architecture Overview	5-1
5.1.1 Basic Architecture Overview.....	5-2
5.1.2 Architecture Definitions	5-4
5.1.3 Logical Architecture for San Joaquin Valley.....	5-7
5.1.4 Physical Architecture for San Joaquin Valley	5-8
5.1.5 Communications	5-10
5.2 Overview of Transportation/Facilities.....	5-11
5.3 Operational Concept.....	5-11
5.4 Functional Requirements.....	5-13
5.5 Information Flows and Interface Requirements	5-14
5.6 Relationship to External Architectures.....	5-15
5.6.1 Background and Terminology	5-15
5.7 Identification of Desired Standards	5-16
5.7.1 Standards Elements.....	5-17
5.8 Project Sequencing	5-24



Table of Contents

<u>SECTION & DESCRIPTION</u>	<u>PAGE</u>
5.9 Summary	5-28
6.0 Program Areas and Projects	6-1
6.1 Purpose of Program Areas and Project Descriptions	6-1
6.2 Project Development Process.....	6-1
6.3 Program Areas and Project Organization.....	6-2
6.3.1 Program Areas.....	6-2
6.3.2 Relationships Between Program Areas	6-4
6.3.3 Project Definition Information	6-8
6.4 Valleywide Project Definitions.....	6-9
6.4.1 Program Area 1.0 Traffic/Freeway Management Systems.....	6-10
6.4.2 Program Area 2.0 Incident Management/Emergency Services	6-22
6.4.3 Program Area 3.0 Transit Systems	6-31
6.4.4 Program Area 4.0 Traveler Information Systems.....	6-41
6.4.5 Program Area 5.0 Regional ITS Configuration Management/ Coordination/ Planning.....	6-59
6.5 Multijurisdictional/ County Project Definitions	6-66
6.5.1 Priority Projects in Fresno County	6-66
6.5.2 Priority Projects in Kern County	6-66
6.5.3 Priority Projects in Kings County.....	6-66
6.5.4 Priority Projects in Madera County	6-67
6.5.5 Priority Projects in Merced County	6-67
6.5.6 Priority Projects in San Joaquin County.....	6-67
6.5.7 Priority Projects in Stanislaus County	6-67
6.5.8 Priority Projects in Tulare County.....	6-67
7.0 Deployment Element	7-1
7.1 Purpose	7-1
7.2 Regional Deployment Concept.....	7-1
7.3 Suggested Deployment Process.....	7-8
7.4 Regional Deployment Timeline and Budget	7-11
7.5 Developing Memorandums of Understanding.....	7-15
7.6 Procurement Alternatives	7-15
7.6.1 Procurement Options	7-16
7.6.2 Suggested Procurements Options	7-18
7.7 Operations and Maintenance Considerations.....	7-20
7.7.1 System Management	7-20
7.7.2 Other O&M Considerations	7-23
7.8 Acceptance Testing.....	7-30
7.8.1 Acceptance Test Plans As Part of the Deployment Process	7-31
7.8.2 Components of An Acceptance Test Plan	7-33
7.8.3 Suggestions for Levels of Acceptance Testing.....	7-35
7.9 Incident Management Considerations.....	7-37
8.0 Funding Element	8-1
8.1 Purpose	8-1
8.2 Basic Funding Principles	8-1
8.3 Recommendations for Strategic Positioning for Funds.....	8-4
8.3.1 Regional Transportation Plan & Regional Transportation Improvement Program	8-5
8.3.2 State Transportation Improvement Program & State Highway Operation and Protection Program	8-6
8.4 Types of Public/Private Partnerships	8-6
8.5 Local, Regional, State, and Federal Funding Opportunities	8-7
8.5.1 Local Funding Sources	8-7
8.5.2 Regional Funding Sources.....	8-16
8.5.3 State Funding Sources.....	8-16



Table of Contents

<u>SECTION & DESCRIPTION</u>	<u>PAGE</u>
8.5.4 Federal ITS Funding Sources	8-16
8.5.5 Public-Private Partnerships	8-22
8.6 Transportation Agency Funding Opportunities	8-25
9.0 Program Management Element	9-1
9.1 Purpose of Program Management in San Joaquin Valley	9-1
9.2 Regional Advantages and Disadvantages	9-1
9.3 Continued Sponsorship of the ITS Program	9-2
9.4 Plan and Deployment Support	9-5
9.4.1 Qualities and Roles of Deployment Champions	9-6
9.4.2 Arenas of Deployment Champion Involvement	9-8
9.5 Suggested Regional Institutional Structure, Procedures, and Policies	9-11
9.5.1 Suggested Institutional Structure	9-11
9.5.2 Suggested Procedures and Policies	9-17
9.6 Moving forward With Deployment	9-19
Glossary	
Appendix A – County by County Project Descriptions	
Appendix B – Working Paper Number 4 – Technologies	
Appendix C – Working Paper Number 5 – System Architecture	

List of Figures

<u>SECTION & DESCRIPTION</u>	<u>PAGE</u>
Figure E.1 Relationship Between System Architecture and Project Identification and Prioritization	E-3
Figure 1.1 ITS Strategic Planning Projects in California	1-4
Figure 1.2 ITS Strategic Planning Projects in California	1-13
Figure 2.1 Valleywide ITS Vision	2-3
Figure 3.1 Deficiencies Assessment Process	3-2
Figure 3.2 Survey Response Percentages by County, Population and Organization	3-3
Figure 4.1 Market Package Process	4-1
Figure 4.2 Example Market Package Diagram	4-4
Figure 4.3 Network Surveillance (ATMS1)	4-6
Figure 4.4 Broadcast Traveler Information (ATIS1)	4-7
Figure 5.1. Presents the System Engineering Process for the Design of ITS Projects	5-4
Figure 5.2. Example of Logical and Physical Architecture for Emergency Vehicle Routing Market Package	5-6
Figure 5.3. Summary of San Joaquin Valley Region Logical Architecture	5-9
Figure 5.4 San Joaquin Valley Conceptual Architecture	5-13
Figure 5.5 Regional Network Management Architecture Using National Architecture	5-16
Figure 5.6 Converting Legacy Data Into Standard CORBA-Compatible Object Definitions.	5-21
Figure 5.7 ITS Standards Architecture Using Currently Defined Standards.	5-22
Figure 5.8 Operational Use of Standards in Transportation Architecture.	5-23
Figure 5.9 Use of Standards In a Shared Field Element Control Application	5-24
Figure 5.10 Physical Architecture for the San Joaquin Valley	5-25



List of Figures

<u>SECTION & DESCRIPTION</u>	<u>PAGE</u>
Figure 5.11 Sequence of Proposed ITS Implementation Activities for the San Joaquin Valley.....	5-26
Figure 6.1 Basic Program Areas and Project Organization	6-5
Figure 6.2 Relationships Between Program Areas	6-6
Figure 6.3 Traveler Information Systems	6-42
Figure 7.1 Regional ITS Deployment Concept	7-6
Figure 7.2 Suggested ITS System Deployment Process	7-9
Figure 7.3 Regional ITS Project Deployment Timelines.....	7-13
Figure 7.4 Acceptance Test Plans and the Overall System Deployment Process.....	7-30
Figure 9.1 Four Arenas of Deployment	9-9
Figure 9.2 Suggested Institutional Structure.....	9-12
Figure 9.3 Deployment Process for ITS Projects	9-20

List of Tables

<u>SECTION & DESCRIPTION</u>	<u>PAGE</u>
Table E.1 Summary List of Problem Priorities.....	E-9
Table E.2 Final San Joaquin Valley ITS Market Packages	E-13
Table E.2 ITS Deployment Action Plan	E-21
Table 1.1 San Joaquin Valley ITS Strategic Deployment Plan Stakeholders	1-8
Table 1.2 Descriptions of Strategic Plan Sections	1-14
Table 2.1 San Joaquin Valley ITS Goals and Objectives	2-8
Table 3.1 Summary List of Problem Priorities	3-4
Table 3.2 User Service Bundles and User Services	3-11
Table 3.3 Potential New National ITS User Services Under Consideration by the USDOT.....	3-21
Table 3.4 Candidate User Services Mapped to San Joaquin Valley ITS Problems	3-25
Table 3.5 San Joaquin Valley Transportation Problems/Issues Not Fully Addressed by User Services	3-28
Table 3.6 San Joaquin Valley ITS User Services	3-29
Table 4.1 List of National ITS Market Packages*.....	4-6
Table 4.2 National ITS Market Packages Versus National ITS User Services.....	4-9
Table 4.3 Market Package Relationships to User Services.....	4-13
Table 4.4 Initial Prioritization of Market Packages	4-15
Table 4.5 Market Package Screening Level Evaluation Results.....	4-18
Table 4.6 Comparison of Market Package Screening Level Evaluation Results to Initial Prioritization	4-21
Table 4.7 Revised (Final) San Joaquin Valley ITS Market Packages	4-23
Table 4.8 Priority Market Package Considerations	4-24
Table 6.1 Summary of Valleywide and Regional ITS Projects	6-69
Table 6.2 Summary of Regional ITS Projects	6-75
Table 7.1 Budget Estimate Adjustment Factors	7-13
Table 7.2 Suggested Procurement Options.....	7-18
Table 7.3 Suggested Acceptance Testing Levels for Valleywide Project	7-35
Table 8.1 Local Funding Sources	8-8
Table 8.2 Regional Funding Sources.....	8-8



List of Tables

<u>SECTION & DESCRIPTION</u>	<u>PAGE</u>
Table 8.3 State Funding Sources	8-9
Table 8.4 Federal Funding Sources (TEA-21).....	8-11
Table 8.5 Specific ITS Funding Sources in TEA-21	8-14
Table 8.6 Dedicated Federal ITS Funding.....	8-17
Table 8.7 Applicability of Federal Funds to ITS Related Projects	8-23
Table 9.1 San Joaquin Valley ITS Deployment Advantages and Disadvantages	9-2

