



Planning Committee STAFF REPORT

Meeting Date: September 5, 2012

Subject	Approval to Circulate the Draft <i>Technical Procedures Update</i> for Review and Comment
Summary of Issues	The Authority has undertaken a significant update of its <i>Technical Procedures</i> , the uniform set of travel analysis and traffic evaluation methods that local jurisdictions are to use to implement the Growth Management Program under Measure J. Besides updating the document to be consistent with Measure J policies, major changes include the transition from Circular 212 to the 2010 Highway Capacity Manual Level-of-Service methodology, and documenting updates to the Authority's Countywide Travel Demand Model.
Recommendation	Authorize staff to release the Draft <i>Technical Procedures</i> to the RTPC-TACs and other interested parties for circulation, review and comment.
Financial Implications	N/A
Options	N/A
Attachments	<p>A. 2012 Technical Procedures Update - Summary of Proposed Changes</p> <p>B. Draft <i>Technical Procedures Update</i>, August 2012 (Chapter 1 only). Complete report available at www.ccta.net)</p>
Changes from Committee	

Background

The Authority is in the process of updating its *Technical Procedures*, which focuses on the specific tools and procedures that local jurisdictions are to use to implement the Growth Management Program (GMP). In 1990, the Authority, in consultation with local staff, adopted its first version of the *Technical Procedures* under Measure C. The *Technical Procedures* was last updated in 2006. The current update was initiated to reflect the transition from Measure C to Measure J, to document the Authority's

updated travel demand model, and to adopt the Transportation Research Board's (TRB's) published methods for calculating Level of Service (LOS).

The *Technical Procedures* is one of several documents, which together form the Measure J Implementation Documents for the GMP. The purpose of the *Technical Procedures* is to establish a uniform approach, methodology, and set of tools that public agencies (and their consultants) in Contra Costa may use to evaluate the impacts of transportation projects and land use decisions on the local and regional transportation systems. The *Technical Procedures* provide uniform guidance for development of the subregional Action Plans for Routes of Regional Significance, analysis of Multimodal Transportation Service Objectives (MTSOs), review of General Plan amendments, use of the Authority's Countywide Model, and for traffic impact reports' analyses for new development projects.

Major Changes Since Last Update

Several significant changes have been made to the *Technical Procedures* since the 2006 update to reflect the new policies and procedures under Measure J, which have resulted in a more streamlined document. The new document has been reduced from nine chapters to five. The primary thrust of the update is to change the focus from the micro-level of measuring performance of local intersections, to the macro-level of regional routes. The new chapters focus on the following topics:

- Introduction (Chapter 1),
- Action Plan Development (Chapter 2),
- General Plan Analysis (Chapter 3),
- Traffic Impact Analysis Guidelines (Chapter 4), and
- Travel Demand Forecasting (Chapter 5)

The document also includes the following Appendices:

- Appendix A - *Guidelines for Calculating Multimodal Transportation Service Objectives*
- Appendix B - *Traffic Counting Protocol*
- Appendix C - *Guidelines for use of the CCTALOS Methodology*
- Appendix D - *Typical Traffic Impact Report Outline*
- Appendix E - *Procedures for Using ODME and ODME Pilot Test Results*
- Appendix F - *Guidelines for Application of Gateway Capacity Constraint Methodology*
- Appendix G - *Regional and Internal Screenline Comparisons*
- Appendix H - *Standard Agreement Regarding Use of the Authority's Travel Demand Forecasting Models and Databases*

The chapters covering Intersection Level-of-Service Methodology and Compliance Reporting for non-regional routes have been removed, as the requirement for intersection LOS reporting was discontinued under Measure J. The previous document had three separate chapters covering components of the Authority's Countywide Model - Travel Demand Forecasting, Specifications, Policies and Procedures for Travel Demand Forecasting Models, and Gateway Capacity Restraint Methodology. These related topics have been combined into one chapter in the new document, Travel Demand Forecasting (Chapter 5).

New to Technical Procedures

In addition to the concatenation and deletion of chapters as described above, the update of *Technical Procedures* includes references to topics not previously covered in the document, either because they weren't relevant during the 2006 update, or because internal policies have changed. The following list summarizes the new concepts in the *Technical Procedures*:

New Topics in Technical Procedures	Location Where Reference is Found
Complete Streets and its Relationship to Measure J.	<i>The Complete Streets Act of 2007 is referenced in Section 3.2 (Chapter 3).</i>
Trip Generation Rate Estimates for "Smart Growth" Developments and TDM	<i>Examples of Trip Generation adjustments are included in Section 4.3 (Chapter 4).</i>
Use of HCM 2010 Level of Service Operational Method for Intersection Analysis	<i>Transition from the Circular 212 Planning Method to the HCM Operational Method is discussed in Section 4.6 (Chapter 4).</i>
Use of HCM 2010 Multi-Modal Level of Service for Quantifying Conditions All Modes	<i>Use of the Multi-Modal Level of Service calculations are addressed in Section 4.7 (Chapter 4)</i>
Activity-Based Models vs. Trip-Based Models	<i>Consistency with the current activity-based MTC model is addressed in Section 5.10 (Chapter 5).</i>

TMWG/TCC Recommendation on LOS Methodology

The Technical Modeling Working Group (TMWG) discussed the LOS Methodology issue at its meeting on June 12, 2012. The group received a presentation from Bill Loudon of DKS Associates, with input from Rick Dowling, of Kittelson Associates (formerly Dowling). An extensive discussion of the two methodologies followed, with the committee members unanimously deciding to recommend the transition from CCTALOS to HCM as the Authority's accepted method of LOS calculation. The transition, however, would need to be made with the following caveats:

- The transition to the HCM operations method will be documented in the forthcoming Technical Procedures update;
- Local jurisdictions will still be allowed to use the CCTALOS method for planning-related studies, as a supplemental measure. Note: Local staff should be aware that software support for CCTALOS-related software (i.e. Traffix™ add-on) may be discontinued (at some point in the future);
- Any GMP disputes that may arise would henceforth be evaluated under the HCM method.
- To ensure consistent results, the Authority's consultant will develop a set of default parameters to be used as inputs for calculations;
- All HCM LOS calculation reports must be accompanied by documentation of core assumptions (inputs), and electronic files be made available. Any deviations from the established default parameters must be fully documented.

At the June 19th meeting of the TCC, the TMWG recommendation was presented, with the committee members approving the transition to the HCM operations methodology for LOS calculation with the above-listed caveats. The proposed default parameters, developed by DKS, are included in Appendix C of the draft document, and are subject to review and further discussion.

Staff Recommendation

The draft *Technical Procedures* is found in Attachment C. Staff recommends release of the draft *Technical Procedures* to the RTPC-TACs and other interested parties for circulation, review and comment. Comments are due to Matt Kelly (mkelly@ccta.net) by Friday, November 2nd.

2012 Technical Procedures Update – Summary of Proposed Changes

The following table summarized proposed revisions to the Authority's Technical Procedures, comparing the July 2012 Draft with the adopted July 19, 2006 adopted document.

SECTION	PROPOSED CHANGES
Acknowledgements	Edits were made to reflect the authors of the 2012 update
1. Introduction	References to Measure C have been updated to reflect Measure J and its policies. The Section covering General Plan Consistency with the Action Plans has been moved from Chapter 6 and replaced the previous reference.
2. Travel Demand Forecasting	Now part of Chapter 5, combined with Chapters 8 and 9. Updated to reflect changes in national, state and local modeling issues, as well as changes to the Countywide Model as part of the Decennial Model Update.
3. Action Plan Development	Now Chapter 2. Updated to reflect change from TSOs to MTSOs. Examples of MTSOs from 2009 Action Plans included.
4. General Plan Analysis	Now Chapter 3. Updated to reflect changes in GMP requirements from Measure C to Measure J. Added reference to Complete Streets Act of 2007.
5. Traffic Impact Analysis Guidelines	Now Chapter 4. Table showing developments meeting traffic impact analysis threshold updated to reflect changes in Measure J GMP. Adjusted Trip Generation table added. Reference to use of HCM 2010 Multi-Modal Level of Service added.
6. Compliance Reporting	Chapter removed. Reference now found in Chapter 1.
7. Level of Service Methodology for Intersections	Chapter removed to reflect new policies under Measure J.
8. Specifications, Policies and Procedures For Travel Demand Forecasting Models	Now part of Chapter 5.
9. Gateway Capacity Constraint Methodology	Chapter removed. Now found in Appendix F.



Technical Procedures Update

Draft

(TABLE OF CONTENTS AND CHAPTER 1 ONLY)

FULL REPORT AVAILABLE ON www.ccta.net

August 2012

TABLE OF CONTENTS

1	INTRODUCTION.....	1
1.1	Background.....	1
1.2	Purpose of the <i>Technical Procedures</i>	1
1.3	Action Plans for Routes of Regional Significance.....	2
1.4	Implementation of Multimodal Transportation Service Objectives (MTSOs) on Regional Routes.....	2
1.5	General Plan Consistency with Action Plans.....	3
1.6	Organization of This Report.....	3
2	ACTION PLANS FOR ROUTES OF REGIONAL SIGNIFICANCE	5
2.1	Establishing Baseline Conditions.....	5
2.2	Near-Term Travel Forecasts.....	7
2.3	Long-Range Travel Forecasts	8
2.4	Analysis of Preliminary Multimodal Transportation Service Objectives and Possible Actions.....	8
3	GENERAL PLAN ANALYSIS.....	11
3.1	General Plan Analysis Requirements.....	11
3.2	Complete Streets Considerations	11
3.3	Use of the Countywide Model	12
3.4	Analyzing Results	13
4	TRAFFIC IMPACT ANALYSIS GUIDELINES	17
4.1	Project Definition.....	20
4.2	Trip Generation Estimates.....	20
4.3	Adjustments to Trip Generation Rates	21
4.4	Trip Distribution and Assignment.....	24
4.5	Selection of Study Intersections.....	24
4.6	Analysis.....	25
4.7	Multi-Modal Level of Service.....	26
4.8	Mitigation Measures.....	26
4.9	Traffic Impact Report.....	27
5	TRAVEL DEMAND FORECASTING	29
5.1	Overview of the Countywide Model.....	29
5.2	Countywide Model Input Requirements	32
5.3	Output Options.....	33
5.4	Link-Level Output Adjustments.....	33
5.5	Intersection Turning Movements and Level-of-Service Options.....	34
5.6	Select Link Analysis	37
5.7	Gateway Constraints	37

5.8 Model Specifications..... 37
 5.9 Validation..... 44
 5.10 Consistency with the MTC Regional Model..... 47
 5.11 Policies and Procedures..... 48
 5.12 Maintenance and Use of the Countywide Model 49

APPENDICES

- Appendix A** - Guidelines for Calculating Multimodal Transportation Service Objectives
- Appendix B** - Traffic Counting Protocol
- Appendix C** - Guidelines for Use of the *2010 Highway Capacity Manual* Operational Method Methodology
- Appendix D** - Guidelines for Use of the CCTALOS Methodology
- Appendix E** - Typical Traffic Impact Report Outline
- Appendix F** - Procedures for Using ODME and ODME Pilot Test Results
- Appendix G** - Guidelines for Application of Gateway Capacity Constraint Methodology
- Appendix H** - Regional and Internal Screenline Comparisons
- Appendix I** - Standard Agreement Regarding Use of the Authority’s Travel Demand Forecasting Models and Databases

TABLE OF TABLES

Table 1: Examples of Multimodal Transportation Service Objectives (MTSOs) and Corresponding Actions 9
 Table 2: Examples of Developments Meeting the Traffic Impact Analysis Threshold 21
 Table 3: Summary of Trip Generation Adjustments 23
 Table 4: Examples of Appropriate and Inappropriate Model Applications 30

TABLE OF FIGURES

Figure 1 – Action Plan Development Process..... 6
 Figure 2 – Trip Generation, Distribution and Assignment Process..... 18
 Figure 3 – Traffic Impact and Mitigation Analysis Process..... 19
 Figure 4 – Link Adjustment Process 35
 Figure 5 – Intersection Turning Movement Adjustment Process (the “Furness” Method) 36
 Figure 6 – Land Use Information System Methodology 42
 Figure 7 – Maximum Percentage Deviation for Freeways and Freeway Ramps 46

This page left blank intentionally

1 INTRODUCTION

1.1 Background

On November 8, 1988, Contra Costa voters approved Measure C: a one-half percent sales tax increase for transportation improvements and an innovative Growth Management Program. The Contra Costa Transportation Authority (Authority) was established to implement Measure C and its overall goals. Its purpose to relieve existing congestion created by past development through road, transit, pedestrian and bicycle improvements funded by the sales tax increase, and to prevent future development from creating new traffic congestion or deteriorating service levels for fire, police, parks, and other public services in Contra Costa through the Growth Management Program. Measure C included funding for projects for all modes. The Growth Management Program established a cooperative, multi-jurisdictional planning process requiring participation of all cities and towns, and the County in managing the impacts of growth in Contra Costa.

Measure J, approved by the voters of Contra Costa in November 2004, extended the ½ cent sales tax for transportation through to 2034. It went into effect on April 1, 2009. A major focus of Measure C was on Level of Service Standards for non-regional routes, and the impacts new development would have on local intersections. Measure J shifts that focus towards the multi-modal regional system and away from level of service. This update to the *Technical Procedures* reflects that change.

To demonstrate its consistency with Measure J requirements, each local jurisdiction must report on its compliance with the Measure J Growth Management Program by completing a Compliance Checklist every two years. The full requirements for compliance are documented in the *Implementation Guide*. The requirements pertaining to traffic impact analysis and mitigation of those impacts are summarized in this document.

1.2 Purpose of the *Technical Procedures*

The purpose of this document is to establish a uniform approach, methodology, and tool set that public agencies in Contra Costa may apply to evaluate the impacts of land use decisions and related transportation projects on the local and regional transportation system. Compliance with the Measure J Growth Management Program requires that local jurisdictions use these *Technical Procedures* to analyze the impact of proposed development projects, General Plans, and General Plan Amendments. In addition to the *Technical Procedures*, the Authority has published two other supporting documents, The *Implementation Guide*, and a *Model Growth Management Element*², which together form the Measure J Implementation Documents for the

¹ Contra Costa Transportation Authority, *Contra Costa Growth Management Program: Implementation Guide*, Pleasant Hill, CA, June 16, 2010.

² Contra Contra Transportation Authority, *Model Growth Management Element*, Pleasant Hill, CA, June 8, 2007.

Technical Procedures Update

Growth Management Program. These are “living documents” that are updated periodically to reflect experience gained in implementing the Growth Management Plan.

Among other things, the *Implementation Guide* outlines the approach and policy direction for establishing Action Plans for Routes of Regional Significance (hereafter referred to as “Action Plans”). These *Technical Procedures* were prepared to help local staff and consultants develop and maintain Action Plans, and to apply a uniform method for calculating performance measures and standards in the Action Plans and in other procedures that are part of the implementation of the Growth Management Plan. The *Technical Procedures* focus on the specific tools and procedures to be used. The Authority’s countywide travel demand forecasting model (hereafter referred to as the “Countywide Model”) has been emphasized since it will be used for many purposes, including the preparation of traffic impact analyses, the development and upkeep of Action Plans, the revision and updating of local General Plans, and the establishment of facility requirements for new transportation projects.

1.3 Action Plans for Routes of Regional Significance

Local jurisdictions have worked cooperatively through their respective Regional Transportation Planning Committees (RTPCs) to develop Action Plans. These Action Plans are comprised of the following:

- Overall policy goals established by the Authority;
- For each route or corridor, Multimodal Transportation Service Objectives (MTSOs) that serve as quantifiable performance measures; and
- Actions to be implemented by the RTPC and participating local jurisdictions. Actions include capital improvements, transit improvements, traffic operations strategies, pedestrian and bicycle facilities, land use policies, demand management strategies, or other local projects and programs intended to meet the adopted MTSOs.

1.4 Implementation of Multimodal Transportation Service Objectives (MTSOs) on Regional Routes

Since the adoption of Measure C, each of the RTPCs has established and periodically revises MTSOs in their Action Plans. Examples of MTSOs include average minimum speed, maximum delay, or duration of congestion not to exceed a specified time period. While MTSOs may use the traditional LOS measurement, such as “not exceeding level of service ‘D’ at all signalized intersections,” a review of the adopted Action Plans indicates that some RTPCs favored adoption of more innovative performance measures, such as delay index, severity of congestion or transit utilization. The Authority regularly monitors the MTSOs, and from time to time the RTPCs reassess the actions, measures, programs and MTSOs in the Action Plan.

The *Implementation Guide* outlines a process that requires RTPC review of any General Plan Amendment that generates more than 500 net new peak hour vehicle trips. The review process specifies that the local

jurisdiction proposing the General Plan Amendment must demonstrate to its RTPC that the proposed General Plan Amendment will not adversely affect their ability to achieve adopted MTSOs.

1.5 General Plan Consistency with Action Plans

The Action Plans are based upon adopted General Plan land uses, the existing road network and planned improvements to the network. Consistency with the Action Plans must be established for any changes to the General Plan that may adversely affect the ability to meet the MTSOs. The *Implementation Guide* establishes the type and size of amendment that triggers review by the RTPC and defines a step-by-step process for General Plan Amendment review. To be found in compliance with the Growth Management Program, local jurisdictions must follow the review process and use these *Technical Procedures* for conducting the analysis.

The adverse impacts of a proposed amendment on the MTSOs can be offset by adopting local and regional mitigations or by modifying the proposed size and scope of the amendment. The process for RTPC review of General Plan Amendments is detailed in the *Implementation Guide*.

1.6 Organization of This Report

These *Technical Procedures* have five sections. This first section provides an introduction to the document. Section 2 describes the procedures for developing the Action Plans. Section 3 describes local responsibilities in using the Authority's Countywide Model in evaluating General Plans. Section 4 outlines recommended guidelines for the preparation of the traffic impact analysis required for projects exceeding the trip generation threshold established by the Authority. Section 5 gives an overview of the Countywide Model and techniques used for adjusting model output. Section 5 also contains specifications, policies, and procedures for using the model.

Technical Procedures Update

This page left blank intentionally

