

**California Conformity Timelines:  
EMFAC-2000 Approval Considerations**

**UC Davis-Caltrans Air Quality Project**

**Task Order No. 2  
Caltrans/U.C. Davis Master Agreement No. 43A0014**

**May 25, 2001**

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UCD-ITS-RR-01-01

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## **ABSTRACT**

Sometime during 2001 or 2002, the U.S. Environmental Protection Agency (EPA) is likely to approve EMFAC-2000 for conformity in California. An EPA EMFAC approval will trigger the beginning of a two-year grace period, after which regional transportation plan (RTP) and transportation improvement program (TIP) conformity findings must be based on EMFAC-2000-modeled mobile source emissions. Depending upon when EPA begins the two-year EMFAC grace period, some metropolitan areas may experience conformity determination problems beginning in 2004. This white paper documents how metropolitan areas have an opportunity to avoid conformity problems by moving aggressively to update, submit, and receive EPA-approval for air quality state implementation plans (SIPs). We recommend that each metropolitan area review their RTP, TIP, and SIP update schedules to determine whether and when conformity problems might occur.

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## 1. INTRODUCTION

This white paper examines how U.S. Environmental Protection Agency (EPA) approval of EMFAC-2000 may affect California conformity determinations. The purpose of the report is to assist the California Department of Transportation (Caltrans), metropolitan planning organizations (MPOs), the California Air Resources Board (ARB), air pollution control districts (APCDs), the Federal Highway Administration (FHWA), and EPA to consider the ramifications of a blanket, state-wide EMFAC-2000 approval. The report findings should motivate interagency discussions to avoid potentially negative conformity consequences from an EMFAC approval action. A companion report provides example analyses showing how mobile source emissions inventories differ between EMFAC-7G and EMFAC-2000 (Gao and Niemeier, 2001).

The conformity regulations require that conformity determinations “must be based on the latest emission estimation model available” (40 CFR 93.111[a]). Section 93.111(b) of the EPA conformity regulations requires that when specifying the availability of a new emissions model, EPA must allow a grace period of from 3 to 24 months during which time regions may still use the older model version. Sometime during 2001 or early 2002, EPA will likely specify that EMFAC-2000 is the latest emissions model available, thus approving EMFAC-2000 for use with conformity determinations. EPA plans to allow the full 24-month grace period following specification of EMFAC-2000 as the latest emissions model (Beardsley, 2001a).

The conformity implications of an EPA EMFAC-2000 approval action are a function of the time needed to update and approve various transportation and air quality plans. As described in detail in later sections of this white paper, a significant challenge is that many areas will have to update, and receive EPA approval for, air quality management plans (i.e., state implementation plans, or SIPs) prior to the time when EMFAC-2000 is required for conformity use. Current EPA-approved California SIPs are based on mobile source emissions budgets established using EMFAC-7F and 7G. EMFAC-2000-based mobile emissions tend to be substantially higher than emissions estimated using EMFAC-7F and 7G, depending upon the analysis year. Unless current SIP emissions budgets are replaced with EPA-approved budgets developed using EMFAC-2000, regional transportation plan (RTP) and transportation improvement program (TIP) conformity determinations will be difficult once EMFAC-2000 is required.

## 2. EMISSIONS DIFFERENCES BETWEEN EMFAC-7G AND EMFAC-2000

EMFAC-2000 emissions are significantly higher than those estimated by EMFAC-7G for base year (2000) and, in most cases, for future year (2010) emissions. ARB analyses using statewide data indicate that year 2000 EMFAC-2000 HC and CO emissions are 56% and 54% higher, respectively, than comparable emissions estimated using EMFAC-7G, and year 2000 NO<sub>x</sub> emissions are 18% higher with EMFAC-2000 (ARB, 2000). ARB estimates that for year 2010, EMFAC-2000 HC and CO emissions are 63% and 13% higher, respectively, than EMFAC-7G estimates, while EMFAC-2000-based NO<sub>x</sub> emissions are 10% lower than those estimated by EMFAC-7G (ARB, 2000).

Researchers at the U.C. Davis Department of Civil and Environmental Engineering are currently preparing an analysis of the differences between EMFAC-7G and EMFAC-2000 by individual California geographic areas. **Table 2-1** provides example comparisons of EMFAC-7G and EMFAC-2000 emission estimates for calendar year 2001 (Gao and Niemeier, 2001). The table includes 17 California areas, and compares total organic compounds (TOG), carbon monoxide (CO), oxides of nitrogen (NO<sub>x</sub>), carbon dioxide (CO<sub>2</sub>) and particulate matter less than 10 microns in diameter (PM<sub>10</sub>). Results are comparable to ARB findings in that near-term EMFAC-2000 emission estimates are substantially higher than EMFAC-7G estimates for hydrocarbons, CO, and NO<sub>x</sub>.

Table 2-1. Example comparisons of emission differences between EMFAC-7G and EMFAC-2000, for calendar 2001.

Air Basin	TOG			CO			NOx			CO <sub>2</sub> (/100)			PM10		
	EMFAC 7G	EMFAC 2000	% Change	EMFAC 7G	EMFAC 2000	% Change	EMFAC 7G	EMFAC 2000	% Change	EMFAC 7G	EMFAC 2000	% Change	EMFAC 7G	EMFAC 2000	% Change
Great Basin Valley	2.63	3.58	36.1	27.53	30.71	11.6	5.26	3.43	-34.8	8.57	7.7	-10.2	0.16	0.1	-37.5
Lake County	2.39	6.53	173.2	20.7	54.62	163.9	2.91	4.86	67.0	5.51	12	117.8	0.07	0.14	100.0
Lake Tahoe	2.72	4.36	60.3	40.85	46.63	14.1	1.75	3.04	73.7	5.84	8.9	52.4	0.08	0.1	25.0
Mojave Desert		30.9			294.5			33.48			99.1			1.08	
Mountain County	14.99	36.37	142.6	124.4	300.8	141.8	21.75	30.65	40.9	45.25	88.8	96.2	0.66	1	51.5
North Coast	14.42	31.34	117.3	156.4	263.2	68.3	21.6	32.79	51.8	33.12	74.4	124.6	0.56	1.04	85.7
North Central Coast	19.29	30.76	59.5	160.9	265.8	65.1	28.18	37.97	34.7	57.58	96.5	67.6	0.97	1.17	20.6
North East Plateau	5.37	9.56	78.0	53.1	83.5	57.3	13.25	8.09	-38.9	13.39	18.8	40.4	0.54	0.25	-53.7
South Coast	336.5	550.3	63.5	2646	5188	96.1	529.3	706.5	33.5	1124	2178	93.8	19.71	24.63	25.0
South Central Coast	39.52	59.49	50.5	335.9	531.5	58.3	55.87	22.41	75.2	120.8	95.4	203.2	1.75	0.79	2.3
San Diego	93.31	116.6	24.9	735.2	1036	41.0	118.7	139.3	17.3	283.2	457.4	61.5	3.82	4.99	30.6
South East Desert	58.3			459.8			101.2			178.4			3.55		
San Francisco	183.3	251.2	37.0	1462	1914	31.0	227.1	263.6	16.1	476.5	886	85.9	6.32	9.02	42.7
San Joaquin Valley	117.1	163.7	39.8	926.6	1674	80.7	185.1	241.1	30.3	352.7	599.5	70.0	6.12	7.91	29.2
Sacramento Valley	75.27	116.1	54.2	565	1047	85.4	117.8	147.9	25.5	216.2	397.8	84.0	4.25	4.79	12.7
Salton Sea		24.11			235.5			27.64			76.5			0.91	
Statewide Totals	965	1417	46.9	7714	12747	65.3	1430	1743	21.9	2921	5211	78.4	48.58	59.62	22.7

Source: Gao and Niemeier, 2001.

Emissions units are tons per day. Model versions used include EMFAC-7G, updated February 10, 2000, and EMFAC-2000, version 2.01f, released October 25, 2000. Additional differences may exist between EMFAC-7G and EMFAC-2000 if EMFAC-2000 incorporates control program benefits that EMFAC-7G users must estimate after 7G model runs are complete.

### 3. ASSUMPTIONS MADE TO IDENTIFY POTENTIAL CONFORMITY RAMIFICATIONS

This report uses several metropolitan area case studies to illustrate how EMFAC-2000 approval affects conformity. For each case study, we examined the expected timing of future SIP, RTP, and TIP updates, and compared those milestones to the required use of EMFAC-2000.

#### 3.1 SUMMARY OF MAJOR ASSUMPTIONS

To identify potential conformity problems, we assume that EPA issues a single, state-wide approval for the use of EMFAC-2000. In addition, the case studies include other important assumptions to enable comparisons across different metropolitan areas:

- EPA approves EMFAC-2000 for conformity purposes effective October 1, 2001, based on either an emissions budget adequacy determination<sup>1</sup> or some other SIP approval action for the San Francisco Bay Area's ozone (O<sub>3</sub>) SIP. The EPA EMFAC approval action is premised on two considerations. First, for areas without an existing EPA-approved SIP emissions budget, EPA has stated its intent to determine emissions budget adequacy within 90 days of a SIP submittal (EPA, 1999; p. 2). Second, since an emissions budget adequacy determination (or a proposed SIP approval) is a de facto endorsement of the modeling tools used to create the emissions budget, EPA is expected to approve EMFAC-2000 prior to, or at the same time as, its first adequacy determination (or SIP approval action) for an EMFAC-2000-based emissions budget. This assumption is explained in greater detail in section 3.2, "Explanation of Assumed EMFAC Grace Period."
- EMFAC-2000 mobile source emissions are substantially higher than EMFAC-7F or 7G for both base- and future-year inventories, thus making it impossible to use EMFAC-2000-based emission inventories to demonstrate conformity against emissions budgets established with EMFAC-7F or 7G. This assumption is particularly relevant for areas where HC emissions estimates are relatively close to HC emissions budgets in base or future years, since EMFAC-2000-based base- and future-year (2010) HC emissions are significantly higher than HC inventories estimated by EMFAC-7G.
- Development, local adoption, and ARB submittal to EPA of updated SIPs will take approximately 18 months. This timeframe is consistent with information provided by planners in San Diego and Sacramento although it might be ambitious compared to recent experience in the South Coast (Arias, 2001; Young, 2001; SCAG, 2001).
- Planned SIP submittals to EPA will be relatively problem free and will not require changes that would slow a "typical" EPA approval process, assumed here to be 18 months in duration from submittal to the effective date of a final EPA approval.

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<sup>1</sup> "Emissions budget adequacy determinations" are EPA findings. On May 14, 1999, EPA issued policy essentially committing to make adequacy determinations within 90 days of a SIP submittal (EPA, 1999). This was in response to court decisions earlier that year. The adequacy finding is important when there is no pre-existing emissions budget in an EPA-approved SIP. In other words, an adequacy finding is needed to allow an area to use the budgets contained in a SIP submittal, but the finding does not replace existing budgets in an EPA-approved SIP.

- MPOs will adhere to required RTP and TIP approval process calendars (every three years for an RTP update, every two years for a TIP update). This assumption ignores the routine nature of TIP updates, which can occur several times a year in some regions.
- MPOs will adhere to required RTP and TIP updates within 18 months of a SIP submission that establishes new motor vehicle emissions budgets (per the conformity regulations, 40 CFR 93.104).
- EMFAC-2000-based conformity determinations are achievable if they are based on comparisons to EMFAC-2000-based emissions budgets. This means that EMFAC-2000-based attainment strategies are sound and control measure implementation is proceeding on schedule and achieving expected emission reductions.

The findings from this report are valuable as a planning resource, even if particular assumptions prove to be in error. For example, if EPA chooses to approve EMFAC-2000 effective February 1, 2002, rather than October 1, 2001, some of the timelines in the case studies discussed here would simply slip by four months. Readers should use the material discussed in this report to construct scenarios relevant to their areas and should adjust those scenarios to fit improved assumptions and real world actions.

### **3.2 EXPLANATION OF ASSUMED EMFAC GRACE PERIOD**

The timelines in this report are based on an assumed two-year EMFAC grace period that ends September 30, 2003. EPA approval of EMFAC-2000 will likely be predicated on EPA receiving a SIP prepared with EMFAC-2000.<sup>2</sup> Thus, the timing of the first EMFAC-2000-based EPA SIP submittal is important to the assumed beginning of the two-year EMFAC grace period. The timelines in this report are based on the assumption that the earliest planned EMFAC-2000-based SIP submission will likely be a late July 2001 San Francisco Bay Area O<sub>3</sub> attainment plan.

Discussions with ARB staff indicate that, due to court-imposed timeframes, EPA may need to take a Bay Area O<sub>3</sub> plan approval action as early as late August 2001. We assume that as part of a SIP approval action, EPA would determine that the mobile source emissions budgets were adequate. The need to make an adequacy determination would likely trigger EPA approval to use EMFAC-2000 as the latest mobile source emissions modeling tool. An EPA approval action (or emissions budget adequacy determination) in late August may not be published in the Federal Register for several weeks or perhaps a month or more.

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<sup>2</sup> The trigger for EPA approval of EMFAC generally begins with the SIP submittal process but, in practical terms, is not necessitated until EPA takes action to either find an emissions budget adequate (within 90 days) or to approve a SIP. Litigation may also compel an EPA EMFAC approval action if an interested party believed that agencies conducting conformity analyses were not using the most recent planning tools and assumptions. In addition to budget adequacy and SIP approval actions, EPA must make SIP completeness findings within six months of SIP submissions. The completeness finding, however, is not a judgement of quality and would not likely trigger an EMFAC approval action. EPA has discretion as to when it initiates an EMFAC approval, unless compelled by court actions. EPA may be motivated to approve EMFAC because of the need to act on the San Francisco Bay Area O<sub>3</sub> SIP. A Bay Area O<sub>3</sub> SIP action is necessary both because of pending legal action and the desire to avoid conformity problems beginning in January 2002, when the next Bay Area RTP is due for approval.

For purposes of this report, we assume an October 1, 2001 publication date, and a two-year grace period for using older versions of EMFAC that begins October 1, 2001 and expires September 30, 2003. **Figure 3-1** illustrates how an August 2001 Bay Area O<sub>3</sub> SIP approval action results in a two-year grace period ending September 30, 2003.

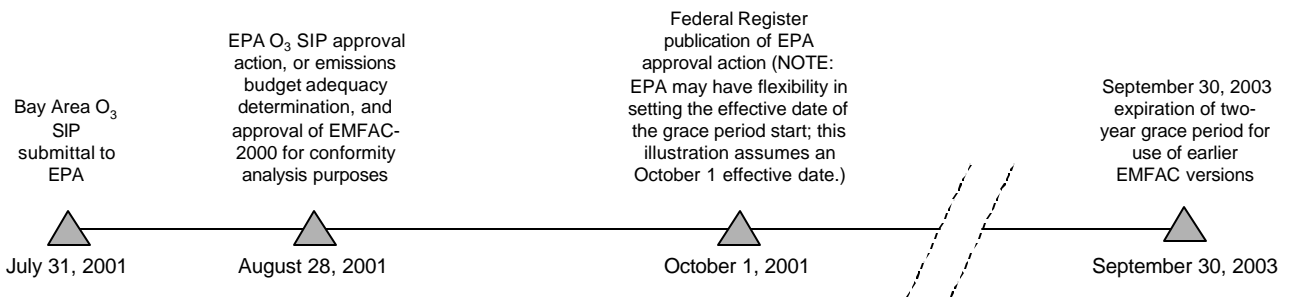


Figure 3-1. Example triggering of two-year EMFAC grace period, based on August 2001 Bay Area SIP approval action.

### 3.3 ASSUMPTIONS REGARDING TIMELINES FOR SIP, RTP, AND TIP DEVELOPMENT AND APPROVAL ACTIONS

#### 3.3.1 SIP Development

Areas using EMFAC-2000 to update their SIPs will generally be creating substantially revised air quality management plans compared to those created with EMFAC-7G. The process for creating such SIPs is typically at least an 18- to 24-month endeavor. Conversations with planners in both the Sacramento and San Diego areas confirm, for example, that SIP development timeframes of about 18 months or longer will probably be necessary for their regions (Young, 2001; Arias, 2001). Timeframes have extended even further in some areas. For example, in the South Coast, a new plan is taking almost three years to develop and adopt. Initially, ARB and the South Coast Air Quality Management District (SCAQMD) created a two-year schedule for preparation and adoption of the SCAQMD's 2000 Air Quality Management Plan (AQMP). The initial schedule began with emission inventory development in January 1998 and ended with plan adoption in December of 2000 (Allen, 1998). Delays, however, have moved plan adoption to late 2001 (Marvin, 2001). For purposes of this study, we assume that metropolitan areas are able to develop and submit SIPs to EPA within an 18-month period, premised on the idea that areas will be motivated to accelerate SIP submissions to avoid conformity problems.

#### 3.3.2 EPA SIP Approval Actions

EPA typically takes at least 18 to 36 months to act on a SIP submission. The Clean Air Act (CAA) allows EPA up to 18 months to make a SIP completeness determination and to act to

disapprove or approve the SIP (CAA §110[k]). In practice, EPA may take longer for a variety of reasons including the desire to give areas time to correct plan deficiencies, to determine whether attainment milestones will be met, or simply to accommodate further EPA review. In some circumstances, citizen suits have motivated court actions to compel expedited EPA reviews.

However, in some cases EPA has acted relatively quickly to approve SIP amendments that correct important deficiencies. For example, on December 10, 1999, the SCAQMD adopted O<sub>3</sub> plan amendments to respond to EPA concerns with the 1997 O<sub>3</sub> plan. The plan amendments included revised emission inventories and emissions budgets. ARB submitted the SIP revision to EPA on February 4, 2000. EPA's final approval action was published in the Federal Register on April 10, 2000 and became effective May 10, 2000 (a three-month approval period from date of EPA submission to effective date of final approval) (EPA, 2000).

Notwithstanding its ability to act quickly on SIP amendments, EPA has historically taken one year or longer to review and act on substantial SIP revisions such as the creation of new attainment plans. Examples include (EPA, 2001):

- Santa Barbara's revised O<sub>3</sub> plan, submitted to EPA in March of 1999 and approved by EPA in August 2000 (17-month approval period).
- California's 1994 O<sub>3</sub> SIP, submitted to EPA in various stages beginning November 1994 and ending July 1996 and approved by EPA in September 1996 (22-month approval period).
- South Coast's carbon monoxide attainment plan, submitted to EPA February 1997 and granted an interim approval by EPA in April 1998 (14-month approval period).
- Owen's Valley PM<sub>10</sub> plan, submitted to EPA in December 1998 and approved by EPA in August 1999 (8-month approval period following lengthy negotiations and legal action).
- South Coast's PM<sub>10</sub> plan, submitted February 1997; EPA approval action still pending (no final action for more than four years).

EPA final approval actions need to be published in the Federal Register (a process which takes approximately one month from signature) and generally become effective 30 days after publication. Any conformity timeframe dependent upon EPA approval action should consider the approximately two months needed between EPA signature and approval effective date. For purposes of this study, we assume that final EPA SIP approvals become effective within 18 months of EPA submission. As with SIP development and submission, we assume EPA will be motivated to accelerate SIP approvals to avoid conformity problems.

### **3.3.3 Summary of Assumed SIP Development And Approval Timelines**

**Figure 3-2** illustrates a sample 36-month timeline for development and approval of a substantial SIP revision such as creation of a new air quality attainment plan. Figure 3-2 is based on an assumed 18-month timeframe needed to create, adopt, and submit a substantial SIP revision to EPA, and an additional 18-month timeframe needed for EPA approval action. EPA sometimes has the ability to "parallel process" SIPs, which means EPA may review the SIPs for

approval purposes while they are still under development.<sup>3</sup> Figure 3-2 also includes an alternative timeline of an 18- to 30-month window as a possible range of time needed to complete both SIP development and approval, assuming some parallel processing by EPA (the 18- to 30-month range is quite rough and will vary by SIP action). For illustration purposes, Figure 3-2 is based on the assumption that SIP development work begins June 1, 2001. Note that for purposes of this report, we assume the SIP development and approval process is a 36-month endeavor. Actual timelines will vary by area and will reflect air district, MPO, ARB, and EPA workloads; SIP approval issues; degree to which parallel processing occurs; and other factors.

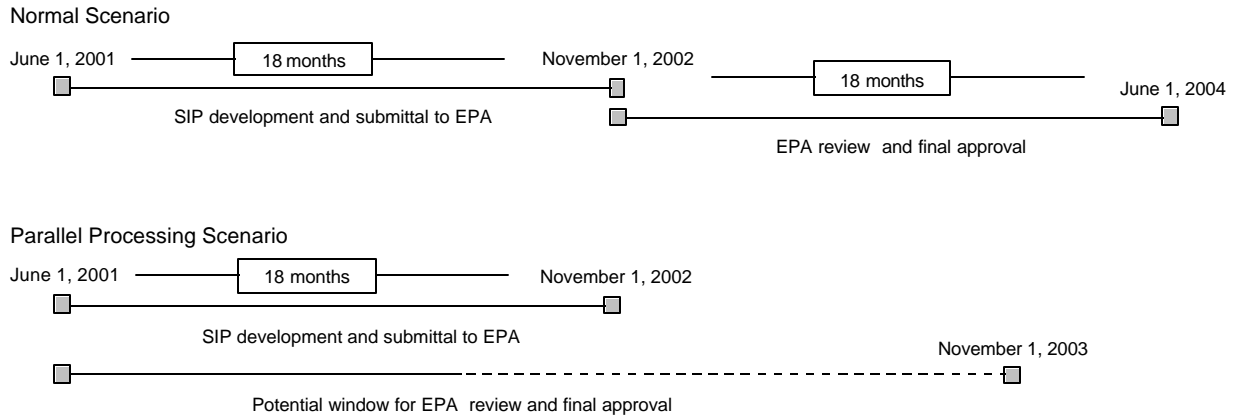


Figure 3-2. Sample 36-month timeline assuming “normal” SIP development and approval, and an alternate 18- to 30-month timeline assuming “parallel” EPA SIP processing.

### 3.3.4 Assumed RTP and TIP Adoption and Approval Timelines

MPOs generally prepare RTPs and TIPs in a 6- to 18-month window, depending upon the complexity of the plan, the level of community consensus concerning projects, and the difficulty in achieving a successful conformity determination, among other factors. In the South Coast, for example, the Southern California Association of Governments (SCAG) has an adoption schedule for the fiscal-year 2001 TIP that runs from February through August 2001 (a seven-month schedule) (SCAG, 2001). In San Francisco, the Metropolitan Transportation Commission (MTC) is in the midst of what it terms a “year-long effort to update the Bay Area’s long-range transportation plan” (Metropolitan Transportation Commission, 2001).

Generally, FHWA has taken approximately two to three months to approve RTPs and TIPs once they have been submitted. As examples, the San Diego Association of Governments (SANDAG) adopted its 2000 RTP in February, and FHWA approved the RTP in April; SANDAG adopted its 2000 TIP in July, and FHWA approved the TIP in October (Arias, 2001). SACOG is planning a May or June 2002 RTP submittal to FHWA, with an expected approval by

<sup>3</sup> Parallel processing involves EPA staff review of draft SIP documents to identify and solve potential SIP approval problems in advance of SIP adoption. When conformity is at stake, FHWA can informally motivate parallel processing by elevating conformity concerns to EPA management and requesting early identification of EPA SIP approval concerns. The ability to parallel process is a function of EPA staff workloads, and thus the degree to which problems are identified and addressed early varies by issue and the EPA staff involved.

July 2002 (Young, 2001). Approvals have been processed more quickly during periods when conformity problems were imminent.

In this report, we assume RTP and TIP development is able to occur within the timeframes mandated by conformity and federal transportation planning statutes and regulations, meaning well within the 18 months required following submission of a SIP with new emissions budgets. We also assume that FHWA needs approximately two months for RTP and TIP approvals (i.e., RTP and TIP conformity determinations).

## 4. EXAMPLE SCHEDULES FOR RTP, TIP, AND SIP UPDATES

### 4.1 REQUIRED AND PLANNED RTP AND TIP UPDATES

The conformity regulations require RTPs and TIPs to pass conformity analysis tests a minimum of every three years (40 CFR 93.104). Federal transportation planning requirements require TIP updates every two years (23 CFR 450.324[b]); therefore, failure to complete a TIP update within the two-year window would invalidate an existing TIP's conformity status. In practice, some metropolitan planning organizations (MPOs) amend their TIPs, and thus perform conformity analyses, on at least an annual and sometimes more frequent basis. In the Sacramento area, for example, the Sacramento Area Council of Governments (SACOG) has routinely performed one to two TIP conformity analyses in each of the past several years, including three TIP analyses in 1998 alone (Garry, 2001).

To illustrate how RTP and TIP schedules might be affected by an EMFAC-2000 approval, this discussion presents sample RTP and TIP update schedules for several California metropolitan areas. **Table 4-1** identifies dates for the most recent federal RTP and TIP conformity approvals, as well as required and planned RTP and TIP updates, for eight California areas. Table 4-1 also lists anticipated SIP updates for these eight areas.

As documented in Table 4-1, Los Angeles, San Francisco, and San Diego provide examples of areas with different three-year RTP update cycles. The Los Angeles RTP update cycle begins June 1998, San Francisco's cycle begins January 1999, and San Diego's cycle begins April 2000. Each of these areas last had their TIP approved in October 2000.

An additional consideration involves RTP and TIP updates triggered by SIP submissions. In addition to the routine RTP and TIP updates, the conformity regulations require new RTP and TIP conformity determinations within 18 months of SIP submittals that establish new emissions budgets (40 CFR 93.104[e]). Any substantial SIP revision, therefore, triggers a new round of RTP and TIP conformity analyses independent of pre-existing RTP and TIP update cycles.

Table 4-1. Example RTP, TIP, and SIP schedules.

Area	Last RTP Approval	Last TIP Approval	Planned RTP updates	Planned TIP updates	Planned SIP updates (O <sub>3</sub> , PM <sub>10</sub> , CO) (EPA submittal date)	Comments	Sources (see notes)
Imperial County	6/9/98	10/6/00	6/8/01	8/31/01	6/30/01 (PM <sub>10</sub> )	Part of the SCAG planning area.	Keynejad, 2001
Los Angeles	6/9/98	10/6/00	6/8/01	8/31/01	12/31/01 (O <sub>3</sub> & PM <sub>10</sub> )	Part of the SCAG planning area.	Keynejad, 2001
Monterey	7/15/99	10/6/00	Spring 2002	Summer 2002	O <sub>3</sub> maintenance plan likely by end of 2001	Each county in the area is working on their own RTP updates, then AMBAG folds them into one RTP. They are also in the middle of a TCM substitution effort for their SIP.	Muck, 2001 Urlie, 2001 Brennan, 2001
Sacramento	7/28/99	10/6/00	6/02	6/02	None	ARB would take lead in SIP update for Sacramento region, given multiple air districts in SACOG area. Sacramento will likely update its O <sub>3</sub> SIP sometime in the next three to four years, perhaps in coordination with development of an 8-hr O <sub>3</sub> plan. The air district and EPA are currently negotiating a change in PM <sub>10</sub> nonattainment status; any resulting agreement may trigger a new PM <sub>10</sub> SIP.	Tollstrup, 2001 Young, 2001

Table 4-1. Example RTP, TIP, and SIP schedules.

4-3

Area	Last RTP Approval	Last TIP Approval	Planned RTP updates	Planned TIP updates	Planned SIP updates (O <sub>3</sub> , PM <sub>10</sub> , CO) (EPA submittal date)	Comments	Sources (see notes)
San Diego	4/13/00	10/6/00	12/01 (amended RTP for new transit element; will not likely reset the 3-yr RTP requirement clock)  4/03	10/02	O <sub>3</sub> maintenance plan or SIP revision will be pursued in the 2002-2005 timeframe, depending upon the 2001 O <sub>3</sub> season, and deadlines for 8-hr O <sub>3</sub> plan submittals.	Air district needs approximately 18 months for SIP development. 2001 O <sub>3</sub> season decides whether area attains O <sub>3</sub> NAAQS.	Arias, 2001 Selnick, 2001
San Francisco Bay Area	1/21/99	10/6/00	1/21/02	10/02	7/31/01 (O <sub>3</sub> )	7/18/01 SIP approval at local level; ARB to act within a week; EPA may issue approval 8/28/01.	Tannehill, 2001 Marvin, 2001
San Joaquin Valley	6/28/00	10/6/00	8/01	8/01	April or May 2002 (O <sub>3</sub> )	To simplify presentation of SJV scenarios, the RTP and TIP information included is specific to the area overseen by Fresno COG. Milestones for other portions of the SJV may differ from those included here. There are currently no plans to update the SJV PM <sub>10</sub> SIP.	Bitner, 2001 Jordan, 2001
Santa Barbara	10/6/00	10/6/00	9/01	3/02	12/31/01 (O <sub>3</sub> )	SIP schedule is approximate.	Damkowitz, 2001

Notes: Dates included in Table 4-1 are based on best estimates and information available as of April/May 2001. Changes will occur as areas revise their planning schedules. ARB provided SIP information for all areas (Marvin, 2001); regional contacts as noted provided additional SIP information where possible.

## 4.2 PLANNED SIP UPDATES

Several areas are working to update existing SIPs. As Table 4-1 illustrates, expected dates for SIP submittals to EPA range from summer 2001 for the San Francisco area, to late 2001 for Santa Barbara, Monterey, and the South Coast, to spring 2002 for the San Joaquin Valley. San Diego may pursue an O<sub>3</sub> SIP update sometime during the 2002 to 2005 period. Most of the planned SIP updates focus on meeting the 1-hr O<sub>3</sub> standard, or focus on a combination of meeting O<sub>3</sub> and particulate matter standards.

Court decisions concerning EPA's 8-hr O<sub>3</sub> standard could affect the timing of 1-hr O<sub>3</sub> SIP development. As of spring 2001, federal courts were still in the process of issuing final decisions concerning the validity of EPA's 8-hr O<sub>3</sub> standard. If the courts approve the 8-hr O<sub>3</sub> standards, EPA will designate 8-hr nonattainment areas. Nonattainment designation by EPA triggers a Clean Air Act requirement for the affected areas to submit 8-hr O<sub>3</sub> attainment SIPs within three years (CAA §110[a][1]). The 8-hr O<sub>3</sub> SIP requirement would be distinct from existing 1-hr O<sub>3</sub> SIP requirements. For example, if federal courts approved the 8-hr standard in the summer of 2001, and EPA designated 8-hr O<sub>3</sub> nonattainment areas by late 2001, 8-hr O<sub>3</sub> SIP submittals would be due to EPA by late 2004. Delays in 8-hr O<sub>3</sub> federal court decisions would delay nonattainment area designations and SIP submittal deadlines.

Some areas may delay 1-hr O<sub>3</sub> SIP development until federal 8-hr O<sub>3</sub> planning requirements are clarified. Although 1-hr and 8-hr SIPs would be distinct plans, the pollutant sources and controls strategies for both SIPs would be closely linked. Areas that simultaneously conducted 1-hr and 8-hr O<sub>3</sub> SIP development efforts would avoid duplicative analysis and regulatory development processes, and enable regulated stakeholders to comment on, and implement, an integrated O<sub>3</sub> control strategy. Aside from conformity, therefore, some areas may be motivated to delay 1-hr O<sub>3</sub> SIP development.

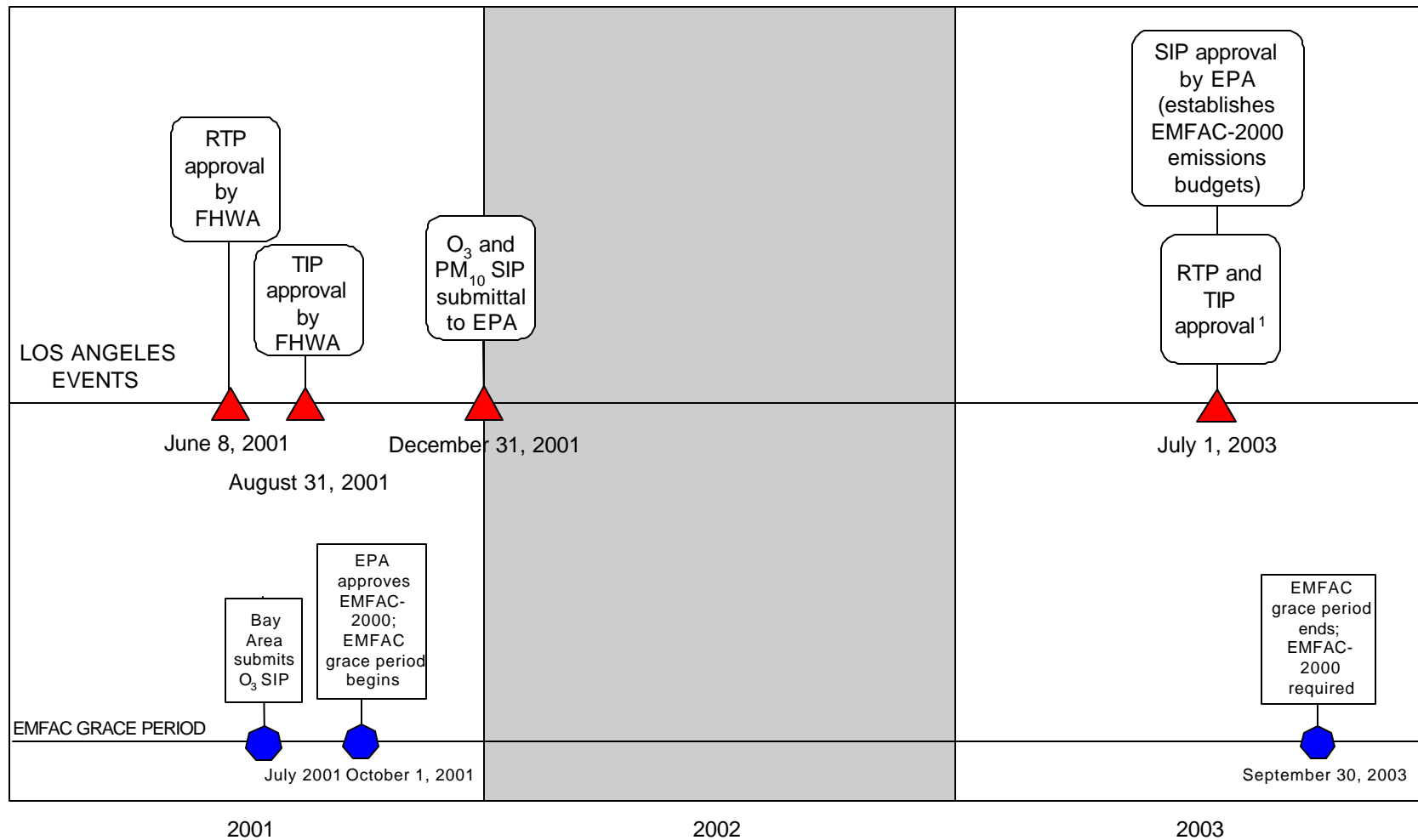
San Diego's O<sub>3</sub> planning considerations illustrate how pending 8-hr O<sub>3</sub> requirements may affect 1-hr O<sub>3</sub> SIP submittals. San Diego will attain the federal 1-hr O<sub>3</sub> standard in 2001 if there are no 1-hr O<sub>3</sub> standard violations during summer 2001. If San Diego attains the standard, the region becomes eligible to prepare an O<sub>3</sub> "maintenance plan." A maintenance plan would be a SIP submittal to replace the region's existing 1-hr O<sub>3</sub> attainment SIP. Since there are no Clean Air Act deadlines to prepare maintenance SIPs, APCD staff indicated that one scenario is to wait until an 8-hr O<sub>3</sub> SIP is required and then simultaneously develop both the 8-hr O<sub>3</sub> attainment SIP and the 1-hr O<sub>3</sub> maintenance SIP. Setting aside conformity motivations, it is conceivable that the San Diego area could delay 1-hr and 8-hr O<sub>3</sub> SIP submittals until 2004 or 2005 (Selnick, 2001).

## 5. DISCUSSION OF TIMELINES AND POTENTIAL CONFORMITY PROBLEMS

This discussion provides a synthesis of the various timeframes necessary for RTP, TIP, and SIP adoptions and approvals, and links these timeframes to the two-year grace period following an EMFAC-2000 approval. The discussion uses four case studies to illustrate the range of potential conformity ramifications from EMFAC-2000 approval. **Figures 5-1** through **5-4** illustrate how EMFAC approval could affect conformity for the Los Angeles, San Joaquin Valley, San Diego, and Sacramento areas (an Appendix includes in table format the milestones used to create Figures 5-1 through 5-4). The timelines in Figures 5-1 through 5-4 identify the time period most problematic for conformity purposes: *the period following the end of the two-year EMFAC grace period and preceding EPA final approval of a SIP that includes EMFAC-2000-based mobile source emissions budgets*. As illustrated in Figures 5-3 and 5-4, a late-summer 2001 EPA approval of EMFAC-2000 could generate significant conformity challenges for some California metropolitan areas.

### 5.1 LOS ANGELES

Based on the assumptions outlined in Section 3 and the RTP, TIP, and SIP schedule information included in Section 4, Los Angeles will avoid conformity problems related to an EPA EMFAC-2000 approval. According to ARB (Marvin, 2001), the South Coast is likely to submit an updated SIP to EPA by the end of 2001. If EPA were to approve the SIP within 18 months, EMFAC-2000-based emissions budgets would be available for use in time for the RTP and TIP updates required by conformity within 18 months of a SIP submission establishing new budgets. **Figure 5-1** illustrates the Los Angeles area RTP, TIP, and SIP timelines.



<sup>1</sup> The conformity regulations (40 CFR 93.104[e]) require RTP and TIP conformity determinations within 18 months of a SIP submittal to EPA that contains a control strategy implementation plan or a maintenance plan establishing a motor vehicle emissions budget.

Figure 5-1. Los Angeles avoids conformity problems assuming EPA SIP approval within 18 months of SIP submittal.

## 5.2 SAN JOAQUIN VALLEY

The San Joaquin Valley (SJV) case study described here would avoid conformity difficulties due to EPA approval of EMFAC-2000.<sup>4</sup> As shown in **Figure 5-2**, if the SJV area submits a SIP update to EPA by late April 2002, and EPA approves the new SIP within 18 months, the SJV (i.e., Fresno) will have EMFAC-2000-based emissions budgets available when new RTPs and TIPs are required by October 31, 2003.

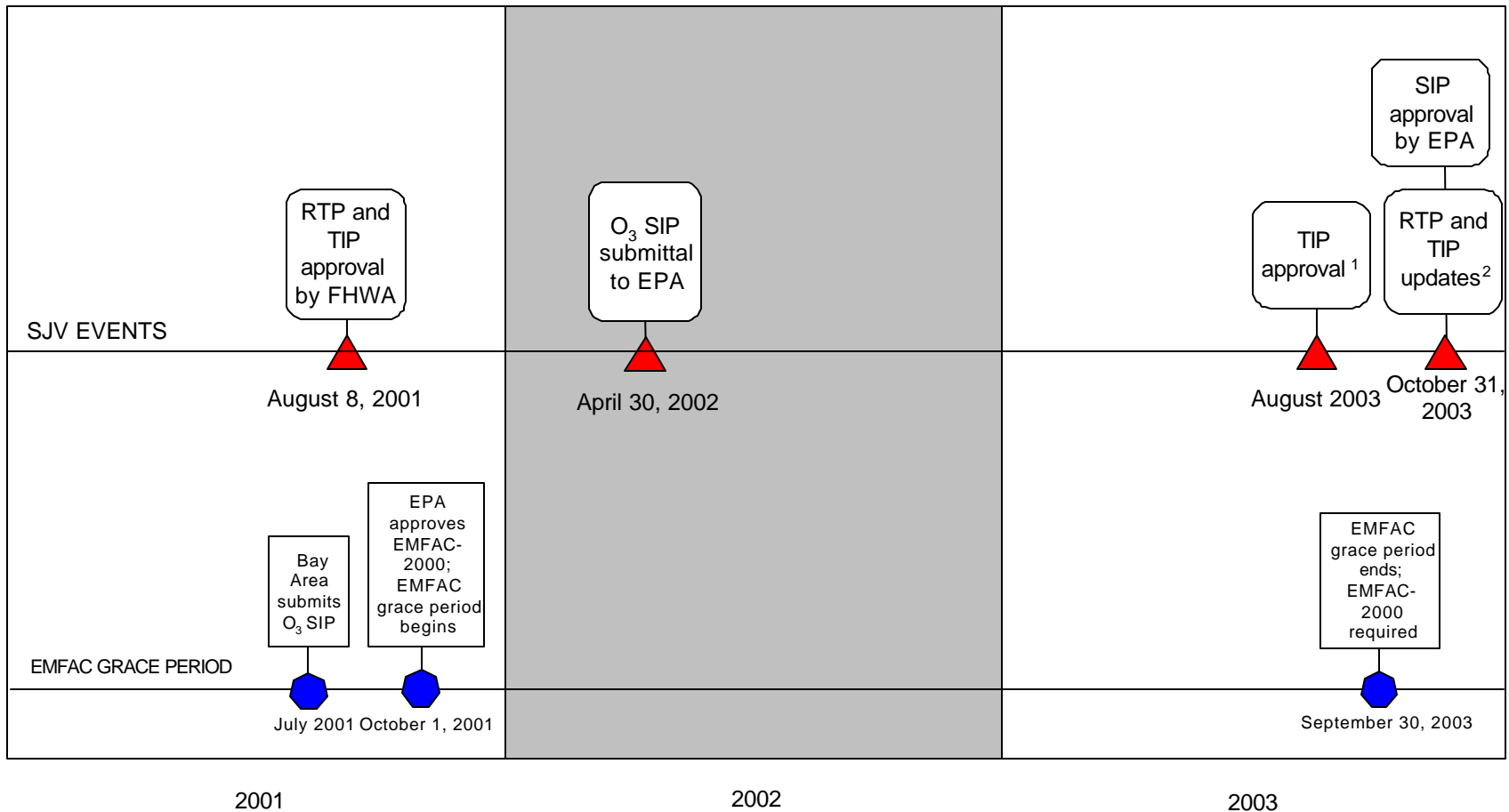
The SJV case study can also be used to illustrate the consequences of various delays. For example, either delayed TIP adoption, or delayed SIP approval by EPA, could result in a conformity lapse. The Fresno area is planning on an FHWA TIP approval in August 2001. A TIP update would be required no later than August 2003 (per 23 CFR 450.324[b]). A TIP update in August 2003 would still fall within the two-year EMFAC grace period, assumed here to run from October 1, 2001 through September 30, 2003. However, if we assume a two or more month delay in preparing and approving the August 2003 TIP update, FHWA approval would occur after September 30, 2003, and thus fall outside the EMFAC grace period. The TIP update would therefore require the use of EMFAC-2000 during the TIP conformity analysis. A conformity lapse could occur until EPA approves an SJV SIP with EMFAC-2000-based emissions budgets.

If we assume any significant delay in EPA SIP approval, for example four to six months, EMFAC-2000-based emissions budgets will not be available, and, under the assumptions included in this report, conformity in the SJV will be jeopardized. Assuming an April 30, 2002 SIP submittal to EPA, both the RTP and TIP would need to be updated within 18 months, or by October 31, 2003. A lengthy delay in EPA SIP approval would effectively mean an RTP and TIP conformity lapse on October 31, 2003, since the new RTP and TIP conformity determinations would be required to use EMFAC-2000-based analyses beginning October 1, 2003.

MPOs and FHWA might avoid some EMFAC-approval conformity problems by accelerating the adoption and approval of RTPs and TIPs to take place during the EMFAC grace period. Overall, the SJV case study assumptions presented here indicate no conformity problems due solely to EMFAC-2000 approval. Delays in various plan approvals, however, could create conformity problems.

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<sup>4</sup> As discussed in Table 4-1, to simplify the illustration of EMFAC-approval conformity implications in the SJV this report includes RTP and TIP milestones provided by the Fresno Council of Governments (COG). The SJV encompasses a geographic area with multiple MPOs, and RTP and TIP milestones for other SJV areas may differ from those provided by Fresno COG.



<sup>1</sup> Federal transportation planning requirements require TIP updates every two years (23 CFR 450.324[b]).

<sup>2</sup> The conformity regulations (40 CFR 93.104[e]) require RTP and TIP conformity determinations within 18 months of a SIP submittal to EPA that contains a control strategy implementation plan or a maintenance plan establishing a motor vehicle emissions budget.

Figure 5-2. SJV avoids substantial conformity problems assuming EPA SIP approval within 18 months of SIP submittal. [As discussed in Table 4-1, to simplify the illustration of EMFAC-approval conformity implications in the SJV, this report includes RTP and TIP milestones provided by the Fresno Council of Governments (COG). The SJV encompasses a geographic area with multiple MPOs, and RTP and TIP milestones for other SJV areas may differ from those provided by Fresno COG.]

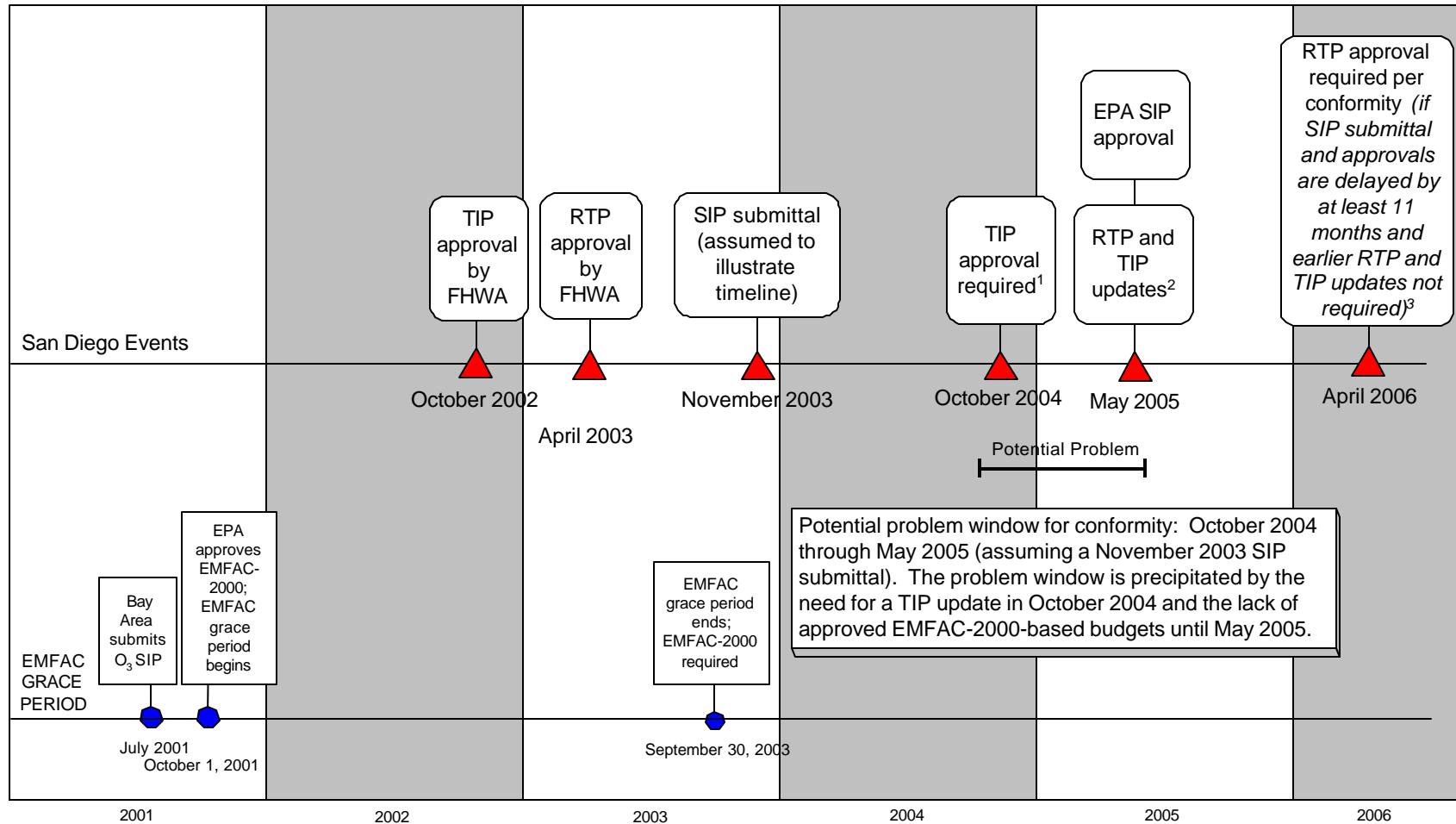
### 5.3 SAN DIEGO

Based on the assumptions described in Section 3, the San Diego area could successfully go through one more round of RTP and TIP approvals before running into conformity difficulties. Assuming, for illustration purposes, that the San Diego area updates its O<sub>3</sub> SIP in November of 2003, and that EPA takes 18 months to approve the SIP, there would be a seven-month problem period from October 2004 to May 2005. The problem period would originate as follows:

- The EMFAC grace period expires September 30, 2003. All conformity analyses beginning October 1, 2003 require EMFAC-2000-based emissions estimates.
- San Diego currently plans a TIP update in October 2002; transportation statutes require TIP updates every two years, meaning another TIP is required by October 2004. The TIP conformity determination will require the use of EMFAC-2000, since it follows the EMFAC grace period.
- Assuming EPA approves the San Diego O<sub>3</sub> SIP 18 months after submittal, EPA approval is delayed until May 2005 (18 months following a November 2003 SIP submission). EMFAC-2000-based emissions budgets are not available until May 2005 for conformity determinations.
- As shown in Figure 5-3, the required October 1994 TIP update would be delayed until May 2005, or by seven months. Although the conformity regulations require TIP updates only every three years, transportation statutes require TIP updates every two years (23 CFR 450.324[b]), and a delay would effectively trigger a conformity lapse (O'Loughlin, 2001).

**Figure 5-3** illustrates the sequence of milestones and the problem period when conformity lapse could occur. The milestones in Figure 5-3 are based on a November 2003 SIP submission.

The San Diego case study can also be used to illustrate how delayed SIP development may exacerbate conformity problems. As discussed in Section 4.2, "Planned SIP Updates," San Diego planners have considered delaying a 1-hr O<sub>3</sub> SIP update to coincide with development of an 8-hr O<sub>3</sub> SIP. Assume that federal courts delay until late-2001 a decision to affirm the 8-hr O<sub>3</sub> standard, and EPA designates 8-hr O<sub>3</sub> nonattainment areas in mid-2002. Areas would be required to submit 8-hr O<sub>3</sub> SIPs by mid-2005 (three years following designation). Also assume that San Diego delays submission of a new 1-hr O<sub>3</sub> SIP until mid-2005 to allow simultaneous development of 1-hr and 8-hr O<sub>3</sub> SIPs. EPA approval of a SIP submitted in mid-2005 may not occur until late-2006. Under this scenario, EMFAC-2000-based emissions budgets would not be available for conformity until late-2006. Two conformity milestones would occur after the expiration of the EMFAC grace period (October 1, 2003) and prior to late-2006: (a) a required October 1994 TIP update (two years following the October 2002 TIP update), and (b) a required April 2006 RTP update (three years following an April 2003 RTP update). This scenario, while perhaps unlikely, serves to illustrate how lengthy delays in SIP development and approval could create a conformity lapse lasting from October 2004 until late-2006.



<sup>1</sup> Federal transportation planning requirements require TIP updates every two years (23 CFR 450.324[b]).

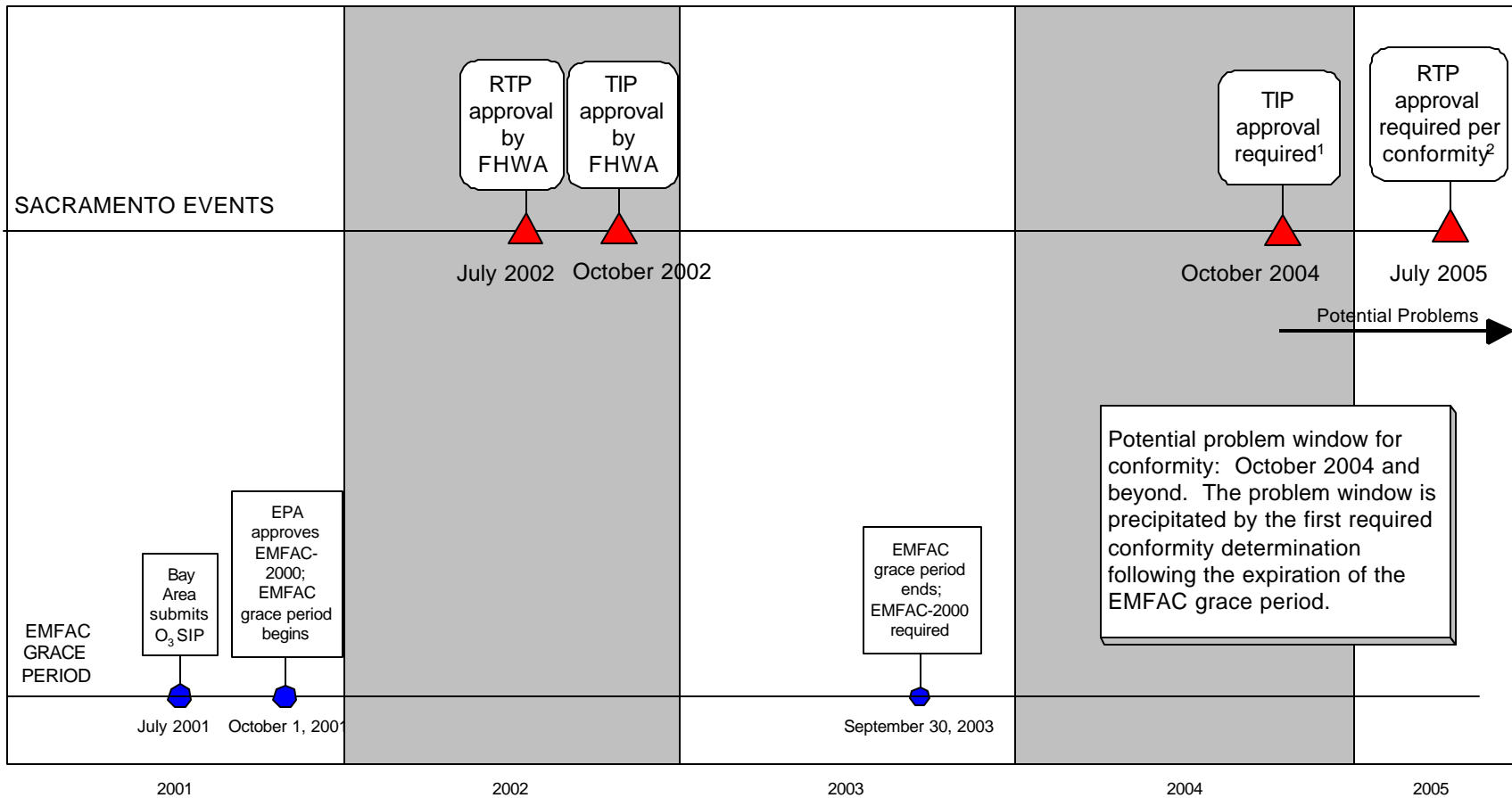
<sup>2</sup> The conformity regulations (40 CFR 93.104[e]), require RTP and TIP conformity determinations within 18 months of a SIP submittal to EPA that contains a control strategy implementation plan or a maintenance plan establishing a motor vehicle emissions budget.

<sup>3</sup> The conformity regulations (40 CFR 93.104[b][3] for RTPs and 40 CFR 93.104[c][3] for TIPs) require RTP and TIP conformity determinations at least every three years.

Figure 5-3. San Diego experiences conformity problems lasting at least seven months if a SIP submittal is delayed until November 2003.

## 5.4 SACRAMENTO

The Sacramento case study illustrates the problems that result from lack of a SIP update. Discussions with staff from the Sacramento Metropolitan Air Quality Management District (SMAQMD) suggest that an O<sub>3</sub> SIP update is likely sometime in the next three to four years. A 1-hr O<sub>3</sub> SIP update may be prepared in coordination with an 8-hr O<sub>3</sub> SIP, or a 1-hr O<sub>3</sub> SIP may be required to address conformity. The SMAQMD is also in discussions with EPA concerning a change in PM<sub>10</sub> nonattainment status, and a new PM<sub>10</sub> SIP may be required to address agreements with EPA. However, as of spring 2001, there are no definite SIP update plans (Tollstrup, 2001). To help illustrate a worst case conformity scenario, this discussion includes timelines that assume no SIP updates. Under a “no-SIP-update” scenario, Sacramento can complete one more cycle of RTP and TIP updates. Conformity problems are likely to arise beginning October 1, 2003, the end of the EMFAC grace period. Existing emissions budgets have been created based on EMFAC-7G; conformity tests requiring EMFAC-2000 are likely to fail once the EMFAC grace period ends. As illustrated in Figure 5-4, the first time a conformity problem occurs is October 2004, when the TIP is due to be approved on the normal two-year update cycle. The TIP failure would be followed by an RTP failure in July 2005, when a new RTP would need to be approved.



<sup>1</sup> Federal transportation planning requirements require TIP updates every two years (23 CFR 450.324[b]).

<sup>2</sup> The conformity regulations (40 CFR 93.104[b][3] for RTPs and 40 CFR 93.104[c][3] for TIPs) require RTP and TIP conformity determinations at least every three years.

Figure 5-4. Sacramento conformity problems begin October 2004 assuming no future SIP update.

## **6. MOBILE6 APPROVAL AND CONFORMITY PROBLEMS FOR OTHER STATES**

States other than California could also face significant conformity challenges in the months ahead due to the upcoming release of a new national mobile source emissions modeling tool. EPA is in the process of updating the MOBILE emission modeling tool, used outside California to estimate emissions from on-road motor vehicles. Early in 2001 EPA released a draft version of the newest version, MOBILE6, to states and local government agencies. EPA expects to release a final version of MOBILE6 during summer 2001, and to approve MOBILE6 for conformity purposes when the final version becomes available. EPA plans to trigger, nationwide, the beginning of the two-year MOBILE modeling grace period upon publication in the Federal Register of its announcement that MOBILE6 is available. Based on the MOBILE6 release schedule outlined by EPA, the two-year grace period would commence summer 2001 and end summer 2003 (Beardsley, 2001a and 2001b).

The emissions differences between MOBILE6 and MOBILE5 suggest that conformity problems may occur but might be limited to specific analysis years. EPA analyses suggest that MOBILE6 estimates mobile source VOC, NO<sub>x</sub>, and CO emissions that are higher than those estimated by MOBILE5, from the present (2001) through approximately sometime between 2004 to 2008, depending upon pollutant (Beardsley, 2001b). EPA's estimates are based on national data and will likely differ by metropolitan area and fleet mix. Unless areas have mobile source emissions budgets based on MOBILE6, RTP and TIP conformity findings after the summer of 2003 (the end of the two-year grace period) will be difficult for analysis years extending to sometime between 2004 to 2008. As evidenced by the California examples discussed above, metropolitan areas around the country will need to review their RTP, TIP, and SIP update schedules to assess whether future conformity findings will be in jeopardy.

## **7. CONCLUSIONS**

### **7.1 KEY ISSUES RELATED TO EMFAC-2000 CONFORMITY PROBLEMS**

Conformity challenges are likely if, sometime during 2001 or 2002, EPA approves EMFAC-2000 for conformity purposes and starts a California-wide two-year EMFAC modeling grace period. Not all areas will necessarily experience conformity problems. Metropolitan areas actively engaged in SIP updates have the opportunity to avoid problems if the areas can submit SIPs to EPA within approximately the next two years, and EPA can act to approve the SIPs within a “typical” approval period. Areas that delay SIP updates until well into 2003 or later may be exposed to significant conformity risk, unless extensive inter-agency effort is expended to expedite SIP adoptions and approvals. The two most critical variables determining whether an area experiences conformity problems are: (a) the date an EMFAC two-year grace period begins, and (b) the time needed for SIP development, submittal, and approval. EPA SIP approval action within 18 months of submittal is especially important given the conformity requirement to update RTPs and TIPs within 18 months of submittal of a new budget (40 CFR 450.324 [b]). The dates presented in this report are illustrations only, and each area should analyze how an EMFAC-2000 approval would affect conformity in their region.

### **7.2 IMPLICATIONS FOR FUTURE EMFAC MODIFICATIONS**

Frequent EMFAC updates will complicate the approval picture illustrated in this report. The area examples in this report and the conclusions drawn from them are premised on approval of EMFAC-2000. ARB is planning, as of spring 2001, to release annual EMFAC updates (Marvin, 2001). It is possible that the transportation planning community may face a series of two-year grace periods, with a grace period expiring each year. Annual EMFAC versions would be a significant departure from past ARB actions. For example, EMFAC-7G, the version prior to EMFAC-2000, dates from October 1996. Based on the illustrations presented here, it is apparent that a steady succession of annual EMFAC updates could require a steady succession of SIP updates and EPA SIP approvals to facilitate conformity findings.

Given ARB’s plan to annually update EMFAC, it may be preferable for EPA to explore alternative EMFAC approval approaches, including possibly approving EMFAC on an area-by-area basis. California’s metropolitan areas are on different SIP submittal schedules, making it possible that over the next two to four years, areas may adopt SIPs using two or three versions of EMFAC. Area-by-area EPA EMFAC approvals might facilitate the use of the most recent EMFAC version during SIP development, without jeopardizing conformity determinations due to RTP and TIP updates occurring throughout the state. If ARB issues annual EMFAC updates, it is likely that interagency discussions will be necessary to plan a minimally disruptive approach for SIP, RTP, and TIP updates, and EPA EMFAC and SIP approvals.

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## **APPENDIX A**

### **SUMMARY MILESTONE TABLES USED TO CREATE FIGURES 5-1 THROUGH 5-4**

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## Los Angeles

Table A-1. Los Angeles area conformity-related milestones, 2001-2003.

Date	Action
June 8, 2001	RTP approval by FHWA
August 31, 2001	TIP approval by FHWA
October 1, 2001	Start of two-year grace period for EMFAC-7F and 7G
December 31, 2001	O <sub>3</sub> and PM <sub>10</sub> SIP submittal to EPA
July 1, 2003	SIP approval by EPA (establishes EMFAC 2000 emissions budgets)
July 1, 2003	RTP and TIP approvals required by 40 CFR 93.104(e)
October 1, 2003	Requirement to use EMFAC-2000 for conformity

## San Joaquin Valley

Table A-2. San Joaquin Valley area conformity-related milestones, 2001-2003.

Date	Action
August 2001	RTP and TIP approval by FHWA
October 1, 2001	Start of two-year grace period for EMFAC-7F and 7G
April 30, 2002	O <sub>3</sub> SIP submittal to EPA
August 2003	TIP approval required by 23 CFR 450.324(b)
October 31, 2003	SIP approval by EPA
October 31, 2003	RTP and TIP updates required by 40 CFR 93.104(e)
October 31, 2003	Requirement to use EMFAC-2000 for conformity

\* Includes RTP and TIP milestones provided by Fresno COG.

## San Diego

Table A-3. San Diego area conformity-related milestones, 2001-2006.

Date	Action
October 1, 2001	Start of two-year grace period for EMFAC-7F and 7G
October 2002	TIP approval
April 2003	RTP approval
October 1, 2003	Requirement to use EMFAC-2000 for conformity
November 2003	SIP update (assumed to illustrate timeline)
October 2004	TIP approval required by 23 CFR 450.324(b)
May 2005	EPA SIP approval
May 2005	RTP and TIP updates required by 40 CFR 93.104(e)
April 2006	RTP approval required per conformity ( <i>if SIP submittal and approvals are delayed by at least 11 months and earlier RTP and TIP updates not required</i> )
<b>Potential problem window for conformity: October 2004 through May 2005 (assuming a November 2003 SIP submittal).</b>	

## Sacramento

Table A-4. Sacramento area conformity-related milestones, 2001-2005.

Date	Action
October 1, 2001	Start of two-year grace period for EMFAC-7F and 7G
July 2002	RTP approval
October 2002	TIP approval
October 1, 2003	Requirement to use EMFAC-2000 for conformity
October 2004	TIP approval required by 23 CFR 450.324(b)
July 2005	RTP approval required by 40 CFR 93.104(b)(3)
<b>Potential problem window for conformity: October 2004 and beyond.</b>	