

# Transportation Project-Level Carbon Monoxide Protocol

Revised December, 1997

UCD-ITS-RR-97-21

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range of conditions. In most cases, not having to run emission factor and dispersion models results in substantial time savings. A screening procedure for projects involving intersections is included in Appendix A. See section 5 for determining acceptability of impacts.

#### 4.5 Detailed Analysis {Level 5 in Figure 3}

A detailed analysis is performed when it is necessary to obtain more robust estimates of CO concentrations than those obtained using a screening procedure. The recommended emission factor and dispersion models are CT-EMFAC and CALINE4, respectively. CT-EMFAC is recommended because it incorporates the most recent version of EMFAC. (At the time of writing of the protocol the latest version was 7F1.1). There is one restriction to the recommendation of CALINE4. The *intersection link* option is not recommended because it makes use of a modal emissions algorithm developed for an outdated vehicle fleet. Guidelines for performing a detailed analysis using these models are given in Appendix B. See section 5 for determining acceptability of impacts.

#### 4.6 Reference to Standing Committee {Level 6 in Figure 3}

If the CO impacts are found to be unacceptable (see Section 5) based on a detailed analysis, the project is deemed unsatisfactory and should not proceed unless modifications can be made leading to its acceptability. The project sponsor may elect to refer the project to a standing committee composed of the local Air District, local MPO, project sponsor, CARB and Caltrans to evaluate model inputs. The standing committee will recommend project-specific guidance that may or may not require a new detailed analysis. A list of MPOs and Air Districts is provided in Appendix C.

#### 4.7 Screening Projects in Attainment or Unclassified Areas {Level 7 in Figure 3}

Air quality in attainment (proposed attainment) and unclassified areas is just as important as in nonattainment areas. In attainment (proposed attainment) or unclassified areas, the project sponsor(s) is primarily concerned with intersections where air quality may be getting worse. Other conditions may also necessitate consideration of project-level CO air quality impacts.

##### → 4.7.1 Projects that are likely to worsen air quality

Only those projects that are likely to worsen air quality necessitate further analysis. The following criteria should be used to determine whether a project is likely to worsen air quality for the area substantially affected by the project:

- a. The project significantly increases the percentage of vehicles operating in cold start mode. Increasing the number of vehicles operating in cold start mode by as little as 2% should be considered potentially significant. **NO**
- b. The project significantly increases traffic volumes. Increases in traffic volumes in excess of 5% should be considered potentially significant. Increasing the traffic volume by less than 5% may still be potentially significant if there is also a reduction in average speeds. **NO**
- c. The project worsens traffic flow. For uninterrupted roadway segments, a reduction in average speeds (within a range of 3 to 50 mph) should be regarded as worsening traffic flow. For intersection segments, a reduction in average speed or an increase in average delay should be considered as worsening traffic flow. **NO**

The above criteria should be applied on an hourly basis to the "build" and "no build" scenarios for the time periods when the highest 1-hr and 8-hr CO concentrations are expected to occur. Note that it may be easier to "screen out" a project by proceeding directly to Section 4.7.2 and therefore, the analyst is encouraged to look ahead at the criteria given therein.

#### **4.7.2 Projects suspected of resulting in higher CO concentrations than those existing within the region at the time of attainment demonstration**

Projects potentially creating CO concentrations higher than those existing within the region at the time of attainment demonstration should proceed to Section 4.7.3; other projects should be deemed satisfactory and no further analysis is needed. Project sponsors may use the following criteria to determine the potential existence of higher CO concentrations in the region. Select one of the worst locations in the region having a similar configuration and compare it to the "build" scenario of the location under study according to the following conditions:

- a. The receptors at the location under study are at the same distance or farther from the traveled roadway than the receptors at the location where attainment has been demonstrated.
- b. The roadway geometry of the two locations is not significantly different. An example of a significant difference would be a larger number of lanes at the location under study compared to the location where attainment has been demonstrated.
- c. Expected worst-case meteorology at the location under study is the same or better than the worst-case meteorology at the location where attainment has been demonstrated. Relevant meteorological variables include: wind speed, wind direction, temperature and stability class.

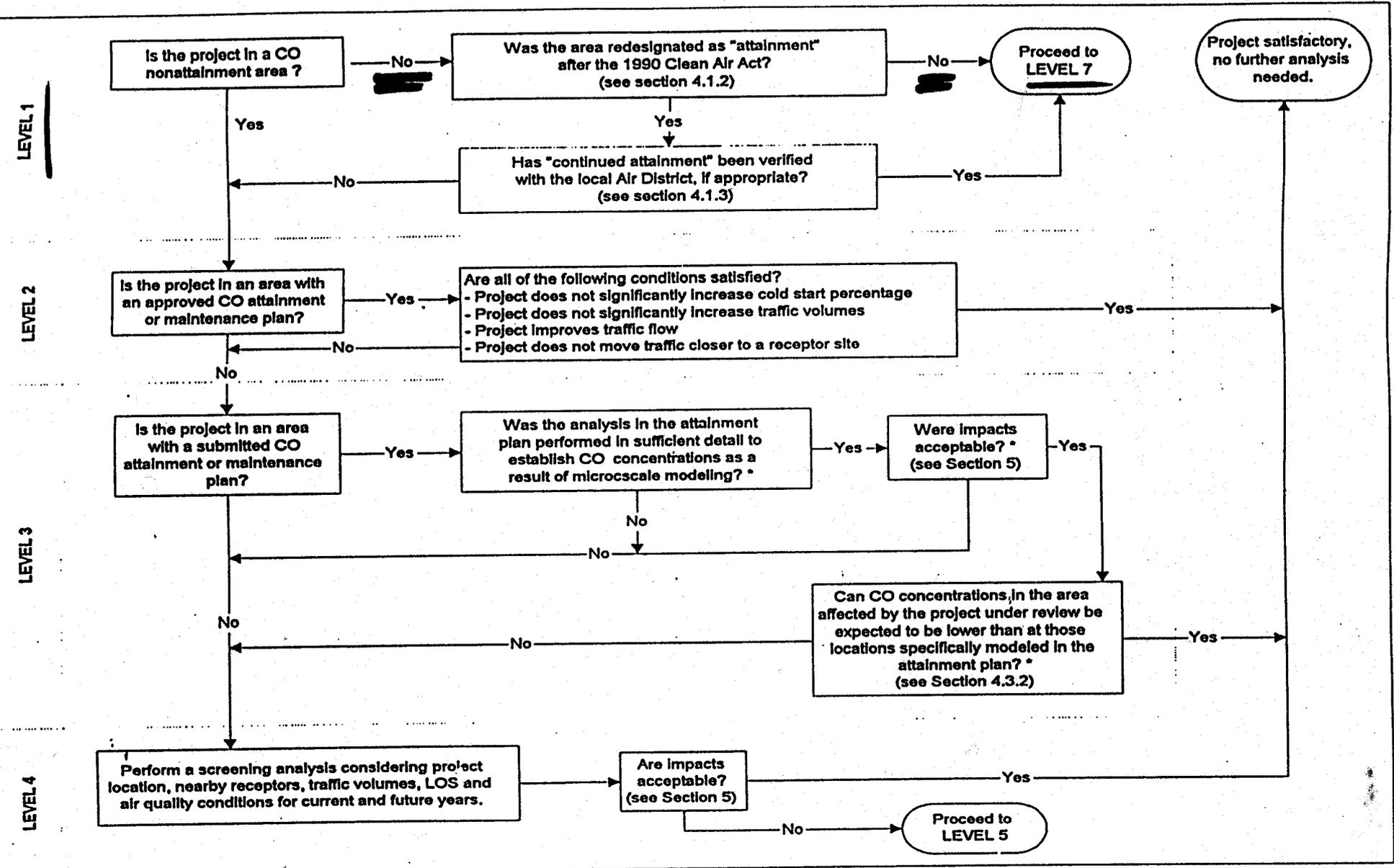


Figure 3. Local CO Analysis

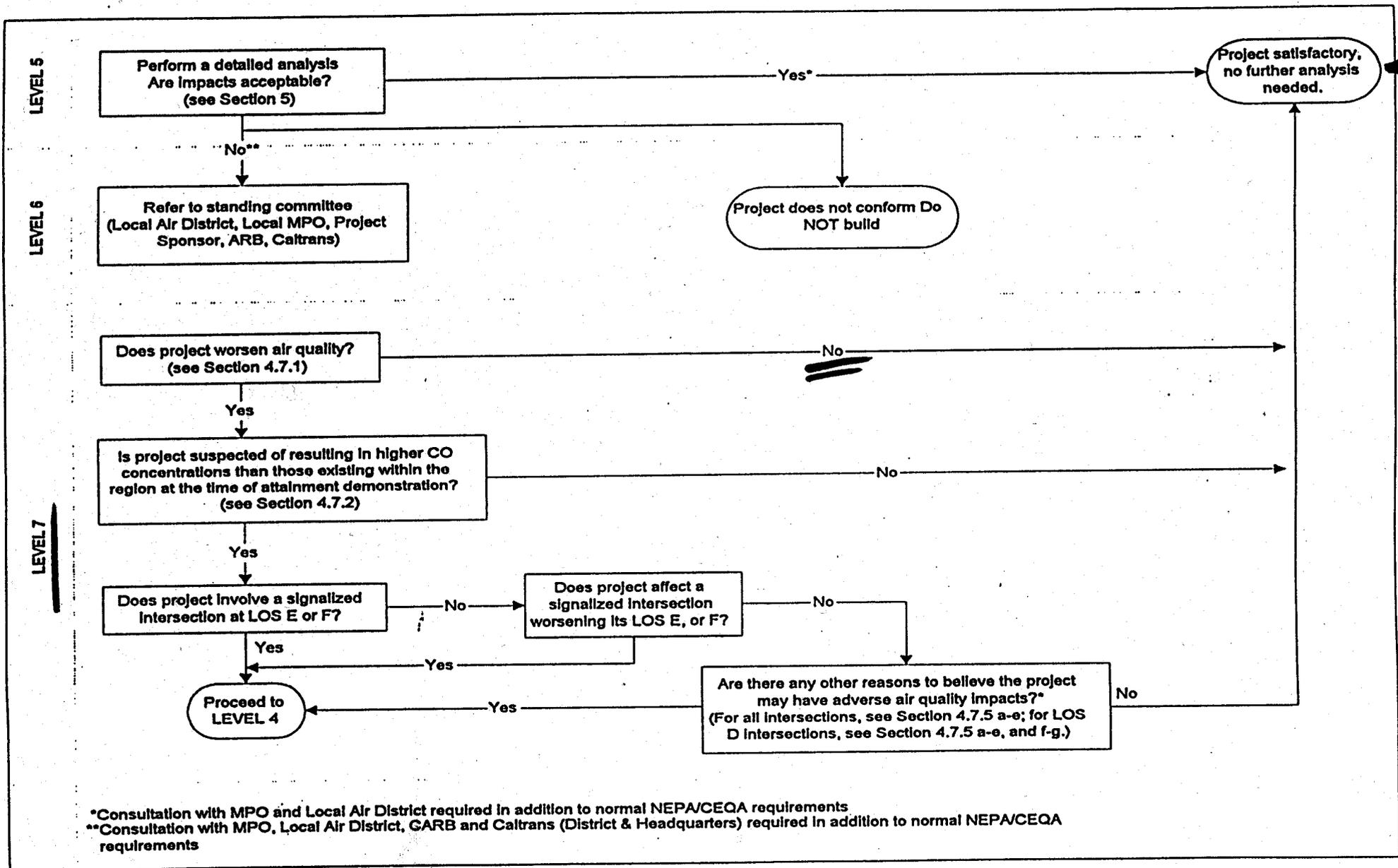


Figure 3 (cont.). Local CO Analysis

Table 1. Projects Exempt from All Emissions Analyses

Safety

Railroad/highway crossing  
Hazard elimination program  
Safer non-Federal-aid system roads  
Shoulder improvements  
Increasing sight distance  
Safety improvement program  
Traffic control devices and operating assistance other than signalization projects  
Railroad/highway crossing warning devices  
Guardrails, median barriers, crash cushions  
Pavement resurfacing and/or rehabilitation  
Pavement marking demonstration  
Emergency relief (23 U.S.C. 125)  
Fencing  
Skid treatments  
Safety roadside rest areas  
Adding medians  
Truck climbing lanes outside the urbanized area  
Lighting improvements  
Widening narrow pavements or reconstructing bridges (no additional travel lanes)  
Emergency truck pullovers

Mass Transit

Operating assistance to transit agencies  
Purchase of support vehicles  
Rehabilitation of transit vehicles<sup>2</sup>  
Purchase of office, shop, and operating equipment for existing facilities  
Purchase of operating equipment for vehicles (e.g. radios, fareboxes, lifts, etc.)  
Construction or renovation of power, signal, and communications systems  
Construction of small passenger shelters and information kiosks  
Reconstruction or renovation of transit buildings and structures (e.g., rail or bus buildings, storage and maintenance facilities, stations, terminals, and ancillary structures).  
Rehabilitation or reconstruction of track structures, track and track bed in existing right-of-way  
Purchase of new buses and rail cars to replace exiting vehicles or for minor expansions of the fleet<sup>2</sup>  
Construction of new bus or rail storage/maintenance facilities categorically excluded in 23 CFR Part 771

Air Quality

Continuation of ride-sharing and van-pooling promotion activities at current level  
Bicycle and pedestrian facilities

Other

Specific activities which do not involve or lead directly to construction, such as:

- Planning and technical studies
- Grants for training and research programs
- Planning activities conducted pursuant to titles 23 and 49 U.S.C.
- Federal-aid systems revisions
- Engineering to assess social, economic, and environmental effects of the proposed action or alternatives to that action
- Noise attenuation
- Emergency or hardship advance land acquisitions [23 CFR 712.204(d)]
- Acquisition of scenic easements
- Plantings, landscaping, etc.
- Sign removal
- Directional and informational signs
- Transportation enhancement activities (except rehabilitation and operation of historic transportation buildings, structures, or facilities)
- Repair of damage caused by natural disasters, civil unrest, or terrorist acts, except projects involving substantial functional, locational or capacity changes

<sup>2</sup>PM<sub>10</sub> nonattainment or maintenance areas, such projects are exempt only if they are in compliance with control measures in the applicable implementation plan.