UNIVERSITY OF CALIFORNIA, DAVIS

COLLEGE OF ENGINEERING
DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING
DAVIS, CALIFORNIA 95616
916-752-0586
916-752-7872(FAX)

August 4, 2016

Re: Comments on Draft RTP Guidelines

Please accept the attached comments for consideration.

Regards,

Deb Niemeier, Ph.D., P.E.

Professor, Civil and Environmental Engrg
Professor, School of Education
Graduate Faculty: Computer Science; Geography
Director, Sustainable Design Academy
Editor-in-Chief, Sustainable Cities and Society
Editor-in-Chief, *emerti,* Transportation Research, Part A: Policy and Practice
University of California
One Shields Ave.
Davis, CA 95616
(530) 752-8918
dniemeier@ucdavis.edu

CHAPTER 3 COMMENTS (pages refer to pdf pages)

Overarching Comments

- Throughout the document, there are references to off-model tool development that is encouraged. There should be a clear statement that all off-model tools must be documented and available to the public;

- It should be clear that every scenario modeled and made available to the public must be consistently modeled and deviations must be well documented with strong rationale;

- The groupings used for the RTP modeling levels is not correct; the Valley counties should be required to use higher levels of modeling practice (to be consistent with federal conformity guidelines);

- The travel demand modeling community has not kept up with the most recent developments in the practice of modeling reproducibility and open source data. This new guideline should require MPO modelers to make available the data, modeling results and off-model information and assumptions such that any step in the modeling process is reproducible. There are significant funding and health determinations that emerge from these data – the public should be able to reproduce results;

- MPOs should be required to identify which projects on the RTP are dependent on other projects and identify anticipated staging of RTP projects (i.e., which projects are likely to begin in which years;

- Every RTP should have benefit-cost ratio for the RTP, and each project within the RTP should have an approximate benefit to cost assessment completed, and documented as part of the RTP documentation. These results should be directly tied to modeling results for the preferred scenario. The need for individual project assessments can be exemplified by the SCAG RTP. The regional benefit-cost ratio SCAG's 2012 RTP is approximately ~2.5, but the b/c ratio of the Tesoro Extension in Orange County was equal to about 0.5. And yet, because the project was on the RTP, it was aggressively pursued by the Toll Authority. Although it was ultimately cancelled, the entire effort of vetting the project was a waste of public time and resources;

- All costs should be part of consideration (e.g., health and environmental) – not just vehicle operating costs;

- The land use models are not well defined and required aspects to these models should be further elaborated upon. In particular, close links to affordable housing should be well described. In addition, the process should be expanded to include uncertainty estimates. In its last RTP update, the Puget Sound Regional Council (PSRC), estimated the 80% confidence intervals for its UrbanSim housing projections, both at an aggregate and sub-aggregate level.[i,ii] PSRC's approach has now been peer reviewed.[iii] The question of model uncertainty is particularly acute in large urban MPOs that are setting aside specific kinds of development areas, such as Priority Development Areas (PDAs), as a critical means for reducing vehicle miles traveled by concentrating new housing growth in certain transit-oriented places. These specifically defined areas play a critical role in helping regions to achieve SB 375 greenhouse gas (GHG) reduction mandates. For example, the transit priority project (TPPs) areas in the Bay Area include 74% of the PDA acreage and the TPPs were specifically targeted as important areas for emphasizing jobs-housing balances in order to reduce commute distances. Thus, understanding the uncertainties in housing predictions for the PDAs is fundamental to assessing the region's ability to meet the performance targets MTC and ABAG have adopted, including SB 375 mandates relating to GHG targets.

[i] PSRC. "Analysis and Forecasting at PSRC." 2012 Land Use Forecast. Seattle: Puget Sound Regional Council, 2012. http://www.psrc.org/assets/2936/UrbanSim_White_Paper_2012_final.pdf.

[ii] Additional information can be accessed via Mark Simonson (msimonson@psrc.org; 206-971-3273) or Hana Sevcikova (hsevcikova@psrc.org; 206-587-4820).

[iii] Sevcikova, Hana, Mark Simonson, and Michael Jensen. "Assessing and Integrating Uncertainty into Land-Use Forecasting." Journal of Transport and Land Use 8, no. 3 (2015). https://www.jtlu.org/index.php/jtlu/article/view/614.

- The discussion of social equity and environmental justice considerations contained in the draft guidelines is woefully inadequate and superficial considering the wealth of recent scholarship on the topic. It should be expanded. I have reviewed the proposed chapter prepared by Richard Marcantonio and strongly support its inclusion. In general, current MPO equity analysis practice tends to obscure, rather than illuminate, potential disproportionate and adverse effects on protected populations. But this does not need be the case. A paper by Alex Karner, just published in the journal *Transport Policy*,[iv] uses the 2011 RTPs prepared by all eight San Joaquin Valley MPOs as data to develop concrete recommendations and best practices that can be used to improve the consistency between equity analyses and real-world impacts. The recommendations developed by Karner involve altering analytical choices rather than estimating new models or acquiring expensive datasets. As such, they can be implemented even in regions with few resources.

Detailed Comments

3.2, p. 57

This sentence makes no sense; it says 'tools' are used as 'tools'. Please clarify.

> Transportation planners and engineers utilize various transportation analysis tools (models) as both policy and technical tools during the regional transportation planning process.

This section in general is confusing. Is it supposed to be making the case for the modeling tools? I don't understand how policy tools provide a "clear explanation of the model and analytical techniques."

Under the technical tools section, there seems to be a mixing of project-level and regional level modeling approaches. It would be very inappropriate to use a regional travel model for a project-level analysis. I would certainly not expect a regional model to be used to assess/prioritize project-level operational or management alternatives. The intent of this section should be clarified.

p. 59

There are numerous grammatical errors and missing words throughout this document. One example appears here,

> For MPOs to affect the emissions from interregional travel and share responsibly for reducing those emissions with bordering regions, it is critical that they have the ability to accurately capture VMT associate with interregional travel trips.

3.4, p. 60

Model consistency is not defined. There should be defined quantitative measures for acceptable consistency. For example, SCAG has consistency requirements for sub-area modeling which specify quantitative levels of acceptable divergence from estimates produced by the regional model.

Is the word 'encourage' meaningful in these statements? It would seem that these should be clear requirements,

- The same land use used in the RTP modeling is *encouraged* [emp added] to be used in the impact assessment for the No Action alternative, the Proposed Plan alternative, and the Environmentally Preferable Alternative.
- Assumptions, model inputs, data, and methodologies are *encouraged* [emp added] be the same for modeling for federal air quality conformity and for SB 375 GHG emission reduction targets. The results provided to the federal government for ozone, carbon monoxide,

[iv] Karner, A. (2016). "Planning for transportation equity in small regions: Towards meaningful performance assessment." Transport Policy 52: 46-54.

> particulate matter and nitrogen dioxide are encouraged come from the same emissions model run as the GHG emissions provided to ARB

Under what circumstances would differing land use assumptions or different inputs/data and methodologies be acceptable?

Note also that there are missing words and confusing statements in the last two bullets,

- MPOs are encouraged strive to use common data definitions, sources, and performance measures for date including but not limited to population, employment and house estimates, and provides, labor force ages, and VMT.
- Post-processing of modeling results can be accompanied the modeling limitations being overcome and how the limitations were identified.

p.61
The text under the modeling assumptions section seems to imply that only some (i.e. "key") assumptions must be documented. All assumptions should be documented.

It should also be made clear that any factor that is not expressly modeled (e.g., race) cannot be used in any analyses that relies on the forecasted results.

p.62
Please define 'reasonable' here (e.g., would it be considered 'reasonable' to run scenarios of all transit improvements)? The language used below would seem to preclude developing scenarios that focus on full investments in modes other than SOV,

> The conformity determination must include reasonable assumptions about transit service and increases in transit fares and road and bridge tolls over time (40 CFR 93.110(

The boundaries of the application of the model are expressly derived by the limitations of the data as input. For example, if the greatest trip is 5 mi, then modeling results should not be considered reliable for any trip length greater than 5mi. The boundaries of the data used in each step of the modeling process should be documented.

All off-models should be made publicly available and the data be of the quality that replication of results can be achieved,

> Consider providing an explanation of what model limitations are being overcome and how the limitation are defined along with the post- processing results.

pg 64, Model Calibration/Validation
All factors and parameters that are calibrated should be documented and results of validation at each step should be provided. Observed and modeled speeds and volumes should be provided for each link in data form and publicly available.

pg 65
MPOs should provide the results of backcasting efforts in data form and these should be made publicly available.

pg 66
Please define 'reasonable',

> Scenarios of land development and use must be consistent with the future transportation system alternatives for which emissions are being estimated. The distribution of employment and residences for different transportation options must be reasonable (40 CFR 93.122(b)(1)(iii));

pg 67

Please describe how calculation of model elasticities conforms to assessing model sensitivities,

> Disaggregate checks, such as the determination of model elasticities, are performed during model estimation.

pg. 70

Peer reviews should include specialists familiar with travel models who do not have a conflict of interest (i.e., are independent of groups working on travel models for the state or the particular agency),

> Furthermore each agency is encouraged to formally seek out peer reviews from Californian transportation modelers including other agencies of similar size during model development and during forecasting at least every 10 years or after a major modeling enhancement. In addition to the review by peers, agencies are also encouraged to utilize FHWA's Travel Model Improvement Program peer review process.

pg 77

How does the average size of an individual TAZ actually get calculated?

> TAZ structure is important for any travel demand model and it should contain homogenous land use as much as possible. The average population in each TAZ should be between 1200 and 3000 and it should not generate more than 15000 person trips per day. The average size of each TAZ should be between 0.25 and 1 square miles

pg. 74

Please define a 'simple freight model' – what are the required aspects to this model? And why is a region in non-conformity for ozone only required to develop a simple freight model? This does not seem consistent with state priorities.