



METROPOLITAN  
TRANSPORTATION  
COMMISSION

**Agenda Item 8**

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*Memorandum*

TO: Policy Advisory Council

DATE: October 3, 2011

FR: Pam Grove, Staff Liaison

W.I. 1114

RE: Staff Liaison Report – October 2011

**September 28<sup>th</sup> Commission Actions**

1. Regional Express Lane Application

Policy Advisory Council member Marshall Loring asked me to share a memorandum (submitted by Dr. Deb Niemeier, Dana Rowan and Alex Karner – a professor and two PhD candidates from UC Davis, respectively) critiquing MTC's plan to submit an application for a regional Express Lane Network. The memo (see attached) was submitted as part of public comment at the September 28 Commission meeting. You can listen to the audio archive of that meeting on MTC's web site at <http://www.mtc.ca.gov/meetings/archive/index.htm>.

In addition, to view information on the MTC website about the Express Lane Application to the California Transportation Commission and the vote of the Commission, go to [http://www.mtc.ca.gov/news/current\\_topics/9-11/express\\_lanes.htm](http://www.mtc.ca.gov/news/current_topics/9-11/express_lanes.htm).

2. Regional Agency Headquarters

MTC and BATA voted to support the findings of the special ad hoc committee and to approve that committee's recommendation to authorize staff to bid on the purchase of the 390 Main Street property in San Francisco. Information regarding the Regional Agency Headquarters project – including the items from the September 28<sup>th</sup> joint MTC/BATA packet – can be found on MTC's website at [http://www.mtc.ca.gov/news/current\\_topics/9-11/headquarters.htm](http://www.mtc.ca.gov/news/current_topics/9-11/headquarters.htm).

The next step involves MTC's real estate broker (CBRE) submitting a bid on MTC/BATA's behalf to purchase the property as part of a competitive bid process. If MTC/BATA is the successful bidder, the Commission will meet to take the necessary actions to close the transaction, including disclosure of the purchase price and other terms and conditions.

While a review by the Bureau of State Audits of the proposed property acquisition is pending, it is not expected to be completed for several months.

## **From the Executive Director's Report**

The following items of interest were in the September 2011 Executive Director's Report to the Commission:

- ***Last Bay Bridge Steel Shipment — Oakland, August 28***  
The last major shipment of steel deck sections for the new suspended portion of the new east span arrived from Shanghai in late August. Our contractor American Bridge/Fluor (ABF) installed the first of the four deck sections last week. In another very visible milestone, ABF also has completed installation of the four construction catwalks that will be used to erect the main cable of the suspension span. The cable work itself is scheduled to begin in earnest early next year.
- ***State Senate Interim Hearing — San Jose, September 13***  
I testified before an interim hearing of the State Senate Transportation and Housing Committee on Assembly Bill 57, the legislation we have sponsored to add two seats to the commission representing the mayors of San Jose and Oakland. The hearing felt very much like “old home week” since the session was chaired by one former MTC commissioner (Senator Mark DeSaulnier) and he was joined at the dais by another former MTC commissioner who authored the bill (Assemblyman Jim Beall). Senator DeSaulnier plans to hold another two hearings – on November 10 in San Francisco and December 1 in Oakland – to discuss the subject of “regionalism” in the Bay Area.
- ***Obama Signs SAFETEA Extension — Washington, DC, September 16***  
President Obama has signed into law the 8th extension of the current federal surface transportation program authorizing legislation that expired two years. We are now four extensions shy of the record 12 extensions that preceded enactment of SAFETEA itself in 2009. This latest extension is for six months until March 2012. Whether the prospects for a long-term authorization bill improve during a Presidential election year is anybody's guess. One encouraging recent development comes from House Transportation Committee Chairman John Mica, who is reportedly looking for additional revenue to supplement the meager receipts in the Highway Trust Fund to avoid a steep reduction from baseline funding levels in his authorizing bill.
- ***Title VI Compliance Review — Oakland, September 19-21***  
Officials from Federal Transit Administration (FTA) headquarters were in town last week to conduct a compliance review of MTC's procedures and practices for implementing Title VI of the Civil Rights Act. We expect to receive a draft report of their findings within the next few months.

To read the entire Executive Director's report to the Commission, go to [http://www.mtc.ca.gov/news/ed\\_report.htm](http://www.mtc.ca.gov/news/ed_report.htm).

## MEMORANDUM

**TO:** Stuart Cohen, Executive Director, TransForm  
**FROM:** Dr. Deb Niemeier, Dana Rowan, Alex Karner  
**DATE:** September 28, 2011  
**RE:** Bay Area Express Lanes Public Partnership Application for High Occupancy Toll Lanes

### Overview

On September 28, 2011 the Metropolitan Transportation Commission, in cooperation with the California Department of Transportation, will submit an application to the California Transportation Commission for the authorization of 270 High Occupancy Toll (HOT, or Express) lane miles, comprising 150 lane miles converted from High Occupancy Vehicle (HOV) and the addition of 120 new lane miles. In light of the MTC's stated goals for projects, we have conducted an independent evaluation of project costs and benefits and draw a different conclusion than presented by MTC.<sup>1</sup> We believe that most of the project benefits will be short-term and that additional long-term challenges will be created that will make it very difficult, if not impossible to achieve the level of greenhouse gas reductions required by 2050.<sup>2</sup> Additionally, important equity and civil rights considerations have not been analyzed.

The project is driven by the singular objective of reducing vehicle congestion delays; a performance measure established more than 50 years ago. While clearly still of importance, congestion mitigation continues to dominate other critical priorities that should have an equal role in project evaluation and prioritization. In short, we find MTC's evaluation to be an overly optimistic portrayal of project benefits that ignores climate and equity impacts and offer an alternative assessment, which we have summarized in Table 1. We focus on identifying the long-term impacts that occur when new lane-mile capacity is added to address congestion. The cyclical effects of building new lane-miles to mitigate congestion are well documented in the academic literature: increased roadway supply brings increased demand, or VMT.

**Table 1. Long-term impacts of the project relative to MTC stated goals**

MTC Goal	Impact
Climate Protection	ADVERSE
Adequate Housing	BENEFICIAL
Healthy/Safe Communities: Air Quality	ADVERSE
Healthy/Safe Communities: Traffic Safety	ADVERSE
Healthy/Safe Communities: Active Transport	LIKELY ADVERSE
Protect Open Space/Agricultural lands	ADVERSE
Equitable Access	ADVERSE
Economic Vitality	UNKNOWN
Transportation System Effectiveness: Mobility	ADVERSE
Transportation System Effectiveness: Maintenance	ADVERSE

<sup>1</sup> MTC and Caltrans. "Bay Area Express Lanes Public Partnership Application for High Occupancy Toll Lanes", September, 2011.

<sup>2</sup> Regions are not only required to meet SB 375 targets, but should also achieve progress toward the longer term state target of reducing greenhouse gas emissions 80% below 1990 levels by 2050 prescribed in executive order S-20-06. It is very unlikely that the state will reach the 2050 target if regions continue to rely predominantly on building roadway capacity as a means for addressing congestion.

## Project Justification

In its CTC application, MTC has focused on the benefits of *connectivity, efficiency, and reliability*. These *vehicle-based* benefits will be short-term in duration and will lock in additional permanent infrastructure that does not serve the long-term interests of the state.

Building new HOT lanes and converting existing HOV lanes to HOT lanes provides new regional revenue, which is used to further expand freeway capacity to outlying suburban communities. For newly built and converted HOT lanes, the long-run effect of additional capacity will be to induce additional travel by facilitating changes in residential location choice and household travel behavior. Congestion will escalate and travel time improvements will be lost for mixed-flow travelers.<sup>3</sup> The argument that a complete HOT lane network results in improved transportation system efficiency hinges on the fact that additional capacity must be continuously added to the system in the form of new freeway lane miles and conversion of HOV to HOT lanes, the net effect of which is to increase long-term VMT.

The conversion of HOV lanes to HOT lanes will also reduce the incentive to use transit or carpool and result in a more stringent HOV criterion (e.g., requiring 3+ occupants to qualify for HOV status will become necessary sooner than it would be otherwise). In short, the conversion to HOT lanes amounts to a transfer of travel time benefits from 2+ carpoolers to those who are willing to pay a toll.

It is clear that from MTC's perspective, the strongest justification is the generation of revenue. But in examining MTC's logic, we find the argument highly circular: HOT lane additions and conversions will provide revenue to fund HOT lanes and conversion of HOV lanes, which increases the network of HOT lanes. The net effect is an expansion of the freeway system with many adverse long-term permanent impacts. In the long run, the main benefit will be improvements in travel time for those who can pay the toll and it will occur at the expense of the travel times of 2+ carpoolers.

## Consistency with Stated MTC Goals

MTC has published a preliminary assessment<sup>4</sup> of the HOT lane system using several of the criteria presented in their proposed project assessment framework. MTC's project analysis does not account for limitations in the travel model which does not consider long run changes in travel behavior and location choice.<sup>5</sup> Based on empirical literature and the design of the travel model,<sup>6</sup> we expect that the project will have the following *long-term* effects on the MTC goals:<sup>7</sup>

**Climate protection: ADVERSE IMPACT.** The project will increase VMT and total greenhouse gas emissions as it facilitates additional growth in distant suburbs and as travelers change their behavior to fill the added capacity.

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<sup>3</sup> Our understanding is that MTC will manage the HOT facilities such that free flowing speeds are maintained.

<sup>4</sup> PDF file "MTC Express Lane Analysis Summary" dated 9/2/11, obtained from Stuart Cohen of TransForm.

<sup>5</sup> MTC has indicated that only the mode choice and trip assignment portions of the model are being run for project-level assessment (email correspondence, D. Vautin, September 1, 2011).

<sup>6</sup> Details about the expected relationship between each objective and potential projects are provided in "Evaluation of Proposed Bay Area Project Performance Assessment and Benefit Cost Assessment," September 2011, available from dniemeier@ucdavis.edu.

<sup>7</sup> Here, 'long-term' is a proxy for that point at which the expanded capacity has been fully utilized. This may or may not occur within the timeframe of the current RTP.

**Adequate housing: BENEFICIAL IMPACT.** As MTC indicates, the project will increase access to locations with planned growth.

**Healthy and Safe Communities: air quality: ADVERSE IMPACT.** As VMT increases and congestion escalates in the long-run, emissions of PM<sub>2.5</sub> and PM<sub>10</sub> will increase. The severity of air quality impacts in CARE communities is unknown.

**Healthy and Safe Communities: traffic safety: ADVERSE IMPACT.** As VMT increases, there is a high probability that traffic accidents will also increase.

**Healthy and Safe Communities: active transportation: ADVERSE IMPACT.** MTC's analysis shows short-run decreases in active transportation as transit trips decrease; these trends are expected to continue long-term.

**Protect open space/agricultural lands: ADVERSE IMPACT.** The project will increase access to agricultural land and open space, which will increase development pressures on those lands.

**Equitable Access: ADVERSE IMPACT.** Most benefits will accrue to those who can pay tolls which are expected to be higher income households. HOV conversion to HOT will cause the HOV threshold to become more stringent. Those who ride in 2+ carpools but cannot pay tolls will eventually experience increased delays on HOV lanes that are converted to HOT lanes. Some carpoolers (those who are 2+ in the short term and 3+ in the long term) will benefit from travel time reductions when new HOT lanes are built.

**Economic Vitality: UNKNOWN IMPACT.** It is clear from the literature that individual projects do not by themselves increase regional economic growth. More specifically, access to ports by freight vehicles will not be affected because trucks will not be permitted to use HOT lanes and as the mixed flow lanes become congested, trucks will not retain travel time savings. There is the possibility that this project could contribute to, or support a period of growth in which the Bay Area could become a mega-region. In this case, GRP would likely rise and there could be economic benefits. However, it is not clear that significant economic growth will result from this project alone.

**Transportation system effectiveness: Mobility: ADVERSE IMPACT.** The project will increase overall VMT in the long run and increase single occupancy vehicle travel.<sup>8</sup>

**Transportation system effectiveness: Maintenance: ADVERSE IMPACT.** The construction of additional lane-miles will increase the long term maintenance burden.

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<sup>8</sup> The MTC preliminary project assessment indicates that the project will reduce carpooling and transit by 0.03% and 0.7% over the base case while SOV trips will increase by 0.3%. These modeled relations are expected to be maintained in the long-run.

The CTC application prepared by MTC also includes a cost-benefit analysis of the project. The conclusion of this assessment is that most stages of the project meet cost effectiveness criteria. However, these benefits are dominated by improvements in vehicle travel time, which are short term improvements only. Because household trip-making activity is assumed to be constant for project-level modeling, in reality vehicle travel times will increase and all benefits will diminish or may even become negative as induced demand increases overall distances traveled, congestion returns, and total travel times increase. The model's omission of long-run changes in travel that result from capacity additions gives overestimated travel time benefits because it fails to account for additional travel that will be induced by increased capacity. It is also critical to note that improvement in vehicle travel times is not an explicit goal as enumerated by MTC.<sup>9</sup>

## Equity

As a final section in this review, we draw attention to the equity issues raised by this project. MTC's website on civil rights and Title VI<sup>10</sup> states that

MTC is committed to ensuring that no person is excluded from participation in, denied the benefits of, or discriminated against under its projects, programs or activities on the basis of *race, color, creed, national origin, sex or age*, as provided in Title VI of the Civil Rights Act and 49 Code of Federal Regulations Section 5332. [emphasis added.]

MTC also adds low-income and limited English proficiency individuals to the list of protected classes. The California Transportation Commission's guidance on HOT lane eligibility pursuant to AB 1467 requires a description of "environmental justice issues or concerns" related to the project.<sup>11</sup>

The discussion of environmental justice issues and concerns included with MTC's project application is deficient for several reasons: it does not use travel model outputs to quantify the effect of HOT lanes on target populations; it omits a discussion of effects by race, thereby violating Title VI, and finally, it includes a hypothetical discussion of express buses using the extended HOT network that does not reflect actually planned projects.

## Use of travel model

While there is no prescribed method to assess whether a transportation project will discriminate against protected populations under Title VI using travel demand models,<sup>12</sup> a traditional approach taken in regional transportation analyses proceeds in three stages as follows:

1. **Define target populations:** Identify target populations by calculating the percentage of travel analysis zone (TAZ) residents that are of color or low-income. TAZs that contain above a threshold percentage of these residents are included. MTC's current definition of the target population includes TAZs with 70% people of color and/or 30% low-income (defined as less

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<sup>9</sup> Vautin D., S. Co, and L. Klein (2011). "Memorandum: Update on Project Performance Assessment." July 18, 2011. Metropolitan Transportation Commission.

<sup>10</sup> [http://www.mtc.ca.gov/get\\_involved/rights/title\\_VI.htm](http://www.mtc.ca.gov/get_involved/rights/title_VI.htm)

<sup>11</sup> California Transportation Commission (2007). "Hot Lane Application."

[http://www.catc.ca.gov/programs/HOTLanes/HOT\\_Lane\\_Application\\_102407.pdf](http://www.catc.ca.gov/programs/HOTLanes/HOT_Lane_Application_102407.pdf)

<sup>12</sup> National Cooperative Highway Research Program (2004). Effective Methods for Environmental Justice Assessment. Washington, DC, Transportation Research Board of the National Academies, p. 1.

than 200% of the federal poverty level), among others. The zones not meeting these thresholds are defined as the non-target population.

2. **Define equity metrics:** Identify metrics on which the equity performance of the project is to be assessed. For example, commute travel time, non-commute travel time, gap between automobile and transit travel time, etc.
3. **Assess equity:** Determine whether forecasted changes in the metrics from the base year to the forecast year are similar for the target communities as compared to the non-target communities. That is, if a 10% reduction in travel time is realized by higher income groups, then a 10% reduction in travel time should be realized by lower income groups for the project to be equitable.

This approach, when conducted appropriately, will provide insight on whether the average benefits and average costs of the long range plan are distributed equitably across the various population groups. For example, if similar average travel time savings accrue to target and non-target populations from the base to the forecast year, the plan is usually judged to be equitable.

MTC is fortunate in that it has recently developed a state of the art activity-based model that not only would facilitate a TAZ-based comparison, it would also allow a much more comprehensive evaluation using the household- and individual-level definitions of the target populations. In other words, the model can simulate the travel behavior of specific groups of households and individuals, thus providing a means for developing a much deeper understanding of the impacts of system improvements on target groups. This capability could result in a more complete picture of the equity effects of the HOT lane expansion but it has not been conducted for this project. Travel demand model runs were completed to provide inputs into the benefit-cost assessment, but the results were not presented in the submitted document and the impact on targets groups has not been identified. Staff should prepare a comparison between target and non-target populations at the household level using these data to assess the equity of the project.

#### **Absence of race**

MTC's discussion of the environmental justice issues regarding the plan completely omits a discussion of race, focusing instead on low-income residents. According to presidential executive order 12898,<sup>13</sup> achieving environmental justice involves "identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on *minority populations* and low-income populations in the United States..." (emphasis added). By focusing the discussion exclusively on low-income travelers, MTC misses an important component of environmental justice and risks noncompliance with Title VI.

Further, race has been found to be a strong predictor of travel behavior. Recent immigrants, who are overwhelmingly non-white, form carpools among friends and family far more readily than white native born Americans.<sup>14</sup> This finding confounds the CTC application's claim that "there is no evidence that 2-

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<sup>13</sup> Clinton, W. J. (1994). "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." from [http://www.epa.gov/region1/ej/pdfs/exec\\_order\\_12898.pdf](http://www.epa.gov/region1/ej/pdfs/exec_order_12898.pdf).

<sup>14</sup> Blumenberg, E. and M. Smart (2010). "Getting by with a little help from my friends...and family: Immigrants and carpooling." *Transportation* 37(3): 429-446.

person carpools are disproportionately comprised of low-income persons.” Additionally, blacks are far more likely than their white counterparts to take transit, especially bus.<sup>15</sup> These relationships cannot be collapsed simply into income. Staff must perform an equity analysis for the HOT lanes similar to that proposed above, looking at effects by race.

### **Transit benefits**

The CTC application repeatedly mentions the benefits of the extended HOT lane network for transit users because of the possibility for express bus service to use the new lanes. Such statements are not justified without explicit proposals from transit operators and MTC regarding new or expanded express bus service including funding mechanisms. Transit funding in the Bay Area has become increasingly scarce, with service cuts becoming increasingly common.<sup>16</sup> The reality of the transit funding situation underlines the importance of making concrete proposals that are supported by sound financial plans and modeled output showing that the added lines are viable and equitable. Simply because there are HOT lanes available doesn’t mean transit service can be viable as indicated in the CTC application, particularly given that the findings presented in the benefit-cost summary that showed a *decrease* in transit trips.<sup>17</sup>

### **The Importance of Planning for the Long-Run**

MTC has a unique opportunity to align its stated goals with the larger interests of the state. Building new freeway capacity to address congestion continues a cycle that has been proven unsustainable. Applications for projects that address congestion through capacity expansion should be held to a higher standard of transparency and be accountable for the longer-term impacts. Additional analysis of the distribution of costs and benefits by race and income for any project considered would also illuminate its effects. It is worth acknowledging the tradeoff between benefitting those who carpool with one passenger and those who are willing to pay \$0.14-\$1/mile (i.e. \$5 - \$35 for a one-way trip from Fairfield to Oakland).

Moreover, the evaluation of alternatives should be clearly defined with results that allow for greater transparency regarding underlying priorities. For example, given that it is relatively inexpensive to convert existing mixed-flow lanes to HOV lanes it is unclear why HOT lanes are needed to finance additional HOT/HOV capacity in distant suburbs.<sup>18</sup> An alternative project might target overall VMT and emissions reductions and mobility improvements by combining mixed flow conversions to HOV or transit only.<sup>19</sup> This

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<sup>15</sup> Pucher, J. and J. L. Renne “Socioeconomics of urban travel: Evidence from the 2001 NHTS.” Transportation Quarterly 57(3): 49-77.

<sup>16</sup> See, e.g., Eskenazi, J. (2010). “AC Transit Approves Massive Service Cuts.” [http://blogs.sfweekly.com/thesnitch/2010/09/ac\\_transit\\_approves\\_massive\\_se.php](http://blogs.sfweekly.com/thesnitch/2010/09/ac_transit_approves_massive_se.php)

<sup>17</sup> PDF file “MTC Express Lane Analysis Summary” dated 9/2/11, obtained from Stuart Cohen at TransForm.

<sup>18</sup> MTC has documented that they considered converting a mixed flow lane to a high occupancy lane on I-880 through Oakland. They indicate that this project would result in travel time delays and likely air quality impacts. However, it is unclear whether these are short or long-run results, and there appears to be no analysis of more distant lane conversions (e.g., to Yolo County).

<sup>19</sup> Caltrans’ website states that, “Regular ‘mixed-flow’ lanes are never converted to HOV lanes. Rather, HOV lanes are always added to existing facilities” (<http://www.dot.ca.gov/hq/paffairs/faq/faq79.htm>). Although this position appears to reflect the *de facto* stance of transportation planning organizations and California transportation policy, it is not based in the law. California Vehicle Code Section 21655.5 states that Caltrans and local authorities may “authorize or permit exclusive or preferential use of highway lanes for high-occupancy vehicles” provided that engineering studies are completed on safety, capacity and delay. Citing similar requirements regarding engineering

could be coupled with increased fuel taxes with revenues distributed to transit, air quality improvements, and disadvantaged households. Another option might involve a mixed-flow conversion to HOT focused on the urban core and surrounding suburbs rather than very distant suburbs in conjunction with programs targeting affordable housing and job access. In short, MTC's proposal as provided continues long-term unsustainable transportation practices and reflects none of what is now understood about the long-term provision of transportation infrastructure.

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studies, California Streets and Highways Code Section 149 also states that "designated lanes on existing highways" may be authorized for bus-only or bus and HOV use.



# UCDAVIS

## UNIVERSITY OF CALIFORNIA

Dr. Deb Niemeier is a Professor in the Dept. of Civil and Environmental Engineering at the University of California, Davis. She joined UC Davis in 1994 as an Assistant Professor after completing her Ph.D. at the University of Washington. Her research interests focus on transportation-air quality modeling, energy consumption and land use interactions, sustainability and the project development process for major infrastructure projects. She teaches graduate classes in travel demand modeling, transportation-air quality, and transportation finance. She has served on the expert independent review teams to assess the cost increases associated with the San Francisco Bay Bridge and to review the cost methods used for the proposed 3<sup>rd</sup> locks of the Panama Canal. Working with an interdisciplinary research group of graduate students, post-doctoral scholars, and faculty collaborators, she has published more than 110 journal articles and book chapters. Dr. Niemeier has been the major advisor for 20 Ph.D. students, two of whom are university faculty (University of Illinois and Cornell University).

She currently serves as the Director for the Sustainable Design Academy at UC Davis and is the Editor-in-Chief of Transportation Research, Part A, the leading international journal focused on transportation policy and practice. She is a member of the National Academy of Science Environmental Systems and Energy Board as well as a member of the MARs Corp. Scientific Advisory Council on Sustainability and the science advisory board for Capital Public Radio. She has served as Dept. Chair and as the Director of the John Muir Institute and Associate Vice Chancellor in the Office of Research at UC Davis. For more than 10 years, she was the Director of the UC Davis-Caltrans Air Quality Project, a state and federally funded research program aimed at improving vehicle emissions modeling and developing regulatory responses for state and local agencies. She has received a number of awards including the Aldo Leopold Leadership Award (2005), the Chancellor's Fellow Award (2001-2004), an NSF CAREER award (1997), and UC Davis Outstanding Faculty Mentor (1997) and Faculty Advisor (1995) Awards.

Dr. Niemeier is a member of the Transportation Research Board and NECTAR, the network on European Communications and Transport Activities Research. She has served on several National Research Council committees; her current committee service includes NCHRP 25-38 (Data Sources for MOVEs) and SHRP 2 C10B (Partnership to Develop an Integrated Travel Demand Model and Fine-Grained, Time-Sensitive Network) Expert Task Group. She recently completed membership on the American Association for the Advancement of Science, serving an elected four-year member-at-large term on the AAAS engineering section nominating committee. She is a member of the graduate faculty in the department of Computer Science as well as a member of a number of interdisciplinary graduate groups: Transportation, Technology, and Policy; Ecology, and Geography.

