

New York State Association of MPOs Climate Change Working Group

June 12, 2013
MEETING NOTES

Participants:

- A/GFTC – Kate Mance
- CDTC – Chris O’Neill, Sree Nampoothiri
- ECTC – Jim Arey
- NYMTC – Larry McAuliffe
- OCTC – Ahmed Ismail
- NYSDOT – Colleen Smith-Lemmon, Cathy Kuzsman
- UVM TRC – Jim Sullivan
- RSG – Steve Gayle

1. Overview of UVM Network Robustness Index - Jim Sullivan, University of Vermont Transportation Research Center [slide set attached]

Sullivan reviewed the presentation, with the following notes:

- Represents pieces of projects that have been done by UVM TRC over the past 5 years. Motivation to do this research: network disruption analysis as alternative to assuming intact network was spurred by events. Dropping one link can have a cascading and catastrophic effect, not intuitive by operators. Unpredictable consequences lead to a desire to predict where the vulnerabilities are (can similarly be applied to telecom networks, supply chains).
- How can analysis can be used in every day planning? Hard to predict which links may be affected by given event. Quantitative measures that can be used in a planning context. Looked at existing measures, but they were “too local” – corridor level. Wanted to examine the entire network/system. If an MPO focused only congestion, for example, and focused resources on that, they could choose projects that would not maximize benefits for whole network. This is more important as funding is becoming scarcer.
- Look at performance measure criteria to assess network disruption. Contrast with traditional PMs. If networks are growing, MPOs want to know where is the best place for the next link? But that is not the case in this part of the country. Better to harden the network that we now have. Major disruptions are more concerning. Certainly outweigh congestion. Can evaluate network benefit of new capacity, but that is a low priority. To identify critical links and vulnerabilities evaluate full day of travel instead of peak period(s). See the full range of travel purposes, not just commuting.
- Network Robustness Index: What happens to the entire network when a link is removed? No longer about how many people use link, but what is the cost impact of network delay if it is gone. Use total network VHT with missing link. Allows region to focus on priority links. The sample map of NRI for Burlington VT shows vulnerability does not match with congestion. More to do with connectivity. A congested link with many alternatives is not a high priority. But a bridge, for example, is high value where alternatives are few, distant, or low capacity.
- Network Trip Robustness. When proposing new links or improvements – how would that investment improve robustness of index. How does network function across a wide variety of disruptions. So if a new link is being planned, MPO can calculate NTR with and without.
- TRC looked at every project in CCRPC (Burlington MPO) LRP (40 years), performed a robustness analysis. Example: evaluated the proposed Circumferential highway by individual links; some are valuable but others do little, some harm robustness by creating new vulnerability. A proposed new

bridge creates redundancy for critical link of existing I-89 bridge and is therefore a priority. Costs are very different for each project, so may have a b/c that differs from traditional measures.

- New research work. Trip importance based on trip purposes; by assigning different values, how does that affect NRI? For example high value freight v recreational travel. How may this affect selection of critical links? Travel model trip purposes do not get down to essential/emergency trip purposes. Using location of facilities to determine link based measures. For example, the road to hospital or emergency services location is more important than others. Also considering modeling the value of time (eg, perishable freight) and the value of access in relation to critical destinations.
- Current applications. Apply NRI to snow and ice removal for VTrans to prioritize plow routes. Drill down into types of disruptions, like flooding.

Q&A

Are there other applications in use?

Sullivan – CCRPC has not incorporated into existing project prioritization process – hard to have an impact. VTrans Maintenance have been most receptive. 10% of budget for snow & ice control, and previous routing was ad hoc.

O’Neill: CDTC TIP project prioritization. Bridges: modify b/c by analyzing system impact of bridge closure. Pavements: measure impact of abandonment (speed reduced to 5 mph in model); correlates to AADT, but also detour length.

Sullivan: look at relationship between network costs; look at lower funding for bridge, therefore capacity deterioration. Relationship is not linear. O’Neill – load posting impact on freight movement. Sullivan – talking to VTrans about weight restriction impact; also how does pavement deterioration translate to capacity loss – proposed research.

Looking at Risk Indices – probability of event occurring times cost in VHD; different prioritization list.

O’Neill: Some links may be higher priority because of adding network redundancy.

Sullivan: look at hardening instead of redundancy.

Mance: Use NR for county level CIP for selecting sites for hardening, culvert capacity.

Sullivan: Bridges and culverts always more vulnerable on local roads

Ismail: Referencing Crown Point bridge closure. Did this inform UVM work?

Sullivan – did not take advantage of that data collection opportunity. Noting Minneapolis I-35 collapse, researchers measured trip changes, time to achieve new equilibrium state of rerouting.

Strategic disinvestment. VTrans is looking at links at bottom of NR list (least applicable to network vulnerability).

Traditional planning measures do not differentiate between O/D pairs by function: where are the roads going? Where do you need to go in an emergency? This is important to analysis.

2. Potential White Paper topics

If there is a project an MPO is working on that may generate a white paper, email Kate. Can be Climate Change or Sustainability. RSG can assist in developing the paper.

McAuliffe: Expressed interest in City of Albany EV charging station plan – status of implementation, costs, use. Local area networks are NYMTC focus.

Albany is pre-implementation, deciding on locations. TCI documents may have included cost information. Mance will review TCI papers to determine whether a summary could be created for MPO members.

3. NYSDOT Updates
NYSDOT has Complete Streets website re: sustainability.
4. Resource review [attached]
5. Set Date/Time/Agenda Items for Next Teleconference
Aug 14. 10:30 AM

RESOURCES

FEMA Local Mitigation Planning Handbook

FEMA released a new Local Mitigation Planning Handbook as the official guide for local governments to develop, update and implement local mitigation plans. It offers practical approaches, tools, worksheets and local mitigation planning examples for how communities can engage in effective planning to reduce long-term risk from natural hazards and disasters. This may be useful for MPOs which have included weather vulnerability studies or other sustainability studies as UPWP tasks.

<http://www.fema.gov/mitigation-planning-laws-regulations-guidance#3>.

CALTRANS Activities to Address Climate Change

The California Department of Transportation released a report detailing their successes in GHG reduction of at least 161,000 tons each year (or the same amount as removing 31,000 vehicles off the state's roadways). This was accomplished through new standards for cement production, efficient roadway lighting, alternative fuels and vehicles in the Caltrans fleet, and renewable energy projects. The report also highlights Caltrans' climate adaptation initiatives.

http://www.dot.ca.gov/hq/tpp/offices/orip/climate_change/documents/Caltrans_ClimateChangeRprt-Final_April_2013.pdf#zoom=75

U.S. Department of Transportation Releases Energy and Sustainability Performance Update

U.S. Department of Transportation (DOT) released an annual performance update that shows significant progress toward energy and sustainability goals. Under Executive Order 13514, Federal agencies must reduce their carbon pollution, increase renewable energy use, and meet energy and water efficiency goals. DOT is meeting goals for greenhouse gas emissions reductions, reduction in energy intensity, use of renewable energy, and reduction in fleet petroleum use.

<http://www.dot.gov/briefing-room/us-department-transportation-releases-energy-and-sustainability-performance-update>

2013 CoreLogic Storm Surge Report

The 2013 CoreLogic Storm Surge Report examines single-family residential structures (homes) exposed to potential hurricane-driven storm-surge damage along the Gulf and Atlantic coasts in the U.S, including an evaluation of 2012's Hurricane Sandy. The 2013 report finds that the New York City region faces the greatest threat of any metro area in the country from the impact on properties of hurricane-related storm surges and sea level rise. Addition new insights in the report include:

- An expanded overview of potential storm-surge risk that could occur in the event a one-foot, two-foot or three-foot sea-level rise
- Innovative analysis that provides a glimpse into the potential for increased risk in the event that ocean levels increase in coming years
- An explanation of the enhanced storm-surge methodology using valuations determined with CoreLogic Automated Valuation Model (AVM) data that is more geographically comprehensive than previous valuation methods
- Impact and implications of Hurricane Sandy—the largest storm of the 2012 hurricane season

Two separate top-ten lists provide an overview of major metropolitan areas ranked by total properties at risk and the total value of those properties based on CoreLogic property improvement value.

<http://www.corelogic.com/about-us/researchtrends/storm-surge-report.aspx#.UbCazOfVBIM>