CHAMPAIGN COUNTY rpc REGIONAL PLANNING COMMISSION

CUUATS
CHAMPAIGN URBANA URBANIZED AREA TRANSPORTATION STUDY

1776 East Washington Street
Urbana, IL 61802

Phone 217.328.3313
Fax 217.328.2426

www.ccrpc.org

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RE: Letter of Interest Submitted for U.S. EPA Technical Assistance: Greenhouse Gas Planning and Travel Efficiency Assessment

To whom it may concern:

Please accept this Letter of Interest for the Technical Assistance: Greenhouse Gas Planning and Travel Efficiency Assessment opportunity issued by the U.S. EPA. The requested information follows:

Introduction

The Champaign-Urbana Urbanized Area is a thriving and growing metropolitan area, located in east-central Illinois and has a population of about 148,000. Included in the urbanized area is the University of Illinois flagship campus with a student population of approximately 44,000, located in between the cities of Champaign and Urbana.

The Champaign-Urbana Urbanized Area Transportation Study (CUUATS) is the transportation entity of the Champaign County Regional Planning Commission (CCRPC), which is the Metropolitan Planning Organization (MPO) responsible for administering the federally mandated transportation planning process for the Champaign-Urbana Urbanized Area. CUUATS staff is responsible for updating the Long Range Transportation Plan (LRTP), as well as other federally-mandated transportation planning documents. The member agencies of CUUATS are the City of Champaign, the City of Urbana, the Village of Savoy, the University of Illinois, Champaign County, the Champaign Urbana Mass Transit District (CUMTD), the Illinois Department of Transportation (IDOT), and CCRPC.

CUUATS has been paying close attention to regional mobile source emissions and their potential impacts on the health, safety, and welfare of local populations, as well as the environment, and local economies. Mobile source emissions contribute significantly to local greenhouse gas (GHG) emissions. Emissions from the transportation sector account for 17 percent of Urbana's GHG emmisions[1], 22 percent of Champaign's GHG emissions[2], and more than 10 percent of the University of Illinois campus's GHG emissions[3]. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm. Despite this reduced standard, Champaign County remained below the maximum level in the years 2010 and 2011. However, with increases in population, total number of households, total vehicle miles traveled (VMT), and climatic changes, Champaign County exceeded the standard in 2012 (0.072 ppm), 2013 (0.075 ppm), and 2014 (0.072 ppm).

1. Reason for interest in participating

Regional Level Initiatives

CUUATS has been incorporating sustainability into the planning and programming activities of the MPO through the LRTP and the Transportation Improvement Program (TIP). The LRTP "*Sustainable Choices 2040*"[4], approved in December 2014, placed sustainability at the core of the transportation planning activities in the urbanized area. For the development of the LRTP, CUUATS evaluated two alternative scenarios: *Traditional Development 2040* and *Sustainable Choices 2040*. A set of interconnected models were used to analyze potential impacts of future planning decisions on the community through the year 2040 for the two scenarios.

The modeling suite for the LRTP "*Sustainable Choices 2040*" includes a mobile emission model using MOVES 2010b, an updated Travel Demand Model (TDM) using CUBE software, a land use model using Land Use Evolution and Impact Assessment Model (LEAM), a development social costs model using the Social Cost of Alternative Land Development Scenarios tool (SCALDS), a Health Impact Assessment model (HIA) developed in-house, and a Local Accessibility and Mobility Analysis model (LAMA) developed in-house. In the preferred *Sustainable Choices 2040* scenario, growth is more concentrated in existing downtown cores, and active modes of transportation are supported through additional facilities. In the final analysis, the preferred scenario is predicted to have lower GHG emissions per capita despite featuring larger overall population and employment growth.

The LRTP *"Sustainable Choices 2040"* also includes a set of performance measures to track progress toward the completion of the goals and objectives identified in the preferred scenario, including reducing VMT per household by 5% by 2020, and improving 1 and 8-hour ozone levels for the entire Metropolitan Planning Area.

1) Apply TEAM in LRTP

CUUATS updates the LRTP every five years as mandated by the Federal Highway Administration (FHWA) in order for communities in the urbanized area to receive federal and state funding for transportation projects. Collaborative efforts at the local, state, and federal levels have helped to implement the previous LRTP recommendations, yet new challenges continue to emerge as CUUATS is now preparing to update the LRTP for 2045, which is due for adoption in 2019.

Economic, social, environmental, and technological forces often have profound impacts on smaller urban areas like Champaign-Urbana. In the context of current broader macro-level changes that are beyond the control or sphere of influence of CUUATS or its partners, such as climate change, driverless cars, public safety events, as well as economic and political restructuring, CUUATS is seeking new approaches for anticipating the future in the development of the next LRTP.

CUUATS hopes to take multiple future conditions into consideration in the next LRTP update, screening a broader range of alternatives or scenarios for each future condition. The TEAM approach strikes CUUATS as a valuable planning resource for this purpose, as it will enable staff to conduct the preliminary consideration of options quickly and efficiently, given the many future conditions and

associated strategies that could be analyzed and assessed. Utilizing the technical assistance from EPA, CUUATS can begin the process of prescreening strategies under different future conditions, which will save our technical resources and maximize the time spent on strategies which merit additional exploration.

At this early stage in the development of the new LRTP, no final decisions have been made about what future conditions and strategies will be included. Reaching those decisions will entail significant research by staff and engagement with CUUATS partners, stakeholders, and the general public. The addition of EPA's technical assistance on the TEAM approach will be a great resource for CUUATS to conduct a preliminary exploration of future conditions and strategies to inform the public and stakeholders during the LRTP public outreach as well as when conducting more detailed modeling efforts.

2) Enhance TEAM with SCALDS

CUUATS would also like to incorporate SCALDS into the TEAM approach to include costs that are not measurable by mobile source emissions amounts. The ability of SCALDS to estimate a specific set of monetary and non-monetary costs associated with land development has made it a valuable part of the integrated modeling framework that informs development considerations for future scenarios.

SCALDS can complement MOVES in the TEAM framework as it can be used to estimate scenario costs including water and sewer cost, storm-water system cost, non-transportation energy cost, as well as streets and utilities infrastructure cost. By adding a social cost dimension to the prescreening process of alternatives options, SCALDS will broaden the collective understanding of different scenarios and their impacts.

As a lightweight spreadsheet-based model, SCALDS will not only work well under the TEAM framework by providing quick assessments of different scenarios, but can also enhance the TEAM approach by making the process more comprehensive for future applications by small MPOs like CUUATS.

Local level initiatives

The Cities of Champaign and Urbana, and the University of Illinois have initiated aggressive plans to address GHG emissions. The City of Champaign completed its first community-wide sustainability plan in 2013, Champaign Growing Greener[2]. The Plan was funded through an Energy Efficiency and Conservation Block Grant (EECBG). Transportation behavior is one of the seven focus areas the plan addressed in details on the goals of reducing GHG and improving air quality. The plan proposed specific strategies and measurable indicators to reduce vehicle miles traveled and build a community culture supportive of active transportation. CUUATS prepared the City of Champaign Community Transportation Report to serve as a baseline for understanding transportation behavior in the City to inform the Sustainability Plan. The analysis is based on the GHG analysis using MOVES 2010b results.

The City of Urbana Mayor Laurel Prussing signed the U.S. Mayors Climate Protection Agreement in 2007. Since then, the City has joined the International Council for Local Environmental Initiatives' (ICLEI) Cities for Climate Protection (CCP) campaign. The Urbana City Council created a Sustainability

Advisory Commission (SAC) in 2008, and developed a Climate Action Plan in 2012 to guide the community's efforts to reduce its emissions footprint. The Urbana SAC has adopted a long-term goal of reducing community-wide emissions by 80 percent below 2007 levels by the year 2050, with the short-term goal of achieving a 25 percent reduction by 2020. Following a phased implementation strategy, the City of Urbana laid out specific actions to achieve various GHG emission reduction goals, including transportation emission reduction, during phase 1 (2012-2014)[1] and 2 (2015-2020)[5] of the Climate Action Plan.

The University of Illinois at Urbana-Champaign signed the American College and University Presidents' Climate Commitment (ACUPCC) in 2008, formally committing to become carbon neutral no later than 2050. The University developed the Illinois Climate Action Plan (iCAP) in 2010[3], and updated the plan in 2015[6] as a comprehensive roadmap toward a sustainable campus environment. Transportation emissions reduction was included in the plan's objectives and strategies for reducing air travel emissions, campus fleet emissions, single-occupancy vehicle usage, and increasing the use of active modes of transportation.

The independent development of climate action/sustainability plans by local jurisdictions demonstrates local interest in reducing the impact of transportation activities on GHGs. The opportunity to be a case study for the TEAM approach will help CUUATS staff to better support member agencies in adopting consistent methodologies for evaluating progress in the implementation of climate action/sustainability plans. It will also allow the region to continually and collectively understand how ongoing development affects emissions in order to remain an attainment area.

2. Availability of staff resources

CUUATS staff includes one Transportation Planning Manager, two Transportation Engineers/Modelers, five full-time Transportation Planners, one Human Services Transportation Plan (HSTP) Coordinator, one Administrative Secretary, and four part time planning interns. Within CUUATS staff, there are many overlapping strengths and specialties in engineering and modeling, crash and safety analysis, bike and pedestrian planning, GIS mapping, long-range planning, public involvement, and public and environmental health coordination. The proposed case study will be conducted at the CUUATS office in Urbana. The CUUATS office is well equipped with planning, engineering, and administration technology including computers, printers, scanners, and a high-speed internet connection.

The team that will be responsible for carrying out the proposed tasks of this project includes the following staff:

Ms. Rita Morocoima-Black. Ms. Morocoima-Black has more than 30 years of experience in traffic engineering and transportation planning. Her emphasis in the last 17 years has been in Metropolitan Planning Organization services. Ms. Morocoima-Black has proven leadership skills gained from managing large projects such as the Long Range Transportation Plan 2025, 2035, and 2040 for the Champaign-Urbana Urbanized Area and several corridor projects. In addition to that, Ms. Morocoima-Black is proficient in dealing with projects involving federal, state, and local governments, as well as private entities.

Mr. M. Sharif Ullah. Mr. Ullah has extensive experience in travel demand modeling, traffic engineering, traffic safety analysis, and transportation planning analysis. His professional background includes more than 11 years of experience in building, maintaining, and updating the travel demand model for the Champaign Urbana Urbanized Area, and providing traffic engineering and safety solutions to the local municipalities and the University of Illinois. In addition, Mr. Ullah provides travel demand model training and coordination for the Illinois Modelling Users Group which has 13 member agencies, including IDOT.

Ms. Shuake Wuzhati. Ms Wuzhati is a transportation planner with experience in transportation planning, modeling, GIS, and data analysis. She has worked on a wide array of projects related to geospatial and tabular database management, data analysis and mapping, and corridor study. She is proficient in ArcGIS, R programming, and various database management applications.

3. Interest in estimating GHGs using a consistent methodology for multiple jurisdictions

While the county scale mobile emissions analysis using MOVES 2010b was useful in developing the LRTP "*Sustainable Choices 2040*", future plans across the region would benefit from having emissions modeling conducted at multiple scales to better match specific data requirements and performance measures for different agencies and jurisdictions.

Currently, the climate action/sustainability plans created by the Cities of Champaign and Urbana, and the University of Illinois each use different methods to measure mobile emissions. Based on the 2010 base year GHG analysis using MOVES 2010b results, CUUATS prepared the City of Champaign Community Transportation Report to inform the Champaign 2013 Environmental Sustainability Plan. The City of Urbana conducted GHG baseline emissions inventory with assistance of the Clean Air and Climate Protection Software (CACP) and the Climate and Air Pollution Planning Assistant (CAPPA). The University of Illinois utilized the Campus Carbon Calculator (CCC), a tool used by the majority of U.S. colleges and universities, to determine GHG emissions for their Climate Action Plan.

CUUATS staff hopes to implement an emissions model that can perform analysis at the municipal level in order help coordinate transportation sustainability efforts across the many jurisdictions in the region through the use of consistent methods and measurements.

4. Interest in implementing travel efficiency strategies analyzed

CUUATS staff is committed to applying the TEAM approach as a strategy prescreening process to explore travel efficiency strategies in the next LRTP as a way to foster the implementation of proven strategies consistent with the goals and expectations of CUUATS member agencies.

In addition, CUUATS staff looks forward to analyzing emission reductions from strategies the area has already adopted. The urbanized area is actively implementing biking and walking strategies recommended in the LRTP "*Sustainable Choices 2040*", as well as several local bike and pedestrian plans. The League of American Bicyclists recognized the City of Urbana as the first Gold Level Bicycle Friendly Community in Illinois in 2014[7]. The urbanized area also received a $15.7 million TIGER

Grant for the construction of the Multimodal Corridor Enhancement Project (MCORE) project within the University District. The total project cost is estimated at $41.4 million which includes the $15.7 million grant plus over $26 million in local matching funds. The MCORE project includes full reconstruction or major rehabilitation to rebuild the project streets into multimodal complete streets to accommodate all modes of transportation including bike lanes, bus-only lanes, improved sidewalks, new street lighting and upgraded bus stops. In addition to the pavement improvements, bus capacity and frequency will be improved on the MCORE corridors to serve the core of the urbanized area where greater transit frequency is most needed. The LRTP "*Sustainable Choices 2040*" also proposed additional public transit strategies, including implementing a high-speed rail connection between Chicago and St. Louis and increasing the frequency of Amtrak service through the Illinois Terminal in downtown Champaign.

Emission reduction analysis for proposed and adopted strategies can be integrated in the annual LRTP Report Card prepared by CUUATS staff. Currently, there are 28 performance measures in the Report Card including 1 and 8-hour ozone levels in the region, VMT per household, and several metrics to track the increase of multimodal transportation connectivity. All of these performance measures have helped CUUATS staff and member agencies to better understand the role of regional transportation strategies in reducing GHG emissions. Including more clear measurements of GHG emissions in the Report Card will further supplement CUUATS' current efforts to track and evaluate the performance and health of the regional transportation network.

5. Availability of data

Through years of intensive modeling efforts, CUUATS staff has developed a comprehensive database on local demographics, travel activity, land use, and transportation emissions. CUUATS staff also evaluates all collected data for accuracy and strives to acquire more and better data on an ongoing basis for future modeling analysis.

Demographic Data

Population data that can be made available for this project includes decennial census population data (block level), American Community Survey 1-year, 3-year, and 5-year estimates (census track and block group level), as well as traffic analysis zones (TAZ) level population estimates from 1990 to 2040. CUUATS staff used HandyAndy to develop region-wide population projections. HandyAndy, developed by Dr. Andy Isserman at the University of Illinois, is an interregional cohort-component model that takes into account various demographic, health, and migration factors to project population change over the planning horizon.

Employment data that can be made available for this project include TAZ level employment estimates from 2010 to 2040 based on data from ESRI Business Analyst, Champaign County Economic Development Corporation, and individual employers. CUUATS staff used TrenDandy, a spreadsheet tool also created by Dr. Isserman in conjunction with HandyAndy, to develop county-wide employment projections.

Household data that can be made available for this project include national decennial census household data (block level), American Community Survey 1-year, 3-year, and 5-year estimates (census track and block group level), Household Travel Survey data, as well as housing mix estimates from 1990 to 2050 at the regional level.

Having previously used the Land Use Evolution and Impact Assessment Model (LEAM) for future land use projections, CUUATS is currently developing a new localized land use model to project demographic distribution by sub-categories at a higher spatial resolution.

Travel Activity Data

All the necessary inputs for the person trip Travel Demand Model (TDM) using Cube Voyager can be made available, including roadway network, localized trip generation rates for the urbanized TAZs, external station data, friction factor table, travel impedance matrix, transit network, transit impedance, mode choice coefficients, intersection data, turn penalties, and volume-delay functions.

In addition, TDM outputs, including VMT by roadway type, ramp fraction (the fraction of VHT on ramps out of the total VHT on freeways), mode choice, traffic volume by road link, and congestion speed can also be made available for this project.

Land Use Data

Existing land use data that can be made available to this project include Champaign County Tax Assessor's GIS database, 2011 National Land Cover Database, as well as zoning maps from the municipalities in the region. Future land use information includes comprehensive plans from different municipalities, as well as future land use maps. The new localized land use model will also produce spatial land use projections.

Transportation Emissions Data

CUUATS staff has developed a localized database of inputs for MOVES 2010b to generate existing emissions inventories and emissions rates in order to conduct community-wide analyses for the 2040 LRTP in 2014, with 2010 as the base year. These existing condition inventories were based on 2010 hourly meteorology data obtained from the National Climate Data Center, 2010 vehicle registration data obtained from the Illinois Secretary of State, road type distribution aggregated from the Highway Performance Monitoring System, MOVES default fuel table, and VMT outputs from the TDM.

6. Level of familiarity with EPA's MOVES model

CUUATS proactively included MOVES in the modeling suite in the LRTP "*Sustainable Choices 2040*" to estimate the environmental impact of alternative planning scenarios. While the staff member primarily responsible for the use and maintenance of MOVES no longer works at CUUATS, current staff is comfortable with new tools and has access to detailed documentation on the data requirements, formatting, and processing steps used for MOVES 2010b when it was previously run. Technical assistance from EPA would provide CUUATS with an opportunity to further staff knowledge of MOVES, including upgrading to the latest version, which would better assist the sketch planning process for the next LRTP.

7. Level of familiarity with travel forecasting models and sketch planning tools

Travel Forecasting Model

CUUATS staff developed the Champaign-Urbana travel demand model (TDM) in-house in 2003. Since then, CUUATS staff has been maintaining the TDM for the Champaign-Urbana Urbanized Area using Cube software. The TDM uses the traditional four-step travel forecasting process to evaluate auto and transit trips for both daily and peak hour scenarios.

In order to facilitate ongoing transportation model development and knowledge sharing, CUUATS staff created the Illinois Model Users Group (ILMUG) and is under contract with IDOT to provide TDM training and technical assistance for the sixteen Illinois MPOs who are members of the ILMUG.

Scenario Planning & Sketch Planning Tools

CUUATS has been using scenario planning and analysis for over a decade and has been recognized in FHWA publications for its use of performance-based planning and programming through scenario planning[8, 9]. In previous long-range transportation planning cycles (2004, 2009, and 2014) and in five corridor studies, CUUATS has tested, refined, and analyzed many different scenarios.

The Emissions Analysis Tool (EAT), developed by CUUATS staff in 2011, is intended to integrate sketch planning into GHG analysis for various projects, as well as to expand the tactical utility of the localized MOVES model. Similar to the TRIMMES model, EAT is intended to quantify the relationships between transportation behavior and the built environment and track changes in emissions resulting from those relationships.

As a sketch planning tool based on elasticity factors computed by Ewing and Cervero[10] from literature meta-analysis between 1993 and 2009, EAT takes nine baseline conditions and nine proposed development inputs, and produces VMT changes as outputs, followed by emission analysis in MOVES. The elasticities developed in the meta-analysis focus on the effects of changes in the "five Ds" in the built environment on VMT, including density, diversity, design, destination accessibility, and distance to transit. Therefore, EAT can be a good supplement to the TRIMMS model on land use strategies that are not easily transferable into TRIMMS inputs.

8. Information about existing regional collaborations

Strong relationships with various local and State agencies and entities (including the University of Illinois at Urbana-Champaign) have been critical to CUUATS staff for obtaining data, conducting analysis, developing recommendations, and building political support for emissions related planning projects. Regional long-range planning and scenario planning processes have worked smoothly in significant part because of the high degree of collaboration and coordination among local agencies.

Serving as a consulting agency for the entire Champaign-Urbana region, CUUATS staff has completed several bike and pedestrian plans for municipalities to foster interagency coordination in the development of active modes of transportation facilities. CUUATS staff also works with its member agencies to develop transportation-related guidelines and data sets that foster coordination and

connectivity within the overall regional network; relevant topics include complete streets[11], roundabout design[12], and the sidewalk network inventory and assessment[13]. CUUATS also prepared the City of Champaign Community Transportation Report to serve as a baseline for understanding transportation behavior in the city to inform the Sustainability Plan based on the 2010 GHG analysis using MOVES 2010b results.

In addition, the Champaign County Sustainability Practitioners (CCSP), an informal intergovernmental committee started by CCRPC in 2008, facilitates coordination of local sustainability initiatives that span political boundaries. CCSP's goal is to investigate sustainability for the region and build momentum for addressing complex sustainability issues such as land use and climate change. Recent topics of discussion include GHG calculations attributed to transportation and the local foods movement.

We look forward to working with the U.S. EPA and be a case study for the TEAM approach which would further strengthen the existing regional collaboration on GHG emissions reduction, and benefit the region through discussions, analyses, and implementation of travel efficiency strategies. This case study will also provide other small-sized MPOs in the nation an example to adopt the TEAM approach in their long-range planning processes and other planning activities.

Thank you for this opportunity.

Sincerely

Rita Morocoima-Black
Planning & Community Development Director
Champaign County Regional Planning Commission
1776 E. Washington Street, Urbana, IL 61802
Email: rmorocoi@ccrpc.org
Phone: (217) 819 4056
Fax: (217) 328 2426

References

1. City of Urbana. (2012). Climate Action Plan, Phase1: Initial Strategies 2013-2015. Retrieved from http://www.urbanaillinois.us/sites/default/files/attachments/climate-action-plan-phase-1-web.pdf

2. City of Champaign. (2013). Champaign Growing Greener: 2013 Environmental Sustainability Plan. Retrieved from http://champaignil.gov/wp-content/uploads/2012/04/Champaign-Growing-Greener_4_16_15.pdf

3. University of Illinois at Urbana-Champaign. (2010). iCAP Illinois Climate Action Plan. Retrieved from https://icap.sustainability.illinois.edu/files/project/36/iCAP_FINAL.pdf

4. Champaign-Urbana Urbanized Area Transportation Study. (2014). Long Range Transportation Plan: Sustainable Choices 2040. Retrieved from http://lrtp.cuuats.org/

5. City of Urbana. (2013). Climate Action Plan, Phase 2: 2015-2020. Retrieved from http://www.urbanaillinois.us/sites/default/files/attachments/ucap-p2.pdf

6. University of Illinois at Urbana-Champaign. (2015). iCAP Illinois Climate Action Plan. Retrieved from http://sustainability.illinois.edu/wpcontent/uploads/2014/08/2015iCAPweb. pdf

7. City of Urbana. (2014). Urbana Named a Gold Bicycle Friendly Community by the League of American Bicyclists. Retrieved from http://www.urbanaillinois.us/posts/2014/11/urbana-named-gold-bicycle-friendly-community-league-american-bicyclists

8. U.S. Department of Transportation, Federal Highway Administration. (2013). *Performance-Based Planning and Programming Guidebook*. Retrieved from https://www.fhwa.dot.gov/planning/performance_based_planning/pbpp_guidebook/pbppguidebook.pdf

9. U.S. Department of Transportation, Federal Highway Administration. (2016). Supporting Performance-Based Planning and Programming through Scenario Planning. Retrieved from https://www.fhwa.dot.gov/planning/scenario_and_visualization/scenario_planning/scenario_planning_guidebook/fhwahep16068.pdf

10. Ewing, R., & Cervero, R. (2010). Travel and the built environment. Journal of the American planning association, 76(3), 265-294.

11. Champaign-Urbana Urbanized Area Transportation Study. (2012). Retrieved from http://www.ccrpc.org/wp-content/uploads/2015/03/complete-streets-policy-2012-final.pdf

12. Champaign-Urbana Urbanized Area Transportation Study. (2012). Retrieved from http://www.ccrpc.org/wp-content/uploads/2015/03/Final_CUUATS_Roundabout_Guidelines.pdf

13. Champaign-Urbana Urbanized Area Transportation Study. (2016). Retrieved from http://www.ccrpc.org/wp-content/uploads/2016/02/SidewalkNetworkInventoryAssessment.pdf