

**DATE:** July 14, 2016

**TO:** Land Use Advisory Committee

**FROM:** Macalester Sustainability Fellows Hannah Field, Virginia Flurry, & Gordon Moore, Local Planning Assistance

**SUBJECT:** Climate Vulnerability Assessment

The Macalester Sustainability Fellows, interns with Eric Wojchik in Local Planning Assistance, have prepared this memo to inform the Land Use Advisory Committee on the progress made with the Metropolitan Council's Climate Vulnerability Assessment (CVA) project. This memo explains the work the Fellows and Council staff have completed, to this point, on the CVA and includes a brief overview of its products and applications.

## Project Overview

The CVA specifically looks at the effects of **extreme heat** and **extreme precipitation events**, in the form of local flooding, and provides a tool that can assist in Council and community efforts in preparing and adapting to climate change. The CVA will help show what indicators (infrastructure, road networks, population, etc.) are most vulnerable to expected climatic changes, depending upon factors such as *exposure*, *sensitivity*, and *adaptive capacity* of the studies indicators.

The purpose of this report is to prompt a discussion about the myriad of ways an increasing number of extreme weather events can affect both communities as a whole and Metropolitan Council assets. Consistently, literature refers to how communities are most resilient to extreme weather events when they work together and outside of their silos. As such, the ultimate goal of this project is to be used as an outreach tool. This will come in two parts: first, a series of tools to show cities how to use and interact with this project, and second, a complete methodology so that cities can replicate our process as desired. The exact form these tools will take is still in progress.

## Methodology

To carry out this analysis, our project team met with subject matter experts under each of the Council's planned for and owned/operated systems, including Wastewater, Land Use, Transportation, Parks and Trails, and Water Resources and Water Supply. These experts each completed a vulnerability matrix to rank their potential indicators (e.g. principal arterial roads under Transportation) in order of relevance and importance to their system.

After all meetings with the subject matter experts had been concluded, our project team narrowed down the indicators to two to four for each system. We created an analysis flow chart for each indicator to determine how we would look at flood and heat vulnerability, which variables we would use, and how many maps we would create. These indicator maps will be overlaid with our heat and flooding basemaps for the metro area to create weighted vulnerability metrics (WVM) for the majority of the indicators.

Each map or series of indicator maps will be further strengthened by the addition of a Brief Indicator Profile (BIP). These one to two page analyses, summary, and explanation pieces will serve as snappy pull-out sections of the overall report and will include further methodological explanation and qualitative discussion. As we are not able to map all indicators, we will use the BIPs for qualitative discussion for several issues related to heat, including road buckling and certain human impacts needing further exploration.

## Focus Group

Because this CVA will ultimately be a tool for cities in their comprehensive planning on adaptation strategies for extreme climate impacts, we saw a need for input from the cities themselves in the CVA planning process. Our project team, therefore, hosted a 2.5-hour Focus Group event at the Met Council on Monday, July 11th. Twenty-one representatives from thirteen cities from around the seven-county metro region attended. Through the session, we collected feedback and ideas on how to improve the project as well as necessary areas for study in the future. Participants expressed interest in an ongoing inter-city collaboration to strengthen the dialogue about regional climate resilience.