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To: **Environment and Natural Resources Committee**

Date: **August 27, 2008**

From: **Bob Dean, Principal Regional Planner**

Re: **Scenario Construction**

A central piece of the *GO TO 2040* planning process is the evaluation of alternative future scenarios. Scenarios are combinations of actions (policies, strategies, and investments) that represent alternative paths that the region could take toward reaching its desired future, as expressed in the Regional Vision. The purpose of the scenario evaluation process is *not* to select one single scenario that will be adopted in its entirety. Instead, it is meant to allow us to examine different potential paths that the region could take toward the realization of its vision. Ultimately, the most effective pieces from each one of the scenarios will be chosen and combined into a preferred scenario.

On July 15, several ENR committee members participated in a conference call to review courses of action related to the natural environment and energy that could be included in the scenario process. Other committees have had the same opportunity for input, and staff is now combining these into full scenarios that include the courses of action from each committee. The overall identities of the alternative scenarios will be discussed with the Planning Coordinating Committee in September and will continue to be refined based on working committee input through the fall.

In the area of the natural environment, several potential courses of action for inclusion in scenarios were discussed:

- "Ecocentric." This course of action seeks to preserve and restore functioning ecosystems. It includes major purchases of land for environmental preservation, and restoration of ecosystems in the most viable areas. It also includes constraining the alignments of transportation facilities to avoid impacts on environmentally sensitive land.
- "Human-nature connection." This course of action seeks to maximize the accessibility of open space and environmental amenities to residents, particularly existing developed areas. It targets open space acquisition and restoration efforts to urban sites ("greenfill") and also increases the accessibility of existing parks and open space. River restoration is targeted toward urban sites with a goal of improving recreation on waterways.

Additionally, this course of action targets water and energy conservation to older developments through retrofitting.

- "Green development." This course of action seeks to minimize the impact of new development, while accepting that new development will occur by 2040. It includes increased use of conservation design, development restrictions in environmentally-sensitive corridors (as identified through Green Infrastructure Vision and water supply study) and cutting-edge stormwater BMPs and wastewater land application techniques. It also relies on alternative energy sources.
- "Individual action." This course of action includes increased general awareness and interest by individual residents of the environmental consequences of their actions. This will probably be included as an assumed part of all scenarios (since without real changes in behavior, there is a limited amount that the public sector can do.)

In the area of energy, several potential courses of action for inclusion in scenarios were discussed:

- "Building efficiency." This course of action seeks to reduce energy consumption by making residential and commercial buildings more efficient. It includes retrofits of older buildings to increase their energy-efficiency and stricter design codes (using LEED or similar system) for new buildings to ensure that they are efficient.
- "Transportation efficiency." This course of action seeks to reduce energy consumption by lowering reliance on single-occupancy vehicles for trips. It includes improved transit service, bicycle and pedestrian facilities, and other alternatives such as car-sharing or ride-matching. It also uses transit-oriented development, mixed-use developments, and a better regional jobs-housing balance to reduce the need for long trips.
- "Industrial regulation." This course of action seeks to reduce greenhouse gas emissions from industrial sources. It focuses on technological improvements and tightened regulations to accomplish this.
- "Alternative energy." This course of action relies on "supply-side" improvements to reduce regional energy consumption. It includes the use of alternative fuels for transportation purposes and alternative energy sources for residential, commercial, and industrial use. It also includes an increase in research and development for alternative energy in the region, focusing on attracting and retaining "green collar" jobs and businesses.
- "Individual action." This course of action includes activities that individuals can take, such as using energy-efficient lightbulbs, that when taken together can have significant energy consumption impacts. As noted above, this will probably be included in all scenarios.

Attached to this memo is an updated version of the document that describes the scenario construction process.

ACTION REQUESTED: Discussion.

Scenario construction process
DRAFT – 8/13/08

Description of thematic scenarios

At working committee meetings in June 2008, staff presented several options for the construction of alternative scenarios. There was general agreement that we construct our scenarios using a *thematic* method. In thematic scenario construction, each scenario is a combination of individual strategies, or a course of action. The strategies can be grouped into thematic scenarios by any method desired; the process for this proposed for CMAP will be described later.

The purpose of the scenario evaluation process is *not* to select one single scenario that will be adopted in its entirety. Instead, it is meant to allow us to examine different potential paths that the region could take toward the realization of its vision. Ultimately, the most effective pieces from each one of the scenarios will be chosen and combined into a preferred scenario.

A thematic organization was chosen after examining various other possible methods for scenario construction, including:

- Varying scenarios by intensity, as in the Envision Utah process. In this construction method, one scenario includes no good planning, one includes lots of good planning, and the others vary between these bookends. This model is useful for establishing that there is support for planning in general, but it does not help very much in prioritizing actions. Therefore, this is more useful for organizations that are trying to create broad support for planning, something that CMAP assumes already exists in this region. However, this method still may have value in terms of communication with the general public.
- Maximizing one goal over another. For example, an environmental scenario could be created which focuses on achieving our environmental goals, and this could be tested against an economic or an equity-focused scenario. While this method is fairly simple and easy to explain, it also leads to false choices (environmental actions can also be economically beneficial, for example), and it would pit groups of stakeholders against each other unproductively.
- Focus on investment in different areas. This method assumes that many of our region's resources are committed to maintaining our infrastructure, education, health care, and other systems, but that there is a certain amount of discretionary funding. Scenarios constructed using this method would focus the investment of this discretionary funding on infrastructure versus education, for example. While this is an interesting public policy question (how best can the public sector use its resources), it leads to the same unrealistic tradeoffs described above. Additionally, the focus on public sector investment ignores the role of private sector investment or other public sector actions such as regulation.
- Assigning growth to one area or another. This method would forecast population and jobs for different geographies and then adjust these forecasts to determine the

effect of faster population growth in Kane County, for example. This method is undesirable given the consensus-based nature of CMAP's decision-making. Also, it is unrealistic, because neither CMAP nor any other group has the ability to simply shift jobs and people between jurisdictions. While it may lead to interesting results concerning the effects of growth in one area or another, it does not lead to a prioritization of strategies.

Within thematic scenario construction, there are a variety of ways to assign strategies to different scenarios. It is proposed that CMAP involve its stakeholders and committees in this process, as described later in this document.

Key standards met through use of thematic scenarios

Before the decision that thematic scenario construction was the right method, a number of baseline scenario features were established to guide the choice of the best scenario construction method. These included the following:

- Scenarios should be logical and internally consistent, and should also be reasonable views of the future, rather than "straw men" which exist to be destroyed. Thematic scenarios can provide more realistic futures than the other methods, which tend toward extremes.
- The purpose of scenarios is to prioritize actions for implementation. Because thematic scenarios are combinations of actions, they can do this. (So could several other of the scenario construction methods, as well.)
- In comparison to the reference scenario, each scenario should lead to an overall improvement in environmental quality, economic competitiveness, equity, and other vision themes. Thematic scenarios can be constructed in a way to ensure that each contains strategies to improve the environment, economy, etc. Other scenario options, such as the maximizing of one goal over another, would tend to be less balanced, and in some cases, it would be difficult to ensure that this standard were met (for example, an economically-focused scenario could easily have a negative effect on the environment.)
- Minimum standards or "floors" should be included in each scenario for basic maintenance of the system, continued funding for education, an acceptable level of planning for safety and security, etc. This could actually be accomplished through any of the scenario construction methods.
- Cost constraints should be clear. This can either be accomplished through holding costs equal and ensuring that all scenarios cost the same, or by explicitly stating the tradeoffs between benefits and costs (such as higher taxes). Because thematic scenarios are combinations of explicit strategies, either of these methods can work with a thematic scenario construction method.
- Scenarios should be treated as examples that illustrate potential futures, not the full range of futures that are available to the region. This is a key consideration in thematic scenarios, and one way in which they may be more difficult to use than other options. They will appear to have a degree of arbitrariness to anyone not

involved in their construction. For example, it is easy to understand that an "environment vs economy vs equity" tradeoff is done to provoke thought and discussion. Because the choices involved in thematic scenarios are not so simplistic, and the future they describe are more realistic, they may be viewed by some as actual choices rather than illustrations.

- Scenarios should be designed with public communication in mind. This will be a greater challenge for thematic scenarios than for others. However, it is more important to select a scenario construction process that allows the most robust analysis possible. Given sufficient effort and creativity, even the most complex processes can be communicated to the public.

In addition to these standards established ahead of time, a number of issues were discussed at the working committee meetings which can be accommodated within thematic scenario construction. A key issue was the responsiveness of scenarios to outside forces, such as energy prices, overall global economic conditions, and climate change. This can be addressed by doing "robustness testing" after scenarios are constructed. For each scenario, we can ask how much sense that particular combination of actions would make in a future with considerably higher energy prices, for example. Energy usage is likely to be calculated for each scenario, so it would be a simple matter to identify the most and least energy-efficient scenarios. This may not matter for decision-making now; we need to select a preferred set of actions based on the best information that we currently have. But as we get a clearer picture of the future of energy prices, we can re-prioritize our strategies based on our changing expectations.

Another critical issue was the place of Chicago within the global economy, as it is clear that global trends do affect the region. There are a variety of actions that can be take in response to this, ranging from increased local food production, to specializing in green architecture, to centralizing our position as an international freight hub, to trying to save our manufacturing jobs, etc. Which one of these courses of action makes most sense depends largely on one's future expectations. However, regardless of this, the plan needs to directly address our place within the global economy.