



**R | S | G** INC.  
RESOURCE SYSTEMS GROUP, INC.

## **SUMMARY REPORT**

### **MPO PEER WORKSHOP ON ADDRESSING FINANCIAL UNCERTAINTY & YEAR OF EXPENDITURE REQUIREMENTS**

*HOSTED BY*

HOUSTON-GALVESTON AREA COUNCIL  
HOUSTON, TEXAS

DECEMBER 13-14, 2007

Prepared for:

**Federal Highway Administration**

January 2008



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## LIST OF ATTENDEES

- **John Orr**, Sr. Principal Planner, Atlanta Regional Commission (GA)
- **Tom Niskala**, Transportation Planning Director, Corpus Christi MPO (TX)
- **Wade Kline**, Community Development Planner, Fargo-Moorhead MPO (ND & MN)
- **Tim Trabold**, Principal Transportation Analyst, Greater Buffalo-Niagara Regional Transportation Council (NY)
- **Andrew Cannon**, Director, Hidalgo County MPO (TX)
- **Alan Clark**, Transportation Director, Houston-Galveston Area Council (TX)
- **Ashby Johnson**, Dep. Transportation Director, Houston-Galveston Area Council (TX)
- **Roland Strobel**, Houston-Galveston Area Council (TX)
- **Beth Webster**, Houston-Galveston Area Council (TX)
- **Pat Waskowiak**, Houston-Galveston Area Council (TX)
- **Suzette Mallette**, Regional Transportation Planning Director, North Front Range MPO (CO)
- **Brad McCaleb**, Director, Texarkana MPO (TX & AR)
- **Mike Zeigler**, Director of Transportation Planning, West Florida Regional Planning Council (FL)
- **Mike Moriarty**, Senior Transportation Planner, Wichita Area MPO (KS)
- **Robin Smith**, Representative, Federal Highway Administration Office of Planning
- **Peter Plumeau**, Facilitator, Resource Systems Group
- **Amanda Messina**, Facilitator, Resource Systems Group

### ACKNOWLEDGEMENTS

The Federal Highway Administration (FHWA), Association of MPOs (AMPO) and Resource Systems Group, Inc. (RSG) gratefully acknowledge the assistance, support and hospitality of the Houston-Galveston Area Council in the development and conduct of this peer workshop.



## 1.0 BACKGROUND AND INTRODUCTION

During 2007 and 2008, the Federal Highway Administration (FHWA), through its Transportation Planning Capacity Building program, is conducting a series of metropolitan planning organization (MPO) peer exchange workshops in partnership with the Association of MPOs (AMPO). Each workshop is focused on a specific topic of current or emerging relevance to MPOs, each of which was identified through a national panel process. The workshops seek to engage participants from MPOs representing a diversity of urban area sizes, MPO structures and expertise/experience in the topic area.

This report summarizes the results of the workshop held in Houston, Texas on December 13 and 14, 2007, on addressing financial uncertainty in metropolitan planning and the “Year of Expenditure” (YOE) requirement promulgated through the February 14, 2007 Final Rule on Metropolitan Planning under SAFETEA-LU.<sup>1</sup> Representatives from 10 MPOs shared their experiences, success stories and challenges in these areas. The ultimate goal of the workshop was to allow senior staff from a variety of MPOs to come together to share information and learn from each other in a facilitated open discussion setting. FHWA developed this report to summarize the workshop discussions and results for the use and benefit of MPOs and their planning partners across the country.

## 2.0 WORKSHOP SUMMARY

### 2.1 OPENING REMARKS

#### 2.1.1 Peter Plumeau, RSG, Inc.

The workshop kicked off with opening comments from Peter Plumeau of Resource Systems Group, Inc. Peter, the lead facilitator for the workshop, established that the purpose of the event was to gather representatives together from MPOs around the country, representing small, mid-size, and large metropolitan areas, to share experiences and collaborate on approaches to addressing the issues of financial uncertainty in planning and programming and the constraints associated with the Year of Expenditure requirements. The workshop would begin with presentations from representatives from the Houston-Galveston Area Council and the Fargo-Moorhead Metropolitan Council of Governments regarding their experiences related to these topics. With these presentations “setting the stage” for the remainder of the workshop, Peter would then move all participants into a facilitated discussion on experiences, issues and options. He noted that Robin Smith of the FHWA Office of Planning was present to provide additional insights from the federal perspective as well as

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<sup>1</sup>“Statewide Transportation Planning; Metropolitan Transportation Planning; Final Rule” *Federal Register*, Volume 72, Number 30, February 14, 2007.



to obtain information from the participants that can help FHWA more effectively provide assistance and support to MPOs.

### **2.1.2 Robin Smith, Federal Highway Administration**

Robin Smith of the FHWA Office of Planning provided a background discussion on the workshop topics. She prefaced the workshop by advising that she would be able to represent broad FHWA policies, but to check with local Division offices for details specific to each MPO's locale. The following summarizes the FHWA introduction:

- Most elements of the February 14, 2007 Final Rule on the implementation of SAFETEA-LU took effect on March 16, 2007. The most recent regulatory deadline was on December 11, 2007, which required all Long Range Transportation Plans (LRTP) and Transportation Improvement Programs (TIP), adopted or amended on or after that date, to present financial information using Year of Expenditure (YOE) dollars.
- In support of the new rule, FHWA published guidance indicating that the MPOs are able to use a default inflation rate of 4% annually. If an MPO decides not to use this default rate, FHWA encourages them to identify a local inflation rate that considers regional considerations. Regardless of which rate is chosen, MPOs should carefully document their analysis and decision making process through which a particular inflation rate is identified. FHWA tried to be as un-prescriptive as possible when creating this guidance so as to accommodate the needs and requirements of 52 different FHWA Division Offices.

## **2.2 OPENING PRESENTATIONS**

### **2.2.1 Wade Kline, Fargo-Moorhead Metropolitan Council of Governments (Metro COG)**

The Fargo-Moorhead Metropolitan Council of Governments (Metro COG) is a small MPO with 110,000 residents in the city of Fargo, and a total of 160,000 residents in the greater metropolitan area. The current LRTP expires in 2008, so the MPO decided to approach the YOE regulation with quick, general assumptions, until they could delve more deeply during their plan revision process. Studying regional historic inflation, they decided a 5% inflation rate for project cost would be appropriate. With input from the DOT, they assumed zero growth in revenue. Additionally, the MPO acknowledged that they could not foresee the exact build date of all long-range projects, so they assumed a 2020 build year for all projects beyond the first five years.

This MPO applied zero inflation to the TIP because it is amended every few years, and thus reflects the most recent cost data available. For example, when the MPO compared its most recent TIP versus actual expenditures, they found a minor 5% variation. In addition, the MPO regularly establishes criteria for the TIP to decide whether each project listed is still a priority. If it is not, the project is removed from the TIP.



The greatest difficulty in the planning process for the Metro COG was reconciling the input and interests of two different states - North Dakota and Minnesota. Because North Dakota is a “minimum allocation” state, total available funds were limited, which created further constraint. This, combined with lack of information about funding availability, forces the MPO to estimate fiscal forecasts with a large degree of uncertainty.

### **2.2.2 Roland Strobel, Houston-Galveston Area Council**

The Houston-Galveston Area Council (H-GAC) used a combination of historic data and population growth statistics, along with the Consumer Price Index (CPI) and the Local Inflation Rate, to determine the annual forecast inflation rate for project cost estimates (2.53%).

To determine historical rates of revenues and expenditures, H-GAC surveyed 44 local and regional agencies. From these surveys, H-GAC found that 90% of revenues and expenditures were attributable to just four entities, and the remaining cities and counties were determined to have an “insignificant” impact on the financial analysis. Sources of data included the STIP, the Statewide Mobility Program, cash flow statements and New Starts transit projects. In addition, H-GAC examined all sources for Federal, State, and Local revenues. Once all data were compiled, the MPO applied a 15% one-time cost multiplier to capital expenditures to accommodate all unforeseen project costs.

With regard to the TIP, the H-GAC used a higher inflation rate (5%) than for the LRTP because they assumed that short range projected costs would be more consistent with current accelerated growth trends than the long range projected costs, which would presumably settle down over time.

The most significant difficulties encountered by H-GAC were that the data collection aspect was very time-intensive portion of this process, and controlling for intergovernmental transfers to ensure there was no double-counting of certain projects or funds was complex. To validate the process, the MPO applied their assumptions and inflation rates to previous LRTPs and found only negligible discrepancies.

Regarding the credibility of their assumptions, H-GAC found that the public was generally more interested in the short-range (the TIP) than in the LRTP. Because the LRTP was expressed in YOE dollars, the projected financials for the Houston area were so large that the public had difficulty in comprehending its size. As a result, the LRTP financial element received little public comment.

### **2.2.3 Post-Presentation Discussion**

In response to the opening presentations, workshop participants questioned the validity of using the CPI for satisfying the YOE regulation. They commented that transportation cost growth has accelerated in recent history, and has been found to be at least twice the CPI for most metropolitan areas. FHWA staff suggested MPOs could consult various websites that maintain indices on the



Cost of Construction that may provide more regional and transportation-related accuracy than the CPI.<sup>2</sup>

The H-GAC considered using inflation rates provided by the Texas Department of Transportation (TxDOT) as a reasonable short-term solution to the dilemma of moving project costs toward YOE dollars. Additionally, due to substantial political stress, this rate had to be “negotiated,” in essence, and was a good starting point in the on-going analytical process.

Another argument was made that while transportation costs have endured significant inflation in the past three years (10-20% in areas, at times), inflation has actually been moderate (2.2%) over the past 20 years. The question was posed, “how much history should MPOs consider when forecasting annual inflation?” There was no clear answer.

## 2.3 ROUNDTABLE DISCUSSION

### 2.3.1 Mike Zeigler, West Florida Regional Planning Council

The West Florida region is dependent on tourism and real estate transactions for the bulk of government revenue. Tourism has declined over the past few years due the rising cost of gasoline. Real estate transactions have also declined for multiple reasons: fewer people are purchasing homes than in recent history, and property insurance rates have grown as awareness of hurricane damage has grown. As a result, property values have declined. In response to these events, the local government and area residents are discussing rollbacks to property tax. This, combined with the fact that in 2005 moving companies reported moving more residents out of state than into the state, has affected total revenue and therefore has affected transportation revenue.

In addition, Florida has a revenue estimating conference twice per year, during which they adjust all budgets. Recently, the Florida DOT cut \$1.2 billion from its estimated annual revenue and is planning on cutting an additional \$1 billion next year. As a result, the Florida MPO Advisory Council is calling for the legislature to create a committee to make future recommendations on transportation revenue options to legislators in 2010.

The WFRPC has a transit authority; however, with recent property tax rollbacks, there was discussion of reduction or elimination of the system. For now, the region has managed to maintain most routes, although there is some inter-county variation. In one county that uses a trolley system, ridership is high, and as a result is receiving local fiscal support.

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<sup>2</sup> FHWA’s Construction Website, <http://www.fhwa.dot.gov/programadmin/contracts/price.cfm>, includes a variety of hyperlinks to websites with highway cost construction indices and state DOT material price indices.



The WFRPC does not receive much local funding to support the transportation planning process. Florida uses toll revenue credits to offset the local match requirement and toll revenue credits are non-cash soft monies that do not add to the MPO spendable budget.

Because of the rising price of oil and increasing awareness of concepts like "carbon footprints" and climate change, local, state and Federal agencies are considering multiple options for financing transportation projects. Some think that the standard gas tax, upon which the transportation systems depend, is outdated and needs to be revised. Currently the tax system incorporates a "local option gas tax," which authorizes the local government to assess up to 12 cents tax per gallon. Counties vary in how they use this option, but usually the tax amount ranges between six and 12 cents. Sales tax, however, which currently generates more funds than gas tax, appears to be a more lucrative revenue-raising option. For example, one county in the region is using a 1% increase in sales tax that is funding predominately transportation projects, and their county is flourishing. All in all, the total revenue decline has resulted in large cuts to the LRTP, reducing the project list from 15 down to five.

### **2.3.2 Brad McCaleb, Texarkana Metropolitan Planning Organization**

The Texarkana MPO (which includes portions of two counties; one in Texas and one in Arkansas) has a core population of about 70,000 residents. This MPO works with two distinct forms of local and county governments, two FHWA Divisions and two State Transportation Agencies (STAs). One funding related issue of interest to this MPO revolves around the proposal for toll collection and distribution where toll revenue stays in the region where it is generated. Because there are no toll facilities in the Texarkana region at this time, the MPO does not have the opportunity to generate funds from this source. The larger metropolitan areas in Texas, as a result, reap the benefits of this system. TxDOT has advised that local funding should be the primary source of revenue, however local funding sources are limited, and transportation costs are great. In some small MPOs, the member cities depend on local bonds to fund projects; however, when a city reaches its bonding limit it can be several years before they can present another bond proposal. Other sources of revenue are not acceptable for smaller metro regions due to economic or geopolitical issues. One example would be trying to implement a local option gas tax in the Texarkana region because it would only encourage residents to cross the state line to buy gas and avoid the additional tax.

Another issue for small MPOs is that staffing levels and therefore expertise are constrained by uncertainties about funding levels and influences by local entities on hiring. As STAs continue to generate "special projects" (activities not required by federal or state law or included in a MPOs UPWP) and the role of MPOs is expanded by federal law, the demands on MPO staff increase. As a result of the funding issues and increasing responsibilities, small MPOs must consider hiring consultants, which can be an expensive alternative that often does not fit within the budget. If the MPO is not able to add/replace staff or cannot afford consultant assistance they are often left with incomplete or outdated information and products.



### 2.3.3 Ashby Johnson, Houston-Galveston Area Council

In the current H-GAC LRTP, 65% of funding is non-federal. These sources are varied, each with their own assumptions and allocations, none of which are guaranteed. Because there is no centralized decision-making that demonstrates commitment to funding as there is at the state level, it requires a significant amount of time and attention to maintain and follow-up with these sources. Also, there is no mechanism in place to hold these parties accountable to their financial commitment. As a result, developing a revenue forecast is an arduous process.

With regard to federal funding, the state recently rescinded a large sum of money, four months into FY 2008 (and after the money was partially spent). The combined problems of funding uncertainty and rescissions have resulted in a lack of confidence in prior funding estimates. The H-GAC believes that fiscal constraint is an important strategic concept; however, it has been difficult to achieve.

The H-GAC has also had difficulty with projects undergoing the National Environmental Policy Act (NEPA) process. Often these projects take many years to get through NEPA, and will undergo multiple revisions and amendments. This ultimately changes the fiscal impact of the project. Historically, the H-GAC has reviewed project changes with great frequency; however, this has become a cumbersome process. Now, the H-GAC reviews project status quarterly so as to minimize the impact to the MPO and state and to limit amendments. Often, the projects that are undergoing the NEPA process are not even listed in the LRTP or TIP because so many elements of the project are unresolved, and it is difficult to grasp the total financial impact.

In response to this problem, Robin Smith from the FHWA encouraged the H-GAC to turn to the State and work to streamline the NEPA process. If this struggle continues, then the FHWA Division office should be involved. Additionally, Robin encouraged the MPOs, when working with project sponsors, to carefully assess the proper timing to commence the NEPA process for projects where sufficient funding for implementation is uncertain. She referred all MPOs to Appendix A of 23 CFR 450 for details on linking and streamlining the transportation planning and NEPA processes.

With regard to the TIP, many of the same problems exist. Among these is a perception that information provided by TxDOT flows from a process that is insufficiently transparent.

Additionally, the H-GAC believes that a lack of communication between the Planning and Finance divisions of TxDOT has hindered LRTP and TIP success.

### 2.3.4 Tim Trabold, Greater Buffalo-Niagara Regional Transportation Council

The Greater Buffalo-Niagara Regional Transportation Council (GBNRTC), like the other 12 MPOs in New York State, receives financial forecasts from the state DOT and their transit providers. In the GBNRTC MPO, Year of Expenditure (YOE) consideration was included for projects in the TIP. The initial step was a complete estimate review of each project to bring them up to current year dollars in a consistent manner, so as to not inflate inaccurate estimates. Factors considered were experience in current lettings, materials increase as documented through AGC and other sources, and



a thorough scope review. Subsequent letting experience has demonstrated bids consistent with the new estimates.

Escalation rates were subsequently applied to all projects based on planned year of expenditure for the project phase. NYSDOT uses Project Support System (PSS) software as its internal project tracking/implementation system. This tool is designed for tracking project progress by phases including obligations. The rates were applied using PSS to assure uniformity. Rates for out-years were: FY2008: 0%; FY2009: 3.5%; FY2010: 7%; and FY2011: 7%. Transit projects are either YOE by definition based on the nature of the projects or the transit provider uses inflation factors in preparing cost estimates for transit projects.

As an international border community, the increased buying power of the Canadian dollar has affected this MPO. Traffic into the U.S. from Canada has increased, which affects local facilities and transportation networks. One county in the MPO reports that locally attributable sales tax was up \$6 million in 2007 because of the increase in Canadian shopping traffic. Increased bridge toll collections and gasoline sales also contribute to local and state revenues but generally do not contribute to the fiscal capacity for carrying out MPO plans.

The greatest challenge the GBNRTC faces with regard to fiscal constraint has been inconsistent project delivery. A high ratio of projects to over-sight personnel has impacted efforts to deliver projects on schedule. This problem builds over time, with projects not reaching completion tending to create a backlog. This problem is further complicated by statewide variance in approaches to the same task, with no standardized template to unify MPOs across the state. This MPO has seen some success in project delivery rates recently by instituting bi-monthly local project meeting reviews with project managers where a status and action list is maintained for every project. This process will ideally lead to the identification of common issues affecting project delivery and recommended strategies.

Finally, this MPO also has associated difficulty assessing funding levels and obligation balances at any given point in time. In essence, once the project becomes delayed, the funds allocated for that project may be re-allocated by DOT. This causes uncertainty in available funding credit and annual allocation targets.

### **2.3.5 Andrew Canon, Hidalgo County Metropolitan Planning Organization**

Hidalgo County has a population of approximately 800,000 people, and sits across the Rio Grande River from Mexico. This county is the fastest growing area in Texas, with 4 to 4.5% annual population growth for the past decade. There are approximately 70,000 additional “winter Texans” that travel south from other parts of the country and reside in Hidalgo County for the winter months. In addition, the adjacent Mexican area contains about 1.2 million residents, many of whom work in and/or visit Hidalgo County daily. The impact of all these additional travelers results in greater strain on the transportation network without additional funding for repair, maintenance, or



construction. Significant sales tax funds are generated from visiting Mexican people shopping in Hidalgo County; however, a large portion of these funds are not actually available since they are returned to those who originally paid the tax via tax refunds.

The TX Legislature recently approved a bill to increase the local vehicle registration fee by \$10, which translated into about \$180 million in additional revenue to the regional mobility authority for project seed money. The local government is also pursuing a local gas tax initiative. Despite the increasing cost of gasoline, Hidalgo County has seen no reduction in Vehicle Miles Traveled (VMT). Therefore, this could be a lucrative decision.

Despite these recent funding changes for Hidalgo County, the state of Texas is expected to be \$3.6 billion in debt by the year 2015. The state is currently facing \$666 million in rescissions, with an additional \$259 million in 2008, and another \$700 million in 2009. This has resulted in a significant reduction of long-range and “non-critical” (i.e. landscaping) projects.

With regard to YOE concerns, Hidalgo County’s transportation-related costs increased 18% above the plan in 2006, and 33% in 2007. It is clear that the default FHWA 4% rate is too low to generate accurate projections for this region; however, significant political pressure makes it difficult to apply a rate much higher than the default to project costs. In addition, this MPO recognizes the need to find additional sources of funding, and hopes for additional information from the FHWA on how to accurately approach fiscal constraint.

### **2.3.6 Tom Niskala, Corpus Christi Metropolitan Planning Organization**

Corpus Christi contains 380,000 residents within the urbanized area, and 420,000 total residents within two large surrounding counties. This metropolitan area has a significant amount of tourism, as well as seasonal population fluctuation (winter residents). It is also the 6th largest port city in the US, which precipitates many freight issues within the transportation network. Recently, TxDOT established a new policy specifying that future state funding will be directed toward preservation rather than additional capacity. This policy is of particular concern to Corpus Christi, which experiences growing freight traffic on its highway network (containers off-load at the port and travel to the closest major container facility, which is in Houston). This has also forced the CCMPO to re-structure its LRTP. For example, in response to this growing traffic, there is discussion of building a new container facility in Corpus Christi to relieve the Houston facility, and act as a back-up in case of emergency shut down in Houston.

The CCMPO faces difficulty, as do most small MPOs, because the metropolitan area does not have the bonding capacity that is necessary to do essential projects. Additionally, they have trouble determining their precise population due to the large fluctuation in the number of residents throughout the year. The combination of these two issues has resulted in difficulty justifying significant fiscal expenditure. Because this MPO does not believe national gas tax revenues will increase markedly, they conservatively estimate 0% growth in LRTP and TIP revenue forecasts.



### 2.3.7 John Orr, Atlanta Regional Commission

The Atlanta Regional Commission (ARC) covers an area of 4.5 million residents and includes the city of Atlanta, 18 counties, and 100 cities. About one and a half years ago, the ARC set up a financial planning team that included MPO staff, Georgia DOT, FHWA, FTA and local transit providers, with the goal of updating financial and cost assumptions. In the course of this process, the ARC encountered numerous challenges, including no readily available national forecast, outdated local forecasts, forecasts that projected only ten years out, and limited information regarding future federal funding.

Prior to putting project costs in YOE dollars, the ARC determined that the region's fiscal capacity was \$5 billion less than they had assumed in their LRTP, primarily due to a variety of unbuilt priority projects being carried forward from year to year. As a result, the ARC cut approximately \$5 billion worth of projects (mostly roadway projects, where the largest overages were). Local governments took over many of these projects, and supported them with local funds. Once the projection process was complete and project costs were listed in YOE dollars, the ARC found an additional \$4.3 billion deficit, requiring more projects to be cut.

The greatest challenge that the ARC faced was that although MPO plans are required to be fiscally constrained, federal law does not impose the same requirement on the state DOT. Because funds cannot be allocated until the project is on the LRTP, the MPO is put in the position of telling the state that the project is unaffordable. ARC and GDOT continue to discuss options for resolving this problem.

The ARC also faces challenges with regard to tolling funds (how to incorporate the funds, and how to coordinate with the state). In addition, they could benefit from greater information transparency related to toll roads.

### 2.3.8 Mike Moriarty, Wichita Area Metropolitan Planning Organization

The Wichita Area Metropolitan Planning Organization (WAMPO) has experienced less controversy than other MPOs present at the workshop. Approximately three months ago, the MPO learned of state fiscal problems in FFY 2009. KDOT advised the MPO to continue as before and to work under the assumption that the fiscal situation would be resolved favorably. KDOT further advised that no state projects would be cancelled; however, some could be delayed. When WAMPO has difficulty resolving planning issues or questions, they work directly with their state association of MPOs to find answers. In the future, the association intends to work directly with AMPO, NARC, AASHTO and perhaps even Congress to shape policy in the best interest of all MPOs.

WAMPO completed its last LRTP in 2005. Both revenue and cost estimates are in 2005 dollars, which they acknowledge to be an underestimation of actual revenues and costs. The LRTP does not have an illustrative project component; WAMPO is planning on creating an illustrative project list for the next revision of the LRTP in 2010. Currently there is no inflation factor built into the TIP because the program (and thus cost) is updated every two years. The list of projects in the TIP is



fiscally constrained. Most projects listed on the TIP are 60-70% complete, implying that most projects move forward from this plan. However, the most recently adopted TIP has federal share dollars listed as open ended, and over-runs came in at 50-60% over the original project estimate.

### **2.3.9 Suzette Mallette, North Front Range Metropolitan Planning Organization**

In the past nine years, the North Front Range MPO had only three major projects listed on the TIP, and sufficient funding to complete just one of those projects was actually available. The majority of funding goes directly to maintenance, and there is barely enough funding to keep up with needs. The new governor has discussed gas taxes and registration fees as potential revenue opportunities, which could generate a significant increase in funding (if the public approves). The MPO has attempted twice to pass a Regional Transportation Authority, which would have the power to collect sales tax and vehicle and visitor tax (hotel/motel); however, this effort collapsed both times due to lack of collaboration and agreement.

Recently the statewide transportation plan transitioned to a corridor-based strategy, so the MPO adjusted their LRTP as well. Only capacity projects are listed in the plan, and only one of these projects is projected to start before 2025. Revenue forecasts came from the DOT, with little backup data provided. The MPO assumed a flat inflation rate for cost estimates.

### **2.3.10 Wade Kline, Fargo-Moorhead Metropolitan Planning Organization**

The Fargo-Moorhead Metropolitan Planning Organization faces many of the same issues already discussed: lack of funding, complex problems, and the inter/intra-state push and pull. Additionally they are challenged by lack of organization at the state level and difficulty communicating between the state and the region. The greatest challenge that they face is developing a sense of autonomy in an economy with declining federal (fiscal) support.

This MPO also struggles with the process of involving the public, and generating substantial public support for the YOE process and thus regional and federal funding. This problem is rooted in a lack of public appreciation for the rising cost of transportation, particularly as expressed in YOE dollars. Concern exists around the topic of getting the public to understand their stake in the planning process.

## **2.4 ISSUES OF COMMON CONCERN**

### **2.4.1 Fiscal Constraint Planning & Year of Expenditure (YOE) Regulation**

As several participants noted, the goals of fiscally constrained planning and the YOE regulation are to make long-range plans more realistic. The consequences of not planning with fiscal constraint include working with misinformation and undermining Plan credibility, at minimum. Project delay is an important reality to consider, since increased costs due to wasted time, inflation, etc., invariably



accompanies delay. Regardless of the future of current revenue streams, the bottom line is that revenues are not keeping up with rising transportation costs. Thus, using YOE dollars can be an important tool for making LRTPs and TIPs more realistic and credible.

One MPO decided to put its TIP entirely in 2006 dollars by deflating the buying power of the dollar, which they believed mitigated the confusion caused by using future dollars. This MPO believed that using future dollars only caused confusion, because future plans seemed to have “more money.” As projects were delayed, their budgets would increase (because of the expected inflation change). As a result, looking at the plan in today’s dollars reduced confusion and misinterpretation. FHWA notes that after December 11, 2007, federal regulations require MPOs to develop all TIP updates and amendments in YOE dollars.

Overall, participants believed that one of the most difficult aspects of creating feasible plans was limited historical data. How do you forecast for a system or structure that does not currently exist? Quantifying this impact was a recurring dilemma for most MPOs.

#### **2.4.2 Integration of MPO Process with Other Regional Planning**

Some MPOs believe that financial uncertainty in the LRTP and TIP is exacerbated by a lack of integration of transportation planning with other planning in their regions due to limited institutional coordination. For example, some MPOs noted that LRTPs often could not adequately reflect key drivers of regional fiscal health, such as demographic changes, housing, wastewater and sewer needs because plans in these areas were done by other agencies with little knowledge of the MPO process. They generally believed that if the LRTP, TIP and other planning documents were better integrated, it would help mitigate some financial uncertainty associated with planning for transportation and infrastructure needs.

Along these same lines, most MPOs found that close coordination with local governments was key to success of the LRTP. Being able to draft these plans alongside people who are drafting ordinances and other regulations was deemed to be a tremendous advantage.

One MPO acknowledged that their major cities “ruled” the planning process, and smaller cities were often left by the wayside. Some believed that there was an advantage in being a smaller MPO, because there were fewer competing visions. Others thought that being small was a disadvantage, because when a MPO region is small, the details become more scrutinized.

#### **2.4.3 Cost of Right of Way**

There are various approaches to determining the cost of Right of Way (ROW) in planning. One MPO has standard ratios that they apply to project costs to determine ROW cost. For instance, if it is a rural project, they would use 50% of the construction cost for the ROW estimate; if it is an urban project, then they might use 150% of the construction cost, etc. Another MPO evaluates the average expenditure on ROW versus construction cost every two years to guide future projections. Both



MPOs agreed changes in property value and changes to projects mid-stream affect ROW costs, and that these “moving targets” are difficult to reliably estimate. Another MPO receives ROW estimates from the state, and found that these were often unrealistic because they averaged all land uses for the state, rather than being regionally or locally specific.

#### **2.4.4 Project Delays**

Workshop participants discussed the relationship of financial uncertainty to project delays. One MPO noted that approximately 70% of all projects in its TIP were delayed last year because of financial concerns. Similarly, another MPO stated that only 40% of projects were actually delivered each year.

The MPOs agreed that having access to (or the ability to view) the FHWA Financial Management Information System (FMIS) would be a tremendous asset in the project planning process. The feeling was that the MPOs could be better partners to the DOTs if they understood where the numbers in FMIS come from. Additional information on and visibility in the transit side of planning would also be very helpful.

#### **2.4.5 Earmarks**

Most participants had similar experiences in receiving insufficient notice of and information on Congressional earmarks for agencies or jurisdictions in the MPO planning area. MPOs are frequently put in the difficult position of having to “force” an earmarked project to fit within an already-adopted LRTP and/or TIP. One MPO addressed this by handing the earmark back to the local government that applied for it, along with the funding, and asked them to resolve it. Others had difficulty because the earmark was for a specific jurisdiction, but had regional implications. Participants agreed that the MPO typically has to amend its Plan to accommodate the earmark. This also often means having to move quickly to identify required non-federal matching funds, possibly taking them from another project that has already been adopted and prioritized through the MPO process.

In an effort to address the earmarking environment, some MPOs are working with Congressional representatives to build greater awareness of the difficulties that earmarks often create. The intent is to encourage collaboration between earmark requestors, Congressional officials and the MPO in future earmark planning.

#### **2.4.6 Other Issues**

Most of the participants expect national ambient air quality standards (NAAQS) for ozone and particulate matter to continue becoming more stringent. As a result, they believe more MPOs will move into nonattainment status under one or more NAAQS standards. Several participants expressed concern that the direct link between air quality conformity status and federal transportation funding availability adds an additional layer of uncertainty to financial planning and



forecasting in MPOs, particularly in areas that are currently in attainment but may fall into nonattainment in the next few years.

Several participants also noted that the cost of construction is increasingly dynamic and unpredictable. They noted, for example, that some contractors will currently only guarantee the cost of steel for three months before being subject to a re-bid. One participant said that it is estimated that cement prices will increase 50% in the next few years. Most participants concurred all of the these factors make forecasting future construction costs very difficult, and precipitate significant variation in estimation techniques across organizations. FHWA staff noted that a recent report may provide additional useful information on the issue of rising construction costs to MPOs and others (*OIG Report: Growth and Highway Construction and Maintenance Cost* (Office of the U.S. Secretary of Transportation, Office of the Inspector General), Report number CR-2007-079, September 26, 2007, <http://www.oig.dot.gov/item.jsp?id=2135>).

Several participants noted that without consistency across MPOs regarding how future revenues and costs are forecast, it is difficult for both policy-makers and the public to determine the credibility and usefulness of LRTPs and TIPs. This may become particularly important if future reauthorizations of SAFETEA-LU move toward more of a performance and return on investment based approach to allocating federal funds across the country. These participants said that without more consistency in guidance and advice from the federal government, it will prove difficult to make credible comparisons of funding efficacy across regions and/or states.



**APPENDICES:**

- 1. WORKSHOP AGENDA**
- 2. PRESENTATIONS**





**MPO Peer Workshop on  
Addressing Financial  
Uncertainty and  
Year of Expenditure  
Requirements**

*Convened by*

**Federal Highway Administration**

*Hosted by*

**Houston-Galveston Area Council**

**Houston, Texas**

**December 13-14, 2007**



*Managed and Facilitated by*

**Resource Systems Group, Inc.**

**Burlington, Vermont**



**MPO Peer Workshop on  
Addressing Financial Uncertainty and  
Year of Expenditure Requirements  
Dec. 13-14, 2007  
Houston, Texas**

**Agenda\***

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**Thursday, Dec. 13**

**4:00 – 6:00 pm**

Welcome & Opening Remarks

- Peter Plumeau, RSG, Inc., Workshop Facilitator
- Robin Smith, FHWA Office of Planning

Setting the Stage - Presentations from:

- Houston-Galveston Area Council
- Fargo-Morehead Metro Council of Governments

Presentation – Workshop Participants’ Interests, Issues and Objectives (summary of pre-workshop questionnaire responses) – Peter Plumeau

Preview of Day 2 Agenda and Logistics

**6:00 – 8:30 pm**

Dinner & Networking (off-site)

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**Friday, Dec. 14**

**8:00 – 8:30 am**

Continental Breakfast

**8:30 – 10:00 am**

Dealing with Financial Uncertainty

- Roundtable – Each Participant Provides Briefing on Current Situation
- Facilitated Discussion on Issues, Options and Needs

**10:00 – 10:15 am**

Break

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\* Note: All activities are at the Houston-Galveston Area Council offices unless otherwise noted.

- 10:15 am – 12:00 pm** Addressing Year of Expenditure (YOE) Requirements
- Roundtable – Each Participant Provides Briefing on Current Situation
  - Facilitated Discussion on Issues, Options and Needs
- 12:00 – 1:00 pm** Lunch - Open discussion & networking
- 1:00 – 2:30 pm** Workshop Results
- Discussion – key themes, issues and needs for MPOs
  - Develop high-level outline of workshop report
  - Possible topics/issues for future workshops
- 2:30 – 3:00 pm** Closing Comments
- Robin Smith, FHWA
  - Peter Plumeau, RSG
- 3:00 pm** Adjourn

***ADDRESSING FINANCIAL UNCERTAINTY & YEAR OF EXPENDITURE  
REQUIREMENTS:***

***THE PERSPECTIVE OF THE FARGO-MOORHEAD METROPLITAN COUNCILS  
OF GOVERNMENTS (METRO COG)***

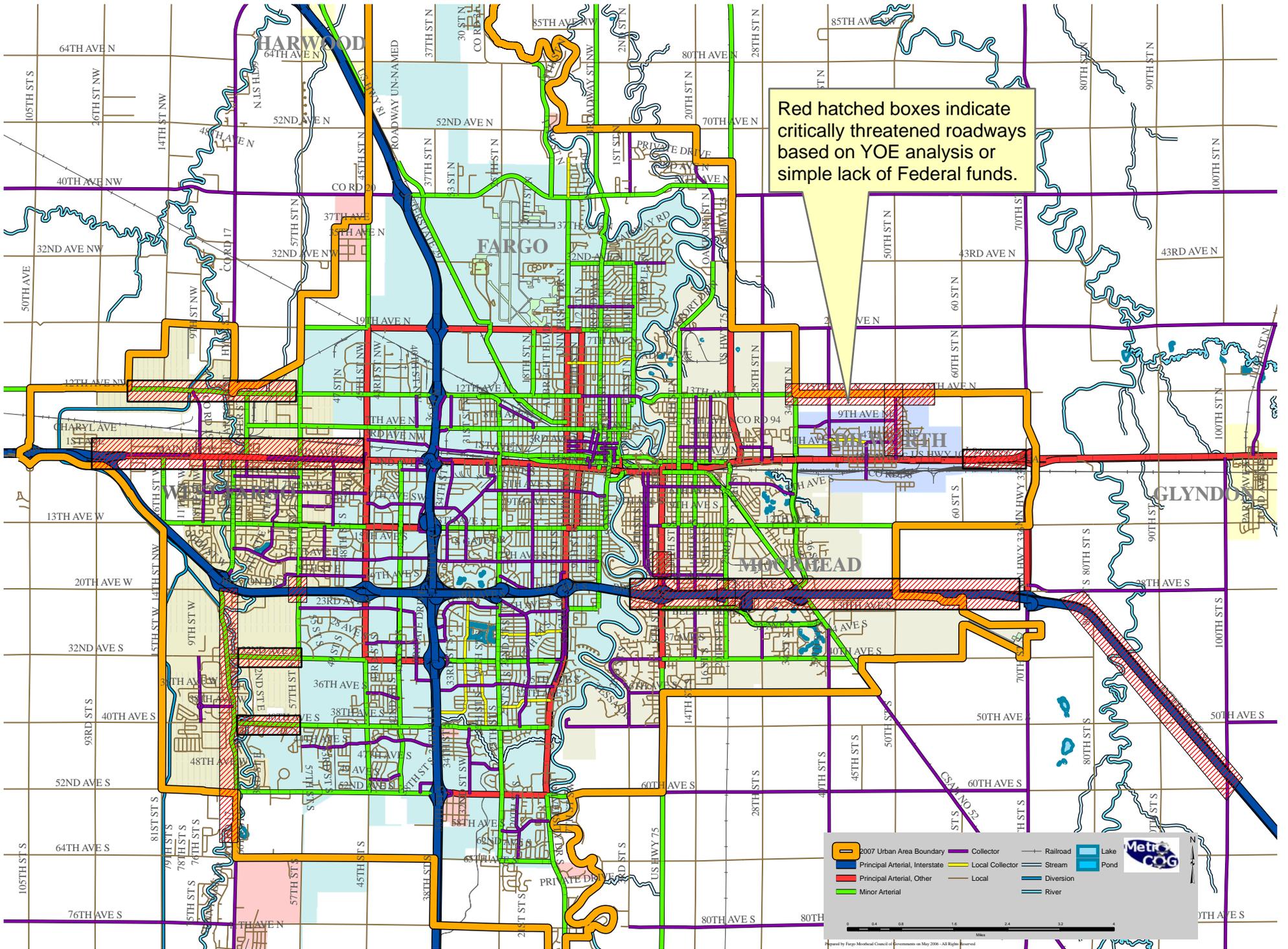
**Introduction & Background**

The Fargo-Moorhead Metropolitan Council of Governments (Metro COG) is a bi-state MPO with an urbanized area population of 160,000. By 2020 the population of the urbanized areas is projected to grow to almost 200,000. The MPO includes the Cities of Fargo and West Fargo, and Cass County, North Dakota, and the Cities of Dilworth and Moorhead, and Clay County, Minnesota. Seventy-five percent of the urbanized population resides in North Dakota. There is a memorandum of understanding (MOU) between the North Dakota Department of Transportation (NDDOT) and the Minnesota Department of Transportation (MNDOT) which gives primary oversight of the MPO to NDDOT. However, MNDOT does apply a measurable degree of input and guidance to the overall planning activities of Metro COG. The Metro COG has a staff of 7 and an annual planning (UPWP) budget over \$1,000,000. Planning dollars spent by Metro COG are based on the urbanized area of both the Minnesota and North Dakota portions of the urbanized and are blended per the MOU listed above. Metro COG provides a broad range of planning and technical assistance to its member communities beyond the required TIP and LRTP. As will be discussed, Metro COG recently amended its LRTP to account of the Year of Expenditure (YOE) requirement. The YOE process was fairly straightforward, however given the vintage of the current LRTP (due for update in 2008), the actual YOE exercise with the full LRTP update in 2008 and 2009 may prove more contentious.

**The Issues**

The population of the urbanized area grew by 30% between the late 1980s and the early part of this decade. In response to this growth the a large number of major transportation projects were brought to fruition to facilitate the growth of the region. While population growth is projected to slow slightly over the coming two decades, growth is projected to remain healthy. For most of the 1980s and 1990s the majority of the regions growth was captured by the City of Fargo (ND). In the last five to eight years the regions growth has been diverted away from Fargo to the other communities with in the metropolitan area. The community of West Fargo (ND) has seen its population double between 1990 and today. The City of Dilworth (MN) has seen its population grow by 50% since 1990. Growth in these communities has not been matched with complimentary transportation infrastructure.

# Fargo Moorhead Metropolitan Area



Red hatched boxes indicate critically threatened roadways based on YOE analysis or simple lack of Federal funds.

	2007 Urban Area Boundary		Collector		Railroad		Lake
	Principal Arterial, Interstate		Local Collector		Stream		Pond
	Principal Arterial, Other		Local		Diversion		
	Minor Arterial				River		

0 0.4 0.8 1.6 2.4 3.2 Miles

Metro COG

Prepared by Fargo Moorhead Council of Governments in May 2008 - All Rights Reserved

A number of critical projects in the metropolitan roadway network are either illustrative in nature or can't reasonably be shown in the TIP or the LRTP. In the case of West Fargo there are two critical transportation needs which have been delayed for over three years based on a lack of necessary Federal funds. Another major project in West Fargo is at least fifteen years away from construction and its delay will cause ripples in the existing and future arterial transportation network (including the freeway system). The attached map shows the major attributes of the Metro COG planning area, including several critically threatened transportation corridors.

Moorhead (MN) has grown substantially in the past several years and has faced a number of challenges in meeting its transportation demands. As an *out-state* Minnesota community Moorhead has traditionally battled against the needs of the St. Paul-Minneapolis region. The lack of adequate Federal funding in Moorhead has delayed the re-construction of a deficient freeway interchange and threatens two other substandard freeway interchanges.

The North Dakota portion of the freeway system in the metropolitan area is nearing the end of a fifteen year program of rebuilding, reconstruction, and expansion. This new capacity readies the region for at least a decade or more of growth on the freeway system. In Minnesota however, the freeway system improvements have been delayed and are considered illustrative at best. The disconnect in the freeway system between MN and ND portion of the Metro Area is creating a distinct bottle-neck situation at the border.

In 2008 Metro COG initiates the *Freeway Operations Study* to better understand existing and future needs of the metro freeway system. It is anticipated that this study will identify a number of mid-to-long range needs for the regional freeway system, many of which are not currently programmed in either or the TIP or the LRTP.

### **Year of Expenditure Applied**

Completion of the Year of Expenditure (YOE) amendment to the LRTR allowed local, state, and Federal officials affiliated with Metro COG to get a better picture on long range funding issues in the region. Metro COG addressed the YOE as such: for projects in the Long Range, an estimated year of construction of 2020 was used. Some projects will be implemented before 2020, and some will be implemented after 2020, but in the absence of more specific implementation information, the median year of the Long Range was chosen. A 5% annual project cost inflation rate was assumed, which worked out mathematically to be a 218% inflation adjustment factor that was applied to the 2004 cost estimates for all Long Range projects. On top of the cost (inflation) forecasts, Metro COG developed a flat line set off revenue projections for the region based on the most recent (2008-2011) TIP financial forecasts for each entity and applied them to the year 2030. Having done the YOE exercise, Metro COG was able to demonstrate a fiscally contained LRTP. However in doing so some communities were forced to move projects out of the long range element of the LRTP and list them as illustrative. The YOE exercise only confirmed what we already knew: we can't keep pace with the needs. If funds becomes less scarce than they currently are, things will get worse.

## **What does this Mean?**

What this means is that the smaller cities of the MPO area are going to face a growing challenge to bring to bare the needed transportation infrastructure their growth demands. This is going to be partly due to a lack of Federal funding sources. It will also be the result of a lack of foresight in the development of their communities. The largest community of the MPO area, Fargo, has managed to develop a number of local financing tools that assist it to work beyond Federal funding inputs. The lack of Federal funds spent by the DOT on larger regional corridors (interstates and major arterials) is also going to drastically limit the production of new transportation capacity.

As a region there is little, if any congestion in the metropolitan area. However spots of congestion (relative to our size) are appearing. This congestion is tied directly to major facilities in our region which are currently, or are nearing obsolescence. Unfortunately, most of this emerging capacity crunch is occurring on corridors in communities with the least amount of financial autonomy and security. These incidents of congestion will accelerate based on the inability to bring new capacity to the system.

## **What are we doing about it?**

At this point, nothing. If anything, we are good at complaining about the lack of available Federal money; the delay in the ability to bring projects to construction; and the short sightedness of planning at the local level; and of course bemoaning the looming potential that Federal resources may become even scarcer. What do we need to do about? With the update of the next LRTP we need to demonstrate the implications of decreasing pools of Federal revenues. This can likely be done through a scenario planning process in which we program short and long range elements in a scenario of ever decreasing Federal transportation dollars. There is support for demonstrating a future with less Federal money; however the challenge in the coming months is to concoct a process that allows the integration of such a scenario into the LRTP update process. Hopefully the process may spell out a strategy that more adequately allows for the regional allocation of Federal funds.

## **Conclusions**

The YOE requirement was a mildly eye opening exercise for our MPO. But the current LRTP was conservative to start with. We are likely to see more hurdles with the update process in 2008 and 2009 and application of the YOE at that time. However the analysis needs to go deeper (than just looking at how we project revenues and expenses) and needs to get MPOs to a process that truly engages the local and state officials (and the public). As noted, the Federal funding issues is not a single city issue, it goes region wide and has implications for all residents of the region, not just in the community which gets the least amount of money.

In Metro COGs estimation, YOE is just the first step. The next step is figuring out how to get more efficient and expeditious with our Federal resource, regardless of how Federal money is available. While the battle of roadway congestion may be unmanageable in many of our nation's largest urban areas, in several small and mid-sized urban areas the battle is at hand. With swift and logical planning, education, and consensus building (through programs like scenario planning) many small to mid-sized urban areas may have a chance to trump a destiny of shirking capacity.

### **The New Axiom for Mid-Sized Metro Regions?**

All cities reach a size at which they self-implode under the weight of complexity; especially when they are surrounded by communities that are what they once were: Less complex. Repeat.

# Houston-Galveston Area Council

## Summary of the 2007 Financial Analysis Methodology

In 2006-2007 the Houston-Galveston Area Council (H-GAC) conducted a survey of entities that collect revenues or make expenditures for the surface transportation network (roadway and transit) in its transportation management area. This encompassed

- 29 cities (cities under 10,000 residents were not included),
- 8 counties,
- 5 transit operators, and
- 2 districts of the Texas Department of Transportation.

The survey collected historical revenue and expenditure data, and when available, projections for future revenues and expenditures from published sources including

- budgets,
- mobility reports,
- cash flow analyses,
- capital improvement programs,
- comprehensive annual financial reports,
- statewide mobility programs,
- statewide transportation improvement programs, and
- any other source of information for accurate and current financial data.

The data were entered into an Excel-based database that made estimates of future revenues and expenditures based on the obtained information. These estimates, expressed in Year of Expenditure dollar values, formed the basis of the financial analysis for the SAFETEA-LU-compliant 2035 Regional Transportation Plan.

### Financial Survey Data

#### 1 Cities and Counties

The most readily available source of accurate financial information from cities is their yearly budget, and in some cases a Capital Improvement Program (CIP) statement or a Comprehensive Annual Financial Report (CAFR) is available. These documents often have some historical information as well as budgeted amounts for current and future years.

Cities and counties often have budgets that combine expenditures for streets with other infrastructure, such as sewers or other public works. Discussions with city staff may be necessary to discern what percentage of these amounts are dedicated to transportation-related activities and how much are for other infrastructure. These discussions may be even more important to understand how much of a city's general revenue has been dedicated to transportation, and whether historical levels are expected to change or remain the same.

#### 2 Other Transportation Entities

**Transit Agencies:** Because transit agencies work with funds from and report back to the Federal Transit Administration, their financial data may be in the form of cash flow statements, new starts projects, and other forms. Just as with cities and

counties, it is important to work closely with agency staff familiar with the financial statements to ensure that the data for both revenues and expenditures are valid and current.

**State Department of Transportation:** By federal regulation, states track their projected expenditures in Statewide Transportation Improvement Programs (STIP) and Statewide Mobility Programs. These records are useful sources for estimating future expenditures. Revenues are more difficult to estimate. They are based on federal apportionments to the state, state motor fuels taxes, state registration fees, etc. Discussions with persons familiar with trends in these statewide accounts are helpful.

## **Assumptions**

### 1 Growth Rates

A rate of growth (real growth) must be determined for each entity. Real growth is the amount of actual growth a region is expected to have during the forecast years. H-GAC used the readily-available population growth rates by county as a proxy for real growth rates for that county and the cities it contains (in some cases cities provided their own assumptions on future real growth rates). Regionwide population growth rates are used for entities that covered more than one county. The population growth rates by county are not only a good econometric proxy, but these numbers had been developed in advance of the financial analysis and underwent an intensive public review process that resulted in mutually-agreed upon rates of population growth.

### 2 Inflation Rate

To convert base year dollars for future years into year of expenditure dollars, the base year dollar value needs to be multiplied by an inflation rate. For example: if we have an expenditure that is expected to remain flat, i.e., it has no real growth, and the inflation rate is 3.24%, then that expenditure that costs \$100.00 in 2007 is going to cost \$103.24 in 2008, \$106.58 in 2009, and so on. In 30 years, the total expenditure will be \$4,946.90 in year of expenditure dollars as opposed to \$3,000.00 in base year dollars. This multiplier is the basis of calculating year of expenditure dollar values.

H-GAC uses an average of the past ten years (1996-2006) of the Consumer Price index as the inflation rate for 2006-2035. This value of this average is 2.53%.

### 3 Contingency Costs on Capital Expenditures

Experience shows that capital expenditures are often underestimated by the time the projects are let. To compensate for this underestimation an additional multiplier for contingency costs was added onto all capital expenditures to insure that the expenditures would not be underestimated. The rate of this multiplier may vary by region or state. H-GAC used a rate of 15% on all capital costs except in those cases where an entity already built in some assumptions on capital cost contingencies.

## **Methodology:**

### 1 Average of Available Data

A general template of information for revenues and expenditures was developed and used for each entity (some entities, notably TxDOT and METRO substantially deviated from this template). The data from each surveyed entity was entered into its

spreadsheet. In general, all available data (historical, current year and projected data) for a specific line item (e.g., property tax) were averaged together and entered as the value for the year subsequent to the last year of data. This average became the starting point for creating the values for future years.

Example 1: City X administrative (operational) expenses

	A	B	C	D
1	2005	2006	2007	2008
2	\$421,471	\$761,812	\$816,516	\$666,600

Historic (2005), current (2006) and future (2007) values were provided. 2008 is the average calculated from the previous three years. Excel formula for cell

**D2: =AVERAGE(A2:C2)**

## 2 Multiplier for Real Growth

To create values for future years, the starting point value was multiplied by a real growth factor. The county population growth forecast was used as a proxy if no other growth value was supplied.

Example: County X has a population growth forecast of 2.58% per year for the years 2005 to 2035. A city in this county uses 2.58% as its real growth factor.

## 3 Multiplier for Inflation

Use a multiplier for inflation to express base year dollars in future years as year of expenditure dollars. H-GAC used 2.53% as the multiplier for converting base dollars in future years to future values in year of expenditure dollars. In practice, the real growth value and the inflation factor were added together to create one multiplier for future years.

Example 2: City X administrative (operational) expenses

	D	E	F	G
1	2008	2009	2010	2011
2	\$666,600	\$700,663	\$736,467	\$774,100

The value for 2008 is multiplied the value by real growth + inflation. In this case the combined multiplier was 5.11%, giving the value of \$700,663 for 2009, \$736,467 for 2010, and so on until 2035. Excel formula for cell

**E2: =D2\*(1+5.11%);**  
**F2: =E2\*(1+5.11%); etc.**

## Data Categories

### 1 Revenues

Typical local sources are:

- sales tax;

- property tax;
- general revenues devoted to streets;
- intergovernmental transfers; and
- developer contributions.

State sources include:

- state motor fuels tax;
- state tax on vehicle registration fees;
- sales tax on lubricants, titles, fees, etc.;
- mobility funds;
- state department of transportation funds;
- pass-through funds; and
- other state funds.

Federal sources include:

- Federal Highway Administration (FHWA);
- Federal Transit Administration (FTA);
- Federal Rail Authority; and
- Homeland Security

Other revenue sources include:

- user fees/operational revenues, including tolls and fares;
- debt proceeds from bonds and federal loans/credits;
- investment income;
- asset sales; and
- concession fees.

## 2 Operational Expenditures

Administrative expenditures include:

- personnel;
- depreciation; and
- insurance.

Routine Operations and Maintenance include:

- highways and streets;
- transit;
- bicycle and pedestrian facilities;
- freight rail; and
- other facilities.

Financing Expenditures include:

- interest payments;
- debt payments; and
- debt service.

## 3 Capital Expenditures

Each transportation mode has capital expenditures for added capacity and system rehabilitation/reconstruction. Modes include:

- highways and streets;
- transit;
- bicycle and pedestrian facilities;
- freight rail; and
- other capital costs.

In addition, capital expenditures may have a contingency costs multiplier, as discussed previously.

## Spreadsheet Outputs

### 1 Year of Expenditure Dollar Values vs. Base Year Dollar Values

If the spreadsheets have been set up using formulas similar to the ones given above, all future year dollars are expressed in year of expenditure dollars. To convert these values back into base year dollars will require dividing the summary number by the rate of inflation, and depending on which future year it is, this divisor must be raised to the power of the number of years the value is in the future.

Example 3: City X total operational expenditures

	A	B	C	D	E
1		2010	2011	2012	2013
2	TOTAL OPERATIONAL EXPENDITURES (nominal \$)	\$11,737,645	\$12,337,439	\$12,967,882	\$13,630,541
3	TOTAL OPERATIONAL EXPENDITURES (real \$)	\$10,621,287	\$10,888,555	\$11,162,547	\$11,443,435

Line 2 shows the total operation expenditures in year of expenditure dollar values (nominal \$). Line 3 converts these values back into base year dollar values (real \$). The inflation rate is 2.53%, and the base year is 2006. Excel formula for cell

$$\begin{aligned} \mathbf{B3:} &= \mathbf{B2/((1+2.53\%)^{(B1-2006)})}; \\ \mathbf{C3:} &= \mathbf{C2/((1+2.53\%)^{(C1-2006)})}; \text{ etc.} \end{aligned}$$

### 2 Data Manipulations (What-if Scenarios)

Scenario analysis can be done easily and quickly if the formulas used in the spreadsheets for each entities have been constructed so that they use the multipliers for growth rates, inflation, etc. drawn from a centralized place, such as an assumptions sheet, as opposed to 'hard coded into each formula. By changing a single multiplier value on the assumptions sheet will update all other sheets that use the multiplier.

In Example 2, the actual Excel formula for Cell E2 is

$$\mathbf{=D2*(1+Assumptions!$G$118)}$$

where cell G118 on the Assumptions sheet held the sum of the multipliers for real growth and inflation. Other cells on the assumptions sheet held the growth values for each entity in terms of its

- Revenues (the county population growth rate);
- operations and maintenance costs;
- added capacity costs;
- system preservation costs; and
- additional increases over projected toll revenues and user fees.

In Example 3, the actual Excel formula for cell B3 is

$$=B2/((1+Assumptions!\$C\$30)^(P1-Assumptions!\$C\$29))$$

where cell C30 on the Assumptions sheet held the inflation rate and cell C29 held the base year.

## Final Comments

### 1 Data Gathering

The most person hours used in the creation of this financial analysis were expended on data gathering. The amount of time needed for repeatedly contacting entities with requests for data and discussions to understand the data should not be underestimated. MPOs with a few very large entities and many smaller ones may consider ignoring the smaller entities. For H-GAC, four entities (TxDOT, Harris County, METRO and the City of Houston) accounted for over 92% of all revenues and 89% of all expenditures.

### 2 Total Project Costs

Nearly all very large projects are financed, at least in part, from state revenue sources. In the past many of the costs associated with very large projects were not accounted for in the financial analysis of H-GAC's long-range transportation plan because these funds were distributed from accounts that did not pass through local district offices of the Texas Department of Transportation. This financial analysis includes such 'total project costs' that include expenditures for rights-of-way, relocation of utilities, and engineering costs. Estimates for these costs were developed in tandem with district officials, and accounted for nearly \$19 billion in additional revenues and expenditures over the life of the plan.

### 3 Comparing to Older Long-Range Transportation Plans

The desire to compare the new totals to the financial analysis of previous long-range transportation plans can result from what appear to be staggeringly higher numbers generated by the year of expenditure calculations. Converting financial analyses calculated in base year dollar values (real \$) is not difficult.

The minimum requirements are:

- T: previous total revenues (or total expenditures);
- B1: base year of the previous financial analysis;
- N1: number of years the analysis covers;
- I1: past inflation rate;
- B2: base year of new financial analysis;
- N2: number of year the new analysis covers; and
- I2: new inflation rate (if different from I1).

The Excel formula looks like this:

$$\begin{aligned}
 &=((\text{total revenues of old plan}/\text{number of years of the old plan}) * ((1 + \text{inflation rate}))^{(\text{new base year} - \text{old base year})}) \\
 &\quad \text{or} \\
 &= ((T/N1) * ((1 + I1)^{(B2 - B1)}))
 \end{aligned}$$

This gives you the first year value of the old plan in the new base year dollars. Multiply this number by 1+new inflation rate, e.g., 1.0253 if the inflation rate is 2.53%. The resulting number is the second year of the old plan in new base year dollars.

Multiply the second year by (1+I2) to get the value of the old plan in the third year. Keep repeating this step for the number of years of the new forecast (N2). Add up all the individual years (first year + second year + third year + ... + last year) to get the total revenues of the old plan expressed in year of expenditure dollars in the new base year. The Excel spreadsheet will look like this:

	<b>A</b>	<b>B</b>	<b>C</b>		<b>AD</b>	<b>AE</b>
<b>1</b>	2006	2007	2008	...	2035	Total 2006-2035
<b>2</b>	2.188477	2.243845	2.300614		1.518457	32.45586

The Excel formula in cells

**B2: =A2\*(1+2.53%)**

**C2: =B2\*(1+2.53%)**

and so on through cell AD. Cell AE2 is a summation of cells A2 through AD2. The Excel formula is:

**=SUM(A2-AD2)**

This cell gives the new value converted to year of expenditure dollars.