AMATS AGENDA ITEM:

Project Update ☐ Information Item ☑
Business Item

SUBJECT:	AMATS Travel Demand Model Update Planning Assumptions
PROJECT NO.:	Task 450
GROUP:	AMATS Policy Committee
DATE:	November 20 , 2014
PROJECT INFORMATION:	AMATS Travel Demand Model Update

BACKGROUND

AMATS selected RSG, Incorporated to update the AMATS Travel Demand model to provide state-of-the-art analysis capabilities. In order to develop a robust travel demand model, regional and subarea socio-economic (SE) projections of employment, population, households and other elements are required. These large-scale planning assumptions are later allocated to analysis zones to serve as key inputs to the AMATS Travel Demand Model. The model helps decision makers to better plan and to maintain future transportation facilities without under- or over-building needed infrastructure. AMATS staff and the RSG team concurred that the updated model should include in its geographic scope the Mat-Su Valley (MSV) portion of the Mat-Su Borough given the large amount of travel between the MSV and the Anchorage Bowl.

AMATS Staff presented the findings of a Technical Memorandum "Socio Economic Projections" to the Technical Advisory Committee (TAC) on November 6, 2014. That memorandum described proposed SE projections prepared by the RSG team based on 2014 Alaska Department of Workforce & Labor Development (ADOLWD) forecasts. The TAC reviewed the proposed ADOLWD-based projections and instead recommended that the Policy Committee direct staff to create a "spliced" socio-economic projection using the originally-proposed ADOLWD projections for subareas within the AMATS planning geography and separate projections created by the Mat-Su Borough-based on a 2009 forecast from the Institute for Social & Economic Research--for the MSB subarea.

This memo describes the TAC recommendation and also addresses the following related topics: Regional Collaboration, the use of ADOLWD data by AMATS, the differences between ADOLWD & ISER data, the implications of using a "spliced" socio-economic projection, and AMATS staff recommendations.

Regional Collaboration, Mat-Su Borough & ADOT&PF

To develop the required SE projections while meeting the federal mandate to use the "…latest available estimates and assumptions for population, land use, travel, employment…" (23 CFR 450.322 (e)) AMATS conducted a search for the most recent estimates. Discussions with University of Alaska Anchorage's Institute of Social & Economic Research (ISER) revealed that a recent socio-economic projections report is unavailable from them and it is not known when a

new report will be available. AMATS then turned to exploring potential alternatives to a standard ISER product, including ADOLWD data. Staff exploration included consultation with both private and public agencies. Initial discussions with the Mat-Su Borough and the Alaska DOT&PF regarding socio-economic projections began in December 2013. AMATS staff reached out to the Mat-Su Borough and held a teleconference with state and local economists to discuss the merits/deficiencies of using ISER data vs. ADOLWD data. This occurred on January 31, 2014, with AMATS & Mat-Su staff; Ed Hunsinger of ADOLWD; Donna Logan and Jim Calvin of McDowell Group, Brad Ewing and Melissa Longshanks. That group discussed the ADOLWD data available and best methodology to develop joint socio-economic projections.

The Mat-Su Borough stood ready to collaborate on a regional growth model that could be used for both the Mat-Su LRTP update and the AMATS Travel Demand Model Update and by implication the AMATS MTP. AMATS staff obtained and provided a cost estimate and scope of work to Allen Kemplen, ADOT&PF. Following this meeting, Mat-Su Borough staff and ADOT&PF personnel met on Monday, February 3, 2014 to discuss a joint effort to undertake the development of socio-economic projections. During this time, AMATS and ADOT&PF staff met with Dr. Scott Goldsmith of ISER to find out when the ISER report might be available and the cost. These conversations have continued at the Quarterly Regional Planners meetings held four times during the past year.

Dec 4, 2013 Plenary Meeting: AMATS Policy & Procedures #6 was provided to regional planners. Clear collaboration on development of the model and assumptions / approach was a priority.
Feb 5, 2014: AMATS Model Update was on the agenda.
May 7, 2014: Agenda items included: MSB / AMATS Model Updates & Socio-Economic Projections; MSB/ AMATS HH Travel Surveys; MSB LRTP Update Project Overview.
Aug 6, 2014: Agenda items included: MSB / AMATS Model Updates & Socio-Economic Projections; MSB/ AMATS HH Travel Surveys; MOA Land Use Updates.
Nov 5, 2014: Presentation by Lauren Driscoll, MSB Planning Chief, about the MSB LRTP and land use.

In particular, on May 7, 2014, the Travel Demand Model projections and planning assumptions where discussed in detail. Mat-Su staff indicated that for their LRTP update they produced SE projections that started with the 2009 ISER SE forecasts; the MSB product applies only within the Mat-Su valley. Mat-Su Borough staff received invitations to October 9, 2014 TAC meetings and concurrent the Model User Group meetings. Equally, invitations to the November 6 & 13th meetings were sent. These discussions did not, however, produce a plan for a single region-wide SE projection process.

Regional Collaboration, Knik Arm Bridge & Tolling Authority (KABATA)

AMATS also consulted with the Knik Arm Bridge & Toll Authority (KABATA) In June 2013, AMATS developed a Memorandum of Agreement with KABATA. AMATS shared the 2011 AMATS Travel Demand Model and data so that KABATA could perform traffic and revenue updates. This agreement was executed in late August 2013. As part of this agreement, *Section 4. Model Documentation and Section 5 Presentation of Findings & Data* outlines the documentation of model changes, socioeconomic updates, TAZ refinements, network and transit modifications, financial, planning, and land use assumptions, network attributes that affect modeled travel times, HOV assumptions, changes to the growth factor, sensitivity testing, scripting and algorithm

methodologies, and a list and map identifying the changes that were made to the data provided by AMATS. Further these findings and assumptions developed by KABATA are to be presented to the AMATS TAC & Policy Committees. Also, KABATA staff was invited to present information on their findings and model development on several occasions; however due to other commitments; KABATA was unable to meet with us.

Subsequently, KABATA staff was also invited to attend the October 9 2014 TAC meeting and the Model Users Group meeting. KABATA staff participated. Further, KABATA staff were invited to attend the November, 6th TAC meeting and the continuation meeting on November 13, 2014.

To the current knowledge of AMATS staff no documents have yet been released by KABATA describing the bridge study SE projections or methods used to create them.

Within the Scope of Work and tasks for the AMATS Travel Demand Model Upgrade project there are budgeted resources to continue to engage MSB and other agencies in discussions on how to treat the SE projections in the next regional plan update (4 years beyond adoption of the next plan).

Why ADOLWD Data Was Chosen

AMATS staff research and inter-agency consultation ultimately found two options for producing region-wide SE projections: a 2009 ISER forecast[1] or a consultant-led process of projecting ADOLWD forecasts[2] into AMATS analysis years and subarea geographies. A brief description of staff assessment of these two options follows.

Historically, AMATS used ISER's work; yet the ISER 2009 socio-economic assumptions are dated and are now inaccurate. For example, ISER forecasted the Knik Arm Bridge would open in 2015, the LNG pipeline would be operating, and oil revenues would increase along with a boost in the state's general revenue. The methodology and key inputs employed by ISER includes:

- Working from Past Observed Employment and Economic "Events"
- Key Assumptions:
    - Future Economic "Events"
    - Population is a function of economic activity

The Alaska Department of Labor and Workforce Development's (ADOLWD) *Alaska Population Projections 2012 to 2042* was issued in 2014, five years after the ISER 2009 product. The ADOLWD projections include population by age cohort and gender for the Anchorage Municipality and Mat-Su Borough in five-year increments. The following methodology is employed by ADOLWD.

- Working from a Population Cohort Method with Past Observed Population and Migration as Key Inputs
- Key Assumptions:
    - Future Population In- and Out-Migration Rates
    - Employment is a function of population

[1] *Economic and Demographic Projections for Alaska and Greater Anchorage 2010–2035*. Institute of Social and Economic Research University of Alaska Anchorage. 2009.
[2] *Alaska Population Projections 2012 to 2042*. Alaska Department of Workforce & Labor Development. 2014.

Although the ADOLWD and ISER techniques are different they attempt to account for similar effects. ISER's method explicitly incorporates economic events such as those that might occur with transportation infrastructure development or with large-scale industrial development. The ADOLWD method uses in-migration assumptions as a reasonable proxy for economic "events" without the need to depend upon specific assumptions about when such events would occur and the effects they might produce.

Rates of population growth evident in the ADOLWD projections are slower than recent historical growth rates and forecasts 25,000 fewer individuals within the Mat-Su Valley by 2040. Anchorage's population grew at an average annual rate of 1.13 percent between 2000 and 2013.

ADOLWD's forecast indicates annual growth rates of 0.82 percent for the 2013 to 2028 period and 0.51 percent for the 2028 to 2040 period. The Mat-Su Borough grew at an annual rate of 3.78 percent over the 2000 to 2013 period. ADOLWD projections indicate slowing growth, with rates of 2.18 percent and 1.66 percent for the 2013 to 2028 and 2028 to 2040 periods, respectively.

In conclusion, due to the need for region-wide SE projections, the dated nature of the 2009 ISER forecasts, and the fact that new ISER forecasts will not be available in a timely way, staff chose to start with the ADOLWD's 2014 forecasts as the "latest" assumptions per the federal requirement. Furthermore, since future ISER work is highly uncertain staff recommended that AMATS develop a policy to use ADOLWD data for a consistent and reliable data source in their future planning efforts.

Discussion at TAC Meetings

AMATS and RSG staff explained the proposed SE projections to the TAC at their October and November standing meetings and at a work session prior to the November meeting. Answers to TAC questions about why the ADOLWD and MSB-LRTP projections differ and how TAC and PC members could communicate to their stakeholders about any differences are summarized below.

<u>TAC questions about the proposed SE projections relative to the MSB-LRTP SE projections</u>

- Some TAC members expressed concern about the differences between MSB projections made for the MSB LRTP update and the proposed SE projections.
- The proposed 2040 SE projections for AMATS have about 25,000 fewer people in the Mat Su Valley than the MSB LRTP SE projections (see tables further below).

<u>TAC questions about why ADOLWD & ISER Can Differ</u>

- Different starting dates of different analyses inherently define both the starting (base) data and the assumptions (e.g. MSB using 2009 ISER and AMATS using 2014 ADOLWD).
- Different assumptions (e.g. when a Knik Arm Bridge might open or the price of oil).
- Different purposes (e.g. different geographic or financial focus areas).

<u>TAC questions about how to Interpret and Communicate Different Findings</u>

- Different findings do not necessarily mean any given finding is "wrong" given the range of uncertainty in projecting the future.
    - RSG pointed out that the draft AMATS SE projections are within the range of the 2009 ISER forecasts within the Mat-Su Valley (in future year 2028).

- Different starting points and assumptions (which may have been perfectly reasonable at the time they were made) and analysis objectives quite often do lead to different findings.

Another alternative to the "Splice"

- During the November TAC meeting an audience member raised a point that AMATS and RSG staff had also considered as an alternative to creating a new SE projection. AMATS could adopt the originally-proposed ADOLWD SE projections but during model validation apply the Mat-Su projections as a sensitivity test to show how the model performs with different potential future SE projections. In a sense showing a range of possible futures, even if in the model validation report, is a more realistic representation of what may happen in the future than any single forecast.

TAC Recommendation – "Spliced Socio-Economic Approach"

In order to accommodate the future population growth of the additional 25,000 individuals predicted in the Mat-Su Valley by the MSB LRTP SE Projections in 2035 the TAC recommended that the PC direct staff to amend the proposed SE projections by applying the MSB LRTP SE projection numbers within the MSV subarea while retaining the proposed ADOLWD-derived SE projection numbers within the Anchorage Bowl and Chugiak/Eagle River subareas of the updated AMATS travel model. The tables below compare the original SE projection proposal to approximate values of the "spliced" projections that would result from adopting this recommendation[*]. Note that this will result in region-wide totals greater than the ADOLWD region-wide totals. The TAC also suggested that staff should work to begin the development of a consistent and standardized Travel Demand Model for the region.

Table 1: MSV Estimates Compared. (TAC recommends that 2035 MSB, after adjusting to 2040, replace 2040 AMATS Estimate for MSV)

Metric	2035 MSB TAZ Estimates, Total	2040 AMATS Estimate for MSV
Total Population	176,121	151,241
Total Employment	48,543	53,808
Total Households	65,024	56,254

Table 2: Approximate Change to Originally-Proposed 2040 Population Projection*

[*] The RSG team will need to adjust the MSB projections to the AMATS horizon year 2040

Geography	Draft AMATS 2040 Population	APPROX Spliced 2040 Population	% Difference
Anch+CER	358,363	358,363	0%
Mat-Su Valley	151,241	176,121	16%
Total	509,604	534,484	5%

Table 3: Approximate Change to Originally-Proposed 2040 Employment Projection*

Geography	Draft AMATS 2040 Employment	APPROX Spliced 2040 Employment	% Difference
Anch+CER	241,225	241,225	0%
Mat-Su Valley	53,808	48,543	-10%
Total	295,033	289,768	-2%

Table 4: Approximate Change to Originally-Proposed 2040 Household Projection**

Geography	Draft AMATS 2040 HH	APPROX Spliced 2040 Households	% Difference
Anch+CER	143,967	143,967	0%
Mat-Su Valley	56,254	65,024	16%
Total	200,221	208,991	4%

Implications of the "Spliced Socio-Economic Approach"

AMATS and RSG staff pointed out to the TAC a number of implications of adopting the "spliced" approach. Those observations are repeated below with the addition of a brief description of the schedule and budget implications for the overall model update process.

Uncertainty about the Method Used in making the MSB LRTP SE Projections

- At this time AMATS and RSG staff do not have full knowledge about how the MSB projections were developed (other than that they used the 2009 ISER forecasts as a starting point). To properly document a "spliced" projection consistently with practice in the field it will be necessary to fully understand how MSB produced its projections.

Regulatory Risk

- By not using the more-recent ADOLWD forecasts for all subareas and by creating regionwide totals greater than those forecast by ADOLWD, AMATS may be at risk that

* The RSG team will need to adjust the MSB projections to the AMATS horizon year 2040

Federal staff will have issues with the modeling for the next AMATS MTP given the "…latest" clause in the Federal planning regulations.

Legal Risk

- Related to the Regulatory Risk already noted, members of the public could take issue with a "spliced" forecast as the basis for legal action against AMATS and its MTP.

Schedule Implications

- The RSG consultant team will need additional time to complete the MSB projection review noted above, alter the subarea projections for the MSV, and conduct additional analysis necessary to complete a "spliced" projection data product (e.g. to allocate the new employment totals to economic sectors). This will likely add at least one calendar month to the original travel model development schedule.

Budget Implications

- The original project scope allowed for one SE projection process. Creating the "spliced" forecast will add $15,000 of cost which, lacking additional funds, AMATS will have to obtain by eliminating or diminishing some other element of the original model update work plan.

Staff Recommendation

With all due respect to the TAC concerns about differences in MSV numbers between the MSB LRTP projections and the draft AMATS projections, AMATS staff recommends that the PC adopt the originally-proposed ADOLWD-based SE projections given the need to meet the federal mandate for the latest socio-economic data available. AMATS could also apply the Mat-Su projections as a sensitivity test during model validation to show how the model performs with different potential future SE projections. Also, staff respectfully requests approval to develop AMATS policy to use ADOLWD data for future planning assumptions and travel demand modeling efforts.

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