



TECHNICAL MEMORANDUM #6

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To: Paige West, RVTD
From: Ryan Farncomb (Jacobs)
Jennifer John (Jacobs)
Susan Wright, PE (Kittelson & Associates, Inc.)
Subject: Modeling and Analysis Tools Summary

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INTRODUCTION

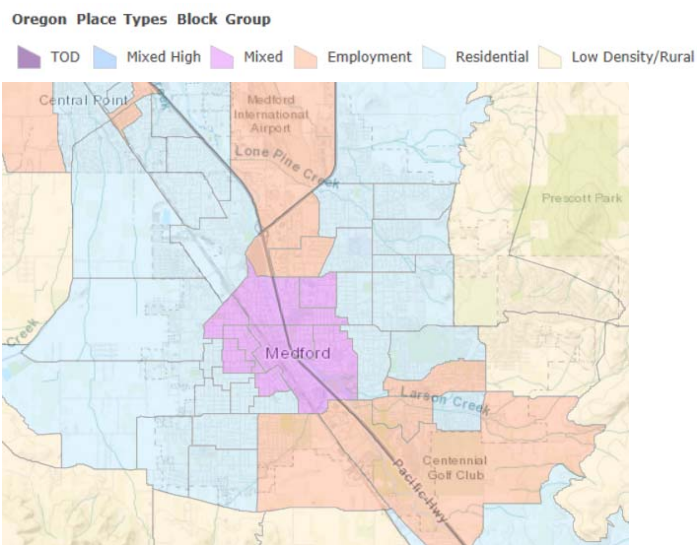
This memorandum describes the tools and process for evaluating future service improvements, projects, and programs developed as part of the 2040 Transit Master Plan process.

The project team will use several advanced modeling tools to inform the 2040 Transit Master Plan process. Each tool is designed for different purposes. For example, the Rogue Valley MPO's Joint Estimation Model in R (JEMnR) model can estimate the impacts of transit service changes on transportation choices, while RVTD's T-BEST model can provide a fine-grained look at the demographics of the communities served by transit. Using multiple tools will provide the fullest picture of the benefits and drawbacks of potential service changes and improvements being contemplated as part of the 2040 Transit Master Plan process.

MODELING TOOLS

PLACETYPES

PlaceTypes is a new tool developed by ODOT to help policymakers understand the relationship between transportation and land use at the regional level. The tool uses five factors to assign a “place type” to each Census tract in the Rogue Valley. These factors are destination accessibility, jobs/household density, presence of a multimodal street network, land use diversity, and level of transit service. These factors are rated for each Census block group, resulting in a score that indicates which areas in the region are most transit-supportive today and

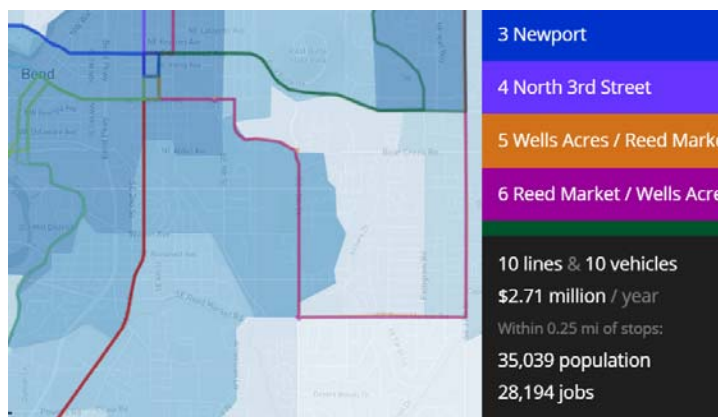


2017 PlaceType designations for Medford and vicinity

projected into the future. The project team will use PlaceTypes to help understand what parts of the region—now and in the future—are most likely to be transit-supportive. The TBEST tool, described below, also has features that allow for similar analysis; the project team may use either PlaceTypes or TBEST to assess transit-supportive areas.

REMIX

Remix is a user-friendly, web-based tool for planning transit networks. Remix automates the process of route and schedule testing, allowing users to immediately see the impacts of route and schedule changes. The tool can also be used to quickly understand the social and economic impacts (e.g., changes in population and employment transit accessibility, changes in operating costs) of new/modified transit routes and schedules. Other tool outputs include travel times and costs of service changes. The project team will use Remix to draft service alternatives, export alternatives for use with other modeling tools, and review potential benefits/impacts of the alternatives at a high level.

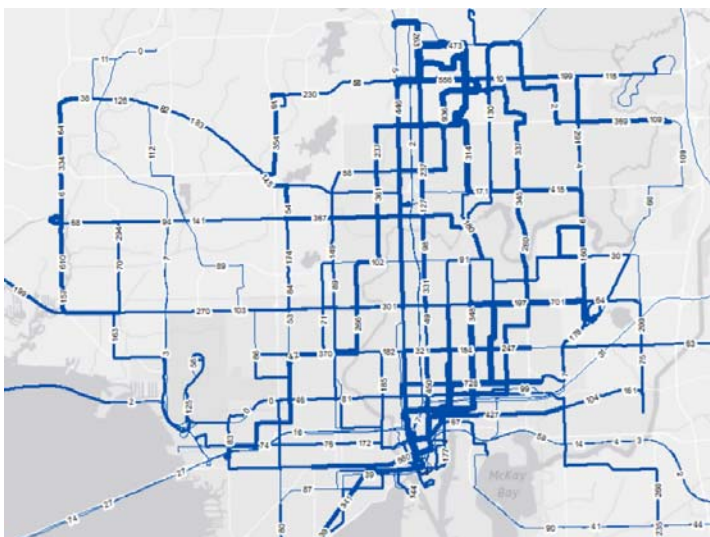


Example screenshot from Remix showing the transit network. Darker shades of blue indicate greater numbers of jobs.

JEMNR (REGIONAL TRAVEL MODEL)

The JEMnR model is a travel demand model maintained by ODOT and the Rogue Valley MPO. The JEMnR model estimates multimodal traffic flows in the Rogue Valley and produces estimates of future travel based on future land use, population, and transportation system assumptions. Different land use and transportation assumptions (e.g., new transit routes) can be tested in the model to understand the potential effects of traveler choices using the regional transportation system.

JEMnR will be used to evaluate future “scenarios,” or packages of potential transit improvement projects, to understand their collective impact on regional travel, as well as other regional impacts such as effects on congestion and emissions.



Example ridership “bandwidth” map from TBEST, where thicker lines correspond to greater ridership (Hillsborough Area Regional Transit, Hillsborough County, Florida).

TBEST

TBEST (Transit Boardings Estimation and Simulation Tool) is a model for analyzing transit system

changes. RVTD has adapted and calibrated this powerful tool, originally developed by the Florida DOT, for use in the Rogue Valley. The tool will be used to understand transit ridership generated by service changes, as well as the potential socioeconomic effects of those changes (e.g., changes in the number of low-income riders that use the system). TBEST will be used primarily to understand potential ridership impacts of future service enhancement projects and scenarios. TBEST, along with Remix, will also be the primary tools for evaluating the impacts of service changes or improvements to communities of concern (e.g., households that are low-income, racial or ethnic minority, do not own a personal vehicle).

OTHER TOOLS

GREENSTEP (RSPM)

GreenSTEP is a tool developed by ODOT for estimating the impacts to communities caused by different transportation and land use projects and policies. The tool is primarily intended for understanding greenhouse gas emissions impacts, but it also provides a snapshot of impacts on transportation mode choice, the cost of driving, congestion, and other factors. ODOT may use the state’s GreenSTEP model to estimate

the greenhouse gas and other air quality impacts of different scenarios generated for the Rogue Valley.

SKETCH MODELS

“Sketch” models are simple tools for understanding the potential impacts of transportation projects and programs. For the 2040 Transit Master Plan process, the project team may use sketch tools developed as part of another analysis tool (Mosaic) to understand the potential public health impacts of transit improvements, or the effects of transit improvements on transportation safety.

PROCESS

This section reviews the step-by-step process for developing project and program ideas; evaluating projects, programs, and scenarios; and involving the CAC, TAC, and broader public.

STEP 1 – IDENTIFY “TRANSIT-SUPPORTIVE” AREAS AND TRANSIT NEEDS

The project team will first evaluate “transit-supportive” areas, meaning those areas of the Rogue Valley region that have demographic and land use characteristics that make it more feasible for transit to be provided due to the proximity of medium or high employment and residential densities. This work will help the team in understanding what transit services might be most cost-effective. Generally, those areas with high numbers of people who are low-income, minority, older adults or youth, or lack access to a personal vehicle are more likely to use transit. In addition, land use characteristics will be considered such as housing density, mixing of uses (e.g., apartments with retail on the ground level), presence of major employers, and other essential destinations such as major shopping districts, social services and schools that can make transit more attractive.

The project team will use the PlaceTypes data from ODOT to help with this task. PlaceTypes will show, at a high level, those areas of the region that have a greater transit propensity than other areas. The TAC and CAC will review and provide feedback on the draft transit-supportive areas analysis.

Evaluation criteria have also been established for evaluating future service enhancement ideas. (See Technical Memorandum #5.) The TAC and CAC will “weight” the criteria at a meeting to identify those criteria that are the most important to consider during the evaluation.

STEP 2 – DEVELOP/DEFINE SERVICE CONCEPTS

The project team will consider input from the public, CAC, TAC, RVTD staff, and other public agency staff (e.g., from the cities) regarding transit needs now and in the future. The team will use this input in developing service concepts for potential evaluation and

eventual inclusion in the 2040 Transit Master Plan. RVTD will hold two transit design charrettes with the TAC, CAC, RVTD Board, and RVTD staff to review service ideas and discuss tradeoffs.

With this input, the project team will create a draft list of service enhancements for evaluation. Some service enhancements may include “alternatives,” or different ideas for meeting an identified need (e.g., different bus routing alternatives to serve a given area). The project team will conduct an initial review, based on a high-level assessment of the project goals, objectives, and evaluation criteria, to narrow the list of service concepts down to the list that will be fully evaluated using the tools and methods described in the previous section.

STEP 3 – EVALUATE SERVICE CONCEPTS

The project team will use the modeling tools described above to evaluate the projects as packages of projects called “scenarios” based on the evaluation criteria. Some evaluation criteria are quantitative, meaning the team will use a tool to generate a number (e.g., ridership). Others are qualitatively assessed, meaning the team will use available data and professional judgment. The scenario evaluation process will take approximately four months, to allow sufficient time to run each modeling tool and process the results.

Projects will be evaluated individually and as scenarios using the regional travel model (JEMnR) and TBEST. Packaging projects together will allow understanding of the collective impacts from potential improvements. The projects can be packaged in a number of different ways; the project team will consider how to differentiate the scenarios from each other so as to provide the most useful performance data to the CAC, the TAC, RVTD staff, and the public to inform decision-making. The project team may also re-run individual projects or scenarios with slightly different assumptions than the first model runs to see if those changes produce better results.

STEP 4 – REVIEW RESULTS

With results in hand, the project team will draft a memorandum that summarizes the service concepts and how they performed relative to the evaluation criteria. It is important to note that the evaluation process is not a black box, where service concepts go in and good or bad projects come out. RVTD staff, the TAC, the CAC, and the public will all weigh in on the results of the evaluation to make sure the results make sense and to consider other factors that may be important in assessing potential improvements. This work will help illuminate those improvements that will be most beneficial to the community and that should be considered for inclusion in the 2040 Transit Master Plan. Ultimately, the service enhancements will need to be adopted in priority order such that available funding can go toward the next enhancement. Exceptions can be made by the Board of Directors based on emerging community needs and issues however the list helps to build community expectations with RVTD’s competing resources.