Rogue Valley Commuter Rail Project

Final Report

Prepared for:
Rogue Valley Metropolitan Planning Organization
Central Point, Oregon

March 2007

HDR
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Prepared for: Rogue Valley Metropolitan Planning Organization
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TABLE OF CONTENTS

EXECUTIVE SUMMARY

Purpose of Report

The Rogue Valley Metropolitan Planning Organization (RVMPO) has taken the lead to see if the CORP facilities may be more fully utilized to expand transportation options in the region. The MPO has commissioned a number of studies over the past years, exploring the potential for commuter rail between Central Point and Ashland, a distance of just over 16 miles. The RVMPO requested that this additional study be made to reflect the unavailability of the Oregon Department of Transportation (DOT) cars previously available for the project. In addition, RVMPO wanted basic information that it might use to approach the Federal Transit Administration (FTA) for potential funding under the agency's "Small Starts Program"

Key Findings

Findings from this report provide updated information to the July 2006 study regarding equipment options, and capital costs and ridership capacity for a bi-directional commuter rail operation. (Both 30- and 60-minute service during the morning and evening peaks were considered.) Potential demand for rail transit was considered briefly, as well. However, this is a topic that must be treated in more depth in a next phase of study, if the project moves ahead.

Equipment Options (Alternatives to the ODOT Rail Diesel Cars).

Four train sets of at least 180 seats are needed in order to provide the contemplated 30-minute service levels while two sets would be needed for hourly interval service. They would also have to meet all existing ADA requirements along with current FRA passenger car safety standards. The exception would be the light-weight DMU which requires either physical or temporal separation from freight operations.

Table ES-1: Available Commuter Rail Equipment and Costs

COMMUTER RAIL EQUIPMENT						
Type	Seats	Cost Each	Number Needed for Hourly Service	Cost	Number Needed for 1/2 Hourly Service	Cost
Conventional Rail Cars						
With passenger cab car	180	$2,200,000	2	$4,400,000	4	$8,800,000
With locomotive cab car	180	$2,525,000	2	$5,050,000	4	$10,100,000
Self Propelled Cars						
Rebuilt RDC Cars	180	$2,600,000	2	$5,200,000	4	$10,400,000
New DMU	180	$5,600,000	2	$11,200,000	4	$22,400,000
Light-weight DMU (VT 642)	180	$3,000,000	2	$6,000,000	4	$12,000,000
Bi-Level Commuter cars	200	$5,200,000	2	$10,400,000	4	$20,800,000

From the perspective of capital costs, conventional rail cars and rebuilt RDC cars would appear be the lowest priced options. However, it should be noted that they all need two-man crews while the light-weight DMU can be operated by only one person. This will be more fully examined in the next section that explores yearly operating costs associated with commuter service.

Capital Costs (Bi-Directional Operations)

Table ES-2 summarizes capital costs associated with commuter rail service implementation in the Rogue Valley.

Table ES-2: Summary of Estimated Capital Costs

SUMMARY OF ESTIMATED CAPITAL COSTS	
Commuter Rail Rolling Stock (depending on choice)	$4.4 to $20.8 M*
Track Improvements (HDR July 2006)	$16.1 - $20.4 M*
Seven Station Platforms	$257,970
Five Park and Ride Facilities	$612,500
Maintenance Facilities	$800,000
Total	**$27.7 M to $42.9 M**
**Ranges show cost variation from least cost 60 minute service to highest cost 30 minute service.*	

Operating Costs (Bi-Directional Operations)

Necessary operating costs include the following train-related costs. Additional costs may include station and park-and-ride operations, security, and the cost of other amenities.

Table ES-3: Summary of Estimated Operating Costs

SUMMARY OF ESTIMATED OPERATING COSTS	
Train Crews	$4.25 p/tm
Track Inspections	$0.07 p/tm
Equipment operating costs	$3.82 p/tm
Insurance	$4.00 p/m
Track Access	$3.33 p/m
Total	**$15.47 p/tm**
Table above assumes hourly service levels.	

This translates into approximately $3.1 million per year or $2.6 million using the VT 642 equipment. The per-train/mile rate is relatively low, compared to operating costs experienced by other commuter and passenger train operators.

Ridership Capacity (Bi-Directional Operations)

Maximum Capacity—All Seats Full: If every seat (180) were filled on each of the 28 runs (at 30 minute service intervals) one could expect 5,040 riders each day. This results in approximately 1,310,000 annual passengers. The hourly service would produce 3,600 daily riders or 936,000 yearly passengers. This scenario is equivalent to the maximum capacity of the train service under the configuration assessed. (Note that more cars can be added to expand capacity.)

Concept-Level Transit Ridership Estimates

The ability to increase the *capacity* of a commuter rail operation with bi-directional operations begs the next question: Can this capacity be filled? Is there enough demand now, or in the near future, to warrant the investment of capital funds and the regional commitment of operating expense subsidies?

This study was able to touch on this issue only superficially. But while there is no definitive answer at this time, several encouraging features and demographics of the alignment, including severe congestion and constraints on the only two highway alternatives (I-5 and Highway 99)

Based on conservative assumptions and area traffic patterns, residential and employment densities and the alternative highway and bus modes available, it is reasonable to expect that 547 to 1,094 highway and bus riders would be attracted to commuter rail during the morning three-hour peak window. A brief discussion of minimum transit density "thresholds" for residential and employment density that could support a commuter rail operation in Rogue Valley is included in the full report. This topic must be considered in more detail, however.

Next Steps

There are several steps to take if the RVMPO decides to pursue a commuter rail program, including:

- Work with regional stakeholders to solidify support for moving ahead, or postpone or abandon the concept;
- Explore the potential with FTA "Small Starts/Very Small Starts" staff to get direction and sound advice on pursuing program support from FTA;
- Identify a scope and budget for a more in-depth study that will either satisfy FTA's funding requirements, or will be designed to answer service and cost questions sufficient to attract other public and/or private sources of capital and operating funds, including:
    - Answer unaddressed issues in this report;
    - Better understand the range of transit ridership potential for this alignment, given real constraints and opportunities unique to the Rogue Valley area;
    - Expand and refine the understanding of station-area development, demographics, opportunities and constraints;
    - Ascertain political and taxpayer willingness to support a commuter rail program with long-term operational expenses;
    - Work with area transit provider to integrate bus and rail transit planning with the wider MPO planning goals, including, potentially, commuter rail; and
    - Identify a range of policies, commitments and actions that will enhance demand for commuter rail within the alignment corridor.

2007 ROGUE VALLEY COMMUTER RAIL STUDY BACKGROUND

The Rogue Valley area in southern Oregon is one of the fastest growing regions in the Pacific Northwest. Most of the yearly growth rates in the 20-mile corridor extending from Ashland to Central Point have exceeded two percent. Local government officials expect an additional 30,000 people to move into the region by 2015.

This influx of people is spreading in a linear pattern, since the valley is hemmed in on the east by the Cascade Mountains and on the west by the Coast Range. Both current residents and the expected newcomers face limited transportation options. The only through north-south roads are State Route 99 (Highway 99) on the west and Interstate 5 (I-5) on the east. Both of these must accommodate not only Oregon and west coast through-traffic, but also local north-south traffic. High traffic volumes mean that segments of both roadways fall short of Oregon Highway Plan mobility standards. Any expansion to the highway system in this area will be extremely expensive.

CORP Train traverse the Rogue Valley

Parallel to Highway 99 is the mainline of the Central Oregon and Pacific Railroad (CORP).

Several trains a day operate north from Medford while only a single daily roundtrip departs south to California. The Rogue Valley Metropolitan Planning Organization (RVMPO) has taken the lead to see if the CORP facilities may be more fully utilized to expand transportation options in the region. The MPO has commissioned a number of studies over the past years, exploring the potential for commuter rail between Central Point and Ashland, a distance of just over 16 miles.

1. A 2001 Study by the Oregon Department of Transportation (ODOT) examined commuter rail service between Central Point and Ashland (16.9 miles) along with the extension of such service to/from Grants Pass (an additional 28 miles).
2. A July 2006 report looked at conducting a demonstration project between just Central Point and Ashland using three rail diesel cars at that time owned by the Oregon Department of Transportation. These cars had just finished three summers of seasonal operation between Portland and Astoria and were being offered for sale by the Department. The three cars permitted only single direction operations between Central Point and Ashland but they were available at a very competitive price.

The ODOT cars were subsequently purchased by the Wallowa-Union Railroad in far northeastern Oregon before the Rogue Valley region was able to act.

Purpose of this Study

The RVMPO requested that an additional study be made to reflect the unavailability of the ODOT cars. In addition, RVMPO wanted basic information that it might use to approach the Federal Transit Administration for potential funding under the agency's "Small Starts Program".

The scope of work of this study includes three basic updates from the July 2006 study:

1. List the equipment options to replace the ODOT Rail Diesel Cars.
2. Prepare an update to the capital program to permit bi-directional operations.
3. Revisit the earlier ridership projections resulting from the increased frequencies permitted by bi-directional operations.

Study Steps

The current study is organized around the following sequence of tasks:

1. Equipment needs were determined to satisfy the two sample schedules.
2. Potential schedules were developed to ascertain the operating times possible in the corridor. For this brief report, only two sample schedules were produced – a 60-minute and a 30-minute departure frequency.
3. Track and signal upgrades were estimated to take into account the operating characteristics of the equipment and improvements needed to meet the schedule.
4. Travel and demographic data was collected to see what ridership numbers could possibly result under the two different operating scenarios (60-minute and 30-minute frequency during peak periods).
5. Ridership scenarios were developed.

AM PEAK PERIOD SERVICE														
Hourly Interval Service (two train sets)														
			Northbound (Read Down)								**Southbound (Read Up)**			
		9:06am	8:06am	7:06am	6:06am	5:06am	Lv	**Ashland**	Ar	5:54am	6:54am	7:54am	8:54am	9:54am
		9:16am	8:16am	7:16am	6:16am	5:16am	Lv	**Talent**	Lv	5:44am	6:44am	7:44am	8:44am	9:44am
		9:23am	8:23am	7:23am	6:23am	5:23am	Lv	**Phoenix**	Lv	5:37am	6:37am	7:37am	8:37am	9:37am
		9:30am	**8:30am**	**7:30am**	**6:30am**	**5:30am**	Lv	**BCO**	Lv	**5:30am**	**6:30am**	**7:30am**	**8:30am**	9:30am
		9:37am	8:37am	7:37am	6:37am	5:37am	Lv	**Medford**	Lv	5:23am	6:23am	7:23am	8:23am	9:23am
		9:47am	8:47am	7:47am	6:47am	5:47am	Lv	**Central Pt S**	Lv	5:13am	6:13am	7:13am	8:13am	9:13am
		9:50am	8:50am	7:50am	6:50am	5:50am	Ar	**Central Pt N**	Lv	5:10am	6:10am	7:10am	8:10am	9:10am
PM PEAK PERIOD SERVICE														
Hourly Interval Service (two train sets)														
			Northbound (Read Down)								**Southbound (Read Up)**			
		7:06pm	6:06pm	5:06pm	4:06pm	3:06pm	Lv	**Ashland**	Ar	2:54pm	3:54pm	4:54pm	5:54pm	6:54pm
		7:16pm	6:16pm	5:16pm	4:16pm	3:16pm	Lv	**Talent**	Lv	2:44pm	3:44pm	4:44pm	5:44pm	6:44pm
		7:23pm	6:23pm	5:23pm	4:23pm	3:23pm	Lv	**Phoenix**	Lv	2:37pm	3:37pm	4:37pm	5:37pm	6:37pm
		7:30pm	**6:30pm**	**5:30pm**	**4:30pm**	**3:30pm**	Lv	**BCO**	Lv	**2:30pm**	**3:30pm**	**4:30pm**	**5:30pm**	**6:30pm**
		7:37pm	6:37pm	5:37pm	4:37pm	3:37pm	Lv	**Medford**	Lv	2:23pm	3:23pm	4:23pm	5:23PM	6:23PM
		7:47pm	6:47pm	5:47pm	4:47pm	3:47pm	Lv	**Central Pt S**	Lv	2:13pm	3:13pm	4:13pm	5:13pm	6:13pm
		7:50pm	6:50pm	5:50pm	4:50pm	3:50pm	Ar	**Central Pt N**	Lv	2:10pm	3:10pm	4:10pm	5:10pm	6:10pm
	Note: Times in Bold indicate a meet between two trains.													

Figure 1. Hourly Interval Schedule

AM PEAK PERIOD SAMPLE SCHEDULES																
30 minute interval Service (four trainsets)																
	Northbound (Read Down)										**Southbound (Read Up)**					
8:51am	8:21am	7:51am	7:21am	6:51am	6:21am	5:51am	Lv	**Ashland**	Ar	6:11am	6:41am	7:11am	7:41am	8:11am	8:41am	9:11am
9:01am	**8:31am**	**8:01am**	**7:31am**	**7:01am**	**6:31am**	**6:01am**	Lv	**Talent**	Lv	**6:01am**	**6:31am**	**7:01am**	**7:31am**	**8:01am**	**8:31am**	**9:01am**
9:08am	8:38am	8:08am	7:38am	7:08am	6:38am	6:08am	Lv	**Phoenix**	Lv	5:54am	6:24am	6:54am	7:24am	7:54am	8:24am	8:54am
9:17am	**8:47am**	**8:17am**	**7:47am**	**7:17am**	**6:47am**	**6:17am**	Lv	**BCO**	Lv	**5:47am**	**6:17am**	**6:47am**	**7:17am**	**7:47am**	**8:17am**	**8:47am**
9:24am	8:54am	8:24am	7:54am	7:24am	6:54am	6:24am	Lv	**Medford**	Lv	5:40am	6:10am	6:40am	7:10am	7:40am	8:10am	8:40am
	(New passing track between CPN and Medford)										**New passing track between CPN and Medford)**					
9:37am	9:07am	8:37am	8:07am	7:37am	7:07am	6:37am	Lv	**Central Pt S**	Lv	5:27am	5:57am	6:27am	6:57am	7:27am	7:57am	8:27am
9:40am	9:10am	8:40am	8:10am	7:40am	7:10am	6:40am	Ar	**Central Pt N**	Lv	5:24am	5:54am	6:24am	6:54am	7:24am	7:54am	8:24am
PM PEAK PERIOD SAMPLE SCHEDULES																
30 minute interval Service (four trainsets)																
	Northbound (Read Down)										**Southbound (Read Up)**					
5:51am	5:21am	4:51am	4:21pm	3:51pm	3:21pm	2:51pm	Lv	**Ashland**	Ar	4:11pm	4:41pm	5:11pm	5:41pm	6:11pm	6:41pm	7:11pm
6:01pm	**5:31pm**	**5:01pm**	**4:31pm**	**4:01pm**	**3:31pm**	**3:01pm**	Lv	**Talent**	Lv	**4:01pm**	**4:31pm**	**5:01pm**	**5:31pm**	**6:01pm**	**6:31pm**	**7:01pm**
6:08pm	5:38pm	5:08pm	4:38pm	4:08pm	3:38pm	3:08pm	Lv	**Phoenix**	Lv	3:54pm	4:24pm	4:54pm	5:24pm	5:54pm	6:24pm	6:54pm
6:17pm	**5:47pm**	**5:17pm**	**4:47pm**	**4:17pm**	**3:47pm**	**3:17pm**	Lv	**BCO**	Lv	**3:47pm**	**4:17pm**	**4:47pm**	**5:17pm**	**5:47pm**	**6:17pm**	**6:47pm**
6:24pm	5:54pm	5:24pm	4:54pm	4:24pm	3:54pm	3:24pm	Lv	**Medford**	Lv	3:40pm	4:10pm	4:40pm	5:10pm	5:40pm	6:10pm	6:40pm
	(New passing track between CP South and Medford)										**(New passing track between CP South and Medford)**					
6:34pm	6:04pm	5:34pm	5:04pm	7:34am	7:07pm	3:37pm	Lv	**Central Pt S**	Lv	3:27pm	3:57pm	4:27pm	5:57pm	6:27pm	7:57pm	6:27pm
6:37pm	6:07pm	5:37pm	5:07pm	7:37am	7:07am	3:40pm	Ar	**Central Pt N**	Lv	3:24pm	3:54pm	4:24pm	4:54pm	5:24pm	5:54pm	6:24pm
	Note: Times in bold indicate a meet between two trains.															

Figure 2. 30-minute interval schedules

EQUIPMENT

The non-availability of the ODOT equipment opens the project to the wide range of equipment currently available on the market. These include:

Conventional Rail Cars

The trains would consist of conventional rail passenger cars pulled by a diesel locomotive. A "cab car" would be necessary to avoid having to "run around" the train at each end of the line. A "cab car" consists of either a passenger car with train engineer controls at one end or a former diesel locomotive with the controls remaining but the diesel prime mover removed since no propulsion power is needed.

A positive attribute of this form of equipment is that the cars are readily available. Many commuter rail operations across the country are disposing of cars and cab cars as they update their fleets with new equipment. The downside is that most of them are worn out and would probably require extensive upgrading to provide the long-term needs of Rogue Valley riders.

Typical prices are as follows:

Upgraded 3,000 hp diesel locomotive with head end power to provide electricity for heating and cooling.	$1,800,000
At least one passenger car compatible with the locomotive	$175,000
One "cab car" passenger car	$225,000
	$2,200,000

or

Upgraded 3,000 hp diesel locomotive with head end power to provide electricity for heating and cooling.	$1,800,000
Two passenger cars compatible with the locomotive	$350,000
One "de-motored" diesel locomotive	$375,000
	$2,525,000

This equipment would meet current Federal Railroad Administration (FRA) passenger car safety standards and would accessibility standards of the Americans with Disabilities Act (ADA). The trains would each require both an engineer and a conductor. The conductor is needed to operate the loading/unloading doors along with an ADA wheel chair lift. The two cars can be equipped to seat up to 180 total seats.

Self-Propelled Rail Cars

Rail Diesel Cars (RDC)

Self-propelled RDC cars were constructed by the Budd Company in the 1950s and saw extensive deployment in commuter and intercity rail operations across the United States and Canada. Each of the cars had their own propulsion engines along with controls at each end of the cars to avoid "running around operations" at the end of the run. Over the years many of them had their under-floor engines removed and were converted into conventional locomotive-hauled coaches.

Self-Propelled Rail Diesel Car

At the time ODOT purchased their cars from BC Rail, only six cars were in regular service by Via Rail Canada, two cars by the Susquehanna Railroad in Syracuse, New York and eight by the Trinity Railroad Express in the Dallas/Fort Worth area. In addition, a few examples have been preserved by tourist railroads. The Budd Company had constructed over 450 of the cars before they shut down production in the 1962.

Industrial Rail Services (IRS) of Moncton, New Brunswick purchased Via Rail Canada's fleet of surplus RDC cars resulting in having a number of cars that can be refurbished for additional service. At this time, IRS is quoting a rebuilt price of between $1 million and $1.3 million depending upon the current condition of the cars and the level of improvements needed. IRS is the only known company that currently has the ability supply a number of reconstructed RDC cars.

The cars meet all current FRA passenger car safety standards and would be delivered to meet ADA accessibility guidelines. Each car seats about 90 passengers with commuter-style seats and need both an engineer and conductor. The conductor is required to operate the loading/unloading doors along with an ADA wheel chair lift. The two cars can seat up to 180 passengers.

Two cars for each train set: $2,600,000

Diesel Multiple Units (DMU)

The DMU is a modern version of the RDC car. Currently, only Colorado Rail Car produces a car that meets the FRA's passenger car safety standards. TriMet in Portland will be one of the first commuter rail operations in the United States that will use modern DMUs. The two car train set will seat about 180 people.

Two car train set: $5,600,000

Light-weight DMU

The light-weight DMU is a cross between the heavy rail DMU above and an electric powered light rail vehicle such as the MAX trains in Portland. The main difference is that they have been dieselized. Light-weight DMUs are used extensively in many countries around the world.

Light-weight DMUs are not compliant with current FRA passenger car safety standards and can only be operated if they are physically separated from freight operations. However, the FRA does permit their use in mixed service if there is a temporal separation between the freight and passenger service. The Oceanside to Escondido line in southern California is the only current operator of this equipment in the United States. The cars are based on the German Railroad's VT642 DMU's.

A one-car train set: $3,000,000

The Escondido line's cars seat about 180 people and have low floor loading. This eliminates the need for any special ADA equipment. It also requires only an operator thus greatly reducing labor operating costs. A special FRA waiver would be needed to place these cars in service.

Bi-Level Commuter Cars

Many commuter operations in the United States and Canada have upgraded their fleet with two-story commuter rail cars propelled by a head-end power equipped diesel locomotive. The passenger cars come in two versions – a full passenger version seating about 100 passengers along with a car that has full engineer controls in one end that seats about 90 passengers. Very few of these cars are available on the used equipment market. Some earlier examples are being offered at the time this report is being drafted, but they are fairly worn out and would need extensive rebuilding for long-term service. The two cars can provide up to 200 seats.

Upgraded 3,000 hp diesel locomotive with head end power to provide electricity for heating and cooling	$1,800,000
One passenger car compatible with the locomotive	$1,600,000
One "cab car" passenger car	$1,800,000
	$5,200,000

Summary

Four train sets of at least 180 seats are needed in order to provide the contemplated 30-minute service levels while two sets would be needed for hourly interval service. They would also have to meet all existing ADA requirements along with current FRA passenger car safety standards. The exception would be the light-weight DMU which requires either physical or temporal separation from freight operations.

Table 1: Available Commuter Rail Equipment and Costs

COMMUTER RAIL EQUIPMENT						
Type	Seats	Cost Each	Number Needed for Hourly Service	Cost	Number Needed for 1/2 Hourly Service	Cost
Conventional Rail Cars						
With passenger cab car	180	$2,200,000	2	$4,400,000	4	$8,800,000
With locomotive cab car	180	$2,525,000	2	$5,050,000	4	$10,100,000
Self Propelled Cars						
Rebuilt RDC Cars	180	$2,600,000	2	$5,200,000	4	$10,400,000
New DMU	180	$5,600,000	2	$11,200,000	4	$22,400,000
Light-weight DMU (VT 642)	180	$3,000,000	2	$6,000,000	4	$12,000,000
Bi-Level Commuter cars	200	$5,200,000	2	$10,400,000	4	$20,800,000

From the perspective of capital costs, conventional rail cars and rebuilt RDC cars would appear be the lowest priced options. However, it should be noted that they all need two-man crews while the light-weight DMU can be operated by only one person. This will be more fully examined in the next section that explores yearly operating costs associated with commuter service.

OPERATING SCENARIOS

The following figures show possible operating schedules for the proposed Central Point to Ashland service. One displays times for hourly interval service while the other shows times for 30-minute interval service.

Once dependable running and station dwell times are established, it may be possible to run a faster schedule. Under the hourly scenario, reduced headways could get down to 45 minute intervals.

Some adjustments might be made, depending upon the eventual levels of track upgrades and to match the timing of the service to fit employee work schedules at Harry & David (H&D). H&D is the major employment generator (3,000 plus workers) located on the line; the proposed commuter schedule will be adjusted to meet its work schedules to the extent practical.

CAPITAL IMPROVEMENTS AND ESTIMATED (CONCEPTUAL) COSTS

Previously Identified Capital Improvements

The major additions in capital improvements from the July 2001 study are as follows:

1. For hourly interval service, a new passing siding will be constructed just south of the Harry & David facility in order to run two trains in opposite directions.

   The project will install 1,100 feet of new passing track along with a power turnout at the north and south end of the trackage. Cost associated with changes to the train control system are included in the estimated signalization costs.

   For half-hourly service, three new passing tracks will need to be constructed. One will be at Talent, another at Harry & David while a third passing siding will be positioned between Medford and the Central Point South station.

2. Extension of the former Medford yard bypass track an additional 2.9 miles to a new station north of Pine Street in Central Point. This will permit a complete separation of freight and passenger operations from Medford north along with service to an additional station in Central Point.

   The $5.84 million project will construct a new passenger mainline from just north of Jackson Street (railroad mile post 442.1) to approximately mile post 446 just north of Pine Street in Central Point. This will completely separate the passenger and freight operations on CORP. When combined with a potential temporal separation between Jackson Street and Ashland it may permit non-compliant FRA vehicles. See the section on Equipment for more details.

3. Adding a covered structure to the original maintenance facility since the project is now more than just a limited duration demonstration facility.

4. Constructing an additional station at what is being called North Central Point in order to provide service to the Twin Creeks Transit Oriented housing project at approximately railroad milepost 446.

Existing Track Conditions

CORP's Siskiyou Branch Main is composed of 90 to 100# rail on 7"x9"x8' ties and is maintained at an FRA Class 2 level. These track conditions and maintenance levels allow CORP to operate its freight trains at a speed of 25 MPH.

Proposed Track and Signal Improvements

To meet the proposed schedules, it will be necessary to operate the commuter rail equipment at speeds of approximately 59 MPH. To achieve this speed, track upgrades of between $16-18 million will be necessary. The difference is the need to construct additional passing sidings depending upon operating hourly interval service or ½ hourly service.

Track improvements will include replace the existing mixture of old and worn rail with new 136 pounds per yard welded rail along with replacing approximately 1,100 ties per mile. These improvements will permit the operation of passenger trains at speeds up to 59 mph.

CORP felt that with the increased level of service over that proposed using the ODOT RDC cars it may be necessary to create a new passenger mainline through CORP's yard in Medford and extend it to the Central Point North station. This will permit separate freight and passenger train operations. The new passenger mainline between Medford Yard and Central Point will utilize the existing CORP mainline and a new freight track would be constructed to the west. This would keep the current grade crossing signal spacing between the tracks and adjacent Highway 99. The separation of the two operations could permit the operation of the light-weight DMU thus reducing crew operating costs.

Improvements also were made to both grade crossing surfaces and the circuitry at the automated equipment. The installation of the new heavier rail will require that the existing surfaces at some crossings be removed and replaced with updated materials. Many of the existing crossings have either new material that already has heavier rail or has a type of crossing surface that is adaptable to the heavier rail. It is estimated that about 392 total feet of crossing surface will need to be replaced. Many of the crossings along the route are already equipped with automatic crossing signalization. However, most of them are equipped with circuitry that is set for existing train speeds. Seventeen of the older signals will need to have upgraded circuitry installed at an estimated cost of $15,000 for each signal.

There will be changes made to the existing train control system since opposing movements are contemplated using multiple train sets. Some costs are anticipated to reconnect the existing train control system to the installation of the new rail.

Note: There are no right of way costs included in these estimates. The railroad has not indicated whether they are amenable to purchase or lease the property.

Table 2: Track Improvement Costs Based on 60-Minute Service

HOURLY SERVICE TRACK IMPROVEMENTS					
Distance	16.9 miles				
ITEM	**Measure**	**Amount**	**Unit**	**Cost Per Unit**	**Total**
Rail					
Rail	tons/mile	240	tons	$910	$3,690,960
Tie Plates	per mile	6,000	each	$10	$1,014,000
Spikes	per mile	24,000	each	$1	$507,000
Subtotal					$5,211,960
Switches					
#10/#12 Relay Switches	each	17	each	$60,000	$1,020,000
Ties					
Ties	per mile	1,100	each	$65	$1,208,350
Ballast	tons per/m	600	tons	$15	$152,100
Surfacing	per mile	16.9	miles	$8,000	$135,200
Subtotal ties					$1,495,650
Medford Yard and Double track to CP					
Approximately 3.9 miles (new construction)	per foot	20,592	feet	$150	$3,088,800
Transportation/labor @ 25%					$772,200
Fills and cuts	cubic yards	23,000	cubic yards	$15	$345,000
Subtotal					$4,206,000
Harry & David Passing Siding					
1,100 feet of track	feet	1,100	per foot	$150	$165,000
Power switches	each	2	each	$120,000	$240,000
Transportation/labor @25%					$225,000
Subtotal					$630,000
Salvage					
Rail	tons p/mile	185	tons	$250	$781,625
OTM	tons p/mile	45	tons	$250	$190,125
Switches	each	17	each	$10,000	$170,000
Ties	ties	18,590	each	$2	$37,180
Subtotal					-$1,035,650
Total Cost for Track Construction					$11,527,960
Grade Crossings					
New surfaces	crossings	472	feet	$800	$377,600
Upgrade Circuitry	crossings	17	each	$15,000	$255,000
Subtotal					$632,600
Signalization					
Labor and Materials	lump sum				$1,250,000
Subtotal					$13,410,560
Contingencies	20%				$2,682,112
PROJECT TOTAL					**$16,092,672**

Table 3: Track Improvement Costs Based on 30-Minute Service

30 MINUTE SERVICE TRACK IMPROVEMENTS					
Distance	16.9	miles			
ITEM	**Measure**	**Amount**	**Unit**	**Cost Per Unit**	**Total**
Rail					
Rail	tons/mile	240	tons	$910	$3,690,960
Tie Plates	per mile	6,000	each	$10	$1,014,000
Spikes	per mile	24,000	each	$1	$507,000
Subtotal					$5,211,960
Switches					
#10/#12 Relay Switches	each	17	each	$60,000	$1,020,000
Ties					
Ties	per mile	1,100	each	$65	$1,208,350
Ballast	tons per/m	600	tons	$15	$152,100
Surfacing	per mile	16.9	miles	$8,000	$135,200
Subtotal ties					$1,495,650
Medford Yard and Double track to CP					
Approximately 3.9 miles (new construction)	per foot	20,592	feet	$150	$3,088,800
Transportation/labor @ 25%					$772,200
Fills and cuts	cubic yards	23,000	cubic yards	$15	$345,000
Subtotal					$4,206,000
Talent, H&D and Medford-CP South Passing Sidings					
Passing siding track	feet	3,300	per foot	$150	$495,000
Power switches	each	6	each	$120,000	$720,000
Transportation/labor @25%					$675,000
Subtotal					$1,890,000
Salvage					
Rail	tons p/mile	185	tons	$250	$781,625
OTM	tons p/mile	45	tons	$250	$190,125
Switches	each	17	each	$10,000	$170,000
Ties	ties	18,590	each	$2	$37,180
Subtotal					-$1,035,650
Total Cost for Track Construction					$12,787,960
Grade Crossings					
New surfaces	crossings	472	feet	$800	$377,600
Upgrade Circuitry	crossings	17	each	$15,000	$255,000
Subtotal					$632,600
Signalization					
Labor and Materials	lump sum				$2,950,000
Subtotal					$17,003,160
Contingencies	20%				$3,400,632
PROJECT TOTAL					**$20,403,792**

Table 4: Recommended Railroad Crossing Improvements for 59 MPH Operating Speed

Crossing Milepost	Location	Street Name	Device Type	30 mph Speed Restriction	Upgrade Circuitry	Replace Crossing Surface (ft)
Crossing Improvements						
	Ashland	Station will be located at MP 429.1				
429.40	Ashland	Oak Street	Active	X	X	
429.55	Ashland	Helman Street	Active	X	X	
429.69	Ashland	Laurel & Hersey Streets	Passive	X	NA	104
429.90	Ashland	Glenn Street	Passive	X	NA	
432.80	Talent	Public Road	Passive	X	NA	16
434.10	Talent	Rapp Road (Wagner Butte Rd)	Active		X	32
434.50	Talent	Wagner Avenue	Passive		NA	
	Talent	Station will be located just north of the Main St Crossing				
435.60	Talent	Main Street	Active	X	X	
435.10	Talent	Colver Road	Active		X	
435.60	Talent	Hartley Road	Passive	X	NA	
436.56	Phoenix	Colver Road Multi-use path	Active			
437.04	Phoenix	1st Street	Active			
		Station will be located just north of the 1st Street Crossing				
437.20	Phoenix	4th Street	Active			
438.40	Gas Works	Glenwood Road (Pvt Crossing)	Passive		NA	32
438.90	Voorhies	South Stage Road	Active		X	
439.40	HARRY & DAVID	Bear Creek Orchards (Pvt Xing)	Active			32
		Station for Bear Creek Orchards will be at MP 439.5				
440.30	Medford	Garfield Street	Active			
440.60	Medford	Stewart Avenue	Active		X	
440.85	Medford	Barnett Street	Active		X	
441.40	Medford	Eleventh Street	Active		X	
441.50	Medford	Tenth Street	Active			
		Station is located between the two crossing				
441.60	Medford	Eighth Street	Active			
441.70	Medford	Main Street	Active		X	
441.77	Medford	Sixth Street	Active		X	
441.90	Medford	Fourth Street	Active		X	
441.97	Medford	Third Street	Passive	X	NA	
442.10	Medford	Jackson Street	Active		X	32
442.30	Medford	Clark Street	Passive	X	NA	32
442.70	Medford	McAndrews Road	Active		X	40
443.96	Central Point	Ehrman Way	Active		X	
444.20	Central Point	Elk Road #780	Active		X	32
444.80	Central Point	Beall Lane #736	Active		X	40
445.70	Central Point	Pine Street				80
			TOTALS	9	17	472

Stations

The project envisions having seven passenger stations. Currently, only one station actually exists while the other six will need to be built. No train boarding platforms are currently present at any of the station sites.

Generic station platforms have been designed at a conceptual level (see drawing on next page). The platform will be 8 inches above the top of rail which eliminates the need for traditional railroad step boxes for boarding passengers. The estimated cost for this basic facility is approximately $14,600 per station location. The platforms need to be handicapped accessible and equipped with a lift to facilitate moving passengers to and from the cars. The manual lift used by Amtrak is built in Canada and cost about $7,000 each. Safety lighting will be needed along with a trash receptacle. The only structure will be a typical transit shelter to provide short term inclement weather protection. A basic transit shelter enclosed on three sides cost approximately $5,000 while the safety lighting will add an additional $10,000 to the facility. A trash receptacle will cost about $250. This indicates that the basic platform and station will cost $36,850.

The potential use of the VT 642 will not require any wheel chair lifts. However, the platform might have to be a bit higher to accommodate the vehicles. It could also be possible to put a handicapped lift on the equipment rather than having one at each station. These trade-offs will require further study should not greatly impact capital costs. Equipment costs might go up a bit while individual station costs will probably go down.

Station Locations

Central Point (population 19,522[1]).

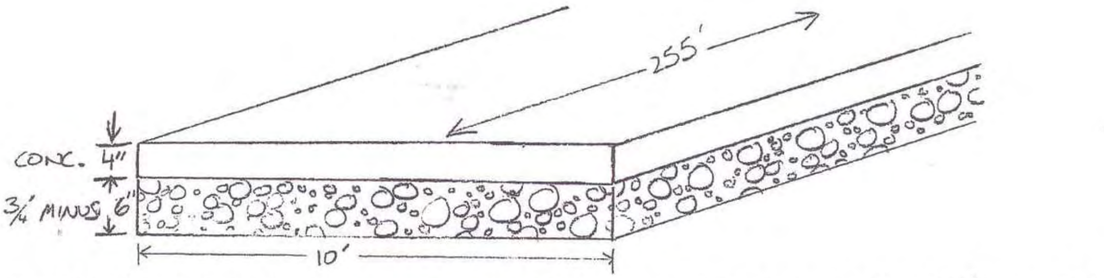
Two stations are proposed in Central Point due to two large housing developments adjacent to the tracks.

1. **Central Point North** will be located ½ mile north of Pine Street at approximately railroad milepost 446. It will serve the Twin Creeks Transit Oriented Development. Discussions with the MPO and the transit provider indicate that approximately 30 park-and-ride spaces should be provided along with a bus parking space.
2. The **Central Point South** station site sits westerly of Highway 99 across the road from the Dollar Tree at approximately CORP railroad milepost (MP) 444.5. The site is graded with the only structure being the former offices of the Central Point Lumber Company. It might be possible to rehabilitate the former lumber company offices into a station. However, that is not being considered in this study. West of the tracks, the Snowy Butte housing development is under construction and could provide significant ridership.

This location could be developed into a major park-and-ride/kiss-and-ride station. It also needs to have good transit access, because connecting bus service will be critical to attract ridership.

[1] Year 2000 census figures

COMMUTER PLATFORM



LENGTH ASSUMPTION: 3 COLORADO RAILCAR DMU SINGLE LEVEL CARS @ 85'/CAR → 255'

CONCRETE WALKWAY**

$10' \times 255' \times 1/3' = 850\ ft^3 = 31.5$ c.y. ~or~ $2550\ ft^2$

$2550\ ft^2 \times \$4.04/ft^2$* = $10,300

* AVE ODOT REG 3 PRICE OF 3 LOWEST BIDS ON SIMILAR-SIZED QUANTITIES.

** UN-REINFORCED SLAB

3/4" MINUS AGGREGATE:

$10' \times 255' \times 6" = 1275\ ft^3 = 47\frac{1}{2}$ C.Y.

$47\frac{1}{2}$ C.Y. × 2.05 TON/C.Y. = 97.5 TONS

97.5 TONS × $12.70/TON = $1240

EXCAVATION:

$10" \times 1/12" \times 10' \times 255' = 2125\ ft^3$ = 79 C.Y.

79 C.Y. × $7.85/C.Y. = $620

ESTIMATED COST

CONCRETE	2550 ft²	$10,300
3/4" MINUS AGG.	97.5 TONS	$1240
EXCAVATION	79 C.Y.	$620
		$12,160
		× 1.2 CONTINGENCY FACTOR
		$14,600

Figure 3. Schematic and Rough Cost of Commuter Platform

Discussions with the Rogue Valley MPO and the Rogue Valley Transportation District indicate that approximately 50 park-and-ride spaces should be provided along with a bus parking space. Currently, a unit cost for a permanently developed parking space at this site is about $3,000 a space or $150,000 for 50 P&R parking spaces. This cost figure does not include any property acquisition costs.

The required property may already be owned by CORP and consideration should be given to lease the needed space.

- **Medford (population 63,154).** The proposed station site is just west of Rogue Valley Transit's downtown transit center located between 8th and 10th Streets at approximately MP 441.55. The Medford site has outstanding transit access along with significant parking already available east of the transit center. Construction would include providing access through a fence bordering the transit center along with the basic platform. This does not include any property acquisition costs.

  The needed property may already be owned by CORP and consideration should be to lease.

- **Harry & David (approximately 3,500 employees)**. Harry & David is world-famous for gift baskets of fruit and other products. Yearly employment is about 3,500 but swells to over 4,500 prior to the winter Holiday Season.

  The station would be located just south of the main access road to Harry & David at railroad MP 439.4. No park-and-ride spaces are considered for this location since Harry & David is considered a destination for workers rather than a facility to be used by the public. Only the basic platform is being considered for construction at this site. This does not include any property acquisition costs.

  The needed property may already be owned by CORP and Harry & David and consideration should be made to lease the needed space.

- **Phoenix (population 4,060)**. The station at Phoenix is proposed to be located on the west side of the tracks just north of First Street, MP 437. Construction would consist of the basic platform along with 20 park-and-ride spaces. Costs are anticipated to be around $5,000 for each P&R space or $100,000 total. This does not include any property acquisition costs.

  The needed property may already be owned by CORP and consideration should be to lease the needed space.

- **Talent (population 5,589).** Talent has recently completed a station site with a replica of the original train station that appears, with the improvements listed below, to be very satisfactory for the proposed demonstration commuter service. The station is located on Main Street at railroad MP 434.6. Improvements contemplated are the construction of the basic platform along with the expansion of the current park-and-ride facility by adding another 15 spaces. The estimated cost per space is $4,000 or $60,000. This does not include property acquisition costs for the platform or the expanded park-and-ride facility.

  The needed property may already be owned by CORP/city and consideration should be given to a possible lease of the needed space.

- **Ashland (population 19,522**). The proposed station site is at the foot of 4th Street at railroad MP 429.1. Construction would consist of the basic platform along with the creation of 85 parking spaces. These spaces could be constructed along the east and west side of the tracks at an anticipated cost of $2,500 per space or $87,500.

The former rail yards consist of the core of a 74-acre development parcel that is currently undergoing master planning. In any eventual scenario, the site should be able to provide substantial ridership to the system.

Table 5: Park & Ride and Platform Costs by Station Location

SUMMARY			
Station	**Park-and-Ride Costs**	**Platform Costs**	**Total**
Central Point North	$90,000	$36,850	$126,850
Central Point South	$150,000	$36,850	$186,850
Medford	NA	$36,850	$36,850
Harry & David	NA	$36,850	$36,850
Phoenix	$100,000	$36,850	$136,850
Talent	$60,000	$36,850	$96,850
Ashland	$212,500	$36,850	$249,350
Total	$612,500	$257,950	$870,450

More information on current and future development activities around each station will be found in the ridership section of this study.

Maintenance Facility

There is no facility in the project area that can be used as it is for the maintenance of the equipment. Maintenance consists of both necessary and recommended activities, including:

- Routine mechanical inspections which need to take place on a daily basis along with major FRA-mandated inspections every 92 days.
- The cars need to be fueled on an ongoing basis. Environmental regulations do not permit the spilling of fuel on the ground.
- The interior of the train should be cleaned on a daily basis.
- The toilets should be emptied daily or as needed.
- The exterior of the cars should be cleaned at least every two weeks.
- Engines may have to their engines steam cleaned on a regular basis.
- Routine engine serving and air conditioning maintenance is required on an on-going basis.

The passenger equipment can be maintained at a very basic facility. A site adjacent to the CORP offices in Medford should be given primary consideration. The existing offices could serve as a place for operating crews to assemble and complete their paper work. Toilet and shower facilities are already established for both mechanical and operating personnel.

However, some improvements should be considered if the Medford site is to function appropriately as a maintenance facility:

- The area should be paved to minimize tracking of grease and oil into the interiors of the cars. Much of the mechanical work is also impacted by the presence of dirt which could be minimized if the maintenance facility is paved.
- A fueling facility with the necessary drip pans and oil containment apparatus needs to be installed. Amtrak recently installed such a system in Portland at a cost of about $100,000. However, for the demonstration project, it may be possible to provide fuel by using fuel delivery trucks.
- Some RDC cars have an air starting system. This requires the purchase and installation of an air compressor. Air is also handy for doing some of the required FRA inspections and the operation of air tools.
- Necessary drop boxes (dumpsters) for trash must be ordered and placed on the site.
- Water for both charging the toilets and exterior washing must be present on the site.
- A steam cleaner is needed to clean the engines on a regular basis. Residue from the cleaning must be collected by the drip pans and processed properly.
- Good overhead lighting should be installed since much of the mechanical work takes place at night or early in the morning.
- A used shipping container for the storage of parts and supplies.
- A basis metal building structure should be erected which covers at least the length of one train set.

The estimated cost for the maintenance facility is about $800,000.

POTENTIAL YEARLY OPERATING COSTS

Operating costs will vary depending upon the equipment chosen. The July study contained a detailed examination of the operating cost associated with RDC cars. It has been updated to show increased hours of service. These costs were based on a five-day week operating 52 weeks a year. Fuel costs are likely to vary.

Table 6: Potential Yearly Operating Costs

POTENTIAL YEARLY OPERATING COSTS OF EQUIPMENT			
Miles Operated		**Cleaning**	
Daily (16 miles x 12 rt x 4 cars	768	Interior per day all four cars	$100
Yearly Miles Operated (260 days)	199,680	Days per year	260
		Yearly costs	$26,000
Fuel Costs			
Miles per gallon	3		
Gallons per car per year	16,640	Exterior every two weeks for all four cars	$300
Total gallons consumed	66,560	Times per year	87
Cost per gallon	$1.85	Yearly costs	$26,100
Yearly cost of fuel	$123,136	Total Yearly Cleaning Costs	$52,100
Repairs		**Summary**	
Estimated per mile, per car	$1.90	Fuel	$123,136
Yearly miles for all four cars	199,680	Repairs	$379,392
Estimated repair costs	$379,392	Inspections	$209,664
		Cleaning	$52,100
Inspections		Total	$764,292
Estimated per mile, per car	$1.05		
Yearly miles for all four cars	199,680	**Operating Costs per Mile**	
Estimated inspection costs	$209,664	Miles	199,680
		Annual Costs	$764,292
		Per Mile	$3.82
Source: Alaska Railroad RDC operating costs summary 2000-2005			

It is assumed that the other types of equipment will have similar operating costs. Differences may occur in fuel consumption. However, items such as repairs, inspections, and cleaning will probably not vary measurably from the RDC cars since it is assumed that the cars will be delivered in a rehabilitated condition.

Central Oregon & Pacific Railroad (CORP) Operating Costs

CORP costs are incurred in the daily operations along with weekly track inspections and track/signal forces that maintain the trackage.

1. **Train Operating Crews.** CORP would supply an engineer and conductor for train operations. FRA regulations limit the number of hours railroad operating personnel may be on duty to 12 continuous hours. There are exceptions which permit a "split shift" but require at least four hours of "uninterrupted rest" between the two operating periods. The crews must also be given at least eight hours of rest between days of operation.

   Discussions with the railroad determined that two crews would be required for each train set due to the length of the operating day. Crews would be coming on duty at approximately 5:00 am and would be off duty at 10:00 pm. While a split shift could be operated with one crew being given a mid-day rest period, there would not be eight hours of rest between shifts.

   CORP assumed that daily costs for crews would be $4.25 a train mile. However, the light-weight DMU (VT 642) would require only an operator, since there is no need to have an additional crew person to open/shut doors and operate a handicapped lift. For the VT642 the crew costs would be $2.05 per mile
2. **Track Inspections**. The FRA requires two track inspections per week for trackage that sees regular passenger operations. CORP stated that the second track inspection would cost $14,000 per year or $0.18 per train mile.
3. **Track Access Fees**. These fees include such items as dispatching, supervision, track maintenance, and profit for the railroad. It is unlikely that the parent company of CORP would agree to the commuter rail operation on its tracks without receiving an economic benefit. It was estimated that this would amount to approximately $250,000 per year or $3.33 per train mile. The amount is typical of several similar operations but would be subject to negotiations before any service would commence.
4. **Insurance**. The railroad currently does not carry passenger liability insurance. The commuter service will greatly increase the railroad's exposure to risk and it is asking for the purchase of $100 million of passenger liability insurance to cover the operation. The actual cost for this coverage will be determined through the placement of the policy on the competitive market. However, contacts with several carriers have produced potential costs between $5,000 and $6,000 per million of coverage or an annual premium of $600,000. This translates into a per train mile cost of $4 with hourly service or $2 per train mile for the half-hour service frequency

Table 7: Summary of Operating Costs

SUMMARY OF OPERATING COSTS	
Train Crews	$4.25 p/tm
Track Inspections	$0.07 p/tm
Equipment operating costs	$3.82 p/tm
Insurance	$4.00 p/m
Track Access	$3.33 p/m
Total	$15.47 p/tm
Table above assumes hourly service levels.	

This translates into approximately $3.1 million per year or $2.6 million using the VT 642. The per train mile rate is on the low side compared with that experienced by other commuter and passenger train operators.

TRANSIT-RELATED FACTORS IN THE ROGUE VALLEY

Travel Patterns in the Rogue Valley

The section of track under consideration for commuter rail use is at the core of one of the fastest-growing regions in the Northwest. Southwestern Oregon has attracted new residents and business at rates that exceed growth rates in other regions of the state. Railroad tracks pass through the downtowns of the largest and fastest-growing cities in southwestern Oregon. The five cities that straddle this section of track form the commercial, cultural, and residential hub of the region. The area is encompassed by the Rogue Valley Metropolitan Planning Organization. The cities and the adjacent suburban area have a population of more than 180,000, and more than 70,000 jobs.

Furthermore, this area provides services to a region that stretches to the coast, into Northern California, and across the Cascade Mountains into the Klamath Basin. Once a timber-dependent community, the region has seen its economic base shift to trade and services over the past 20 years, putting even a greater strain on the transportation system. Forecasts show the region gaining some 30,000 new residents and 6,000 new jobs by 2015.

Nearly all travel through the region is by motor vehicle (transit mode share is one percent), and most travel is confined to two north-south routes: I-5 and Highway 99, both paralleling the railroad tracks. Both the interstate and the state highway, as well as connecting roads, experience commute-hour congestion on a daily basis, with volume to capacity ratios that exceed Oregon Highway Plan mobility standards. The potential for expanding roadway capacity in this area is limited by high land costs and public sentiment opposing street-widening projects.

Most land along these routes is developed, and property owners and others object to government taking businesses and homes for transportation projects. In some locations, the railroad tracks themselves limit roadway expansion. Insufficient road capacity north-south is evidenced by a high percentage of local traffic using the interstate. An origin-destination study in 2000 for the South Medford Interstate 5 interchange found that in the Medford section of the I-5, 40 percent of south-bound traffic and 90 percent of north-bound traffic was local, i.e. traveling between the North Medford and South Medford interchanges. This phenomenon leaves less capacity on the interstate for the regional traffic it is intended to carry. Major highway projects in the foreseeable future address capacity at I-5 interchanges, but no projects are planned to increase north-south corridor capacity.

The railroad tracks pass North-South through or along side the downtowns of all five cities. For that reason they are within walking distance (¼ mile) of many homes, businesses and other attractions, including a university and community college, Tony Award-winning theater (Oregon Shakespeare Festival's three theaters in Ashland), the region's single largest employer (Bear Creek Corp with 34,000 daily trips to and from its South Medford facility, which abuts the rail line), and the area's first major transit-oriented development at what would be the northern terminus of passenger rail in Central Point.

The following is a community-by community snapshot of jobs, housing, and other activities along the rail line, from the south to the north. Although each city is different, all are experiencing heightened interest in redeveloping downtown areas to high-density, commercial/residential mixed uses. With the railroad tracks bisecting all of the downtowns, the redevelopment trend increases potential for passenger rail service.

Community Review

A brief synopsis of conditions along the railroad tracks in each city along the proposed commuter rail route appears below, beginning at the south terminus and moving northward.

Central Point

Located at the northern terminus of the commuter service, the city has three major, high-density developments along the railroad tracks, two mixing commercial and residential uses. Planned development abutting the tracks includes a total 1,875 dwelling units, about 13 acres of commercial uses, a park, and a church. Additionally, a 32,000-square-foot medical center is in the permitting process.

All told, new development along the railroad tracks is expected to generate 13,700 trips per day. Most of the traffic will use Hwy. 99. Each of the three major developments in this area includes plans to accommodate commuter rail service. These projects are located within the city's "Transit Oriented Development" zone, which is intended to provide diverse house types, complementary service and civic uses, and encourage use of public transportation, walking, and bicycles.

Medford

The largest city in the RVMPO, Medford is the hub for public transportation with the main Rogue Valley Transportation District station abutting the railroad tracks in central downtown, which supports roughly 2,000 jobs. The region's largest employer, with 3,500 positions, is Harry and David Operations. Harry and David business campus straddles the railroad tracts in South Medford, and sees 34,000 vehicle trips per day to and from the facility. It is envisioned that a rail stop would be located here.

Several projects along the tracks are in planning or construction. Medford's first large, up-scale downtown residential development is being built along the west side of the railroad tracks (roughly opposite the transit station), and will offer 58 condominiums, along with commercial areas. Many units already have sold, and the first will be ready for occupancy in mid-2007.

In the same area, Medford Urban Renewal has dedicated more than $2.4 million to create a pedestrian mall/outdoor activity area stretching several blocks along the west side of the tracks. In development since 2005, this project includes parking, outdoor dining, bicycle facilities, and a re-orientation of fronting businesses to the pedestrian mall area, in part to beautify the railroad corridor.

The urban renewal agency also has committed $14.1 million to a public-private development project that will include two, 10-story office buildings, corporate headquarters facilities, residential, retail and commercial and park blocks in downtown, east of the railroad tracks. Property negotiations are underway. The corporate headquarters is to be completed by January 2009.

In north Medford, plans for an 84-acre, mixed commercial center along the railroad track also are underway. The project will redevelop a former lumber mill site with a 417,500-square-foot retail center, a 219,300-square-foot office park, and an 180,000-square-foot industrial business park.

Phoenix

Although Phoenix stretches to the east side of Interstate 5, an much business interest has focused on the eastern area, much of the city's residential and commercial activity – including two schools, grocery and city government – occurs within walking distance of the railroad tracks (¼-mile). Employment in this area includes a lumber yard and fruit packing industry. The city wants to redevelop a vacant, former lumber mill site along the tracks as an employment center.

Talent

The city has invested significant effort in the past few years to revitalize the area around the railroad tracks, which run along the west side of the downtown area. Formerly an area of gravel and weeds, land bordering the tracks now host a park, landscaping, and a rebuilt depot ready to use as a train station.

The depot building was built to serve as a public transit park-and-ride location. Businesses have rented areas of the commercial mixed-use depot. Other recent development in the downtown area includes commercial-residential mixed use. An urban renewal district functions in a section of downtown that is within walking distance of the tracks (¼-mile).

The Talent Industrial Park covers about 35 acres in roughly the middle of the urbanized area. The park abuts the railroad tracks and is not fully developed.

Ashland

Much of the city is within walking distance (¼- to ½-mile) of the tracks, including the downtown commercial area and higher-density residential neighborhoods. Destinations include Southern Oregon University, Ashland Shakespeare Festival theaters and a commercial/light industry zone. A "historic railroad district," which has National Historic Register status, has developed over the past 10-15 years. This area features renovated homes and shops. Commercial construction in this area is continuing.

An undeveloped area just under 50 acres in size along the tracks north of downtown and the Historic Railroad District, has been studied for potential high-density mixed use development and redevelopment that would not only harkens to the site's railroading history –the area was a Union Pacific maintenance yard for nearly a century – but would accommodate commuter rail service. A 2001 master plan for the site and surrounding area (74 acres total) includes provisions to build a rail station on the original roundhouse foundation. The station would be part of a retail plaza. Potential development is hampered by toxic soils associated with the former industrial uses. Strong demand for commercial and residential development in the city is expected to push the clean-up process.

Another undeveloped, former industrial site, at the south end of the city, also abuts the rail line. The 65- acre property, known as the Croman Site, is proposed for a mix of employment and residential uses.

Population Statistics

The table on the next page shows population growth in the region, including cities along the rail route. Information was provided by Portland State University.

Table 8 : Population Changes in Rogue Valley Metropolitan Planning Organization Area

	1990	2000	Average Annual % Change 1990-2000	2001	% Change	2002	% Change	2003	% Change	2004	% Change	2005	% Change	2006	% Change
Ashland	16,234	19,522	2.03%	19,770	1.27%	20,130	1.82%	20,430	1.49%	20,590	0.78%	20,878	1.40%	21,430	2.64%
Central Point	7,509	12,493	6.64%	13,460	7.74%	14,120	4.90%	14,750	4.46%	14,720	-0.20%	15,640	6.25%	16,550	5.82%
Eagle Point	3,008	4,797	5.95%	5,410	12.78%	5,950	9.98%	6,630	11.43%	6,980	5.28%	7,586	8.68%	8,340	9.94%
Jacksonville	1,896	2,235	1.79%	2,360	5.59%	2,370	0.42%	2,370	0.00%	2,410	1.69%	2,488	3.24%	2,555	2.69%
Medford	46,951	63,154	3.45%	64,730	2.50%	66,090	2.10%	68,080	3.01%	69,220	1.67%	70,855	2.36%	73,960	4.38%
Phoenix	3,239	4,060	2.53%	4,270	5.17%	4,420	3.51%	4,510	2.04%	4,570	1.33%	4,662	2.01%	4,740	1.67%
Talent	3,274	5,589	7.07%	5,580	-0.16%	5,520	-1.08%	5,700	3.26%	5,890	3.33%	6,255	6.20%	6,415	2.56%
County Total	146,389	181,269	2.38%	184,700	1.89%	187,600	1.57%	189,100	0.80%	191,200	1.11%	194,515	1.73%	198,615	2.11%

Maps

The maps on the following pages illustrate employment and housing densities in the RVMPO area, and land uses.

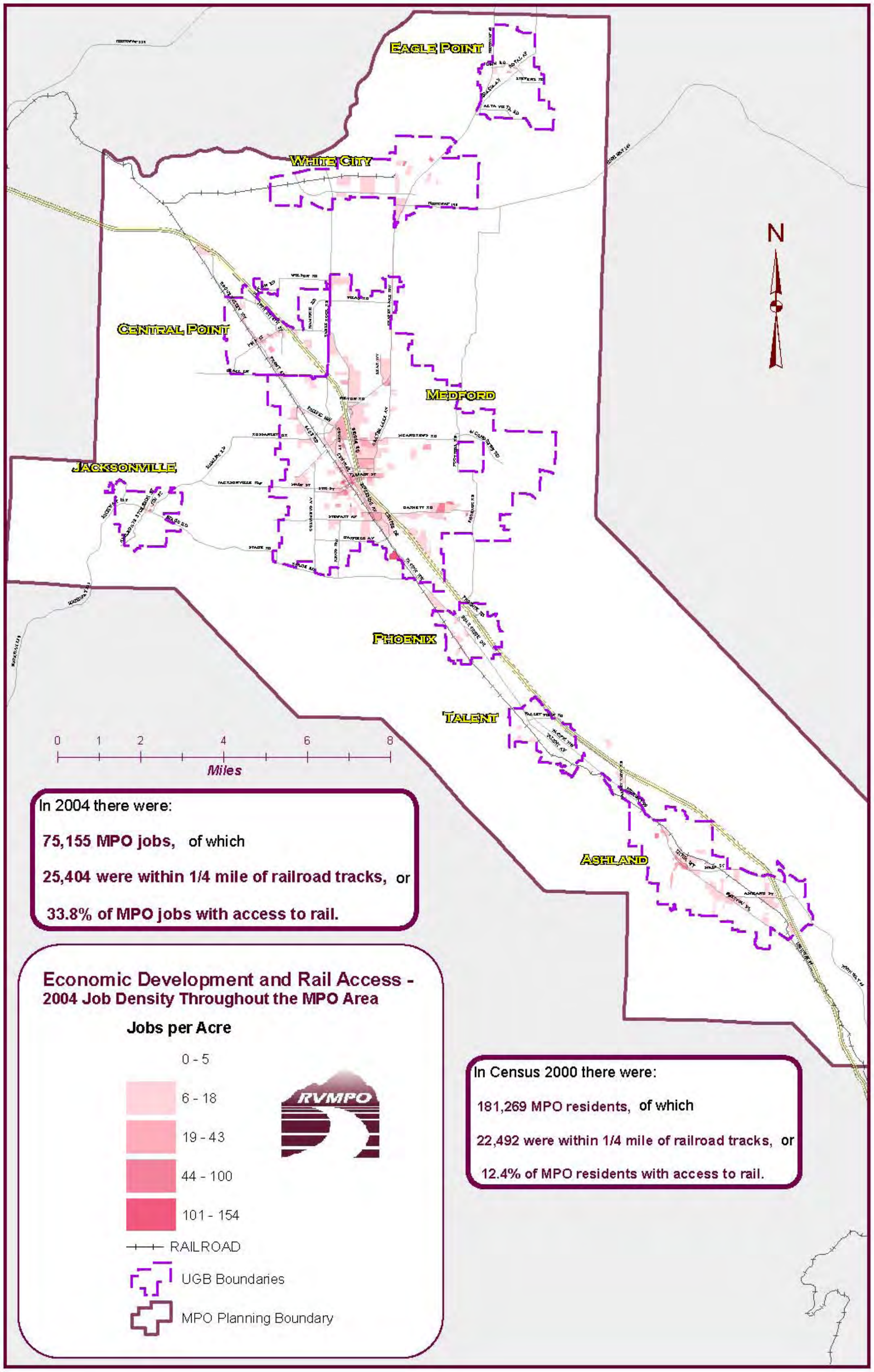


Figure 4. Economic Development and Rail Access – 2004 Job Density throughout the MPO Area — Jobs Per Acre

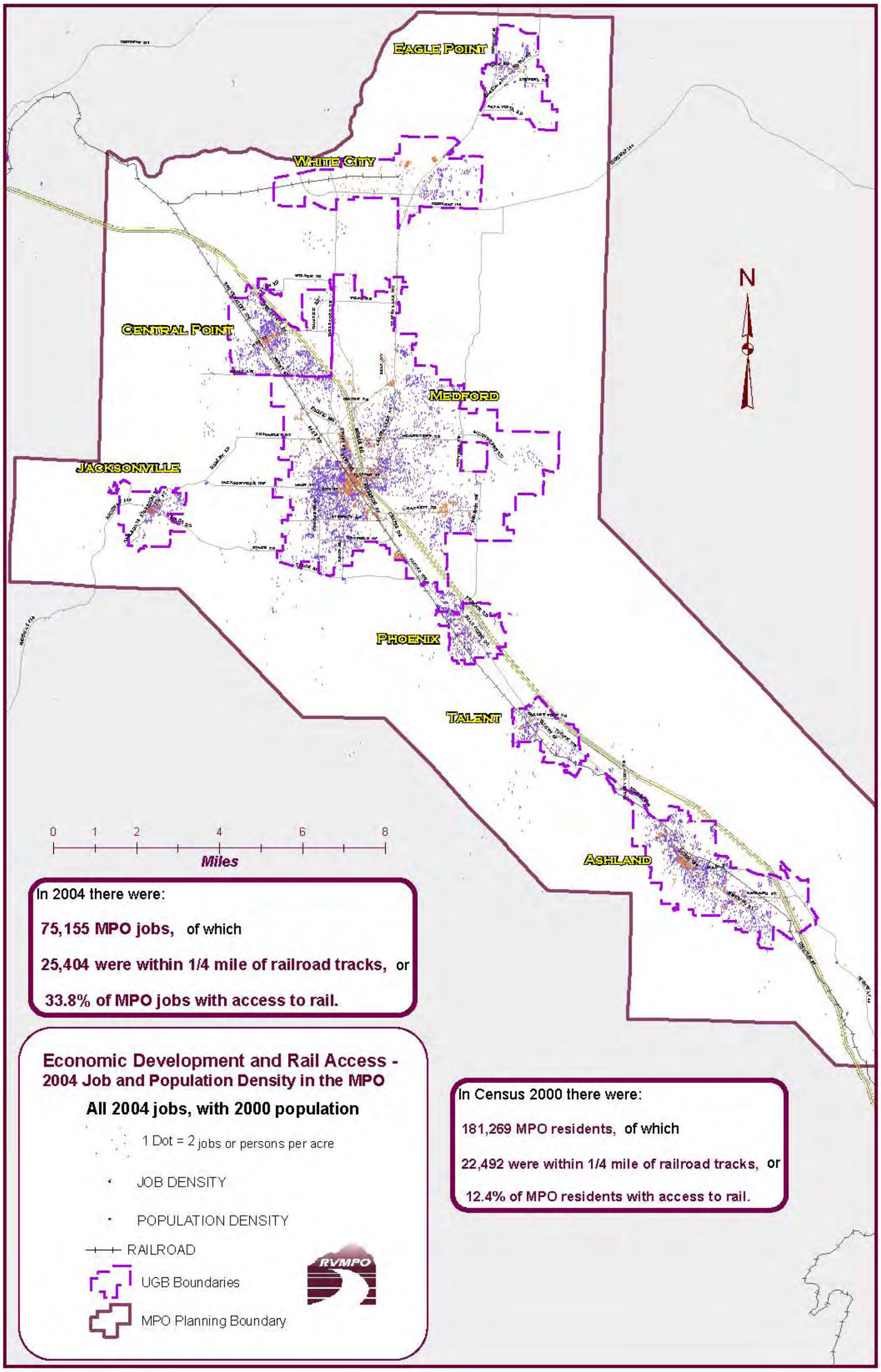


Figure 5. Economic Development and Rail Access – 2004 Job Density throughout the MPO Area — All 2004 Jobs, with 2000 Population

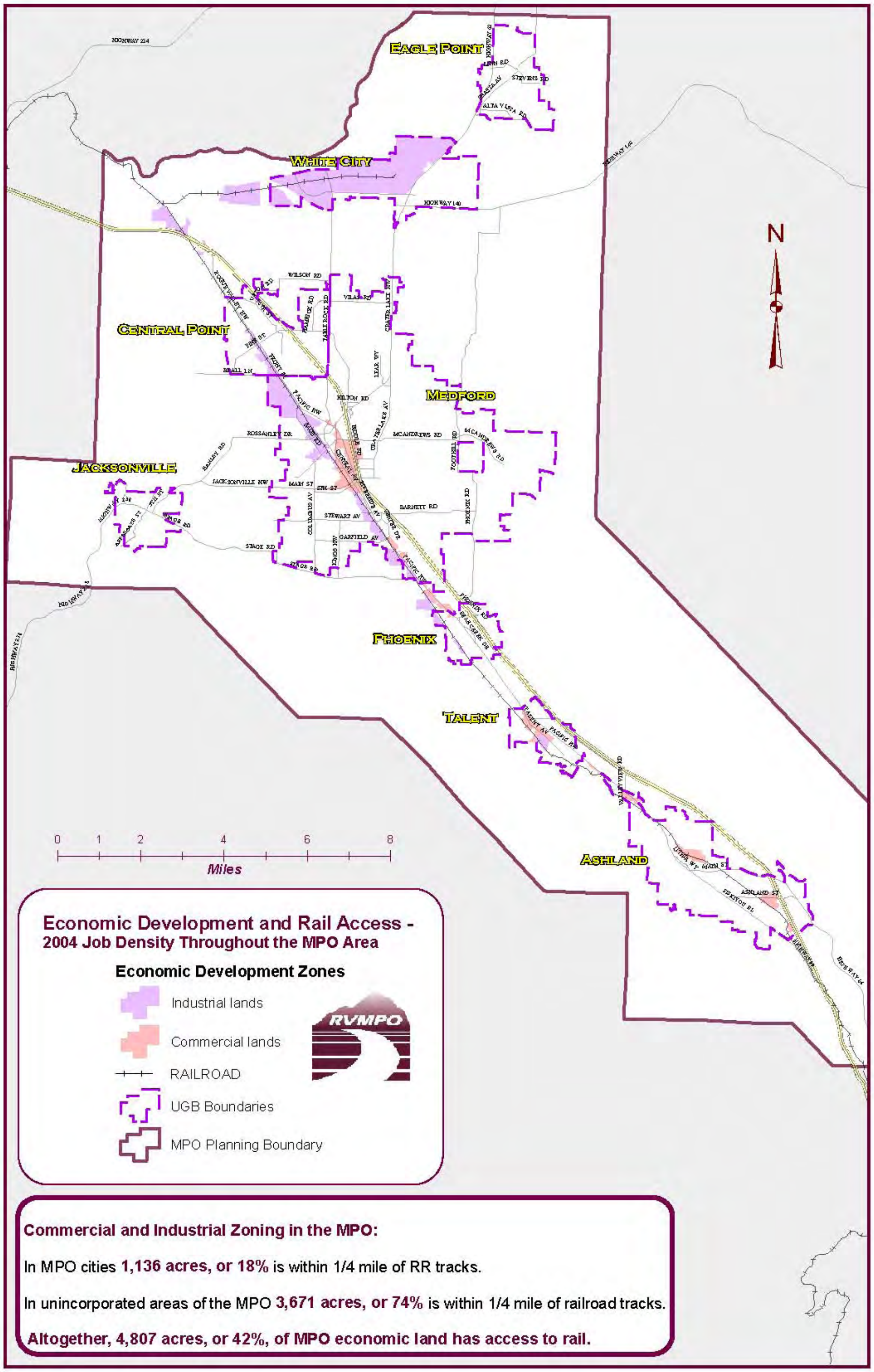


Figure 6. Economic Development and Rail Access – Land Uses

POTENTIAL COMMUTER RAIL RIDERSHIP

Predictors of Commuter Rail Success

The 2001 Study listed 11 items that greatly influence the success of any commuter rail system. These elements bear repeating since each must be addressed and understood with respect to this specific context, in order to answer the question: "Will the commuter rail project attract enough ridership to make investing in such a system justifiable?"

1. **Direct Rail Link**. Does the corridor have an existing rail line with a reasonably direct route connecting the communities to be served and with sufficient unused capacity to accommodate frequent rush hour passenger service?
2. **Support Regional Goals**. Have the communities involved adopted land use and transportation goals seeking to:
   (a) Concentrate development near urbanized areas in the corridor
   (b) Promote higher-density residential development within the corridor
3. **Growing Population / High Density Close to Stations**. Is there moderate to rapid growth in population within and along the corridor, with a high concentration of residences and / or business / commercial activity close to proposed station sites?
4. **Limited Funding for Highway Projects**. Is it difficult to raise funds for new highway projects which would increase traffic capacity in the corridor?
5. **High Level of Daily Commuting Within the Corridor**. Does the rail line to be used for commuter rail parallel a route used by many corridor residents commuting to and from work?
6. **Traffic Congestion**. Is traffic congestion on highways paralleling the rail line worsening and becoming severe? Are paralleling highways reaching or exceeding their design carrying capacity?
7. **Limited, High Cost Parking**. Is parking at commuter destination points limited and expensive?
8. **Competitive Transit Times**. Can the rail commuter system provide service on a schedule that is competitive to auto commute times?
9. **Competitive Transit Costs**. Will the cost of using the rail commuter system be competitive with the cost of commuting by automobile?
10. **Willingness to Use Transit**. Do daily commuters in the corridor have a relatively high propensity to use mass transit?
11. **Compelling Circumstances**. Does the region need to take drastic action because of some overriding economic, environmental, and/or safety concerns that make it imperative that more people switch from auto commuting to mass transit?

It is important to realize that not all of these predictors are equal in terms of impact—some carry more weight than others do. However, an affirmative answer to each question will increase the likelihood that the investment in commuter rail will be worthwhile.

Where Riders Might Come From

There are two fundamental approaches to the markets which can contribute to ridership on this start-up service. First, and usually easiest, is to attract new riders from those who already choose existing transit (that is, bus) service. These potential riders might be attracted by the "no transfers" trip from Central Point to Ashland, and a 35 minute savings over the competing bus route (which includes a transfer.) Second, given the transit-friendly factors found in the Rogue Valley, there will be some new-to-transit riders drawn from the congested highway routes, and still others who will consider living/working in the area because of the convenience of commuter rail. A source of potential future growth in rail ridership, namely the substantial residential and commercial development along the proposed rail alignment that is built, planned or under review, is not included in the conceptual ridership estimates in this report. In this way, the estimates for commuter rail demand are conservative.

Land Use Required or Recommended to Support Rail Ridership

There is no definitive set of required or recommended land use characteristics that define a threshold or floor for success with small start-up commuter lines. However, the Urban Land Institute's *Ten Principles for Successful Development Around Transit*, identifies the following recommended densities (p. 9 of the ULI report) which are included in order to provide some compass for making a determination of the concept-level potential for Rogue Valley commuter rail success.

As another source of comparison, FTA has assembled land use factors intended as a "rough guide" for the range of variation found in New Starts projects over the past eight years. Table 7 (next page) shows several land use measures (employment, residential densities, parking cost and supply) that are rated for their level of support for transit.

Table 8 shows US Census (2000) and Oregon State Office of Economic Development information for the year 2000, to allow for some comparison, followed by year-2030 buildout densities based on transportation analysis zones (TAZs). Note that neither the information within Table 8, nor the comparison data presented in Table 7 is directly or easily comparable, however. In some cases, data categories do not match, in others, peculiarities of data collection or compilation differ, or the geographic coverage of the data in question is at odds. It is presented because it appears promising enough—especially in light of overall development trends and co-existing physical constraints on highway alternatives— to pursue to the next level of clarity, in order to make a fact-based determination on whether to proceed with commuter rail in the area.

Table 7: FTA 2004 Quantitative Element Rating Guide

	Existing Land Use				Corridor Policies and Station Area Zoning				
	Station Area Development		Parking Supply		Station Area Development			Parking Supply	
Rating	Emp. served by system[2]	Avg. pop. density (persons/ sq. mi.)	CBD typical cost/day[3]	CBD spaces per employee[4]	CBD comm. FAR[5]	Other comm. FAR[6]	Residential DU/acre	CBD spaces per 1,000 sq. ft.	Other spaces per 1,000 sq. ft.
High (5)	< 250,000	> 15,000	> $16	< 0.2	> 10.0	> 2.5	> 25	< 1	< 1.5
Medium-High (4)	175,000 – 250,000	10,000 – 15,000	$12 – 16	0.2 – 0.3	8.0 – 10.0	1.75 – 2.5	15 – 25	1 – 1.75	1.5 – 2.25
Medium (3)	125,000 – 175,000	6,667 – 10,000	$8 – 12	0.3 – 0.4	6.0 – 8.0	1.0 – 1.75	10 – 15	1.75 – 2.5	2.25 – 3.0
Low-Medium (2)	75,000 – 125,000	3,333 – 6,667	$4 – 8	0.4 – 0.5	4.0 – 6.0	0.5 – 1.0	5 – 10	2.5 – 3.25	3.0 – 3.75
Low (1)	< 75,000	< 3,333	< $4	> 0.5	< 4.0	< 0.5	< 5	> 3.25	> 3.75

[1] This table is intended as a rough guide for assigning land use ratings for factors in which quantitative data are given primary consideration. The ranges shown were developed based on an analysis of land use characteristics and assigned ratings for New Starts projects rated for Fiscal Years 1999 through 2002. Measures of parking supply are the most commonly reported measures but may not be available for every project.
[2] Entire line with a no-transfer ride from the New Starts project stations (including the CBD), even if the New Starts project is an extension not located in CBD.
[3] CBD core (not fringe parking).
[4] Average across CBD.
[5] CBD core area.
[6] Elsewhere in corridor (typical for commercial districts).

Source: Federal Transit Administration, Office of Planning, *Guidelines and Standards for Assessing Transit-Supportive Land Use.* (May 2004, p. 40

Table 8: Density Characteristics Surrounding Potential Rogue Valley Commuter Rail Stations

Prospective Rogue Valley Commuter Rail Stations Service Area Characteristics		**OED Data**		**Census 2000 Data**			
Station Name	**City**	**2006 Job Densities within 1/4 mile (jobs/acre)**	**2006 Job Densities within 1/2 mile (jobs/acre)**	**Dwelling Unit Density within 1/4 mile (DU per acre)**	**Dwelling Unit Density within 1/2 mile (DU per acre)**	**Population Density within 1/4 mile (Pop. per acre)**	**Population Density within 1/2 mile (Pop. per acre)**
Twin Creeks	Central Point	3.88	2.20	1.03	2.01	0.02	5.54
Snowy Butte	Central Point	6.18	3.12	3.91	4.39	10.08	10.90
New Development, Medford	Medford	8.19	8.27	0.04	2.33	0.14	5.09
Downtown Medford	Medford	36.32	20.54	4.27	4.58	8.47	10.10
Bear Cr. Corp.	Medford	30.77	11.44	0.84	0.64	1.93	1.22
Phoenix Station	Phoenix	3.86	1.97	4.41	2.96	11.22	6.69
Talent Station	Talent	3.65	2.14	8.82	3.59	17.46	8.43
Ashland Station	Ashland	7.19	7.02	4.89	3.85	9.49	7.28
	MPO						

Table 8 (Continued): Density Characteristics Surrounding Potential Rogue Valley Commuter Rail Stations

Prospective Rogue Valley Commuter Rail Stations
Forecast Service Area Characteristics
EVALUATION USING RVMPO TAZ BUILD-OUTS

DENSITIES

		RVMPO TAZ 2030 - Jobs		RVMPO TAZ 2030 - Households		RVMPO TAZ 2030 - Population	
	ULI Guidelines:	il Target Threshold: 125 jobs/acre		Light Rail Target Threshold: 9 DU/acre		Light Rail Target Threshold: 23 persons/acre	
		Frequent Bus Target Threshold: 75 jobs/acre		Frequent Bus Target Threshold: 15 DU/acre		Frequent Bus Target Threshold: 38 persons/acre	
Station Name	**City**	**Job Density Forecasts within 1/4 mile (jobs/acre)**	**2006 Job Density Forecasts within 1/2 mile (jobs/acre)**	**Dwelling Unit Density Forecasts within 1/4 mile (DU per acre)**	**Dwelling Unit Density Forecasts within 1/2 mile (DU per acre)**	**Population Density Forecasts within 1/4 mile (Pop. per acre)**	**Population Density Forecasts within 1/2 mile (Pop. per acre)**
Twin Creeks	Central Point	8.48	3.08	13.74	5.57	37.43	15.37
Snowy Butte	Central Point	8.56	3.95	9.94	6.59	8.56	16.42
New Dev. Medford	Medford	16.39	10.07	2.55	2.60	5.30	6.02
Downtown Medford	Medford	47.60	24.42	4.81	4.42	12.04	10.74
Bear Cr. Corp.	Medford	30.81	12.18	1.42	1.30	3.12	2.83
Phoenix Station	Phoenix	4.54	2.12	7.58	3.68	19.23	8.69
Talent Station	Talent	5.82	2.82	12.52	4.65	30.29	10.74
Ashland Station	Ashland	9.45	8.42	5.72	6.05	11.56	12.85
Entire Corridor	Rail Corridor	3.78	1.26	2.10	1.96	5.04	5.00

COUNTS

Station Name	**City**	**Job Forecasts within 1/4 mile**	**Job Forecasts within 1/2 mile**	**Dwelling Unit Forecasts within 1/4 mile**	**Dwelling Unit Forecasts within 1/2 mile**	**Population Forecasts within 1/4 mile**	**Population Forecasts within 1/2 mile**
Twin Creeks	Central Point	1,065	1,549	1,727	2,802	4,703	7,726
Snowy Butte	Central Point	1,076	1,984	1,249	3,310	1,076	8,251
New Dev. Medford	Medford	2,060	5,062	321	1,308	666	3,026
Downtown Medford	Medford	5,982	12,274	605	2,221	1,513	5,398
Bear Cr. Corp.	Medford	3,872	6,124	178	655	392	1,423
Phoenix Station	Phoenix	570	1,064	952	1,852	2,416	4,370
Talent Station	Talent	731	1,415	1,573	2,335	3,806	5,398
Ashland Station	Ashland	1,188	4,232	719	3,043	1,453	6,459
Entire Corridor	Rail Corridor	42,196	53,739	23,396	83,867	56,268	213,903

Travel Volumes in the Corridor Support Rail Transit Ridership

Because many new rail riders are current automobile passengers, it is important to understand the pool from which these rail riders will come, primarily I-5 and Highway 99.

ODOT maintains permanent traffic counters on both I-5 and Hwy 99 in this corridor.[2] The two highways parallel the train tracks from Central Point to Ashland. Data for 2004 reveals pertinent information, below. Samples of driving times in the corridor indicate that the commuter train would be time-competitive compared to travel on either Hwy 99 or I-5.

Table 9: Ramp Counts of Daily Traffic Volume in Project Area

I-5 TRAFFIC		
MP No. 19.07	North of North Ashland Interchange	34,900
MP No. 28.33	Medford Viaduct	47,200
MP No. 30.59	Crater Lake Highway Interchange	38,800
MP No. 34.04	South of Seven Oaks Interchange	35,500
I-5 INTERCHANGE DATA		
MP No. 19	North Ashland southbound exiting I-5	5,830
	North Ashland northbound exiting I-5	5,170
MP No. 24	Phoenix southbound exiting I-5	3,820
	Phoenix southbound entering I-5	3,650
	Phoenix northbound exiting I-5	3,180
	Phoenix northbound entering I-5	5,590
MP No. 27	Barrett Road southbound exiting I-5	6,200
	Barrett Road southbound entering I-5	6,600
	Barrett Road northbound exiting I-5	9,980
	Barrett Road northbound entering I-5	9,430
MP No. 30	Crater Lake Highway southbound exiting I-5	7,070
	Crater Lake Highway southbound entering I-5	10,970
	Crater Lake Highway northbound exiting I-5	4,580
	Crater Lake Highway northbound entering I-5	9,090
MP No. 32	Central Point southbound exiting I-5	7,130
	Central Point southbound entering I-5	5,560
	Central Point northbound exiting I-5	4,430
	Central Point northbound entering I-5	4,920
MP No. 35	Seven Oaks southbound exiting I-5	1,830
		1,790
	Total interchange movements	**116,820**

[2] See http://www.oregon.gov/ODOT/TD/TDATA/tsm/docs/2005_TVT.pdf

It is interesting to note that total movements exiting and entering the various interchanges in the study area are about 2.5 times the traffic volume on the freeway. This supports the MPO's contention that large numbers of travelers are using I-5 to make local trips. This is understandable given the lack of any alternative north-south main travel routes.

Calculating Highway Driver Diversion to Rail

Highway 99

The following characteristics of traffic on Hwy 99 in the study area support the calculations summarized below in Table 10.

- ODOT's permanent traffic count locations indicate that there were 10,600 daily vehicles traveling on Hwy 99 through Medford. It is important to note that the 10,600 ADT for Hwy 99 is a conservative number because it does not take into account the trips that are originating or terminating in Medford. Assuming 1 occupant per car translates to 10,600 potential train riders.

- Passenger car/light vehicle traffic makes up almost 97 percent of the traffic on Hwy 99 in the study area, which results in 10,282 potential commuter rail passengers.

- Assuming that 20.2 percent of daily traffic occurs during the three-hour morning peak period, 2,077 potential morning peak period riders can be captured from Hwy 99.

- Using the lower ridership attraction assumption of 4 percent it can be determined that a total of 83 morning peak period riders will be attracted to the commuter rail from Hwy 99.

- The higher attraction assumption of 8 percent shows 166 morning peak period riders attracted to the rail from Hwy 99.

Interstate 5

Being one of two practical North/South routes in the project area, I-5 is heavily used for local trips. The following data suggests that it is reasonable to assume that a percentage of I-5 traffic could be captured by a well designed commuter rail.

- The ODOT traffic data for 2005 shows that the highest traffic volume on the freeway is on the Viaduct through downtown Medford, with an average daily traffic flow of 47,200 vehicles.
- Approximately 85 percent of the traffic on I-5 in the study area consists of passenger car/ light vehicles, resulting in 40,120 potential commuter rail passengers.
- Using the assumption that 20.2 percent of daily traffic occurs during the 3 hour peak period, a total of 8,104 peak period riders can be captured from I-5.
- The lower ridership attraction assumption of 4 percent shows that 324 peak period riders will be captured from I-5.

- Using the higher assumption of 8 percent it can be determined that the commuter rail will attract 648 riders from I-5.

Current Bus Transit Ridership

Rogue Valley Transit District (RVTD) has two routes that parallel the train from Central Point to Ashland. Route 10 operates between Medford and Ashland. It runs every 30 minutes and generates about 548,000 riders each year. The trains would take about 45 minutes to travel between Medford and Ashland, while the current bus service takes about 55 minutes.

RVTD Route 40 provides half-hourly service between Central Point and downtown Medford. However, its route is quite circuitous compared to the train. Bus service between Central Point and downtown Medford takes about 22 minutes compared to the 15 minutes on the train. Route 40 carries about 157,000 passengers each year.

Combining the two routes results in just over 705,000 passengers traveling by transit in the Central Point to Ashland corridor each year.

There is no universal formula to apply to a region's bus ridership to determine what portion of bus riders would be attracted to a commuter rail service serving the same corridor. TriMet staff in Portland, Oregon, confirmed that it was difficult to isolate, quantify and predict what might happen to bus patronage on lines that operate parallel to newly introduced light rail service. Staff described experience in the Portland area, where the two sub-modes (bus and rail transit) were viewed as a system. When rail was introduced, the former bus routes were redrawn to feed the train service, thereby increasing local ridership on buses, and moving the longer-haul passengers to train service. This approach greatly increased the combined bus/train transit ridership throughout the corridor, and may be a useful approach for the Rogue Valley area as well.

Along the proposed rail alignment, the corridor bus routes provide direct service to many points along Highway 99, whereas the proposed commuter rail service has only four stops en route, which is why a maximum potential attraction to commuter rail of 50 percent is assumed. At a minimum, however, it is assumed that 25 percent of bus riders would be attracted to the new rail line because of added convenience, speed or cache.

The following bus ridership data supports the information in Table 10.

- Route 10 accounts for 2,150 average weekday riders and Route 40 accounts for 615 average weekday riders.
- Using the same peak period percentage of 20.2 percent that was used in the Hwy calculations, we see a ridership attraction of 434 potential peak period riders for Route 10, and 124 peak period riders for Route 40.
- The assumption for bus rider attraction is that a range of 25-50 percent of current bus riders would use the commuter rail.
- Using the lower assumption of 25 percent of current bus riders attracted to commuter rail results in a total of 140 peak period riders for both routes combined.
- The higher assumption of 50 percent of total bus riders from both routes, yields a total of 279 peak period riders attracted to the commuter rail.

Table 10: Potential Highway and Transit Ridership Attraction Comparison (AM Peak Period)

	AADT	% Passenger/ Light Truck	Potential Riders (assuming 1 person per vehicle)	3-hour AM (undefined) Peak Period %	AM Peak Period Potential Riders	Low Assumption Attraction (4%)	High Assumption Attraction (8%)
Highway Attraction Potential							
HIGHWAY 99	10,600	97%	10,282	20.20%	2,077	83	166
I-5	47,200	85%	40,120	20.20%	8,104	324	648
Subtotal of Hwy Attraction to Rail	**57,800**		**50,402**			**407**	**814**
Bus Ridership Attraction Potential							
Route 10						Assume 25%	Assume 50%
548,000 riders per year /255 days = 2,150 per weekday	2,150	N/A	N/A	20.20%	434	109	217
Route 40							
157,000 riders per year//255 days = 615 per weekday	615	N/A	N/A	20.20%	124	31	62
Subtotal of Bus Ridership Attraction to Rail						**140**	**279**
Total Highway + Bus Transit Attraction						**547**	**1,094**

Concept-Level Ridership Scenarios

The MPO does not have in-house model capability to determine potential ridership on the commuter route being considered. However, it is possible to derive a reasonable estimate of the range of potential ridership, based on professional transit experience elsewhere and given the particular factors within the Rogue Valley that would affect ridership levels.

Below are several ridership scenarios that, together, define the likely range of possibilities. Each conceptual scenario assumes that RVTD will schedule appropriate connecting bus service to maximize ridership. Except for the first "maximum capacity" scenario, the assumptions are conservative, given the numerous favorable factors in the Rogue Valley.

1. **Maximum Capacity—All Seats Full** Under this scenario, the new rail service is widely popular and the cars are filled on each of the 14 roundtrip runs (at 30 minute intervals). If every seat (180) were filled on each of the 28 runs, one could expect 5,040 riders each day. This results in approximately 1,310,000 annual passengers. The hourly service would produce 3,600 daily riders or 936,000 yearly passengers. This scenario is equivalent to the maximum capacity of the train service, as it has been defined in this report. [3]
2. **High Estimate—Eight Percent of Autos and 50 Percent of Bus** This scenario begins with information from commuter rail staff in Albuquerque, New Mexico, stating that their startup rail service captured eight percent of *peak hour* auto riders. Peak period auto travel is about 22 percent of total daily volumes on both Highway 99 and I-5. Applying the 8 percent to those volumes, and factoring in a potential 50 percent of current morning peak period bus riders, yields 1,094 people attracted to the train on a daily basis or 278,970 annual riders.
3. **Low Estimate—Four Percent of Autos and Fifty Percent of Bus** Under this scenario, the rail service would command a four percent modal share of peak hour automobile and half of corridor bus riders. Using the same traffic volumes identified in Scenario 2, the train would divert 547 daily passengers and 139,485 yearly passengers from automobiles and buses during the morning peak period.

Ridership Scenario Summary

The following table provides a comparison of different sources and combinations of transit ridership under various assumptions. Note that, except for the first scenario, the assumptions used are fairly conservative, given the extreme constraints on alternative roadways, and the confluence of supportive factors such as population density and employment along the alignment.

As Table 11 shows, at this concept-level stage of analysis, there is potential to immediately fill half or nearly all of a commuter rail start up, depending on service frequency and train capacity.

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3. It should be noted that maximum capacity of the commuter rail can be modified depending on how many cars are used in service. That is, it may be possible to initiate service with even less capacity, though, practically speaking, there may be a lower limit on the length of a train, such that track signals are properly triggered.

Table 11: Ashland to Central Point Commuter Rail: Morning Peak Period Capacity and Potential Demand

AM Peak Period[1] Transit Capacity & Demand			
Rail Transit Capacity[2]		**Annual Riders[3]**	**Daily**
AM Peak Period Capacity (Fill Every Seat)	(30-min service)	550,800	2,160
	(60-min service)	275,400	1,080
Potential Rail Ridership Demand from Existing Auto & Bus			
Low Assumption (4% mode split)[4]		139,485	547
High Assumption (8% mode split)[4]		278,970	1,094

[1] The morning peak is the three hour period that includes ODOT's peak hour with the hour before and hour following the peak. ODOT data does not identify which specific hours these are, but it is typically in the 5:30-8:30 am range.

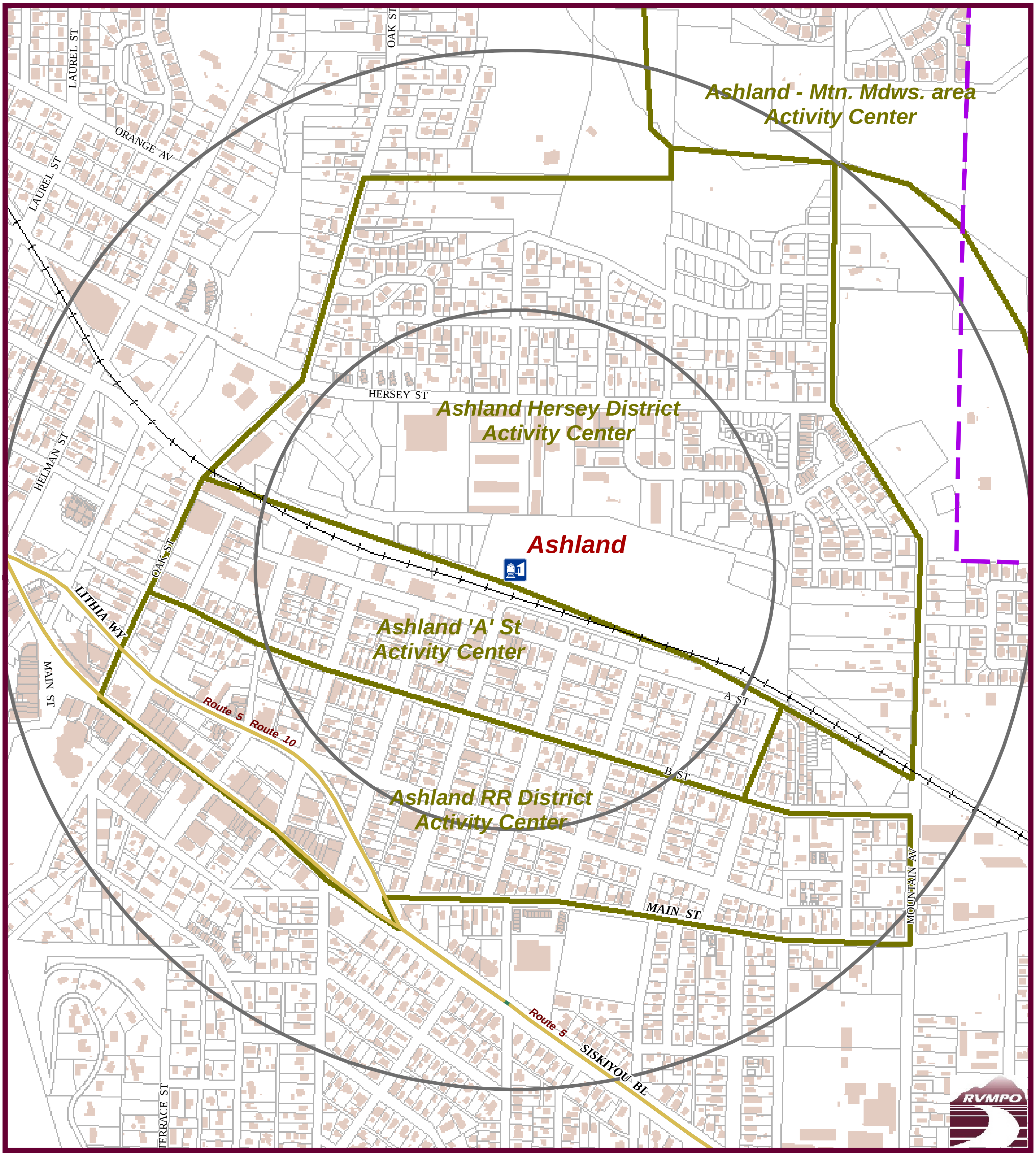
[2] Assumes 180 passenger capacity per train (or "train set"). Numbers include south-bound and north-bound trains.

[3] Assumes 255 weekdays

[4] 4%-8% peak hour capture range based on Albuquerque Startup Rail Service data

APPENDICES

APPENDIX A -



Economic Development and Rail Access -

2004 Job and Population Density at Proposed Station Sites

0 | 0.125 | 0.25 | 0.375

Miles

N

Commuter Rail Stations

Railroad

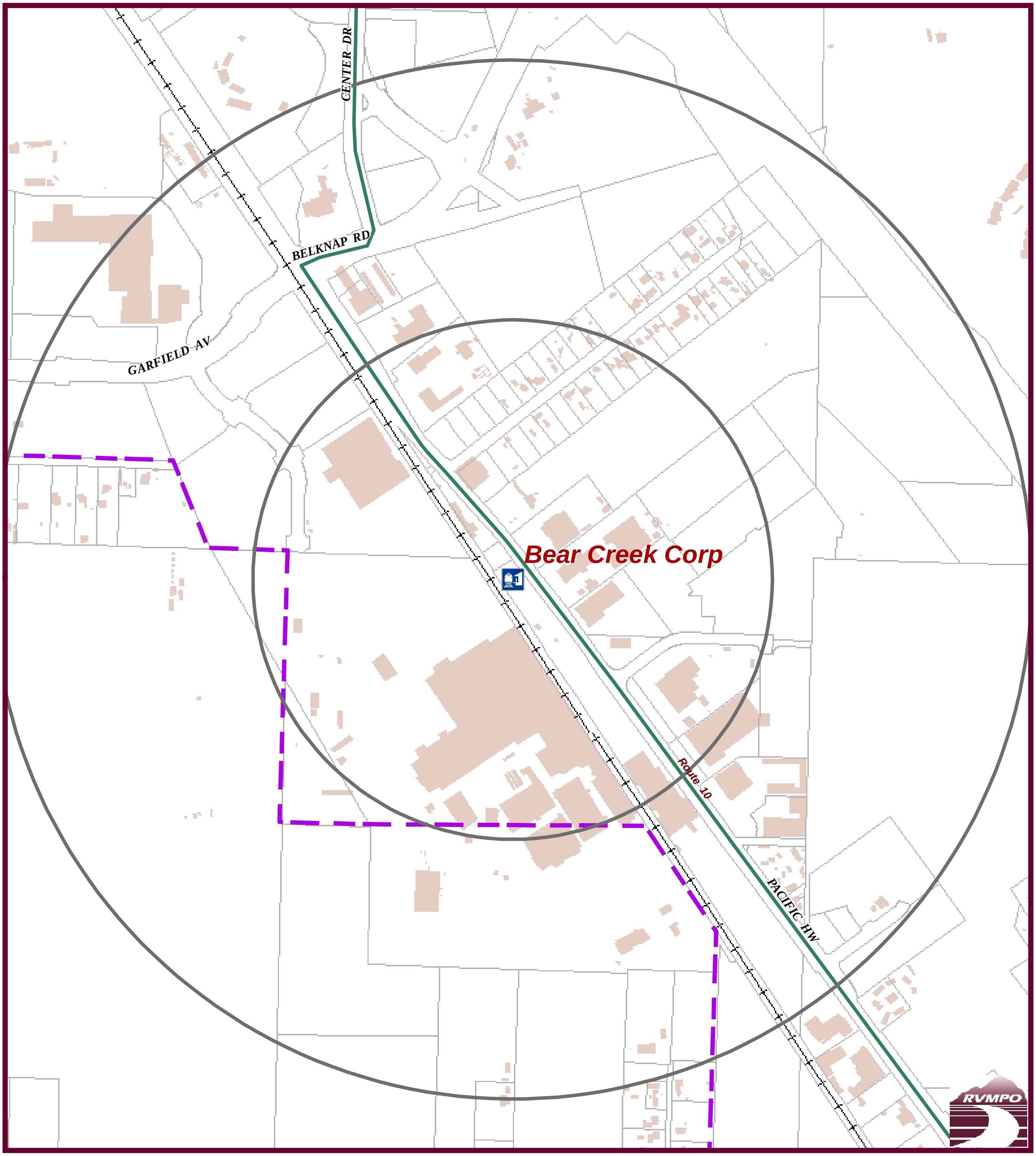
1/4 & 1/2 M Rail Station Buffer

Buildings

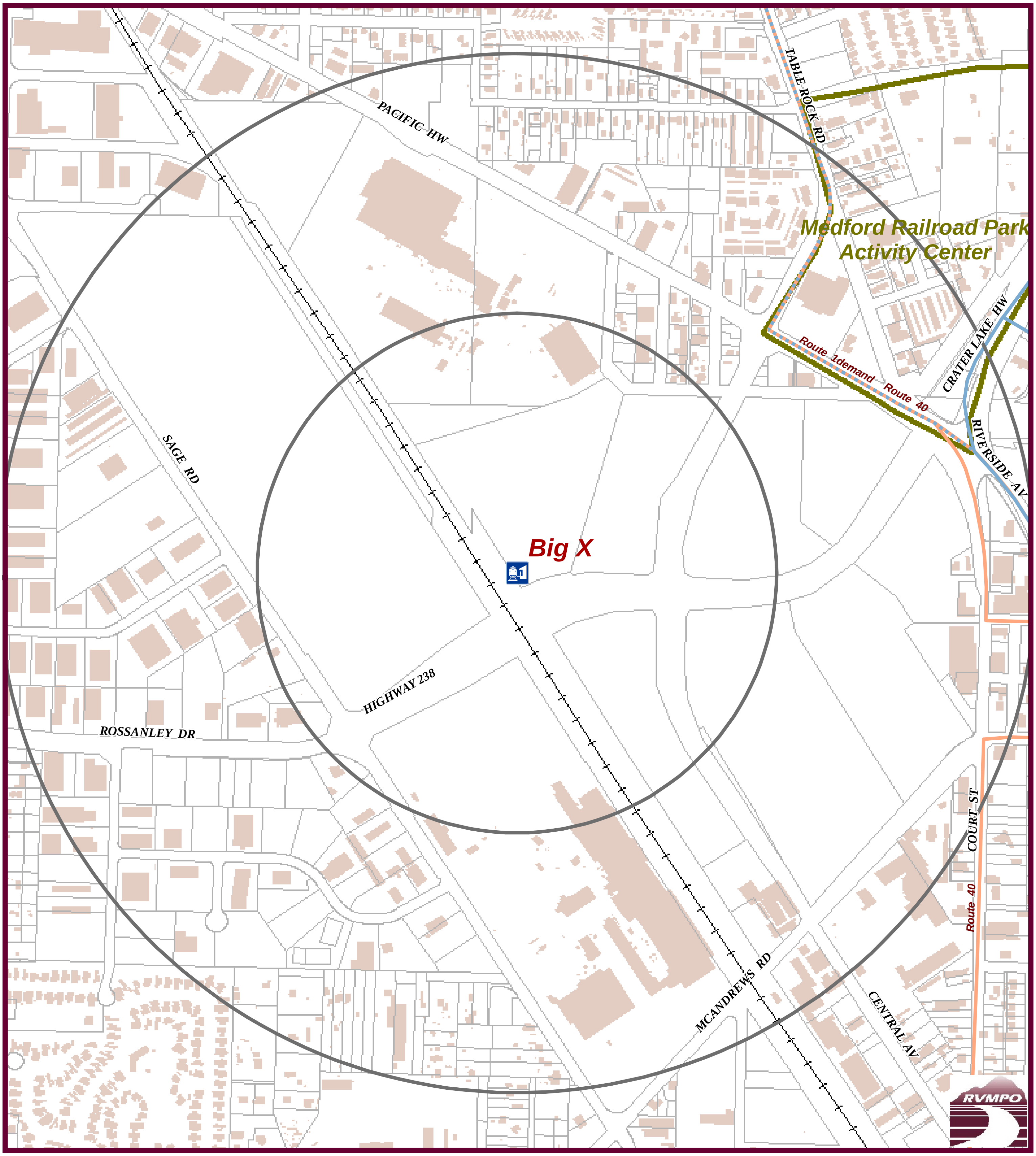
UGB Boundaries

Activity Center Boundaries

MPO Planning Boundary



Economic Development and Rail Access -
2004 Job and Population Density at Proposed Station Sites



Economic Development and Rail Access -

2004 Job and Population Density at Proposed Station Sites

0 0.125 0.25 0.375

Miles

Commuter Rail Stations

Railroad

1/4 & 1/2 M Rail Station Buffer

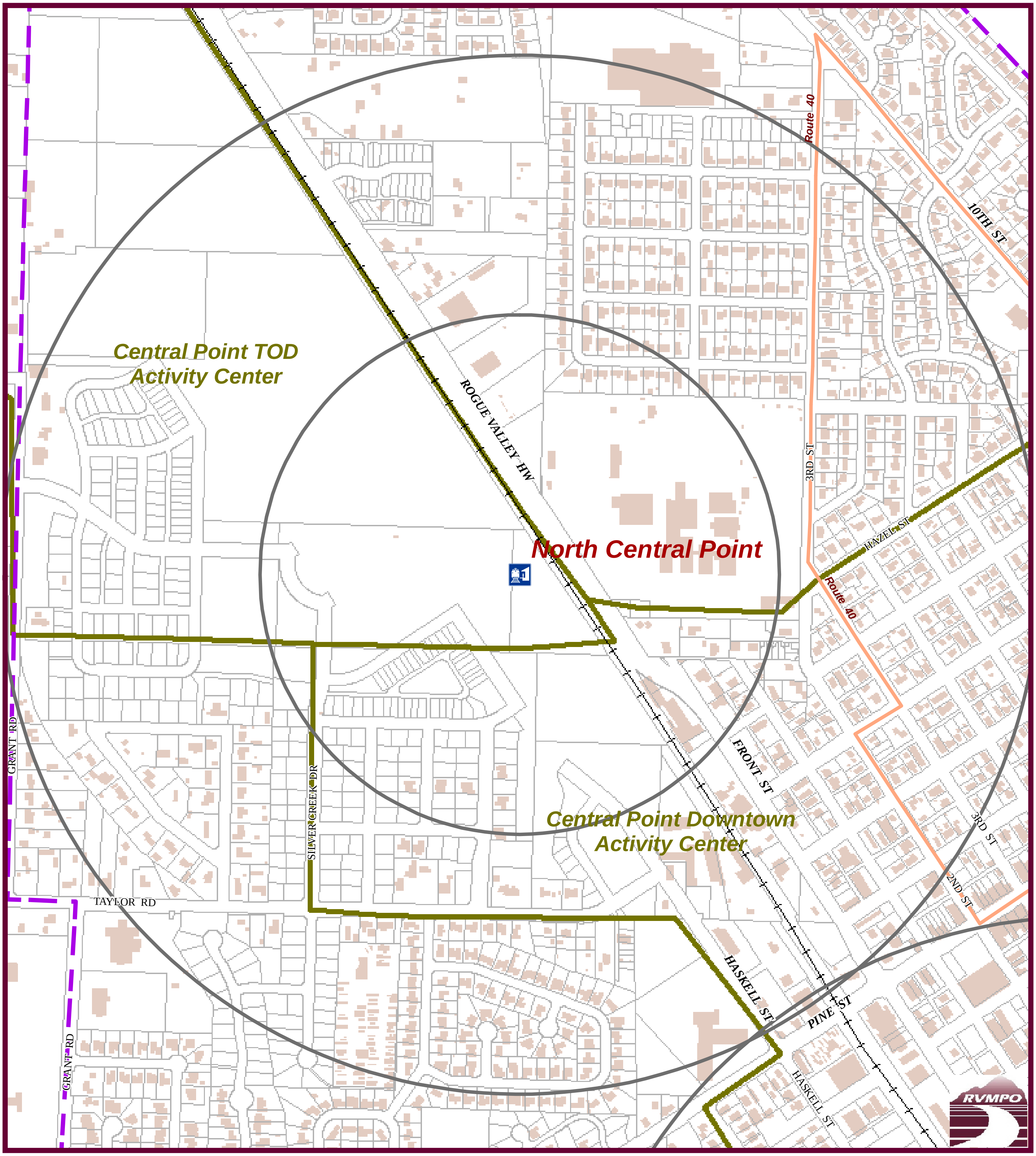
Buildings

UGB Boundaries

Activity Center Boundaries

MPO Planning Boundary

N

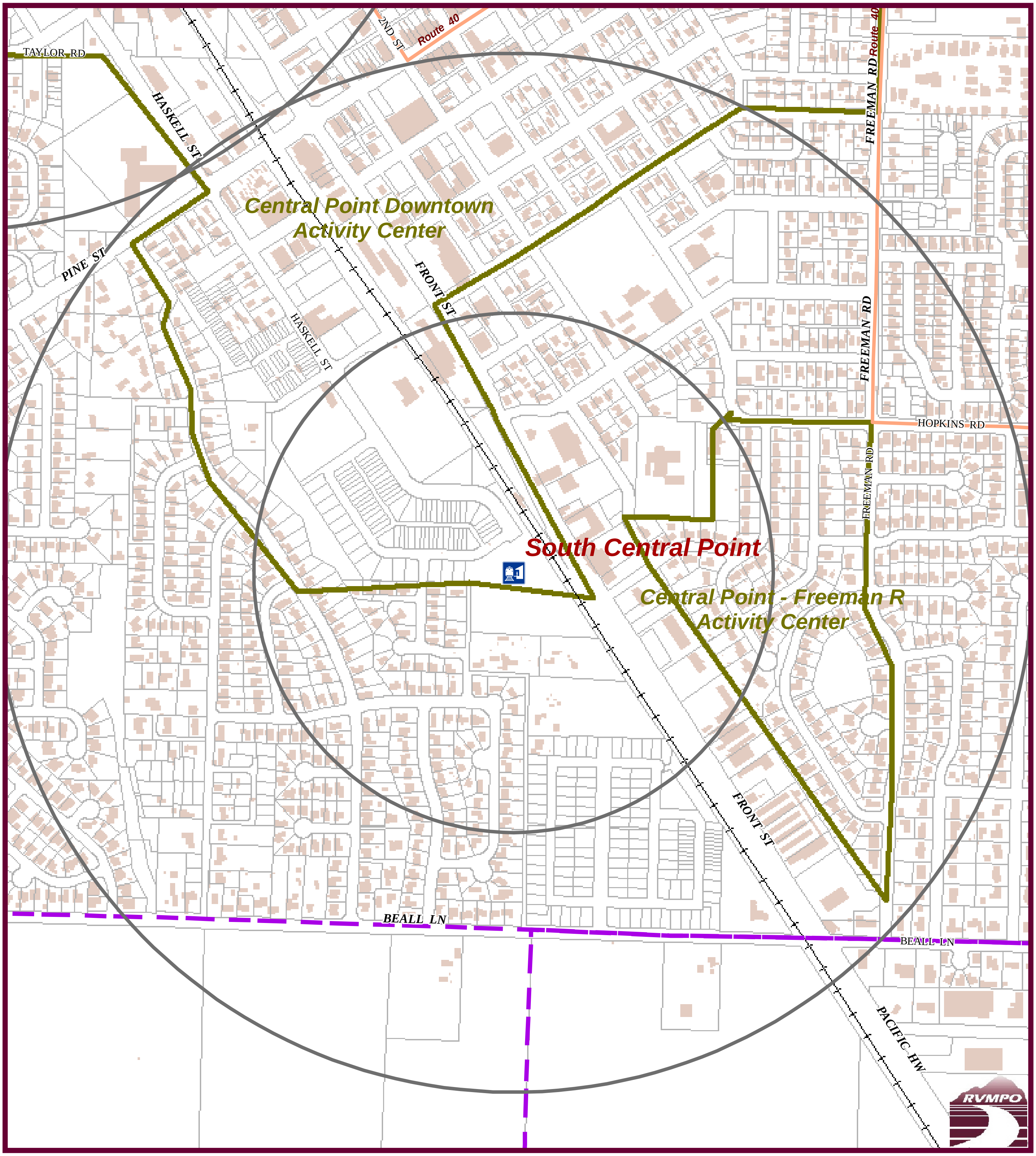


Economic Development and Rail Access -
2004 Job and Population Density at Proposed Station Sites

0 0.125 0.25 0.375
Miles

Commuter Rail Stations
Railroad
1/4 & 1/2 M Rail Station Buffer
Buildings
UGB Boundaries
Activity Center Boundaries
MPO Planning Boundary

N



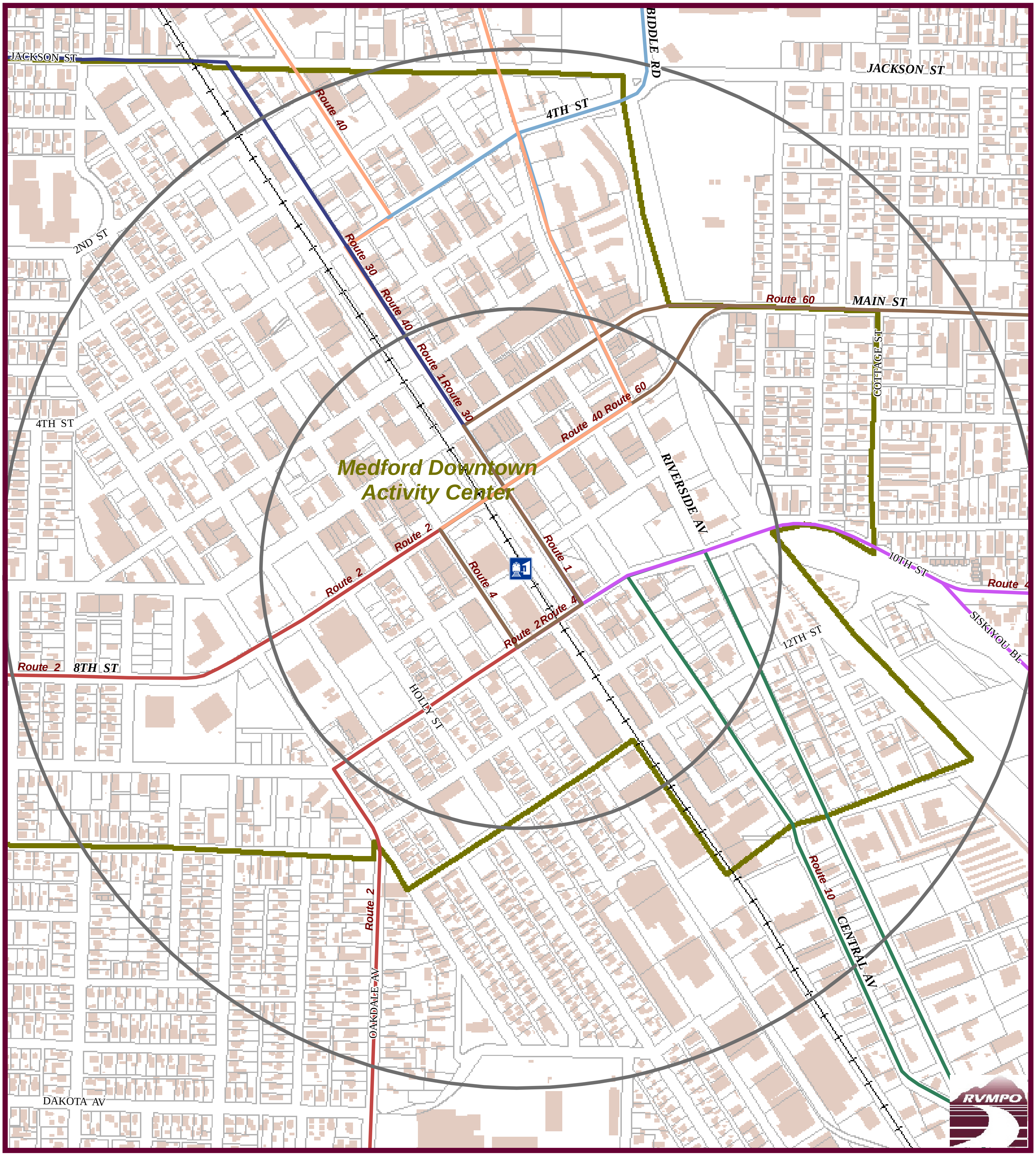
Economic Development and Rail Access -
2004 Job and Population Density at Proposed Station Sites

0 | 0.125 | 0.25 | 0.375

Miles

N

- Commuter Rail Stations
- Railroad
- 1/4 & 1/2 M Rail Station Buffer
- Buildings
- UGB Boundaries
- Activity Center Boundaries
- MPO Planning Boundary

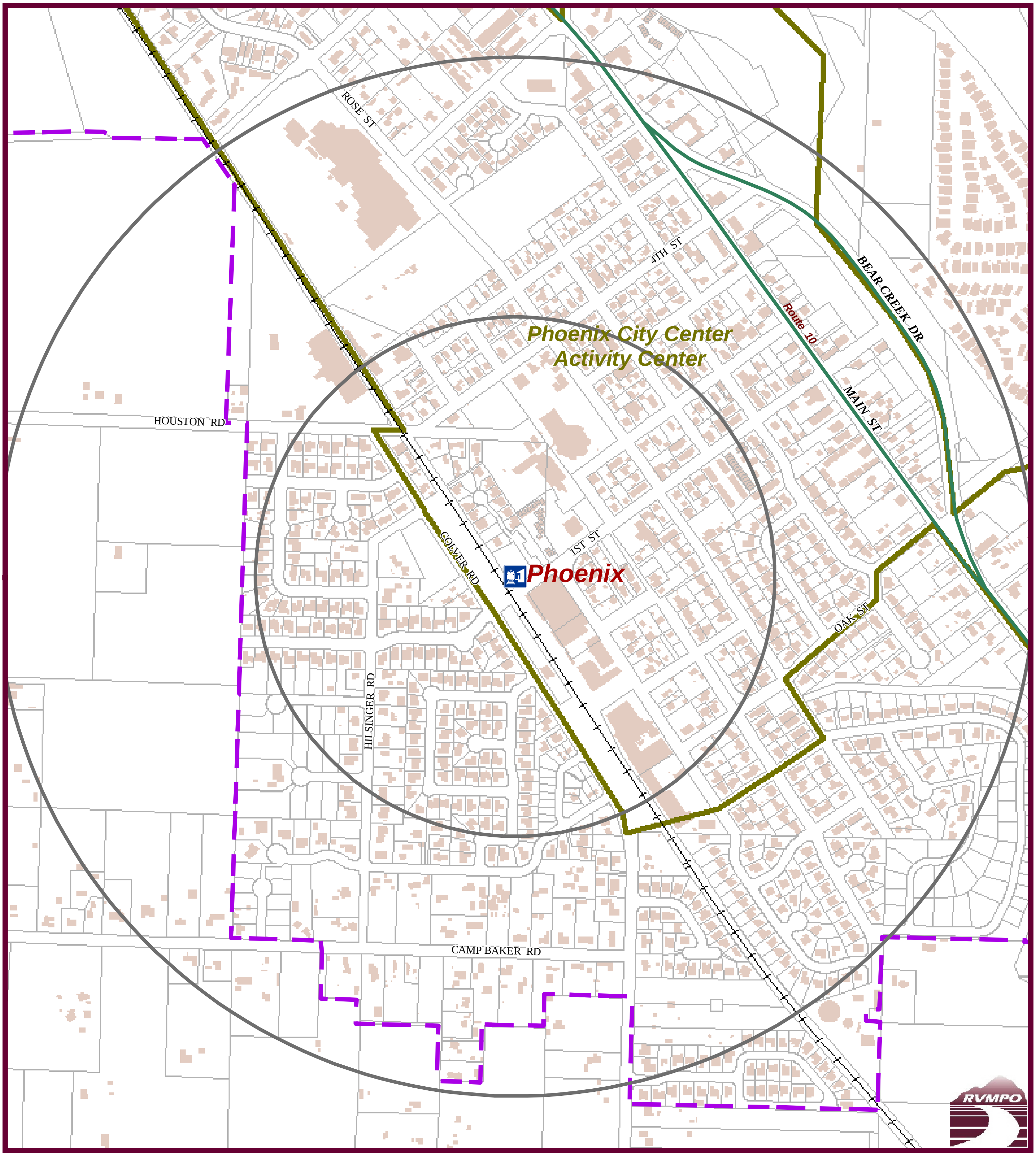


Economic Development and Rail Access -
2004 Job and Population Density at Proposed Station Sites

0 | 0.125 | 0.25 | 0.375
Miles

Commuter Rail Stations
Railroad
1/4 & 1/2 M Rail Station Buffer
Buildings
UGB Boundaries
Activity Center Boundaries
MPO Planning Boundary

N



Economic Development and Rail Access -

2004 Job and Population Density at Proposed Station Sites

Commuter Rail Stations

Railroad

1/4 & 1/2 M Rail Station Buffer

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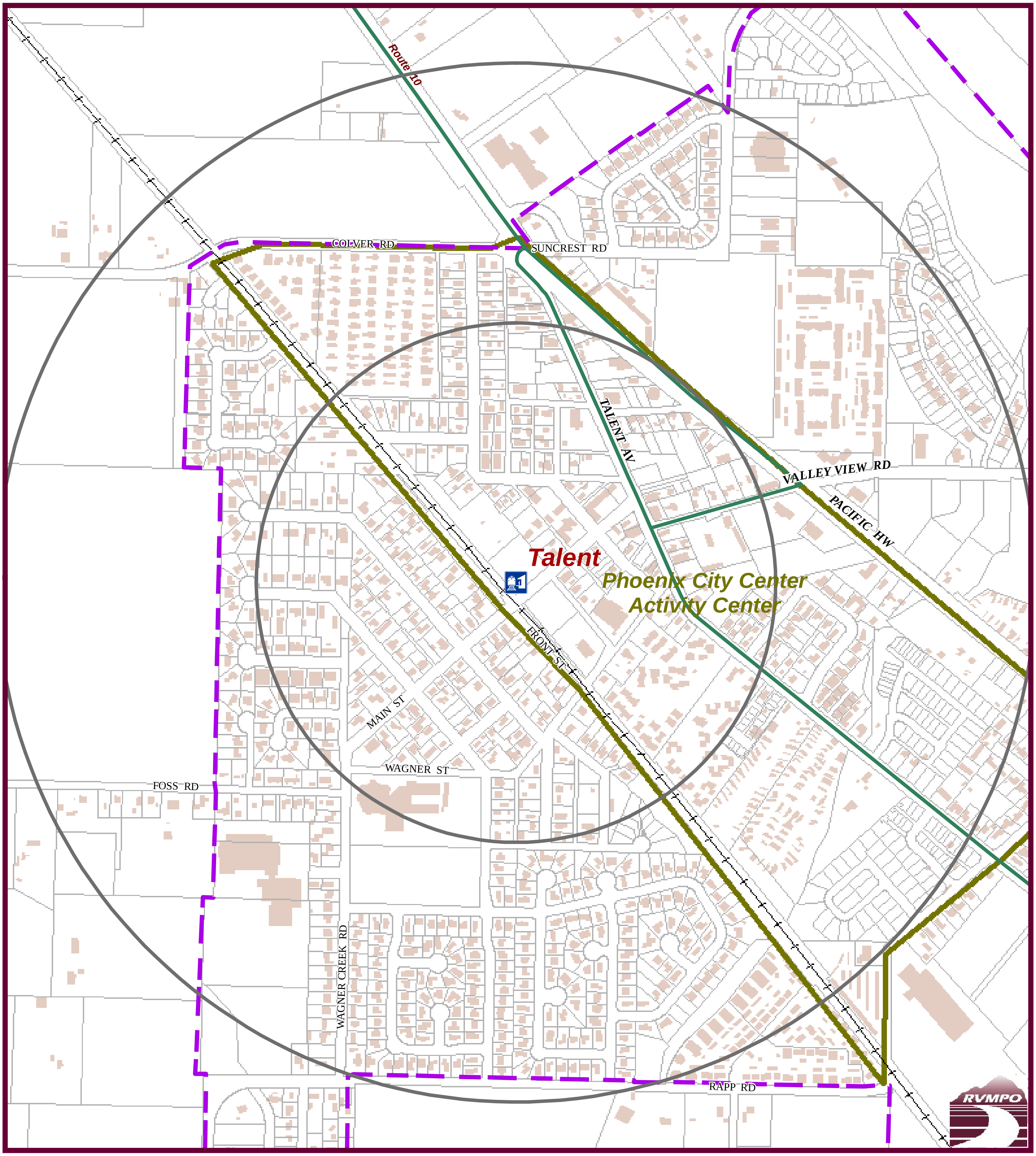
N



Economic Development and Rail Access -
2004 Job and Population Density at Proposed Station Sites