



CET 2040 Transit Master Plan

Regional TAC Meeting #2
October 14th, 2019



Meeting Purpose and Desired Outcomes

Meeting Purpose

- Update TAC on project status
- Recap Bend focus work from summer
- Provide overview of Transit Supportive Development Strategies
- Memo 5 – Transit-Supportive Strategies Memo
- Provide overview of identified transit needs
- Memo 4 – Transit Needs
- Discuss identified needs

Desired Outcomes

- Input from TAC on TOD Strategies
- Validation and input from TAC members on transit needs

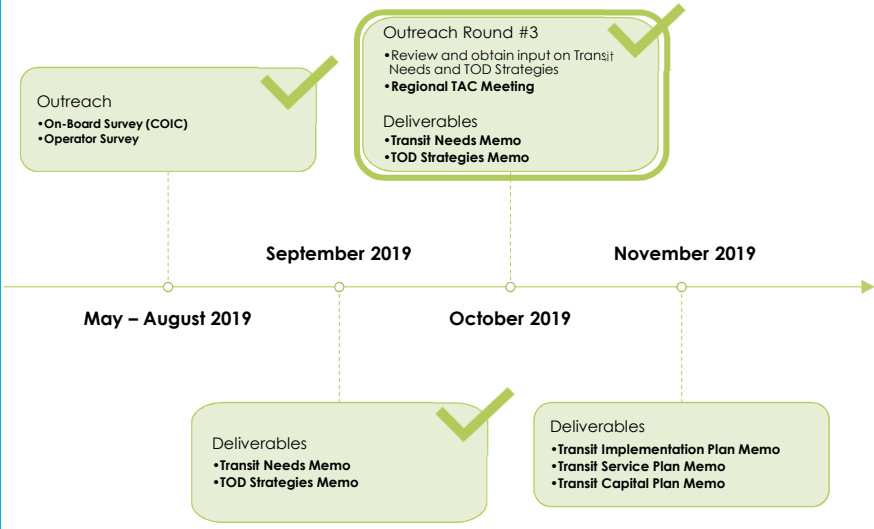


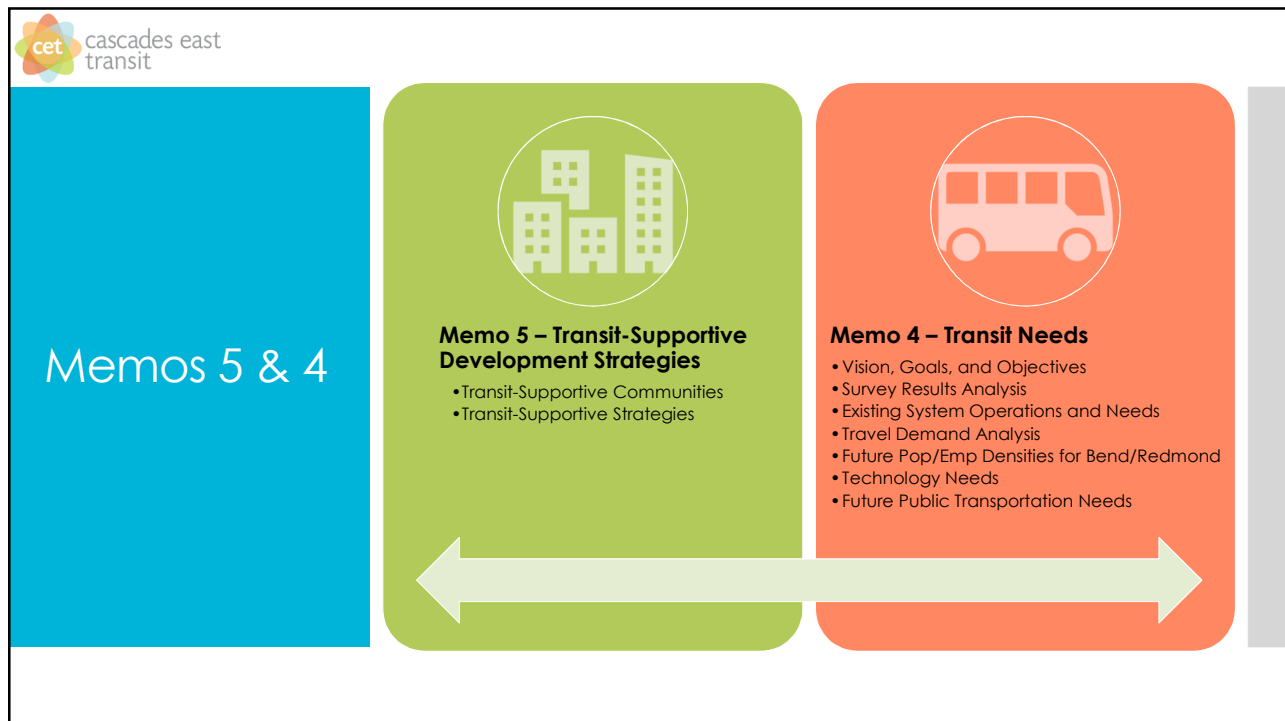
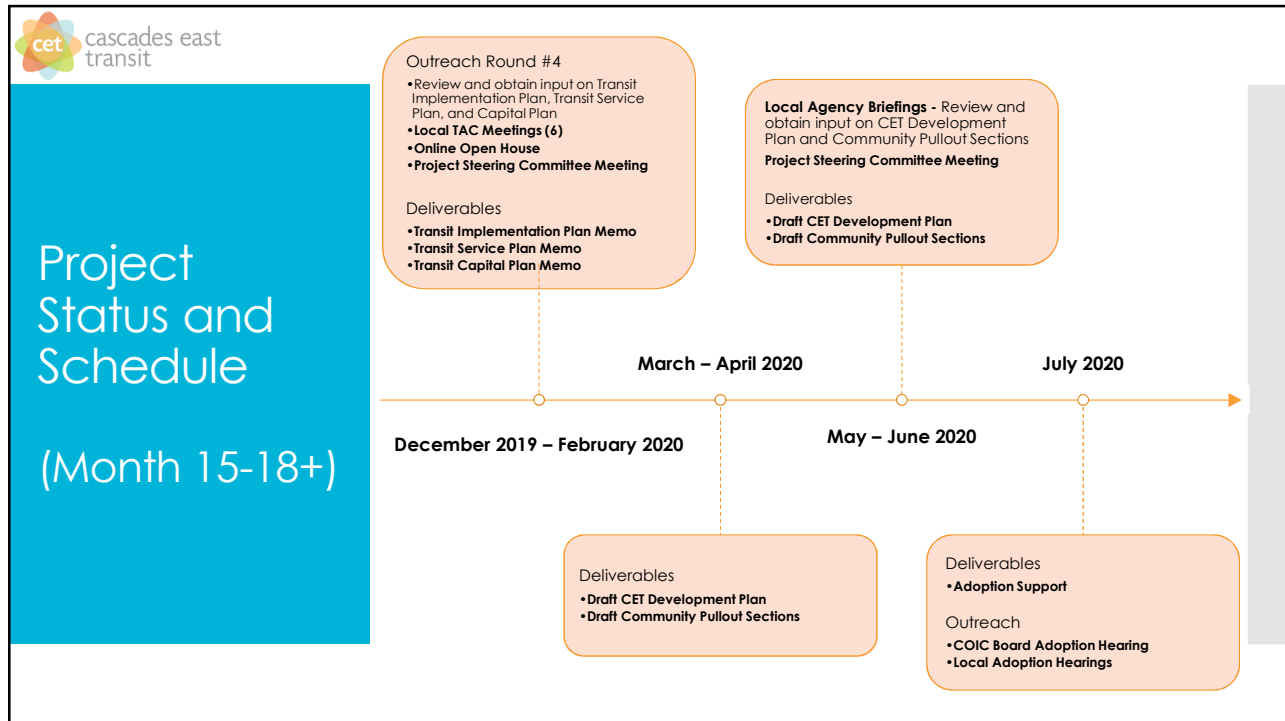
Meeting Agenda

TIME	SUBJECT	LEAD PRESENTER	GUIDANCE REQUESTED
2:00	Welcome and Introductions	Andrea Breault COIC	
2:05	CET Update on STIF	Andrea	
2:10	Public Comment		
2:15	Project Status (schedule, Bend focus work, next steps)		Confirm Understanding, Questions for Clarification
2:30	Transit-Supportive Development Strategies Memo (Memo 5)	Susie Wright Kittelson	Confirm Understanding, Questions for Clarification
3:00	Transit Needs Overview (Memo 4)	Susie	Questions for clarification to prepare for breakout sessions
3:30	Local TAC Breakout Sessions	Susie	Are there key transit needs within your community/city/town that we did not identify?
4:15	Report Back/Next Steps	Susie/Andrea	
4:30	Adjourn		



Project Status and Schedule (Month 7-14)



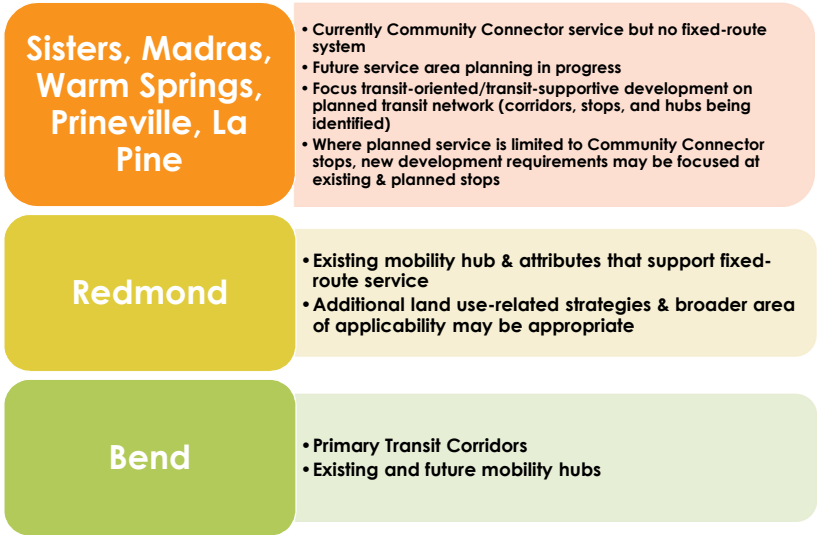




Memo: Transit- Supportive Development Strategies



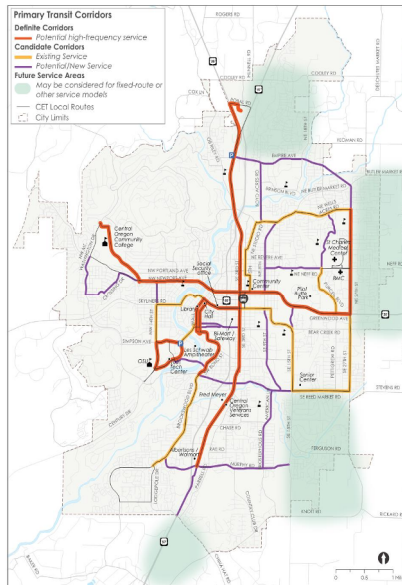
Memo: Transit- Supportive Communities – Areas Outside Bend



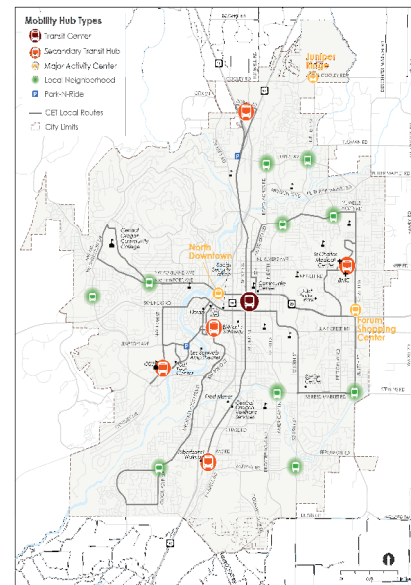


Memo: Transit- Supportive Communities – Bend Area

Primary Transit Corridors



Mobility Hubs



Memo: Transit- Supportive Strategies Overview

Coordination	Pedestrian Orientation (Enhanced)
Coordination with Transit Provider	Additional Height for Housing
Transit Stop Improvements/Amenities	Access
Uses	Block Length
Accessory Dwelling Units	Accessways Through Long Blocks
Mixed Use	Parking
Major Trip Generator: <ul style="list-style-type: none"> Institutional Uses for the Public Neighborhood Commercial Uses Major Employment Generating Uses Major User-Generating Uses 	No Vehicle Parking/Circulation in Front Setback
Limit Auto-Oriented Uses	Parking Maximums
Limit Drive-Throughs	Parking Reductions for Transit
Development Standards	Parking Management Strategy
Residential Density	Landscaping and Walkways in Parking Lots
Min. Floor Area Ratio (FAR) or Lot Coverage	Transit-Related Uses in Parking Lots
Max. Front Yard Setbacks	Preferential Parking for Ridesharing
Pedestrian Amenities in Front	Bicycle Parking
Pedestrian Orientation (Basic)	

Proposed Transit-Supportive Strategies

TOD Strategy	Redmond	Prineville	Madras	Warm Springs	Sisters	La Pine	Crook, Deschutes, & Jefferson Counties
Coordination							
Coordination with Transit Provider	<i>Recommended</i>						
Transit Stop Improvements							
Uses							
Accessory Dwelling Units	<i>Optional</i>						
Mixed Use							
Major Trip Generator Uses							
Limit Auto-Oriented Uses	<i>Recommended</i>						<i>Optional</i>
Limit Drive-Throughs							
Development Standards							
Residential Density	<i>Optional</i>						
Min. FAR or Lot Coverage							
Max. Front Yard Setbacks	<i>Recommended</i>	<i>Recommended</i>	<i>Recommended [no min setback]</i>		<i>Optional</i>		
Pedestrian Space in Front Setback	<i>[max. setback or no min. setback]</i>		<i>Optional</i>				
Pedestrian Orientation (Basic)	<i>Recommended</i>						
Pedestrian Orientation (Enhanced)	<i>Recommended</i>						<i>Optional</i>
Add. Height for Housing	<i>Optional</i>						
Access							
Block Length							
Accessways Through Long Blocks	<i>Recommended</i>						<i>Optional</i>
Parking							
No Vehicle Parking/Circulation in Front Setback	<i>Recommended</i>			<i>Optional</i>			
Parking Maximums	<i>Optional</i>						
Parking Reductions for Transit	<i>Recommended</i>		<i>Optional</i>				
Landscaping in Parking Lots	<i>Recommended</i>			<i>Optional</i>			
Preferential Parking for Ridesharing	<i>Recommended</i>						
Bicycle Parking							
Transit-Related Uses in Parking Lots	<i>Recommended</i>						

Memo:
Transit-Supportive Strategies Recommended for Areas Outside Bend

Recommended Strategies

- Identified as "recommended" or "optional"
- Intended for incorporation into local development code
 - "Adoption-ready" language as part of TMP implementation
 - Adoption of new code language following TMP adoption

Feedback Needed to Tailor Strategies

- Are the strategies appropriate for the communities for which they are recommended?
- Are there "optional" strategies that the jurisdiction would like to pursue and include in draft development code language?
- Where examples of strategies are provided (in Memo Table 1), are these suitable? Are there alternate requirements that you would suggest?
- Where alternatives are provided for strategies in Memo Table 2 (e.g., maximum front setback or no minimum front setback), which strategy is preferred?
- Is establishing a new transit overlay district that implements these code strategies preferable to amending existing code sections?
- Are there other specific regulatory tools that could help a community be more transit-supportive that are not addressed in this memorandum?



Memo: Transit- Supportive Strategies Recommended for Bend

Recommended Strategies

- Intended to be implemented in an overlay district(s)
- Districts to potentially be differentiated by the following geography:
 - All transit corridors
 - Primary ("definite") corridors
 - Hubs

Feedback Needed to Tailor Strategies

- Do the recommended code strategies seem appropriate overall and individually?
- Does varying the code strategies by geography make sense? If so, are the levels of geography proposed in Memo Table 3 appropriate? Are there modifications or specifications that would be useful?
- Are there specific strategies that you see significantly overlapping with underlying, existing Bend zoning (e.g., Mixed Use Urban, Bend Central District)?
- Where examples of strategies are provided, are these suitable or are there alternate requirements that you would suggest?
- Are there other specific regulatory tools that could help Bend be more transit-supportive that are not addressed in this memo?



Transit- Supportive Development Strategies Memo: Next Steps

Assess strategies through TAC and SC review

As needed, consult existing development codes

Refine strategies into draft adoption-ready code language

Revise draft code language for final draft to include in TMP

**Memo 4:
Transit
Needs**

1 Vision Goals Objectives	2 Survey Results	3 Existing Needs	4 Travel Demand	5 Future Pop & Emp Densities	6 Technology Needs	7 Future Needs
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**Memo 4:
Vision,
Goals, and
Objectives**

Goals

- 1 Develop and maintain a public transportation system that is well integrated with local communities, planning documents, and partner agencies
- 2 Provide convenient and attractive public transportation choices for users throughout Central Oregon both within and between communities
- 3 Make riding easy and comfortable with improved stop amenities and information about how to ride readily available to residents, employees, and visitors
- 4 Enhance transit options to provide a time and cost competitive alternative to traveling by automobile and increase transit ridership while reducing automobile dependency
- 5 Evaluate emerging technologies and transit service models and how they might be used to support transportation options in Central Oregon



Memo 4: Survey Results Analysis

- On-Board Survey
 - May 8th – June 3rd, 2019
 - 413 Surveys
 - 277 Bend Fixed Route
 - 136 Community Connector



Memo 4: Survey Results Analysis

On-Board Survey Results

Trip Purpose

- Bend Fixed Route
 - Work is the most common primary trip purpose (34%)
 - School is the second most common trip purpose (16%)
- Community Connector Routes
 - School/college is the most common primary trip purpose (42%)
 - Work is the second most common trip purpose (23%)

Frequency of Use

- 55% ride the bus 5 or more days per week
- 27% ride the bus 2 to 4 days per week (indicating 82% of CET riders use the system for routine transportation needs)
- 18% of riders use CET for occasional trips 1 to 4 days per month or less



Memo 4: Survey Results Analysis

On-Board Survey Results

Transfers Between Routes

- 65% of riders reported needing to transfer onto another route.
- Over 70% surveyed on Bend fixed-route services and half on Community Connector service indicated they needing to transfer onto another route.
- Highest number of reported transfers occurred between:
 - Bend fixed-routes routes
 - 1 and 4 (riders connecting between north and south 3rd street)
 - 4 and 7 (riders connecting between N 3rd Street and the 27th/St. Charles area) and
 - 5 and 6 (which are interlined connecting areas north and south of Greenwood east of 3rd Street)
 - Community Connector route 24 and Bend fixed-routes 2 and 5, e.g., riders connecting to downtown and the St. Charles area.



Memo 4: Survey Results Analysis

On-Board Survey Results

Transit Access

- 76% of riders walked to/from his/her bus stop.
- Riders on Community Connector routes walked longer to access transit than riders on Bend fixed-routes, 12 minutes versus 9 minutes
- The average bicycle trip to/from transit was approximately two miles.
- A relatively small share of riders drove to access the bus – traveling an average of 8.5 miles.

Fare Type and Discounts

- 33% of riders paid fares in cash.
- 3% use of TouchPass mobile app system-wide.
- 37% of Bend fixed-route riders used a senior (age 60 or older) or disabled discount fare.
- 38% of riders on Community Connector routes participate in a Group Pass Program.

Alternatives to CET Service

- 39% of Community Connector riders and 32% of Bend fixed-route riders said they would not have made their trip if bus service was not available.



Memo 4: Survey Results Analysis

On-Board Survey Results

Customer Perceptions of Current CET Service

- 80% of CET's riders are satisfied with the overall service and rated it as either Excellent or Good.
 - Bend fixed-route riders were least satisfied with on-time performance and timing/reliability of transfers (45% fair or poor).
 - Community Connector riders were most concerned with seat availability (20% poor and 15% fair) and condition of bus stops (38% fair or poor).

Improvement Priorities

- Longer Saturday service hours (earlier and/or later) and later weekday evening hours on Bend fixed-routes.
- Community Connector service on Saturdays.
- More frequent weekday service in Bend.
- Ensuring buses run on time.
- Increasing frequency in the morning/afternoon and running later in the evening on the Community Connector system.



Memo 4: Survey Results Analysis

On-Board Survey Results

Rider Feedback

- Needing weekend bus service
- Buses running later on weekdays
- Increasing service frequency on Community Connector routes
- Providing mid-day Community Connector service
- Frustration about late or early buses, leading to missed transfers, e.g.,
- Route 4 consistently late
- Mistimed transfers independent of buses running on-schedule
- Modifying route coverage or adding stops
- Buses being overcrowded, dirty, or bypassing passengers
- Improving transit app accuracy and accessibility on phones
- Improving bus stop amenities (e.g., trash cans, out-of-date schedules, seating/shelters, crosswalks, accessibility during snow events)
- Appreciating most CET drivers, but equally needing more time from CET drivers for safe seating



Memo 4: Survey Results Analysis

On-Board Survey Results

Demographics of CET Riders

- The largest cohort of Bend fixed-route riders are aged 25 to 34
- 42% of Community Connector riders are 18 and younger (83% of these riders are students)
- 10% of riders are 65 or older.
- A majority of Bend fixed-route riders are employed
- 37% of Community Connector riders are students
- Approximately 45% of riders on both Bend fixed-routes and Community Connector routes report household earnings of under \$12,000 per year
- The majority of riders on Bend fixed-routes (53%), and 22% of those on Community Connector routes come from households that do not own a vehicle.



Memo 4: Survey Results Analysis

Operator Survey Results

Planning Considerations

- The top locations identified by operators as difficult to navigate are Courtney Drive (Route 7 and dial-a-ride), left turns at Wells Acres/Butler Market and Jamison Rd/Highway 20
- Bend fixed-route 4 was identified as the most difficult route to keep on schedule (39% of answers)
- A majority of passengers' suggestions to drivers (45%) included adding or modifying routes and providing on-time service
- The top destinations that operators suggest CET should serve are Empire Ave (13%), Deschutes River Woods (15%), and Redmond with fixed-route service (8%)
- The top capital, infrastructure, and technology needs identified by operators were stop amenities (11%), trash and shelter maintenance at stops (9%), and new/improved radios (9%)



Operator Survey Results

Memo 4: Survey Results Analysis

Future Funding Opportunities

- 33% of operators indicate that the priority for funding for the CET service area should be providing additional routes

Overall Recommendations

- The number one recommendation made by participating operators is that all Bend fixed-routes have 35 to 45-minute runs (Routes 1, 3, 4, and 7 on 30-minute runs for weekday schedule)



Dial-A-Ride Needs

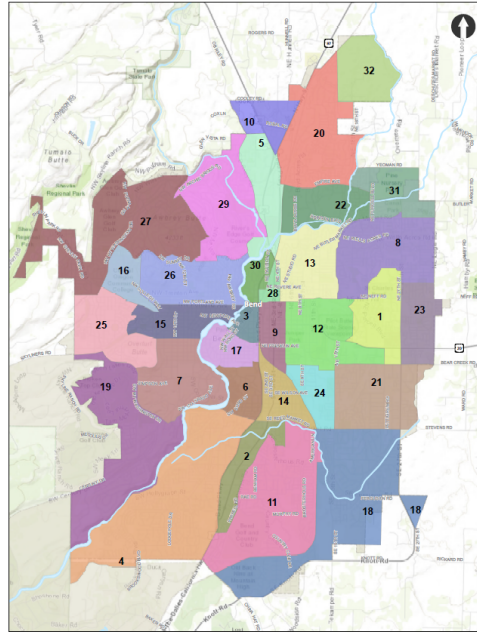
Memo 4: Existing System Operations and Needs

- To increase productivity (Rides per Hour), CET needs to increase the efficiency of Dial-A-Ride service (allowing more rides per hour) with improved scheduling technology
 - Upgrading scheduling and dispatch software
- CET should continue to work with various human services agencies to understand unmet needs and gaps in service
- As technology increases, Rural Dial-A-Ride operates more like microtransit and demand will increase. This lends to more productive areas converting into flex-routes.

Memo 4: Travel Demand Analysis

**Bend Transportation Analysis Zone
Groups
(Figure 1, Pg. 12)**

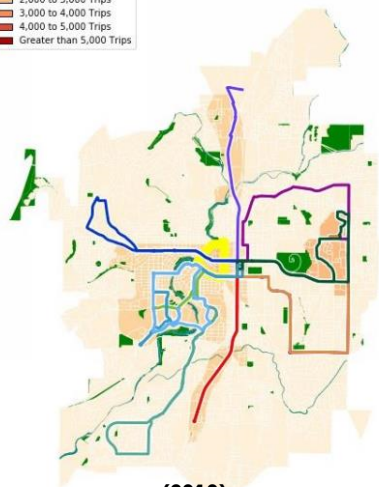
Bend Local Trips (Start and End in Bend)



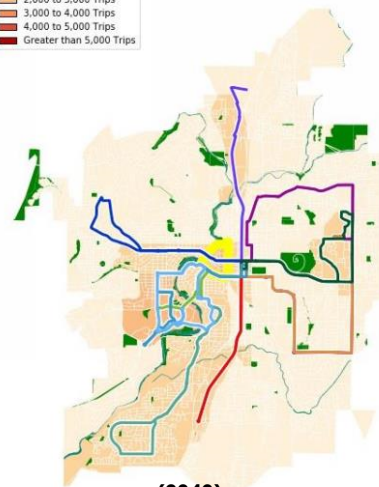
Memo 4: Travel Demand Analysis

**Trip Distribution to/from Group 3:
Downtown Bend
(Appendix C)**

Bend Local Trips (Start and End in Bend, Cont.)



(2010)

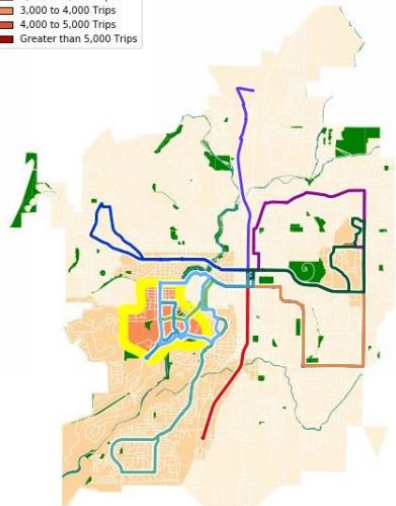


(2040)

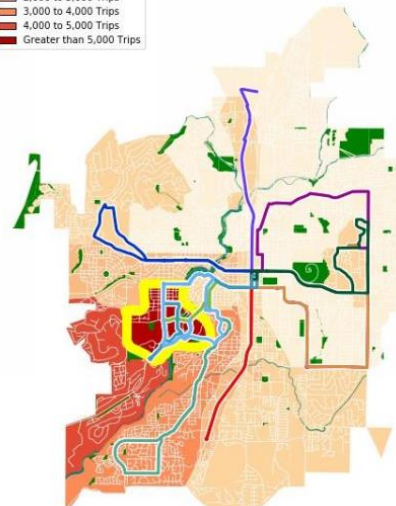
Memo 4: Travel Demand Analysis

*Trip Distribution to/from Group 7:
Oregon State University-Cascades
(Appendix C)*

Bend Local Trips (Start and End in Bend, Cont.)



(2010)



(2040)

Memo 4: Travel Demand Analysis

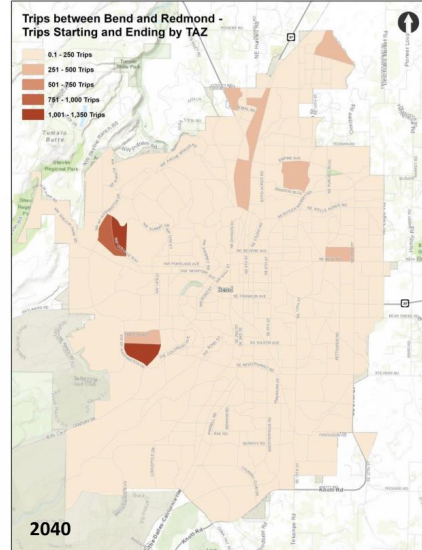
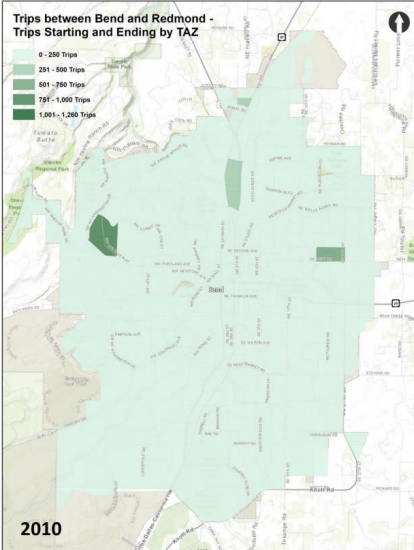
Travel Demand Between Bend and Redmond

- In the 2010 Bend-Redmond model, there are approximately 13,600 total weekday trips between Bend and Redmond.
- The model projects that the number of trips between the cities will grow by approximately 65 percent by 2040 to 22,500.



Travel Demand Between Bend and Redmond (Cont.)

Memo 4: Travel Demand Analysis

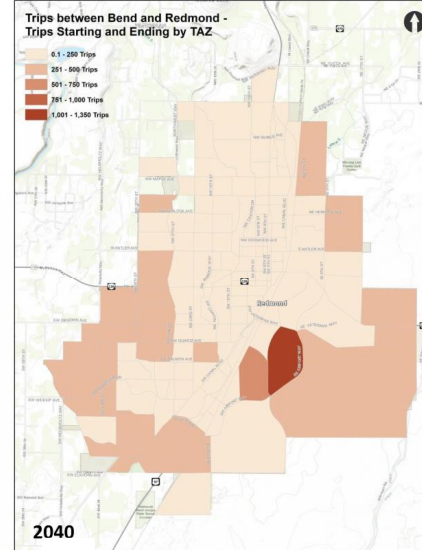
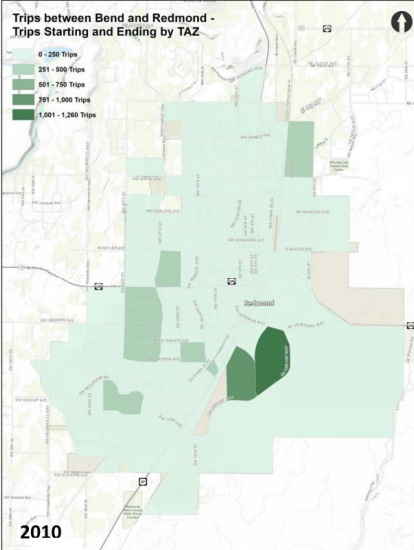


**Bend Trips Connecting to Redmond
(Total Trips per TAZ)
(Figure 3, Pg. 16)**



Travel Demand Between Bend and Redmond (Cont.)

Memo 4: Travel Demand Analysis



**Redmond Trips Connecting to Bend
(Total Trips per TAZ)
(Figure 5, Pg. 19)**

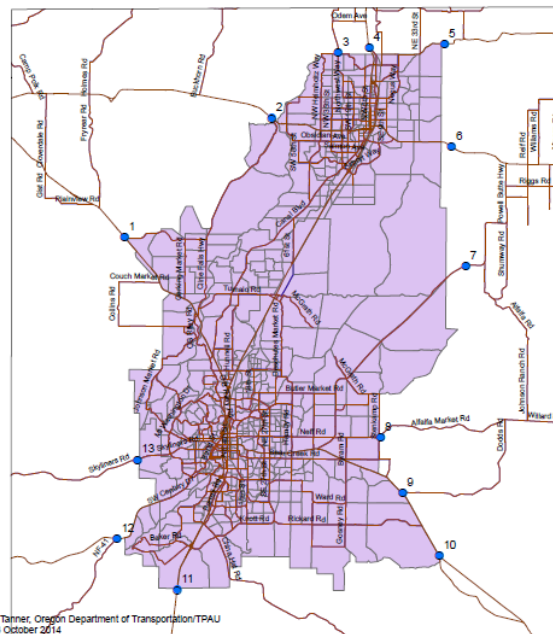
Intercity Travel Demand

Memo 4: Travel Demand Analysis

- In the 2010 Bend-Redmond model, there are approximately 45,310 total weekday trips other cities and the model region.
- The model projects that the number of trips between the cities will grow by approximately 45 percent by 2040 to 65,991.

Intercity Travel Demand (Cont.)

Memo 4: Travel Demand Analysis



**Bend-Redmond Model External
Areas
(Figure 7, Pg. 21)**



Intercity Travel Demand (Cont.)

Memo 4: Travel Demand Analysis

Direction of Travel	2010		2040	
	Bend	Redmond	Bend	Redmond
LaPine / Sun River	9,009	353	11,567	653
Warm Springs / Madras	4,806	7,051	7,326	8,195
Prineville	3,591	4,734	5,147	6,124
Sisters	5,029	2,700	7,424	3,870

**Total Daily Regional Trips to and from Bend and Redmond
(Table 6, Pg. 22)**

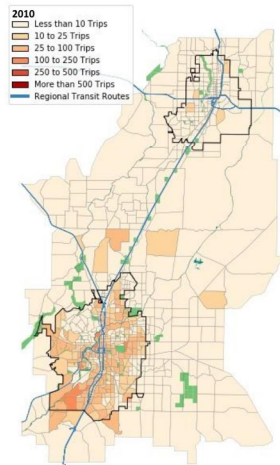


LaPine/Sunriver

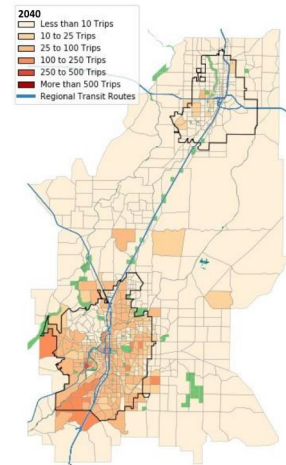
Memo 4: Travel Demand Analysis

Trips to and from Direction of LaPine / Sun River

★ Star indicates where model assigned external trips



(2010)



(2040)

**Trips to/from Direction of La Pine/Sun River
(Appendix D)**

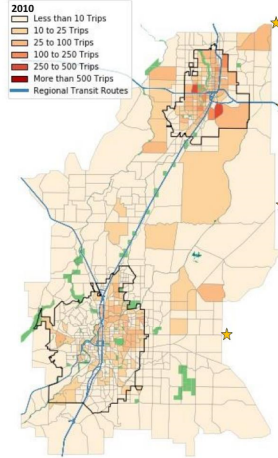


Memo 4: Travel Demand Analysis

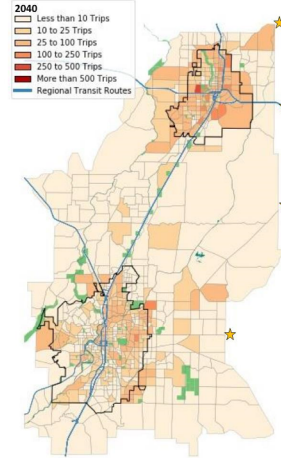
*Trips to/from Direction of Prineville
(Appendix D)*

Prineville

Trips to and from Direction of Prineville
★ Star indicates where model assigned external trips



(2010)



(2040)



Memo 4: Travel Demand Analysis

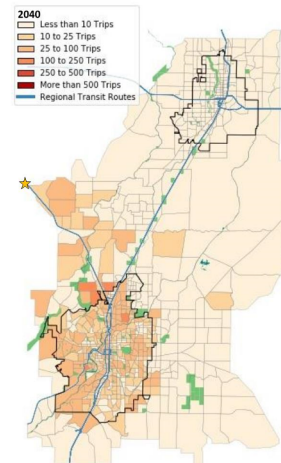
*Trips to/from Direction of Sisters on
Highway 20
(Appendix D)*

Sisters – Hwy 20

Trips to and from Direction of Sisters on Hwy 20
★ Star indicates where model assigned external trips



(2010)



(2040)

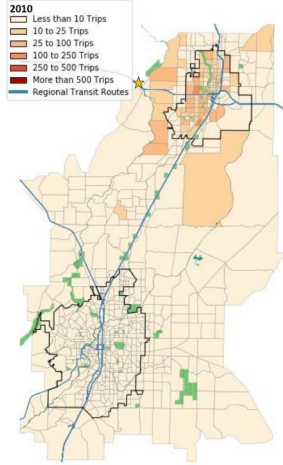


Memo 4: Travel Demand Analysis

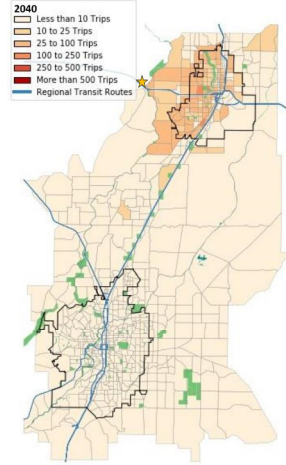
Sisters – McKenzie Hwy

Trips to and from Direction of Sisters McKenzie Hwy

★ Star indicates where model assigned external trips



(2010)



(2040)

Trips to/from Direction of Sisters on
McKenzie Highway
(Appendix D)

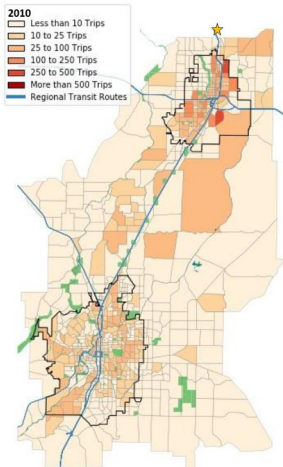


Memo 4: Travel Demand Analysis

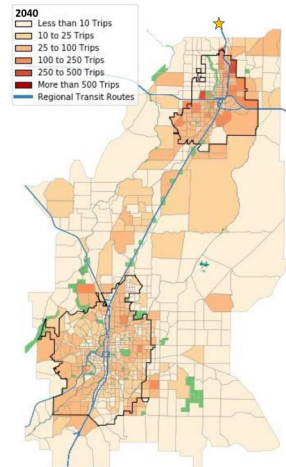
Warm Springs/Madras

Trips to and from Direction of Warm Springs / Madras

★ Star indicates where model assigned external trips



(2010)



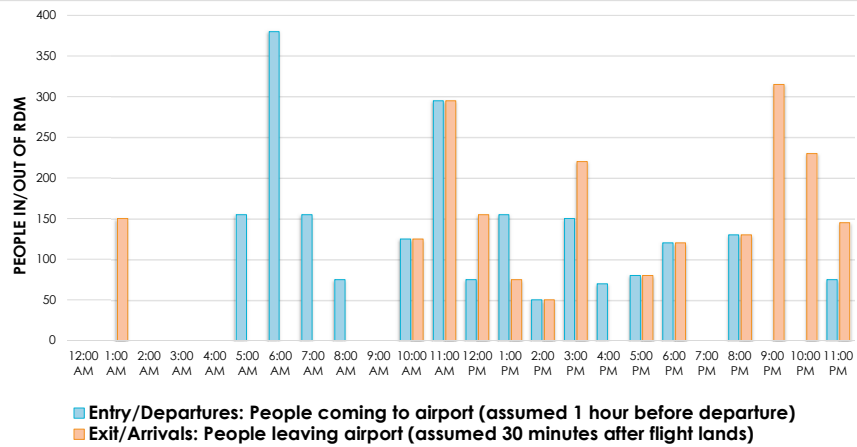
(2040)

Trips to/from Direction of
Madras/Warm Springs
(Appendix D)



Memo 4: Travel Demand Analysis

Travel Demand for Redmond Municipal Airport



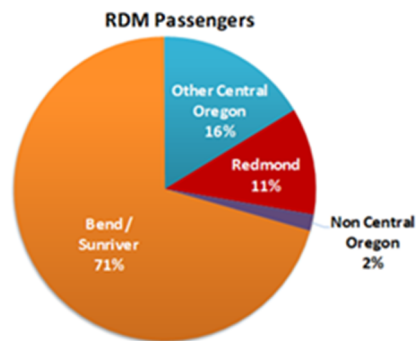
Source: flightradar24.com

Monday, June 24 Flight Data – Represented as Typical Weekday Travel Patterns (Figure 10, Pg. 26)



Memo 4: Travel Demand Analysis

Travel Demand for Redmond Municipal Airport (cont.)



Source: RDM

RDM Passenger Origins and Destinations (Figure 11, Pg. 27)



Travel Demand for Redmond Municipal Airport (cont.)

Memo 4: Travel Demand Analysis

- Approximately 370 staff at RDM working shifts 24-hours/day
- Transit could better support morning passenger departures and afternoon arrivals
- Need more connections to the Redmond Transit Center and/or Community Connectors to service the airport.



Transit Market Land Use Guidelines

Memo 4: Future Pop/Emp Densities for Bend & Redmond

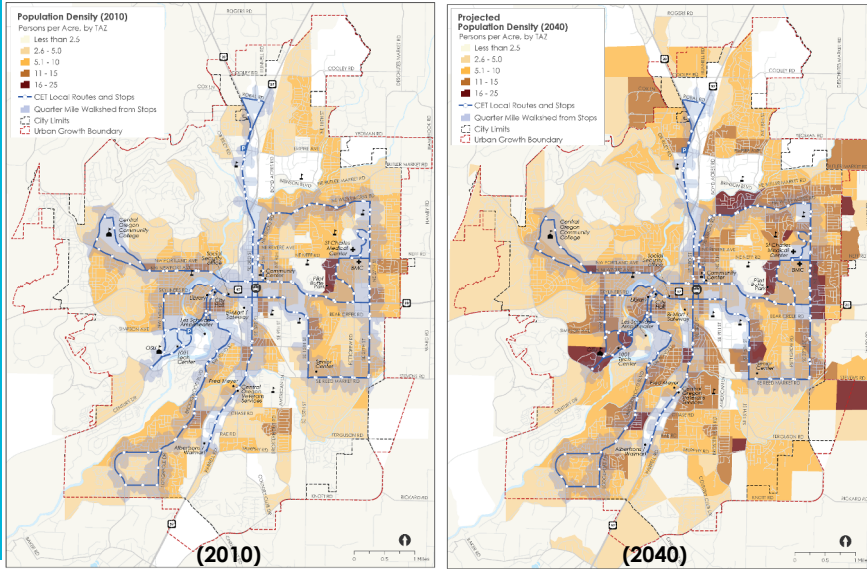
Land Use Type	LAND USE		TRANSIT	
	Residents per Acre	Jobs per Acre	Appropriate Types of Transit	Frequency of Service
 Urban Mixed-Use	20+	15+	 BRT Rapid Bus Local Bus	 10-15 minutes
 Neighborhood & Suburban Mixed-Use	10-20	10-15	 Local Bus	 15-30 minutes
 Mixed Neighborhoods	10-15	5-10	 Local Bus On-Demand	 30-60 minutes or on-demand
 Low Density	2-10	2-5	 On-Demand Rideshare Volunteer Driver Pgm	 60 mins or less or on-demand

Local Transit Service Design Policy
Guidelines Summary
(Figure 12, Pg. 29)



Bend Population Density

Memo 4: Future Pop/Emp Densities for Bend & Redmond

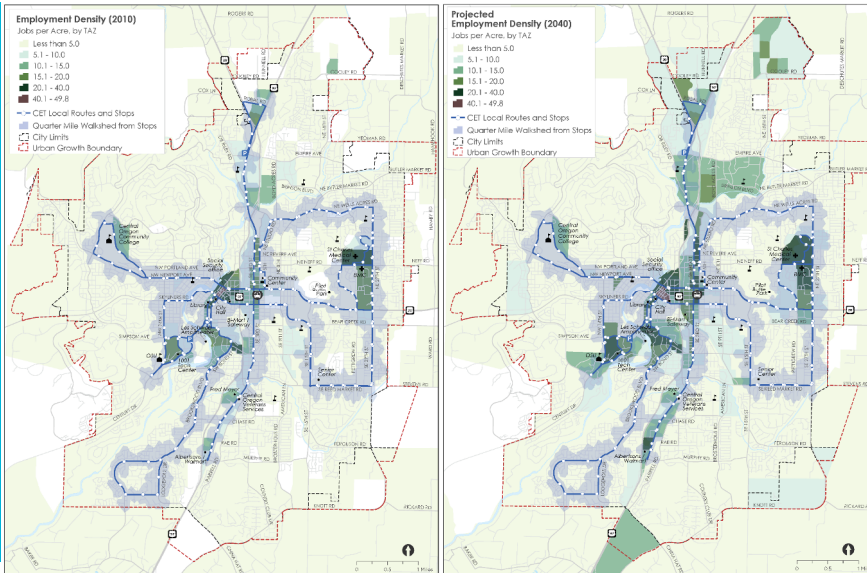


Population Density, 2010 and 2040
(Figure 13, Pg. 31)



Bend Employment Density

Memo 4: Future Pop/Emp Densities for Bend & Redmond



Employment Density, 2010 and 2040
(Figure 15, Pg. 35)



Work Commute Patterns (Cont.)

Memo 4:
Future
Pop/Emp
Densities for
Bend &
Redmond

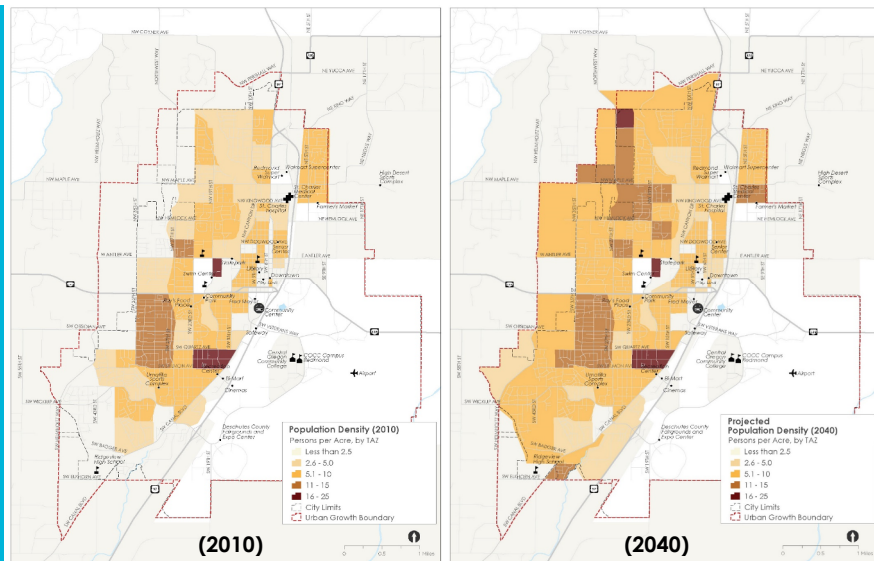
Home Location	Persons	Share of total workers
Bend	24,974	53.1%
Redmond	3,392	7.2%
Deschutes River Woods	1,561	3.3%
Portland	692	1.5%
Prineville	556	1.2%
Eugene	418	0.9%
Three Rivers	285	0.6%
Madras	242	0.5%
Salem	232	0.5%
Eagle Crest	222	0.5%
All Other Places	14,476	30.8%

Where People Who Work in Bend
Live, 2015
(Table 10, Pg. 37)



Redmond Population Density

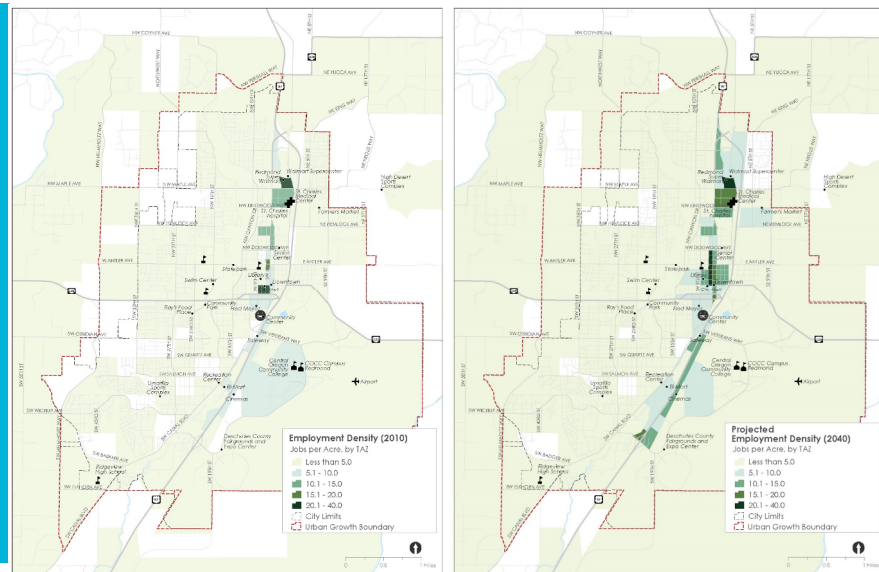
Memo 4:
Future
Pop/Emp
Densities for
Bend &
Redmond



Redmond Projected Population
Density (2010 and 2040)
(Figure 20, Pg. 51)

Redmond Employment Density

Memo 4: Future Pop/Emp Densities for Bend & Redmond



Redmond Projected Employment Density (2010 and 2040)
(Figure 21, Pg. 52)

Technology Needs

Memo 4: Technology Needs

- Transit Signal Priority on routes with schedule adherence issues and future enhanced transit corridors
- Automated stop announcements and displays on buses (eliminating the need for the driver to make stop announcements)
 - Funding sources have been awarded through the Statewide Transportation Improvement Fund (STIF) to implement these improvements for fiscal year 2021.
- Upgraded communication equipment for drivers and operations staff
- Online app maintenance
- Computers and tablets
- Real-time arrival information at bus stops (see transit hubs)
 - Funding sources have been awarded through STIF to implement these improvements for fiscal year 2021.
- Improved Dial-A-Ride dispatch/scheduling system (see Bend Dial-A-Ride section)
 - Funding sources have been awarded through STIF to implement these improvements for fiscal year 2021.

Example Distributed TSP System
(Figure 21, Pg. 52)



Existing and Future Public Transportation Needs

Memo 4: Future Public Transportation Needs

Needs are summarized for each County and Warm Springs as well as countywide and include timeframes.

- Short: 1 to 5 years
- Mid: 6 to 10 years
- Long: 11 to 20 years

Example: Jefferson County Needs

Future Need(s)	Service City	Notes	Timeframe
Local Services			
Have dedicated service for rural areas	Madras	-	Short
Improve service for rural areas in Jefferson County (e.g. Commuter or DART service)	Madras	-	Short
Countywide Services			
Improve service for rural areas in Jefferson County	Madras Warm Springs	Also identified as need by stakeholders in the other counties	Short
Improve service for rural areas in Jefferson County	Madras Warm Springs	Also identified as need by stakeholders in the other counties	Short
Improve service for rural areas in Jefferson County	Madras Madras	Also identified as need by stakeholders in the other counties	Short
Improve service for rural areas in Jefferson County	Madras Madras	-	Short
Improve service for rural areas in Jefferson County	Madras Madras	Also identified as need by stakeholders in the other counties	Short
Improve service for rural areas in Jefferson County	Madras Warm Springs	-	Short
Countywide Services for Management Plans			
Improve service for rural areas in Jefferson County	Crater-Rainier Culpeper Madras	Also identified as need by stakeholders in the other counties	Mid
Special Districts			
Improve service for rural areas in Jefferson County	Redmond Madras	Also identified as need by Deschutes County stakeholders	Short
Improve service for rural areas in Jefferson County	Madras Warm Springs	-	Short
Improve service for rural areas in Jefferson County	Madras Madras Culpeper Warm Springs	-	Short

Breakout Sessions

- Do the needs noted in the tables resonate with you? Anything you would add/change?
- Can residents and your community (city or rural parts of the county) get to medical appointments, shopping, and services? Why or why not? How can Dial A Ride services better meet the needs to people in your community?
- Do the current Rural Dial-A-Ride service areas work for your community? What does/doesn't work well (both service areas and more broadly)?
- Would a flex route work well (less coverage, but more regular, scheduled stops) for local trips?
- What about a local shopper/medical shuttle?
- What is your desire for local service to better connect to fixed-route, and what options would work well (DAR vehicle meets CC, flex-route at end of CC, etc.)?
- Recognizing that it is difficult to serve rural areas, are there key gaps we can look at filling?
- Would expanded DAR be better than special services such as a 'shopper shuttle'?



Report Back 4:15 p.m.

Next Steps

Memos

- Transit Service Plan
- Capital Improvement Plan

Online Open House (December – January 2020)

Meetings

- Local TAC Meetings (January 2020)

