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Norwood Development

Transportation Planning Rule Analysis

Tualatin, OR

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Executive Summary

1. The Norwood Development project proposes a zone change for approximately 8.3 acres of Tax Lot 2S135D 000106, which is currently zone Institutional (IN) and is proposed for rezoning to Medium Low Density Residential (RML).
2. To understand the potential impacts of the requested zone change, the reasonable worst-case land uses under existing and proposed zoning were compared.
    - Under the existing institutional (IN) zoning, two scenario were considered for the 8.3-acre site. One option was a 260-student private school. The other option was a 50,000-SF Community Center with a park that includes a sports field and tennis courts.
    - The proposed medium-density residential zoning (RML) would allow for a worst-case development of 207 townhomes.
3. The existing zoning scenarios could generate a greater number of trips when compared to the proposed zoning during each peak hour and over an average weekday.
4. Based on this comparison of reasonable worst case trip generation, the existing and planned transportation system can accommodate the proposed zone change and the TPR criteria are satisfied. Therefore, no long-term analysis of traffic operations in the study area is warranted

Project Description

Introduction

The Norwood Development project proposes a zone change for approximately 8.3 acres of Tax Lot 2S135D 00106, which is currently zone Institutional (IN) and is proposed for rezoning to Medium Low Density Residential (RML). This memorandum details the trip generation associated with the current and proposed zoning and evaluates the criteria of the Oregon Transportation Planning Rule. Detailed information on trip generation calculations and included as attachments to this report.

Location Description

The project site (Tax Lot 2S135D 000106) encompasses approximately 8.3 acres and is located east SW Boones Ferry Road, and south of SW Norwood Road. It is currently developed with a single-family home, and a parking lot with approximately 212 striped spaces serving the Horizon Community Church. The existing zoning designation is Institutional (IN) and is proposed to be rezoned to Medium Low Density Residential (RML). The site is surrounded by institutional uses to the east, south and west, and residential uses to the north. Figure 1 presents an aerial image of the nearby vicinity with the project site outlined in yellow.

Figure 1: Project Location (City of Tualatin Interactive Zoning Map)

Trip Generation

The Transportation Planning Rule (TPR) is in place to ensure that the transportation system can support possible increases in traffic intensity that could result from changes to adopted plans and land-use regulations. The TPR requires an analysis of a reasonable worst-case development scenario of the site under existing and proposed zoning.

The project site currently has IN zoning while the proposed zoning is RML. Reasonable worst-case development scenarios under the existing and proposed zoning are described below.

Existing Zoning Assumptions

The Tualatin Development Code (TDC) describes allowed uses under the IN zoning in Chapter 49. In considering development scenarios for the TPR analysis, only permitted uses in the zone were considered.

For Lot 106 with IN zoning, allowed uses include assembly facilities (limited to places of religious worship), community services (limited to public facilities such as community recreation buildings or indoor aquatic centers), schools, and government offices. Allowed infrastructure uses include government-owned parks, sports fields, and tennis courts. The adjacent site to the west already includes a church and the remainder of the parcel will include a sanctuary/place of assembly; therefore, another church was not considered a reasonable option. Neither was a government office as research of potential uses shows these buildings tend to have smaller sites that are more centrally located within a community. Therefore, two options were selected as part of the reasonable worst-case analysis:

- School
- Community recreation center with adjacent public park facilities

The TDC does not describe density requirements for either of these uses.

Potential School

The TDC does not describe density requirements for the school. A review of public schools in the Sherwood and Tigard-Tualatin School Districts shows that 8.3 acres is likely too small for a public school; however, the site could be developed with a private school. To estimate school size, the density of approximately 31 students per acre from the site's original annexation analysis was used. Based on this rate, a school accommodating approximately 260 students could be developed. Since the rest of lot 106 contains the Horizon Christian School, which is a private high school, the 8.3-acre portion considered in this analysis was assumed to be a kindergarten through 8th Grade (K-8) private school.

Potential Community Center

To provide a reasonable estimate of building size and facilities, a survey of other sites was conducted for a community recreation center. Three sites on the west side of the Portland metropolitan area were considered because the size of both the buildings and the lots could be determined:

1. The Southwest Community Center is part of Portland Parks and Recreation. The building is listed at 47,014 square feet (SF) on approximately 4.5 acres. The site is part of Gabriel Park, which has outdoor

facilities, including tennis courts, a skate park, an off-leash dog park, sports fields, picnic sites, and walking trails.

2. The Conestoga Recreation and Aquatic Center is part of Tualatin Hills Parks and Recreation District (THPRD). The building is listed at 56,043 SF on approximately 4.9 acres. The site abuts Southridge High School in Beaverton.

3. The Cedar Hills Recreation Center is also part of THPRD. The building is estimated at 38,330 SF on approximately 3.88 acres. The site includes a baseball field adjacent to the building. Additional fields and tennis courts are located across the street. The site is located in Beaverton.

While both the buildings and the lots where the buildings are located are relatively close in size, the abutting facilities vary significantly. Therefore, the building size was used as the basis for estimating a reasonable size for a community recreation center on the subject site. The average size of the three buildings is 47,130 SF; therefore, a recreation center totaling 50,000 square feet was assumed as a reasonable worst case.

Even with a community center occupying 4 to 5 acres of the 8.3-acre parcel, the site is large enough to include park land that could accommodate other public facilities such as a playground, as well as tennis courts and/or sports (soccer/lacrosse/baseball) fields. For this analysis, the park was assumed to include one (1) sports field and four (4) tennis courts. Although both Tualatin High School and the Horizon School include nearby full-size football/sports fields, a sports field accommodating youth programs (weekday practices and weekend games) would be a reasonable use. Tualatin High School also has tennis courts but additional tennis courts, or possibly pickleball courts, would also serve the community. Any other facilities, such as picnic tables or a play structure, incorporated into the park are assumed to serve the adjacent neighborhood and to be very low vehicle trip generators.

Proposed Zoning Assumptions

The Tualatin Development Code (TDC) describes allowed uses under RML zoning in Chapter 41. For the proposed RML zoning, residential development is the only permitted use that will generate significant traffic. TDC Table 41-3 describes the permitted densities for different types of residential development. As a worst-case scenario evaluation, the entire site is considered to be developable without regard to trees or other natural features that may be desirable to preserve with an actual development proposal.

Two scenarios were selected for consideration under a reasonable worst-case analysis:

- Single-Family Dwellings at 10 units/acre – Assuming maximum density can be achieved, the site could accommodate 83 single-family homes.
- Townhouses at 25 units/acre – Assuming maximum density can be achieved, the site could accommodate 207 townhomes.

Trip Generation Comparison

To estimate trips that will be generated by the redevelopment, trip rates from the *Trip Generation Manual* [1] were used based on the number of dwelling units (DU) and number of students. The land use assumptions and trip generation estimates are summarized in Table 1.

Table 1: Trip Generation – Reasonable Worst Case Scenarios

Land Use (Code)	Intensity	Morning Peak Hour			Evening Peak Hour			Weekday Trips
		In	Out	Total	In	Out	Total	
Existing Zoning Options								
Private School: K-8 (530)	260 Students	147	116	263	31	37	68	1,068
Recreational Community Center (495)	50,000 SF	63	33	96	59	66	125	1,442
Park - Soccer Field (488)	1 Field	1	0	1	11	5	16	72
Park - Tennis Courts (490)	4 Courts	NA	NA	NA	9	8	17	122
Subtotal Community Center + Park		64	33	97	79	79	158	1,636
Proposed Zoning Options								
Single-Family Detached Housing (210)	83 DU	16	47	63	52	31	83	850
Single-Family Attached Housing (210)	207 DU	32	70	102	68	52	120	1,516
Net Trip Difference								
Single-Family Attached Housing – Private K-8 School		-115	-46	-161	37	15	52	448
Single-Family Attached Housing – Community Center + Park		-32	37	5	-11	-27	-38	-120

Two combined worst-case scenarios are highlighted under the existing zoning. One assumes a 260-student private school (kindergarten through 8th grade). The other assumes a 50,000-SF recreation center with one (1) sports field and four (4) tennis courts in an adjacent park.

The townhome scenario will generate more trips than the single-family home scenario; therefore, this option was used as the basis of the proposed zoning trip generation analysis.

[1] Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 11th Edition, 2021.

Morning Peak Hour

During the morning peak hour, development of the site with a school under the existing zoning would generate more trips than any other zoning scenario, existing or proposed. Under the proposed zoning, the single-family attached housing could generate 161 fewer morning peak hour trips than existing zoning.

Since the existing zoning has a reasonable potential to generate more trips than the proposed zoning, rezoning will not adversely affect the transportation system.

Evening Peak Hour

During the evening peak hour, development of the site with a community center and park under the existing zoning would generate more trips than any other zoning scenario, existing or proposed. Under the proposed zoning, the single-family attached housing could generate 38 fewer evening peak hour trips than existing zoning.

Since the existing zoning has a reasonable potential to generate more trips than the proposed zoning, rezoning will not adversely affect the transportation system.

Daily Trip Generation

Similar to the evening peak hour, development of the site with a community center and park under the existing zoning would generate more trips than any other zoning scenario, existing or proposed. Under the proposed zoning, the single-family attached housing could generate 120 fewer weekday trips than existing zoning.

Since the existing zoning has a reasonable potential to generate more trips than the proposed zoning, rezoning will not adversely affect the transportation system.

Transportation Planning Rule Findings

The applicable elements of the TPR are each quoted directly in italics below, with responses following.

660-012-0060

(1) If an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation (including a zoning map) would significantly affect an existing or planned transportation facility, then the local government must put in place measures as provided in section (2) of this rule, unless the amendment is allowed under section (3), (9) or (10) of this rule. A plan or land use regulation amendment significantly affects a transportation facility if it would:

(a) Change the functional classification of an existing or planned transportation facility (exclusive of correction of map errors in an adopted plan);

Response: Subsection (a) is not triggered because the functional classification of an existing or planned transportation facility is not changed by the proposal.

(b) Change standards implementing a functional classification system; or

Response: Subsection (b) is not triggered because the standards for implementing a functional classification system are not changed by the proposal.

(c) Result in any of the effects listed in paragraphs (A) through (C) of this subsection. If a local government is evaluating a performance standard based on projected levels of motor vehicle traffic, then the results must be based on projected conditions measured at the end of the planning period identified in the adopted TSP. As part of evaluating projected conditions, the amount of traffic projected to be generated within the area of the amendment may be reduced if the amendment includes an enforceable, ongoing requirement that would demonstrably limit traffic generation, including, but not limited to, transportation demand management. This reduction may diminish or completely eliminate the significant effect of the amendment.

(A) Types or levels of travel or access that are inconsistent with the functional classification of an existing or planned transportation facility;

(B) Degrade the performance of an existing or planned transportation facility such that it would not meet the performance standards identified in the TSP or comprehensive plan; or

(C) Degrade the performance of an existing or planned transportation facility that is otherwise projected to not meet the performance standards identified in the TSP or comprehensive plan.

Response: Subsection (c) would not be triggered since reasonable worst-case development for the proposed zone change is estimated to generate fewer peak hour and daily trips than reasonable worst-case development options under the existing zoning. The level of travel and access will continue to be consistent with the functional classifications of the transportation system. Since potential peak hour volumes are lower with the proposed zoning, the change will not degrade the performance below what was anticipated under existing zoning.

Conclusion

Based on this comparison of reasonable worst case trip generation, the existing and planned transportation system can accommodate the proposed zone change and the TPR criteria are satisfied. Therefore, no long-term analysis of traffic operations in the study area is warranted.

Conclusions

Key findings of this study include:

- To understand the potential impacts of the requested zone change, the reasonable worst-case land uses under existing and proposed zoning were compared.
    - Under the existing institutional (IN) zoning, two scenario were considered for the 8.3-acre site. One option was a 260-student private school. The other option was a 50,000-SF Community Center with a park that includes a sports field and tennis courts.
    - The proposed medium-density residential zoning (RML) would allow for a worst-case development of 207 townhomes.
- The existing zoning scenarios could generate a greater number of trips when compared to the proposed zoning during each peak hour and over an average weekday.
- Based on this comparison of reasonable worst case trip generation, the existing and planned transportation system can accommodate the proposed zone change and the TPR criteria are satisfied. Therefore, no long-term analysis of traffic operations in the study area is warranted.

Appendix

- Trip Generation Calculations

TRIP GENERATION CALCULATIONS
Source: Trip Generation Manual, 11th Edition

Land Use:	Private School (K-8)
Land Use Code:	530
Land Use Subcategory:	All Sites
Setting/Location	General Urban/Suburban
Variable:	Students
Trip Type:	Vehicle
Formula Type:	Rate
Variable Quantity:	260

AM PEAK HOUR

Trip Rate: 1.01

	Enter	Exit	Total
Directional Split	56%	44%	
Trip Ends	147	116	263

PM PEAK HOUR

Trip Rate: 0.26

	Enter	Exit	Total
Directional Split	46%	54%	
Trip Ends	31	37	68

WEEKDAY

Trip Rate: 4.11

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	534	534	1,068

Caution: Small Sample Size

SATURDAY

Trip Rate: 0

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	NA	NA	NA

TRIP GENERATION CALCULATIONS
Source: Trip Generation Manual, 11th Edition

Land Use:	Soccer Complex
Land Use Code:	488
Land Use Subcategory:	All Sites
Setting/Location	General Urban/Suburban
Variable:	Fields
Trip Type:	Vehicle
Formula Type:	Rate
Variable Quantity:	1

WARNING: Variable Quantity is less than Minimum Survey Size for Peak Hours

AM PEAK HOUR

Trip Rate: 0.99

	Enter	Exit	Total
Directional Split	61%	39%	
Trip Ends	1	0	1

PM PEAK HOUR

Trip Rate: 16.43

	Enter	Exit	Total
Directional Split	66%	34%	
Trip Ends	11	5	16

WEEKDAY

Trip Rate: 71.33

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	36	36	72

SATURDAY

Trip Rate: 404.88

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	202	202	404

Caution: Small Sample Size

TRIP GENERATION CALCULATIONS
Source: Trip Generation Manual, 11th Edition

Land Use:	Tennis Courts
Land Use Code:	490
Land Use Subcategory:	All Sites
Setting/Location	General Urban/Suburban
Variable:	Tennis Courts
Trip Type:	Vehicle
Formula Type:	Rate
Variable Quantity:	4

AM PEAK HOUR

Trip Rate: 0

	Enter	Exit	Total
Directional Split	0%	0%	
Trip Ends	NA	NA	NA

PM PEAK HOUR

Trip Rate: 4.21

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	9	8	17

Caution: Small Sample Size

WEEKDAY

Trip Rate: 30.32

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	61	61	122

Caution: Small Sample Size

SATURDAY

Trip Rate: 0

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	NA	NA	NA

TRIP GENERATION CALCULATIONS
Source: Trip Generation Manual, 11th Edition

Land Use:	Recreational Community Center
Land Use Code:	495
Land Use Subcategory:	All Sites
Setting/Location	General Urban/Suburban
Variable:	1000 SF GFA
Trip Type:	Vehicle
Formula Type:	Rate
Variable Quantity:	50

AM PEAK HOUR

Trip Rate: 1.91

	Enter	Exit	Total
Directional Split	66%	34%	
Trip Ends	63	33	96

PM PEAK HOUR

Trip Rate: 2.5

	Enter	Exit	Total
Directional Split	47%	53%	
Trip Ends	59	66	125

WEEKDAY

Trip Rate: 28.82

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	721	721	1,442

SATURDAY

Trip Rate: 9.1

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	228	228	456

Caution: Small Sample Size

TPR Analysis - Proposed RML Zoning Lot 106

TRIP GENERATION CALCULATIONS
Source: Trip Generation Manual, 11th Edition

Land Use:	Single-Family Detached Housing
Land Use Code:	210
Land Use Subcategory:	All Sites
Setting/Location	General Urban/Suburban
Variable:	Dwelling Units
Trip Type:	Vehicle
Formula Type:	Equation
Variable Quantity:	83

AM PEAK HOUR

Trip Rate: =EXP(0.91*LN($X2)+0.12)

	Enter	Exit	Total
Directional Split	26%	74%	
Trip Ends	16	47	63

PM PEAK HOUR

Trip Rate: =EXP(0.94*LN($X2)+0.27)

	Enter	Exit	Total
Directional Split	63%	37%	
Trip Ends	52	31	83

WEEKDAY

Trip Rate: =EXP(0.92*LN($X2)+2.68)

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	425	425	850

SATURDAY

Trip Rate: =EXP(0.97*LN($X2)+2.4)

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	401	401	802

TPR Analysis - Proposed RML Zoning Lot 106

TRIP GENERATION CALCULATIONS
Source: Trip Generation Manual, 11th Edition

Land Use:	Single-Family Attached Housing
Land Use Code:	215
Land Use Subcategory:	All Sites
Setting/Location	General Urban/Suburban
Variable:	Dwelling Units
Trip Type:	Vehicle
Formula Type:	Equation
Variable Quantity:	207

AM PEAK HOUR

Trip Rate: =0.52*($X3)-5.7

	Enter	Exit	Total
Directional Split	31%	69%	
Trip Ends	32	70	102

PM PEAK HOUR

Trip Rate: =0.6*($X3)-3.93

	Enter	Exit	Total
Directional Split	57%	43%	
Trip Ends	68	52	120

WEEKDAY

Trip Rate: =7.62*($X3)-60.48

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	758	758	1,516

SATURDAY

Trip Rate: =13.21*($X3)-444.34

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	1,145	1,145	2,290