IV. EXISTING DEFICIENCIES AND ESTIMATE FUTURE TRANSPORTION NEEDS

The purpose of this chapter present our estimate future 2020 traffic volumes through the City of Wheeler and our evaluation of the adequacy of the existing roadway network to accommodate these volumes.

ESTIMATED YEARLY 30TH HIGHEST HOUR VOLUME

The first step in this process is to estimate the yearly 30th highest hour volume, which is used by ODOT for evaluating the capacity of roadway system. Experience has found that this level of traffic is a reasonable criteria for evaluating traffic conditions. The main source of seasonal data in the area is a permanent 24-hour traffic recording station that ODOT maintains along Hwy. 101 just south of Rockaway Beach (ATR Rockaway, 29-0001). Data from this station as published in ODOT's *1999 Transportation Volume Tables* is attached. The average daily traffic along this section during 1999 was 6,592 vehicles per day (VPD). This varied from 9,415 VPD in August to 4,348 VPD in December. The yearly 30th highest volume was estimated to be approximately 1,035 VPD (6592 x 15.7 percent). **Figure IV-1** present the results of the summer time traffic counts taken in Wheeler during August 2000 at Gregory Street and Hwy. 101 that were presented in our existing conditions/inventory analysis. These counts were taken during mid-day on a Saturday and would equate to about 775 vehicles per hour. While these may be a bit low compared to ODOT's counts, some of the differences can be attributed to people stopping at Rockaway Beach and day-to-day variation. The weekend that the counts were taken had good weather. It is recommended that these volumes simply be used as the estimate of the 30th highest hour. Based on this, the count has been expanded to other intersections throughout the city. Turn volumes at other minor streets were based on December 2000 counts and our knowledge of the city and its land uses. These estimated traffic volumes are also presented on **Figure IV-1**. The only exception was at the intersection of Paradise Cove and Hwy. 101. Paradise Cove is a private roadway that serves an RV park and recreation area, both east and west of Hwy. 101. Traffic volumes at this intersection were estimated based on using standard ITE trip generation rates for RV parks for areas of the RV Park on both sides of the highway.

Intersection capacity analysis was performed for these intersections based on their estimated 30th highest hourly volume and the results are presented in **Table IV-1**. The 1999 Oregon Highway Plan (OHP) uses volume to capacity ratios (V/C) to evaluate mobility deficiencies and needs. V/C is the ratio of peak hour traffic volume to maximum hourly volume of vehicles that a roadway section can accommodate. In other words, v/c measures the percentage of the capacity of the roadway section that is utilized during the peak hour. Through Wheeler, Highway 101 is classified as a Statewide Highway under the 1999 State Classification System (1999 SCS). The OHP states that the maximum acceptable v/c ratio for Statewide Highway outside the Portland Metro and not identified as a STA is 0.80. It should be noted that all the intersections through Wheeler operate as stop control on the minor street approach.

Using ODOT's Mobility criteria, traffic conditions at key intersections along Hwy. 101 were analyzed during the critical PM peak hours based on the volumes shown in **Figure IV-1**. Intersection operational analyses were conducted using the procedures in the 1997 Highway Capacity Manual (HCM) for evaluating unsignalized intersections, which also describe the traffic operations of an intersection in terms of its Level of Service (LOS). The LOS criteria range from "A", which indicates little, if any, delay, to "F", which indicates that vehicles experience long delays. **Table IV-1** presents the results of the intersection capacity analyses and indicates that these intersections operate at LOS C or better during the Saturday/30th highest peak periods, with 0.22 V/C ratios or lower. Even so, observations during the summer revealed that congestion does occur through downtown Wheeler as drivers slow down to look at the area, search for parking spaces, and/or slow for pedestrians. The standard intersection capacity models do not capture these factors well. Traffic simulation models may come closer to what we observed, but they could not replicate the impact of slow tourist drivers. These factors were of less an impact during our off-peak traffic operations because of readily available parking and reduced pedestrian volumes.

Table IV-1: Levels of Service for Current Yearly 30th Highest Hour Volumes

Intersection	Saturday Peak Hour			
	Total Hourly Volume	Avg Vehicle Delay (Sec/Veh)	V/C Ratio	LOS
Highway 101/Paradise Cove Critical Leg: EB Approach	1,007	10.0	0.05	C
Highway 101/1st Street Critical Leg: WB Approach	886	13.2	0.06	B
Highway 101/Gregory St/Rorvik St Critical Leg: WB Approach	892	13.5	0.09	B
Highway 101/Rector Street Critical Leg: EB Approach	1,010	22.3	0.22	C
Highway 101/Spruce Street Critical Leg: WB Approach	952	14.4	0.03	B
Highway 101/Hemlock Street Critical Leg: WB Approach	973	16.0	0.04	C
Highway 101/Old Wheeler Road Critical Leg: WB Approach	959	14.3	0.01	B

GROWTH IN TRAFFIC ALONG HIGHWAY 101

The primary route through Wheeler is Oregon Highway 101. **Table IV-2** presents trend data from the historical volumes collected at the Rockaway automatic 24-hour traffic recorders that provide seasonal, as well as historic traffic data. From the ODOT data in **Table IV-2**, traffic volumes along Hwy. 101 appear to increase only slightly over the last decade. The 30th highest traffic volumes have been calculated by multiplying the ADT by the percentage provided in the ODOT data and are summarized in **Table IV-2** below. Overall, this analysis found the 30th highest volumes along Hwy. 101 have not increased substantially over the last decade. The average annual growth in traffic volumes was overall only 1-2 percent per year. Based on this and the local developments discussed later, it is recommended that a growth rate of 1.5 to 2 percent per year. This equates to a growth of 30 percent to 40 percent over the next 20 years.

Table IV-2: Historic Data ADT and 30th Highest Hour Volumes along Hwy. 101 from ODOT Rockaway Automatic Recording Stations (2.2 miles south of Rockaway)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Average Yearly Growth
Average Daily Volume	5473	5845	6068	6068	6215	6092	6036	6624	6569	6592	2.2%+
Yearly Growth		*1.7%*	*3.7%*		*2.4%*	*-2.0%*	*-0.9%*	*8.9%*	*-0.8%*	*0.3%*	***1.5%***
30th Highest Volume	1039	976	995	947	1001	1036	1044	1080	1064	1035	1%+
Yearly Growth		-6.5%	1.9%	*-5.1%*	*5.4%*	*3.4%*	*0.8%*	*3.3%*	*-1.5%*	*-2.8%*	***-0.31%***

+ Percent growth based on 1999 volumes compared to 1990/1991 volumes

GROWTH IN LOCAL TRAFFIC DUE TO RESIDENTIAL DEVELOPMENT

The state's economic forecasts for Wheeler report that its existing population is about 375 persons and will increase to 459 persons by 2020. This is an increase of only 84 people, which equates to about 34 residential units (based on 2.5 persons per household). However, the AC and city staff has indicated that these estimates do not account for the summer tourist residents and interest from developers to construct new projects in the city. Based on this, meetings were held with city staff to review past development activity and sites that would likely be built out over the next 20 years. The biggest factor would be the redevelopment of the downtown retail area.

The second largest factor would be the redevelopment of the Scoval site on the west side of Highway 101 on the north side of Wheeler. This site has limited development potential because of the site's zoning and location along the Nehalem River. City staff indicated that this site could support a small hotel (50 rooms) and a park/recreation area with about 100 parking spaces. Traffic associated with the hotel was estimated using the standard ITE trip generation rates. For the recreation area, it was assumed that about half the parking spaces would turn over during a one-hour period. Thus, it would have 50 trips in and 50 trips out during a peak hour. Access to both these developments would be along the west side of Hwy. 101 via Hemlock. In addition, city staff identified 4 areas that would likely develop with subdivisions. Figure 2 shows their location and **Table IV-3** presents the trip generation from standard ITE trip generation rates. Figure 2 also shows the directional distribution for assigning these trips onto the roadway network.

Table IV-3: Estimate of Saturday Trip Generation for Planned Developments

Name/Access	Units/ Homes	Daily Trips	Peak Hour Generator		
			Total	In	Out
Scoval Site					
Hotel ITE Code 310	50 Rooms	410	36	20	16
Recreational Area	100 Spaces	Unknow n	100	50	50
Residential Developments					
20 Lots along Old Wheeler Road	20 Homes	202	20	11	9
12 Lots along 4th Street	12 Homes	121	12	6	6
48 Lots along 3rd Street	48 Homes	484	48	26	22
16 Lots along Pennsylvania Street	16 Homes	161	16	9	7
Total All Residential	246	1,378	232	122	110

FUTURE 2020 TRAFFIC VOLUMES AND TRAFFIC OPERATIONS

To estimate future 2020 traffic volumes a ***Traffix*** roadway network model of Wheeler was developed. This model is shown on **Figure IV-3**. Each of the proposed developments is a specific zone on this network. With this model a wide range of assumptions for future traffic patterns or land developments can be evaluated. Assigning traffic from these developments and using a 40 percent growth factor would result in an increase of about 250 vehicles in each direction along Hwy. 101 at Gregory Street, from about 375 vehicles per hour to about 625 vehicles per hour. **Figure IV-4** presents the total projected future 2020 volumes. Intersection capacity analyses was performed for these future volumes and the results are presented in **Table IV-5 and IV-6**. All intersections appear to still have acceptable V/C ratios as shown in **Table IV-4**. However, vehicle delays at Rector Street were estimated to be high. As discussed in the assessment of existing conditions, a major shortcoming of this analysis is that it does not fully account for tourists stopping/slowing their vehicles as they travel along Hwy. 101 looking at stores and searching for parking in Wheeler. The major constraint for growth in activities and vehicles stopping in will be providing parking for additional vehicles that would come to Wheeler**.** Several plans have been developed for Wheeler that examined redevelopment of the downtown core, in particular to provide more parking. The TSP recommended concept for improving parking along Hwy. 101 and at the key intersection of Hwy. 101/Rorvik/Gregory is shown on the attached sketches presented in **Figures IV-5 and IV-6.**

Table IV-4: Levels of Service for Future (2020) Yearly 30th Highest Hour Volumes

Intersection	Saturday Peak Hour			
	Total Hourly Volume	Avg Vehicle Delay (Sec/Veh)	V/C Ratio	LOS
Highway 101/Paradise Cove Critical Leg: SB Approach	1,360	19.4	0.08	C
Highway 101/1st Street Critical Leg: NB Approach	1,315	21.6	0.21	C
Highway 101/Gregory St/Rorvik St Critical Leg: NB Approach	1,278	21.1	0.21	C
Highway 101/Rector Street Critical Leg: SB Approach (existing lane config.)	1,405	91.2	0.71	F
Highway 101/Rector Street Critical Leg: SB Approach (TWLT lane config.)	1,405	27.1	0.35	D
Highway 101/Spruce Street Critical Leg: NB Approach	1,313	20.6	0.08	C
Highway 101/Hemlock Street Critical Leg: SB Approach	1,349	42.1	0.34	E
Highway 101/Old Wheeler Road Critical Leg: NB Approach	1,358	23.0	0.05	C

Another capacity and safety issue at these intersections are conflicts caused by those vehicles slowing to turn onto the minor street. Providing dedicated left and right turn lanes increases capacity and safety by separating the speed differential between the through and turning vehicles. Additionally, left turn lanes provide the turning vehicles with a safe waiting area until an acceptable gap in the opposing traffic becomes available. Using methods and criteria adopted by ODOT, key intersections have been evaluated for both left and right turn lane warrants. **Tables IV-5 and IV-6** summarize results of these turn lane warrant analyses for the intersections along Hwy 101. The results in **Table IV-5** indicate that most intersections technically meet warrants for providing left turn lanes, but the actual left turn volumes are not excessive. The only location that has a relatively high number of left turns is at the two main intersections through the downtown core. However, providing a left turn lane would remove a significant amount of on-street parking from Hwy 101 and speed up traffic along Hwy 101. The public and city staff placed a high priority on maintaining (and increasing) parking through this core area and keeping traffic speeds low. These concepts are illustrated in the conceptual plan for this area presented in **Figures IV-5 and IV-6.** Consequently, we do not recommend that left turn lanes be installed at these intersections. Finally, if any additional pavement is available, it should be used to provide a raised pedestrian median at these intersections to enhance safety.

Table IV-5: Results of Left Turn Warrant Analyses for Intersections along Hwy 101

Future 2020 30th Highest Peak Hour			ODOT Design Criteria	
Intersection	**Total Approach Volume**	**Left Turns**	**Left Turn Volume Criteria**	**Warrant Met?**
Highway 101/1st Street SB Approach	630	40	17	**Yes/NR***
Highway 101/Gregory St/Rorvik St WB Approach	611	50	18	**Yes/NR**
Highway 101/Rector Street Critical Leg: EB Approach	649	40	16	**Yes/NR**
Highway 101/Spruce Street WB Approach	648	11	16	**No**
Highway 101/Hemlock Street EB Approach	642	25	16	**Yes/NR**
Highway 101/Old Wheeler Road WB Approach	674	8	14	**No**

*NR= Not Recommended, see discussion in text.

The results of the right turn lane warrants in **Table IV-6** indicate that only one intersection, at Rector Street will have high right turn volumes. Even so, this level of traffic is not excessive for the slow traffic speeds through the downtown core and for the same reasons as above, no right turn lanes are recommended.

Table IV-6: Results of Right Turn Warrant Analysis for Intersections along Hwy 101

Future 2020 30th Highest Design Hour			ODOT Design Criteria	
Intersection	**Total Approach Volume**	**Right Turns**	**Right Turn Volume Criteria**	**Warrant Met?**
Highway 101/Paradise Cove Critical Leg: EB Approach	697	14	15	**No**
Highway 101/1st Street Critical Leg: EB Approach	589	24	35	**No**
Highway 101/Gregory St/Rorvik St Critical Leg: WB Approach	576	15	37	**No**
Highway 101/Rector Street Critical Leg: WB Approach	661	61	25	**Yes/NR***
Highway 101/Spruce Street Critical Leg: EB Approach	632	7	29	**No**
Highway 101/Hemlock Street Critical Leg: WB Approach	652	31	26	**Yes/NR**
Highway 101/Old Wheeler Road Critical Leg: EB Approach	662	5	25	**No**

*NR= Not Recommended, see discussion in text

(Figure 1)

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

SPECIAL TRANSPORTATION AREA (STA) EVALUATION

The primary objective of managing highway facilities in an STA, as stated in the 1999 Oregon Highway Plan (OHP), is to provide access to community activities, businesses, and residences and to accommodate pedestrian movement along and across the highway in a downtown, business district and/or community center. An STA is a highway segment designation that may be applied to a highway segment, when a downtown, business district or community center straddles the state highway within an urban growth boundary or unincorporated community. Direct street connections and shared on-street parking are encouraged in urban areas. Direct property access is limited. Local auto, pedestrian, bicycle and transit movements to the business district are generally as important as the through movement of traffic. Traffic speeds are slow, generally 25 mph or less.

The STA Evaluation Matrix demonstrates that downtown Wheeler along Highway 101 meets the STA criteria and therefore, is eligible for designation as a Special Transportation Area.

STA EVALUATION

STA STANDARDS/CHARACTERISTICS/CRITERIA	WHEELER STA CHARACTERISTICS/POTENTIAL	Status
STA STANDARDS		
STAs must be designated in a corridor plan and/or local TSP and agreed upon in writing by ODOT and the local government.	The TSP will recommend an STA designation for Wheeler. The TSP will recommend that a subsequent grant fund the development and implementation of an STA.	TSP Future
STAs apply to a highway segment.	Highway 101	Existing
Direct street connections and shared on-street parking are encouraged	Existing local streets connect to Hwy. 101 Shared on-street parking exists on Hwy. 101	Existing
Direct property access is limited.	Vehicular property access to properties on Hwy. 101 is primarily limited to side streets and from the back (off-highway) or property.	Existing
Purchase of access control may be of lesser importance and access to adjacent land use for all modes is a higher priority.	No additional vehicular access on Hwy. 101 within the STA is anticipated.	TSP
Redevelopment and in-fill development are encouraged.	Redevelopment and in-fill development is recommended in Wheeler's downtown report prepared by the Oregon Downtown Development Association	Existing and Future
Local auto, pedestrian, bicycle and transit movements to the area are generally given more importance than the through movement of traffic.	This is the reason an STA is needed in Wheeler. There is significant pedestrian, bicycle, transit, and parking in downtown Wheeler along Highway 101. These modes of transportation currently conflict with through traffic.	STA
STA CHARACTERISTICS		
A compact district located on a state highway within an urban growth boundary (UGB).	Downtown is a compact district located on Highway 101, primarily located between Hospital Street and north of Rector Street, and from the waterfront to approximately First Street.	Existing
Local access outweighs the consideration of highway mobility except on designated Freight Highways where accessibility and mobility needs are balanced.	Local accessibility and mobility on Highway 101 is essential to the community. Local access requires Hwy. 101 usage. Freight mobility and through traffic rely on Hwy. 101.	Existing

STA STANDARDS/CHARACTERISTICS/CRITERIA	WHEELER STA CHARACTERISTICS/POTENTIAL	Status
STAs include convenient movement of pedestrians, bicycles, transit, and automobiles.	The commercial establishments located on Hwy. 101 necessitate convenient and safe movement of pedestrians, bicycles, transit, and autos in downtown Wheeler for both local residents and visitors.	TSP and STA
STAs typically have an interconnected local street system to facilitate automobile and pedestrian circulation.	Local streets connect to Hwy. 101	Existing
Speed typically do not exceed 25 mph	Current Hwy. 101 speed limit through downtown Wheeler is 30 mph and connecting local street speed limit is 25 mph.	Existing and STA
People who arrive by car or transit find it convenient to walk from place to place within the area.	…if existing Hwy. 101 parking spaces are available. TSP will recommend improvements.	Existing and STA
OTHER STA ATTRIBUTES		
Mixed Uses	Primarily consists of commercial uses with some residential, industrial, and public uses.	Existing TSP
Buildings spaced close together and located adjacent to the street with little or no setbacks.	Existing on east side of Hwy. 101	Existing
Sidewalks with ample width which are located adjacent to the highway and the buildings	Existing, for the most part, on the east side of Hwy. 101 within the proposed STA.	Existing, TSP, and STA
Interconnected local street networks to facilitate local automobile and pedestrian circulation except where topography severely constrains the potential for street connections.	Right-of-way exists. Needs to be improved. Topographic challenges.	TSP Future Design
On street parking and shared or general purpose parking lots which are located behind or to the side of buildings.	Existing on-street parking and some general purpose parking behind buildings. Need additional parking.	Existing TSP
Convenient automobile and pedestrian circulation within the center and off the state highway.	Existing grid system in place however improvements needed	Existing TSP
STA MANAGEMENT PLAN		
Goals and Objectives	To be prepared in STA	STA
Clearly defined STA Boundaries	To be prepared in STA	STA
Design Standards	To be prepared in STA	STA
Strategies for addressing freight and through traffic	To be prepared in STA	STA
Parking strategies	To be prepared in STA	STA
Provisions for a network of local traffic, transit, pedestrian, and bicycle circulation	To be prepared in STA	STA
Analysis of regional/local traffic and safety impacts	To be prepared in STA	STA
Identify needed improvements, responsible party(s) for implementation, likely funding source, and time frame	To be prepared in STA	STA
Identify maintenance and operational strategies	To be prepared in STA	STA

In accordance with the Oregon Highway Plan (OHP) Implementation Handbook, planning for STAs must also address strategies for freight and through traffic and actions in other parts of the corridor to address overall

through traffic needs. A mechanism for addressing areas outside STAs is the OHP designated Urban Business Areas (UBAs) which address commercial uses in urban growth boundaries where automobile accessibility is important to continued economic activity. UBAs encourage clustering of development and offer opportunities outside of STAs to develop strategies for good traffic progression, automobile and pedestrian access and safety, bicycle lanes, sidewalks, pedestrian crossings and other pedestrian amenities.