



NE 107th St. Extension

Study Area

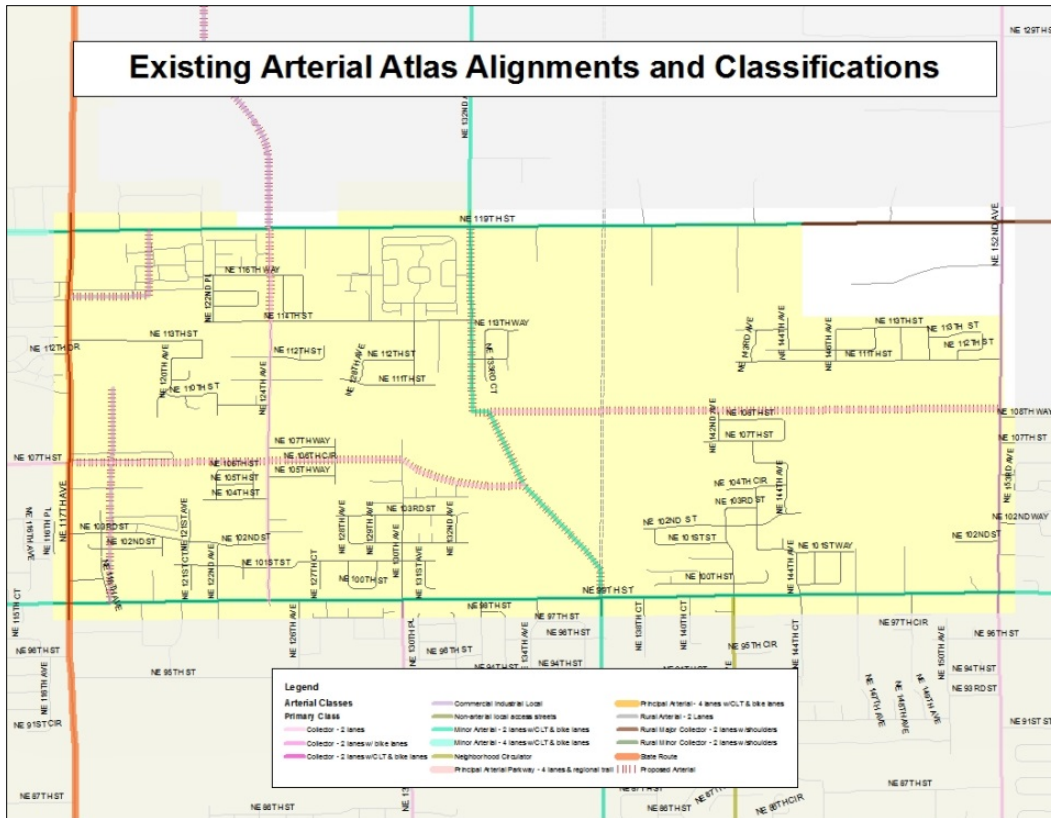
The study area is generally bounded by NE 119th Street on the north, NE 152nd Avenue on the east, NE 99th Street on the South and NE 117th Avenue (SR-503) on the west. The area includes six traffic signals, of which four are operated by Clark County and two are operated by the Washington Department of Transportation (WSDOT). These signals are located at the following intersections:

- Clark County
 - NE 152nd Avenue/Ne 119th Street
 - NE 137th Avenue/NE 99th Street
 - NE 130th Avenue/NE 99th Street
 - NE 124th Avenue/NE 99th Street
- WSDOT
 - NE 117th Avenue (SR-503)/NE 99th Street
 - NE 117th Avenue (SR-503)/NE 119th Street

WSDOT has a planned signalized intersection at NE 117th Avenue and NE 107th Street.

Background

In 2005, the Board of County Commissioners approved Ordinance 2005-12-23 to add several new streets and re-classify existing streets on the Arterial Atlas proposed as the SR-503 Circulation Plan. The circulation plan included several parallel “frontage” roads to allow ingress and egress to be concentrated at signalized intersections and to provide alternative route choices, from SR-503, for the developing neighborhood.



Roadway Characteristics

The key roadways within the study area are detailed in the following table. This table details each roadway’s jurisdiction, classification, number of lanes, sidewalks, bike lanes, speed and design capacity.

Street	Jurisdiction	Classification	Lanes	Sidewalks	Bike Lanes	Speed	Single Direction Capacity (Hour)
NE 99 th Street	Clark County	M2-cb	2	Yes	Yes	35	900
NE 119 th Street	Clark County	M2-cb	2	No	No	45	900
NE 152 nd Avenue	Clark County	C-2	2	Partial	No	35	800
NE 117 th Avenue (SR-503)	WSDOT	State Route	4	Yes	No	40	
NE 137 th Street / NE 132 nd Avenue	Clark County	M2-cb	2	Planned	Planned	40	900
NE 124 th Avenue	Clark County	C-2	2	No	No	30 ¹	800
NE 107 th Street / NE 111 th Street	Clark County	C-2	2	Planned	No	35	800
NE 118 th Avenue	Clark County	Commercial / Industrial		Planned	Planned	35	600-1,200

¹ Proposed

Pedestrian Facilities

Pedestrian facilities were inventoried for the study area. Sidewalks are provided on the majority of the urban streets within the study area. The most significant gap is on NE 124th Ave. NE 124th Ave. provides access to Dogwood Neighborhood Park. The lack of sidewalks on this street force pedestrians and bicycles to conflict with vehicles; discouraging residences use of the park. Additionally, Prairie High School is adjacent to the study area on the west side of NE 117th Ave. (SR-503), just south of NE 119th St. The State Route and lack of safe pedestrian crosswalks are impediments for students residing in the neighborhood on the east side of NE 117th Ave. (SR-503) who wish to walk to school.

Bicycle Facilities

Bikeways are distinguished as preferential roadways accommodating bicycle travel. Accommodation primarily takes the form of bicycle route designation (signage) and/or bicycle lane striping. While dedicated bicycle facilities are not required to accommodate bicycles, the existing traffic speeds and volumes on roads in Clark County often warrant additional separation. While some dedicated cyclists may feel comfortable riding on any street, the majority of people need bike lanes at a minimum to feel comfortable enough to consider bicycling as a viable mode of transportation. Existing bike lanes are present on NE 99th Street from NE 117th Avenue to NE 142nd Avenue.

Transit Facilities

The study area is served by 2 C-TRAN routes. Route 7 serves the area on NE 117th Avenue (SR-503) connecting the area to Battle Ground and the Vancouver Mall; with northbound stops at NE 100th Street, NE 107th Street, the 11600 Block, and southbound stops at the 11500 Block, NE 107th Street, and NE 99th Street. Route 72 serves the area on NE 99th Street connecting the area to the Vancouver Mall; with eastbound stops located at NE 118th, NE 122nd, NE 126th, NE 130th, NE 134th, NE 144th, and NE 149th Avenues.

Roadway Volumes

To determine intersection traffic operations, vehicle turn movement counts were conducted at study area intersections during the weekday evening peak period (4 to 6 PM). The raw traffic count data is included in the Appendix. Raw traffic count data were adjusted to reflect balanced volumes between nearby intersections. The adjusted peak period traffic volumes developed for the study intersections are shown in the following map..

Performance Measures

The Growth Management Act requires counties to adopt and enforce ordinances which prohibit development approval if the development causes transportation facilities to decline below the performance measures.

Jurisdictional Operating Standards

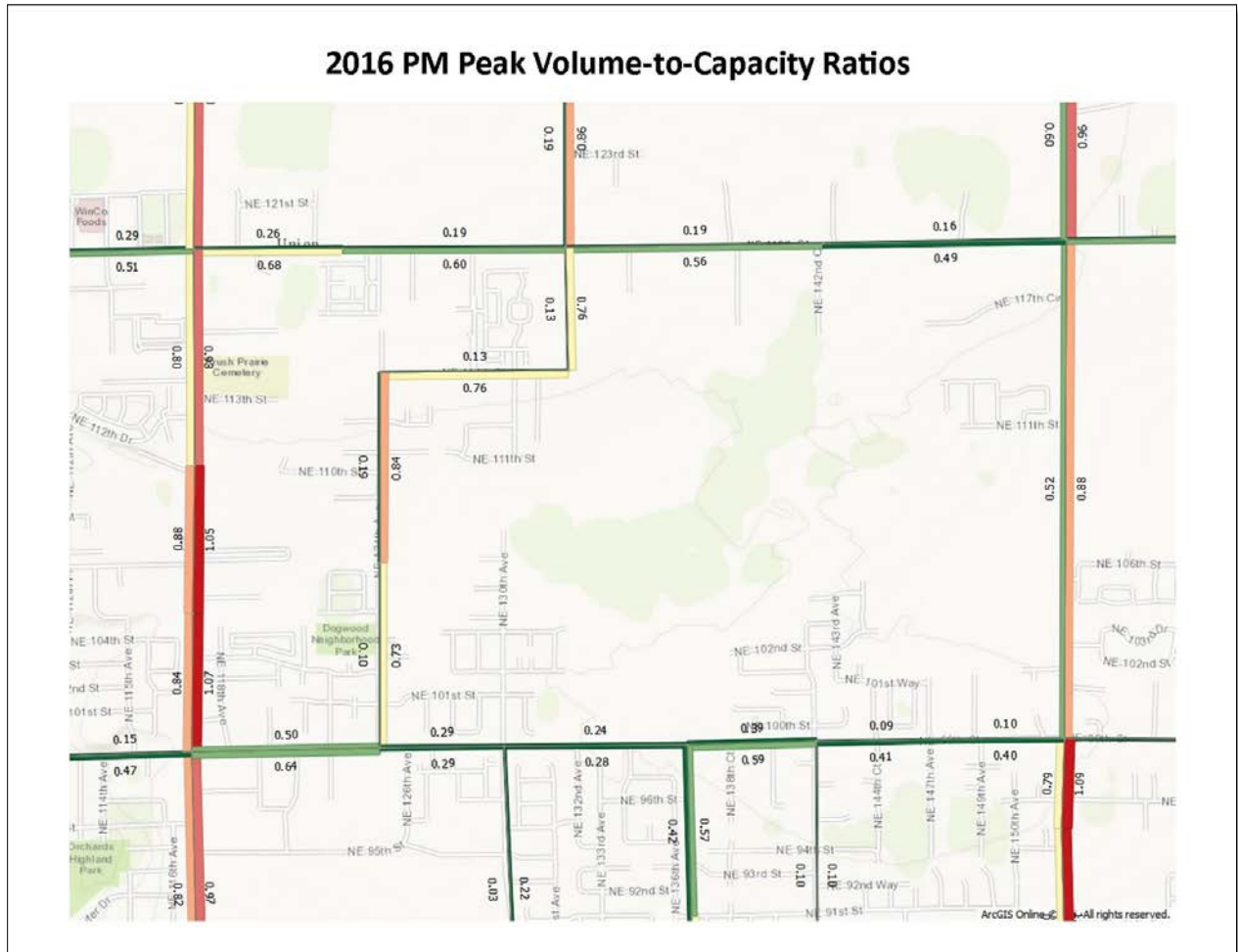
Clark County reviews applications for subdivisions, short subdivisions, conditional use permit approvals, and site plan reviews which have a potential vehicular impact on transportation segments and intersections. Clark County Code 40.350.020 established the standards for county owned transportation facilities. Level of service (LOS) and volume-to-capacity (V/C) ratios are two performance measures that provide a gauge of intersection operations. In addition, they are often incorporated into agency mobility standards. Descriptions are given below:

Level of service (LOS): A “report card” rating (A through F) based on the average delay experienced by vehicles at the intersection. LOS A, B, and C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. LOS D and E are progressively worse operating conditions. LOS F represents conditions where average vehicle delay has become excessive and demand has exceeded capacity. This condition is typically evident in long queues and delays.

Volume-to-capacity (V/C) ratio: A decimal representation (between 0.00 and 1.00) of the proportion of capacity that is being used (i.e., the saturation) at a turn movement, approach leg, or intersection. It is determined by dividing the peak hour traffic volume by the hourly capacity of a given street segment. A lower ratio indicates smooth operations and minimal delays. As the ratio approaches 1.00, congestion increases and performance is reduced. If the ratio is greater than 1.00, the approach leg is oversaturated and usually results in excessive queues and long delays. Clark County’s maximum volume to capacity ratio for each roadway segment shall not exceed 0.9.

Existing Motor Vehicle Operations

Utilizing the mobility standards described previously, the map below displays the existing roadway volume-to-capacity ratio.



Safety Analysis

The most recent five years (January 2009 – December 2013) of available crash data for the study area was obtained from the Clark County Sheriff and the Washington Department of Transportation (WSDOT) and used to evaluate the crash history. To identify potential deficiencies, crash types were analyzed to identify patterns or trends. Crashes at study intersections were summarized to identify existing problem areas.

Street	From	To	Number of Collisions	Type of Most Collisions
NE 99 th St.	NE 117 th Ave. (SR-503)	NE 124 th Ave.	13	Rear End and Angle Collisions
NE 99 th St.	NE 130 th Ave.	NE 137 th Ave.	10	Angle Collisions
NE 99 th St.	NE 137 th Ave.	NE 152 nd Ave.	7	Angle Collisions
NE 119 th St.	NE 117 th Ave. (SR-503)	NE 132 th Ave.	5	Angle Collisions
NE 119 th St.	NE 132 nd Ave.	NE 152 nd Ave.	23	Angle Collisions

Future Conditions

Capacity

Capacity is defined as the maximum number of vehicles, which can be accommodated under given conditions with a reasonable expectation of occurrence. Transportation capacity is measured by the volume of vehicles a street can accommodate in a single direction. For example, a curved road has lesser capacity compared to a straight road. Clark County assigns capacity for each roadway classification in terms of units of vehicles at the p.m. peak period. Typically this occurs between 5:00 and 6:00 p.m. on weekdays.

Concurrency and Traffic Forecasting

Concurrency is one of the goals of the Growth Management Act and refers to the timely provision of public facilities and services relative to the demand for them. To maintain concurrency means that adequate public facilities are in place to serve new development as it occurs or within a specified time period. The Growth Management Act (GMA) gives special attention to concurrency for transportation.

The GMA requires that transportation improvements or strategies to accommodate development impacts need to be made concurrently with land development. "Concurrent with the development" is defined by the GMA to mean that any needed "improvements or strategies are in place at the time of development, or that a financial commitment is in place to complete the improvements or strategies within six years." [RCW 36.70A.070\(6\)\(b\)](#). Local governments have flexibility regarding how to apply concurrency within their plans, regulations, and permit systems.

As part of the requirement to develop a comprehensive plan, jurisdictions are required to establish level-of-service standards (LOS) for arterials, transit service, and other facilities. [RCW 36.70A.070\(6\)\(a\)](#). Once a jurisdiction sets an LOS, it is used to determine whether the impacts of a proposed development can be met through existing capacity and/or to decide what level of additional facilities will be required. Transportation is the only area of concurrency that specifies denial of development if LOS standards cannot be met. However, local jurisdictions must have a program to correct existing deficiencies and bring existing transportation facilities and services up to locally adopted standards.

Clark County applies a volume-to-capacity ratio on its collectors and arterials to measure LOS and forecast where improvements should be made. The volume-to-capacity ratio measures the number of

vehicles in a street segment and divides the number of vehicles that could theoretically pass through when at capacity. If vehicles (v) divided by capacity (c) is less than one the facility has additional capacity. If (v)/(c) is greater than one it is likely that the peak hour will elongate into a peak period. In order to remain proactive in the County's road system investments forecasting future congestion is critical. The County's Comprehensive Plan land designations can be analyzed to assess the number of vehicle trips born from development. The following table details each land use designation in the neighborhood and applies the Institute of Transportation Engineer's Trip Generation Manual to forecast future vehicle trips. We utilized the most common land use in each Comprehensive Plan's land use destination to determine the associated trip generation.

Forecasted Neighborhood Trips						
Comp Plan Designation	Acreage	Infrastructure Deduction Percentage	Density	Yield	Trip Generation	Total Daily Trips
Industrial	155.8	25	9 ²	1052	3.02	3,176
Commercial	24.8	25	20 ²	372	42.94	15,974
Mixed Use	52.7					
Residential	80%	27.7	12 ³	366	9.52	3,484
Commercial	20%	25	20 ²	158	42.94	6,789
Urban Medium Residential	37.8	27.7	8 ⁴	219	9.52	2,081
Urban Low Residential	701	27.7	8 ⁴	4,055	9.52	38,600
Total	972.1					70,104
Total PM Peak Trips						7,010

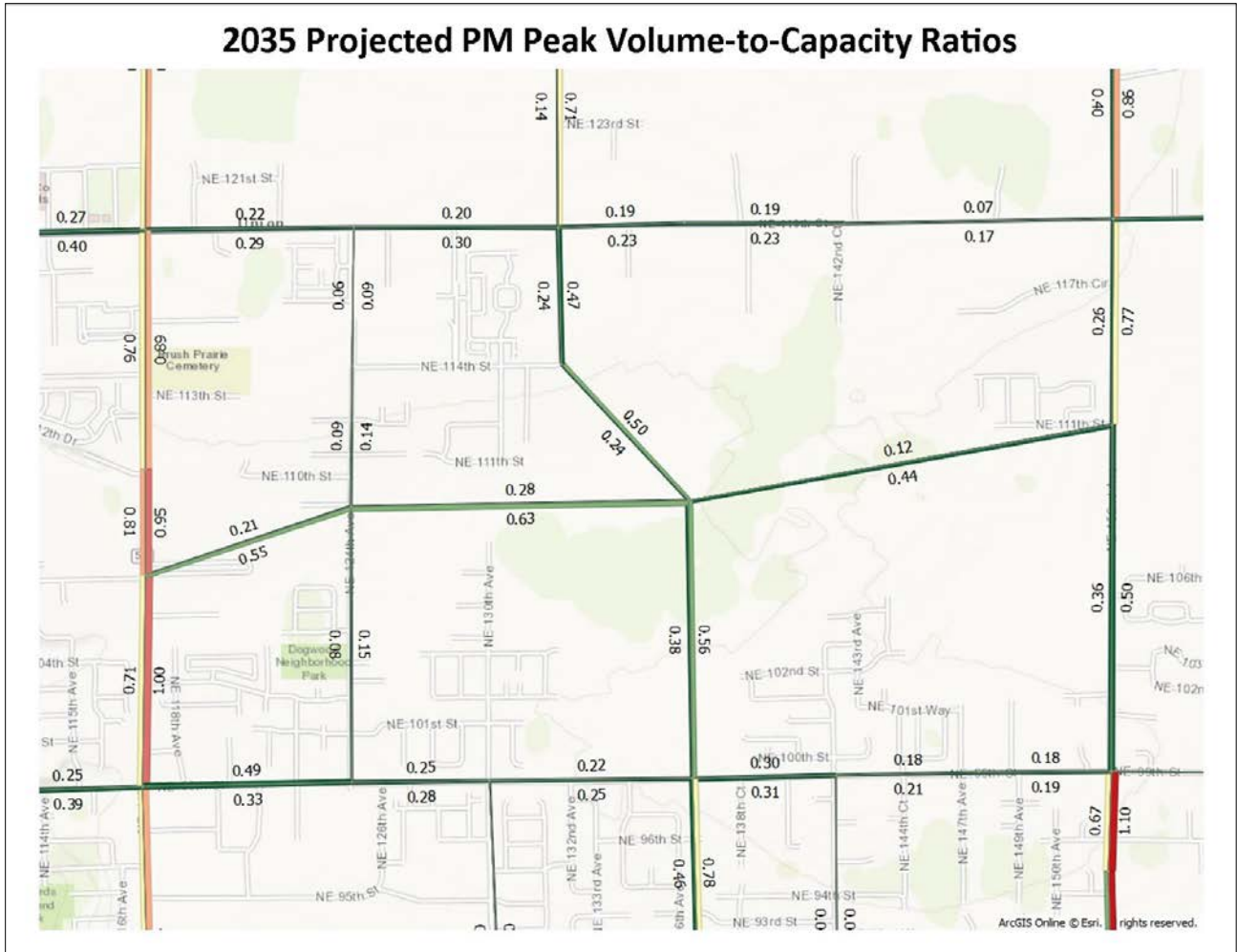
The Southwest Washington Regional Transportation Council (SWRTC) travel demand models were used for developing future traffic volumes. The models, as provided by SWRTC, generally contain regionally significant facilities, typically arterials and above, with some collector roadways.

The base (2010) and future (2035) travel demand models were used to develop future year 2035 traffic volumes. The future (2035) model includes regional improvements that can reasonably be expected to be funded by 2035. The future model did not include improvements in the study area, although improvements in other parts of the region affect travel behavior and route choice. The growth increment between the base (2010) and future (2035) years was calculated for volumes at each study intersection and factored to reflect 19 years of linear growth (2016 to 2035), since existing traffic counts were collected in 2014. This growth was added to the existing traffic volumes and post-processed to create a volume forecast.

² Employees per Acre

³ Units per Acre

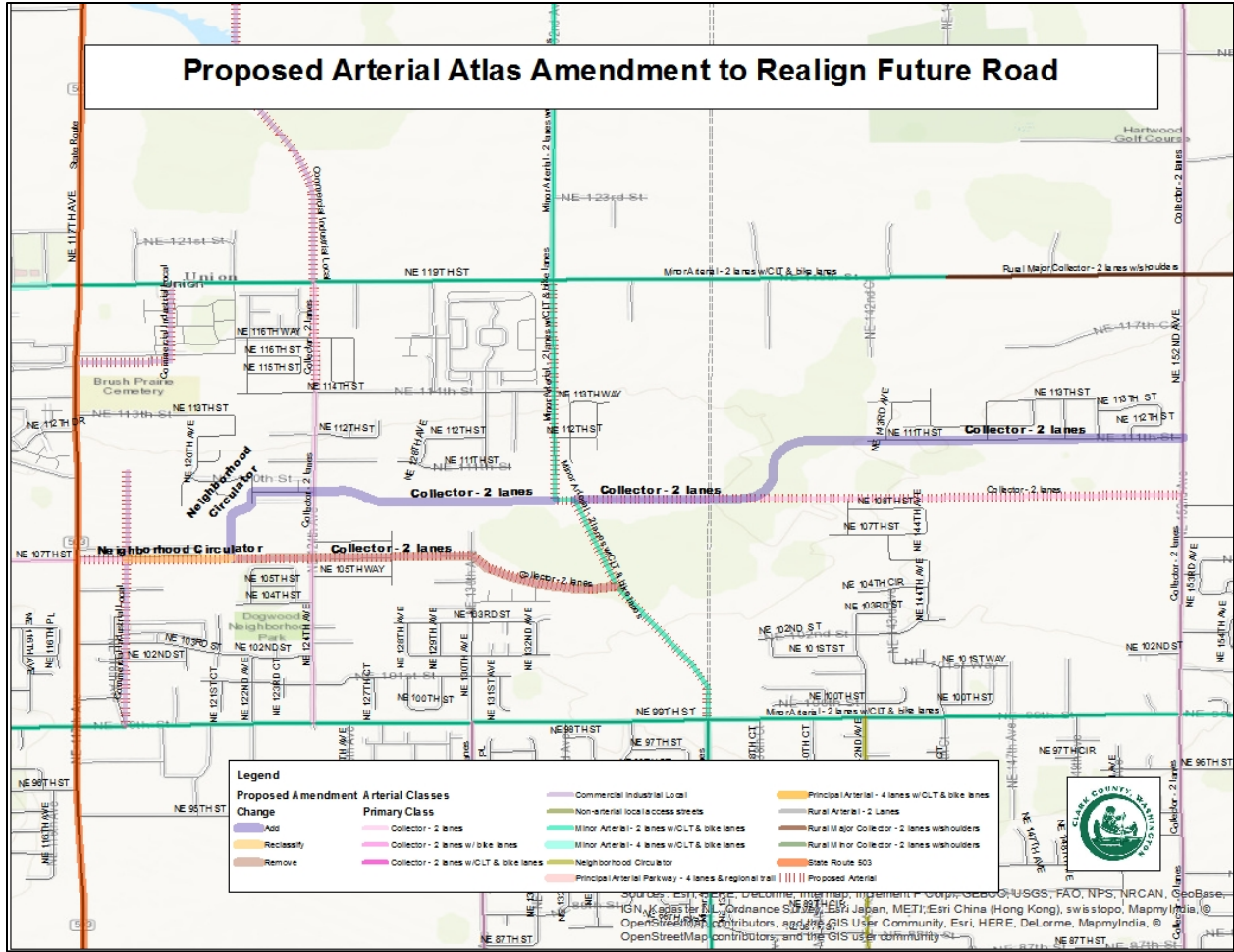
⁴ Units per Acre



Proposed Network

The proposed transportation network for the neighborhood distributes traffic evenly to the adjacent streets. The 2016 transportation network concentrates traffic at regionally significant intersections. The 2035 transportation network creates more intersections which allow traffic to disperse equally. The proposed network also continues the County’s street grid network, by extending NE 107th Avenue and NE 132nd Street, creating a predictable transportation system.

Proposed Arterial Atlas Amendment to Realign Future Road



KEY FINDINGS

Based on the analysis presented above, the following key findings can be made regarding the need for road connectivity in this developing neighborhood:

- Improvements will be required at several study intersections by 2035, and the addition of the planned extension does not eliminate or postpone the need for these improvements.
- Recommended system planning for collector facilities is approximately one-half mile spacing. The planned intersection at NE 117th Avenue (SR-503) and NE 107th Street is ideally located to facilitate regional travel to/from commercial and residential zoning districts.
- Based on the recommended collector spacing of one-half mile, an east-west roadway connecting NE 117th Avenue and NE 152nd Avenues is necessary between NE 99th Street and NE 119th Street to facilitate the proportionate amount of forecasted traffic volumes generated by development growth.
- Based on the recommended collector spacing of one-half mile, a north-south roadway connecting NE 99th Street and NE 119th Street would be desirable between NE 117th Avenue and NE 152nd Avenue to facilitate the proportionate amount of forecasted traffic volumes generated by development growth.
- The planned NE 107th Street extension provides an important collector facility for local traffic to access adjacent neighborhoods (including future developments), reducing the potential for traffic volumes and speeds to exceed livability thresholds on local streets with residential frontage.
- The planned NE 107th Street extension provides an important connection for student's access to Prairie High School from residential districts across the state route. Dedicated bicycle lanes and sidewalks should be provided on the planned extension.