



FREQUENTLY ASKED QUESTIONS

1. ***What is the Palmer Couplet?***

A: One-way couplets are parallel one-way roads with opposite traffic flow (similar to 5th & 6th Avenues in Anchorage). For the Palmer Couplet, the eastbound traffic will travel on the Palmer Wasilla Highway and Evergreen Avenue. Westbound traffic will travel on Dogwood Avenue, which will be extended west to approximately Local Road 302.

In the 20 years from 2005 to 2025, traffic along the Glenn Highway is expected to more than double and traffic on the Palmer-Wasilla Highway in Palmer will increase over 60%. This growth in traffic is expected to continue well beyond 2025 and increase user delay unless upgrades are made.

The purpose of this project is to improve east-west mobility at the Palmer end of the Palmer-Wasilla Highway while maintaining access to the Palmer City core and maintaining the function of the Glenn Highway. The project need is to provide for current and future traffic volume while addressing identified safety concerns.

The physical limits will be from roughly Local Road 302 (west of Hemmer Road) to a point east of the Glenn Highway (yet to be determined), possibly Valley Way.

The Palmer-Wasilla Highway and Evergreen Avenue will flow eastbound, and Dogwood Avenue will be extended west to approximately Local Road 302 and flow westbound. All north-south roads will remain two-way and provide for easy and direct navigation with short trip lengths. The missing segment of Felton Street will create an important north-south route, as would Irwin Loop if it were extended north to Arctic Avenue.

Traffic will be controlled by signals that operate sequentially so that vehicles traveling near the speed limit will rarely need to stop at multiple lights along their route. Because of their sequential operation, these traffic signals will also control travel speeds at 25 miles per hour east of the Glenn Highway and 35 miles per hour west of the Glenn Highway.

2. ***Where did the couplet come from?***

A: In the 2003 Palmer Traffic Study, prepared jointly by David Evans & Associates and Hattenburg Dilley & Linnell, Dogwood Avenue was proposed to be extended west from Cobb Street across the Glenn Highway and connect to a future segment of Felton Street. Although this was not the

couplet as currently planned, it included approximately 50% of the new roadway included in the current couplet plan.

In 2006, the Alaska Department of Transportation & Public Facilities contracted with Kinney Engineering and Hattenburg Dilley & Linnell to prepare the Palmer Urban Traffic Study. The purpose of this study was to explore alternatives for satisfying the east-west traffic demand (including access to the Central Business District) while maintaining adequate service along the Glenn Highway. A baseline alternative consisting of improvements already planned, and three other alternatives were studied.

In 2007, the one-way couplet was selected on the basis of traffic level of service (see FAQ # 5), safety, minimal impact (particularly within the CBD), and the highest potential for serving pedestrians, bicyclists, and transit. In August 2007, the Matanuska-Susitna Borough Transportation Advisory Board passed a resolution supporting the one-way couplet on the basis of best retaining the small town atmosphere and culture, accommodating the many small businesses, providing walkable streets, and improving safety. In September 2007, the Palmer City Council adopted a resolution supporting the one-way couplet for similar reasons.

3. *Why a couplet? How will the Couplet benefit Palmer?*

A: As the areas west of the Glenn Highway develop, the businesses within Palmer will need to compete with new businesses that develop west of the Glenn Highway. With increasing numbers of customers living west of the Glenn Highway, it is critical to the vitality and sustainability of the CBD that access across the Glenn Highway be maintained at a high level. What the one-way couplet will do very well is link the CBD and developing areas west of the Glenn Highway, without degrading service along the Glenn Highway.

The one-way couplet is able to accomplish this goal because one-way roads are very efficient because they reduce vehicle conflicts and include timed signal operations that minimize delays and prevent speeding. Because the one-way couplet is efficient, intersections will be small which will enhance pedestrian crossings and preserve the small town flavor of Palmer.

4. *Were there other alternatives?*

A: A baseline alternative consisting of system upgrades included in the Long Range Transportation Plan was included, as were two other alternatives that added two-way improvements. These alternatives are discussed in detail in the Palmer Urban Traffic Study.

5. *What is level of service (LOS)?*

A: Level of service is a measure of the service available to the traveler. The LOS is graded using letters with A being the highest service (free flow) and F being very low to no service. Intersections are graded based on the anticipated delay and are commonly designed for C or D level of service, see table below:

LEVEL OF SERVICE (LOS)	DELAY (in seconds)
A	< 10
B	10-20
C	20-35
D	35-55
E	55-80 (may not get through signal in one cycle)
F	>80 (will not get through signal in one cycle)

6. How do you determine the future traffic volumes (2020, 2025, 2034)?

A: We use the Matanuska Susitna Borough (MSB) TransCad 4-step travel demand model. The four steps include: trip generation (based on forecasted land uses) , trip distribution, trip assignment and modal split. The MSB Borough model year is 2025, and to estimate 2034 design year volumes, we’ve used about a 3% growth factor that we’ve obtained from UAA ISER population forecasts.

The MSB 2025 model is actually a regional model for the MSB and MOA; and includes most of the committed projects that are called for in the LRTP. In addition, we’ve worked closely with MSB Transportation planning to confirm other improvements not in the model, or modifications of the model based on most current information. The LRTP improvements include extensions of Bogard, Hemmer, and Felton. However, in working with MSB, we concluded that Hemmer won’t be extend as far north as the LRTP shows. In addition, we’re assumed higher development densities along the Glenn Highway than the original model estimated because there are new water and sewer lines.

The models go through a validation and calibration process to improve forecast accuracy. The original model work by the Borough entered existing development conditions and the roadway network for a year in which actual traffic volumes were available, and the model was then calibrated so that the model volumes compared well (within specified tolerances) to the actual volumes. Once adequate calibration was achieved, this became the base for new and future development and roadway links.

7. What are accident rates and how are they determined?

A: The State tracks crashes and from that, they prepare crash rates of their intersection and highway link facilities. The compute average crash rates by type of intersection and by type of roadway. One of the first steps in evaluation safety is to evaluation the crash rate for the facility and compares it to the population averages. Rates are computed as follows:

$$R = \frac{1,000,000 \times A}{365 \times N \times ADT \times L} \quad \text{[Equation 1- Road Segment Crash Rate]}$$

Where:

R = Crash rate for the segment expressed as crashes per million vehicle miles (MVM),

A = Total crashes in the study period,

N = Number of years of data,

ADT = Segment Average Annual Daily Traffic (AADT) volumes, both directions (average over study period). The AADTs used in this calculation should be the average of all AADTs in the study period,

L = Segment length, miles.

Intersection Crash rates are calculated as:

$$R = \frac{1,000,000 \times A}{365 \times N \times V} \quad \text{[Equation 2- Intersection Crash Rate]}$$

The variables in this equation are:

R = Accident rate for the intersection expressed as accidents per million entering vehicles (MEV),

A = Total in the study period,

N = Number of years of data,

V = Traffic volumes entering the intersection daily, usually $\frac{1}{2}$ of the sum of the Average Annual Daily Traffic (AADT) volumes on the intersection's legs for two way approaches, or the sum of entering AADT volumes on one-way approaches. The AADTs used in this calculation should be the average of all AADTs in the study period.

We can calculate crash rates using Equations 1 and 2 to compare the facility to the corresponding State of Alaska average crash rate population. However, by only comparing the rate of the facility under analysis to an average rate, we may erroneously infer that those facilities with higher than average rates are problem areas.

Instead, we would like to establish an upper limit, or *critical* rate that is our threshold of concern. The Rate Quality Control Method establishes an upper control limit (UCL) to determine if the facility's crash rate, as calculated in Equation 1 and 2, is significantly higher than crash rates in facilities with similar characteristics. The UCL or critical rate is determined statistically as a function of the statewide average crash rate for the facility category (i.e., highway or intersection) and the vehicle exposure at the location being considered. UCL is calculated with the following equation:

$$UCL = R_a + Z \times \sqrt{\frac{R_a}{M} + \frac{1}{2 \times M}} \quad \text{[Equation 3- Upper Control Limit for Rate Quality Control Method]}$$

The variables in this equation are:

R_a = Average crash rate for the population in crashes per MVM (road segments) or MEV (intersections);

M= Facility exposure in MVM for roadway section, using N, ADT, and L stated above and computed as:

$$M = \frac{365 \times N \times ADT \times L}{10^6} \quad \text{[Equation 4- Roadway Segment Exposure]}$$

For intersections, exposure in MEV is computed with V and N, stated above, with the following equation:

$$M = \frac{365 \times N \times V}{10^6} \quad \text{[Equation 5- Intersection Exposure]}$$

Z= Normal Distribution Transformation Variable (usually 1.64 for a 95% confidence level)

Segments with rates that exceed the UCL are inferred to be well above the population average at the confidence level reflected in the selection of the “Z” variable, and would therefore have a significant crash experience, that is not likely to be due solely to chance.

8. Who is funding the project?

A: The State Legislature obligated \$20 million during the 2008 Capital budget for the design and right of way acquisition for the Palmer Couplet Project. An additional allocation of State Capital funds will be required in the future to proceed with construction.

9. How much will the project cost?

A: We will know better in about a year, but in 2008 the Palmer Urban Traffic Study estimated the cost at \$38.2 million. This included the Palmer Wasilla Highway, Dogwood Avenue, and Evergreen Avenue improvements only; the Hemmer and Felton extensions were not included. The cost estimate included design, right of way, utility relocations, and construction.

10. Where does the couplet begin and end?

A: The exact east and west termini haven't been determined yet but for planning purposes the west end is approximately Local Road 302 (west of Hemmer Road) and the east end may extend to Valley Way (other Eastern termini are possible). It is the DOT&PF's intent to get input from the public, businesses, the Borough, and the City of Palmer before deciding on the termini.

11. What will the speeds be for Palmer Wasilla Highway? Downtown?

A: 35 miles per hour west of the Glenn Highway. 25 miles per hour within the Central Business District (CBD).

12. Why extend the couplet past Hemmer Road?

A: This allows for free flow of traffic where the one-way couplet legs join the two-way traffic of the Palmer Wasilla Highway.

13. Why not end the couplet at the Glenn Highway?

A: This would not satisfy the goal of providing improved east-west connectivity across the Glenn Highway so that the CBD can flourish even as areas to the west of the Glenn Highway develop and traffic volumes increase.

14. Will the streets between Palmer-Wasilla Highway and Dogwood be one way?

A: All north-south streets will be two-way.

15. Will there be negative impacts to businesses in changing the traffic patterns from two-way to one-way?

A: We understand that this is a business concern. We are investigating this question, with special focus on things that can be done to positively impact businesses and minimize negative impacts. It is also important to consider the benefits of keeping the CBD connected to areas west of the Glenn Highway.

16. Has there been any analysis discussing the business impacts between a couplet and two-way streets?

A: We are working on it.

17. Why are some towns/cities changing from couplets back to two-way streets?

A: Each town has their own reason. In reviewing some Institute of Transportation Engineers articles; it appears that the purpose of the CBD has evolved, as has the reliance on the automobile in the CBD. At one time most downtown businesses were primarily retail, which created a high roadway demand, so one-way roads were constructed. More recently, downtown areas have become more office and service oriented, so the traffic demand can be met with two-way streets. Common strategies in the projects discussed in these articles are

low-speed and on street parking (pedestrian friendly), and these can be included in one-way streets.

18. *Will there be on street parking?*

A: We think that is a high priority and are working on ideas that should allow some on street parking. How much is not known yet, and will depend to some degree on community priorities (how much space for sidewalks, pathways, green buffers, etc.).

19. *How will the subdivisions south of Palmer-Wasilla Highway and east of Felton get access?*

A: Access will continue to be available via Felton and Ellen Streets. If Irwin Loop is extended north, then that will increase options.

20. *If my property or business is needed for the project, how will I be compensated?*

A: The Alaska Department of Transportation & Public Facilities has a rigorous process based on the Federal Statutes that assures that the owner is paid fair market value for the property and is for certain other expenses as well.