QUESTION 1:

What are some of the initial planning-level considerations when determining whether to include a four- to three-lane conversion as an alternative for assessment?

The consideration of a four-lane undivided to three-lane (four- to three-lane) conversion as an alternative typically begins with one or more concerns being raised about the existing corridor. These concerns may include, but are not limited to, one or more of the following: safety, speed, nonvehicular road users, and livability. The focus of this summary is on some of the initial planning-level considerations that might help determine whether a four- to three-lane conversion should be included in an alternatives assessment.

QUESTIONS TO CONSIDER

The questions that might be asked when deciding whether to include a four- to three-lane conversion in an alternatives assessment generally focus on the goals and objectives for the roadway segment under consideration. These goals and objectives may be far-ranging, and a determination needs to be made about whether a four- to three-lane conversion would address them. Agreement on the measures used to quantify the advancement of these goals/objectives, and over what time period, is also critical. In many cases, a number of years may be needed to measure impacts. In addition, some measures of these impacts may be quantitative and others qualitative.

Some questions that one might ask at this point in the project development process may include, but are not limited to, the following:

- What is the current and expected/desired function of the roadway?
- What is the context of the corridor segment improvement (e.g., urban or rural)?

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Three-lane roadway featuring two through lanes and a two-way left-turn lane

- Does the jurisdiction have a context-sensitive solution (CSS) and/or Complete Streets policy that should be applied?

ROADWAY FUNCTION AND CONTEXT

The current and desired function and context of the roadway corridor should be an early point of discussion with regard to the consideration of a four- to three-lane conversion alternative. The success of this type of conversion is typically measured by a comparison of how well these expectations are served before and after the cross section is changed. It is also important that the function and context of the roadway and the characteristics of the area surrounding it (e.g., whether significant changes will occur in land uses or other construction) be considered for a design period (i.e., the period of time the design is expected to serve). Any large changes in land uses and/or the volume and type of road users along the roadway need to be taken into account when selecting alternative cross sections.

The traditional functional classification of a roadway is focused on its vehicular mobility and access characteristics. The conversion of a four-lane undivided cross section to three lanes can have impacts on these characteristics and on how the cross section serves or influences other road users. One quantitative and qualitative evaluation that can be made with regard to vehicle mobility and access is a comparison of the current operations along the four-lane undivided cross section to those of a three-lane roadway. In other words, how similar are the current operations along the four-lane undivided cross section to a de facto three-lane roadway? For example, are most through vehicles using the outside or right lane in order to avoid vehicles turning left? If the operations of the four-lane undivided roadway are similar to those of a de facto three-lane roadway, the impact of a four- to three-lane conversion on vehicle flow should be smaller.

The reallocation of the cross section space, however, can also encourage more pedestrian and/or bicycle usage of the corridor. This can be done through the addition of a bus lane, bicycle lane, refuge islands, and/or wider sidewalks. The reduction in the number of through lanes and the addition of a bicycle and/or parking lane that acts as a buffer between pedestrians and traffic can also enhance the experience of those using the sidewalks. The consideration of all roadway users, current and expected, along a corridor being considered for a four- to three-lane conversion is important.

A summary table of some observed primary/intended and secondary/unintended (positive and negative) impacts of some cross section features along case study corridors is provided in the Federal Highway Administration (FHWA) *Road Diet Informational Guide* (Knapp et al. 2014). That table is reproduced below.

The context of the roadway (e.g., urban/rural) being considered for conversion is important and can influence the type of roadway users. The context also interacts with the cross section features that are either added or removed. The *Road Diet Informational Guide* proposes that four- to three-lane cross section conversions should meet seven listed qualities of CSS (Knapp et al. 2014). According to FHWA, CSS is a "collaborative, interdisciplinary approach that involves all stakeholders in providing a transportation facility that fits its setting. It is an approach that leads to preserving and enhancing scenic, aesthetic, historic, community, and environmental resources while improving or maintaining safety, mobility, and infrastructure conditions" (FHWA 2018). Additional information on CSS can be found in FHWA (2018).

CSS is similar to the approach proposed in Complete Streets policies, whose objective is to account for all road users in the planning, design, and maintenance of a roadway corridor. The application of a Complete Streets or context-sensitive approach to a cross section conversion, of course, is unique to the situation that exists and is defined by some of the factors previously discussed. For more information, the reader is referred to the *Road Diet Informational Guide* as well as to any CSS or Complete Streets policies that might exist in their local jurisdictions (Knapp et al. 2014). In addition, the Iowa DOT has a Complete Streets policy (Iowa DOT 2020), and the Iowa Statewide Urban Design and Specifications (SUDAS) program includes a section on this subject (SUDAS 2024).

SUMMARY

A four- to three-lane conversion may be considered to address concerns raised about an existing corridor, such as safety, speed, nonvehicular road users, and livability. This summary outlines some of the initial planning-level considerations that might help determine whether a four- to three-lane conversion should be included in an alternatives assessment.

Practitioner observations on the common features of four- to three-lane conversions

Four- to Three-Lane Conversion Feature	Primary/Intended Impacts	Secondary/Unintended Impacts	
		Positive	Negative
Bike lanes	• Increased mobility and safety for bicyclists, and higher bicycle volumes • Increased comfort level for bicyclists due to separation from vehicles	• Increased property values	• Could reduce parking, depending on design
Fewer travel lanes	• Reallocate space for other uses	• Pedestrian crossings are easier, less complex • Can make finding a gap easier for cross-traffic • Allows for wider travel lanes	• Mail trucks and transit vehicles can block traffic when stopped • May reduce capacity • In some jurisdictions, maintenance funding is tied to the number of lane-miles, so reducing the number of lanes can have a negative impact on maintenance budgets • Similarly, some Federal funds may be reduced • If travel lanes are widened, can encourage increased speeds
Two-way left-turn lane (TWLTL)	• Provide dedicated left turn lane	• Makes efficient use of limited roadway area	• Could be difficult for drivers to access left turn lane if demand for left turns is too high
Pedestrian refuge island	• Increased mobility and safety for pedestrians	• Makes pedestrian crossings safer and easier • Prevents illegal use of the TWLTL to pass slower traffic or access an upstream turn lane	• May create issues with snow removal • Can effectively increase congestion by preventing illegal maneuvers
Buffers (grass, concrete median, plastic delineators)	• Provide barriers and space between travel modes	• Increases comfort level for bicyclists by increasing separation from vehicles • Barrier can prevent users entering a lane reserved for another mode	• Grass and delineator buffers will necessitate ongoing maintenance

Source: Adapted from Knapp et al. 2014

References available in: Knapp, K., and D. Veneziano. 2024. *Roadway Cross Section Reconfiguration: Responses to 14 Commonly Asked Questions.* Iowa Local Technical Assistance Program, Institute for Transportation, Ames, IA. https://intrans.iastate.edu/uploads/2024/10/roadway_cross_section_reconfiguration_w_cvr.pdf.