2 Alternatives

This chapter summarizes the development, screening, and identification of project alternatives for evaluation in this Alternatives Analysis Report (AA Report). This chapter is divided into three sections:

- **Section 2.1 (Screening and Selection Process).** Describes the process used to screen options and alternatives, and identifies the process to recommend an alternative.

- **Section 2.2 (Alternatives and Options Previously Considered).** Outlines the process used to identify and screen options during the planning process, and summarizes the alternatives developed but not carried forward for further analysis in this AA Report.

- **Section 2.3 (Description of Alternatives).** Describes the alternatives evaluated in this AA Report.

Appendix G provides information on how to obtain the documents referenced in this chapter.

2.1 Screening and Selection Process

This section describes the two-step process that will lead to the selection of a Preferred Alternative: 

A) Screening of Options and Alternatives; and 
B) Selection of the Preferred Alternative.

A. Screening of Options and Alternatives

The identification of options to improve mobility and safety in downtown Tillamook began with the TTRP and continued through a multi-step screening, evaluation, and refinement process during the Tillamook US 101/OR 6 Alternatives Study.

During the Tillamook US 101/OR 6 Alternatives Study, ODOT established a process to identify and narrow options and alternatives for further study.

1. Develop Planning-level Evaluation Framework

ODOT developed a planning-level evaluation framework to gauge the effectiveness of reasonable alternatives. ODOT solicited public input on the planning-level evaluation framework at an open house in January 2009.

2. Develop and Screen Options

ODOT worked with community and agency stakeholders to identify a range of options that addressed the problem statement and screened those options based on the planning-level evaluation framework.

3. Develop Alternatives

From the various options that were advanced for further study, ODOT developed a set of alternatives for more detailed evaluation. In general, each alternative incorporated a unique set of options selected for further study.
4. Screen Alternatives

ODOT screened the alternatives using the planning-level evaluation framework and identified alternatives for further evaluation in this AA Report.

Each step of this screening process included public input and review by the Stakeholder Advisory Committee (SAC) and the Project Management Team (PMT) (see Chapter 5).

B. Selection of the Preferred Alternative

ODOT established the following process to evaluate the alternatives in this AA Report:

1. Develop Purpose and Need

   Develop a purpose and need statement to establish the need for the project and define the problems that the project is expected to address.

2. Develop Objectives

   Develop objectives based on the purpose and need statement.

3. Evaluate Alternatives Using the Objectives

   Evaluate the alternatives using the project’s objectives.

Chapter 5 (Public Involvement and Agency Coordination) summarizes the project decision-making and public and agency involvement.

Following publication of this AA Report and a subsequent public comment period, the PMT will recommend a Preferred Alternative to ODOT. The PMT will base the recommendation on the effects to the transportation system and the natural and community environment documented in this AA Report; input from the SAC; and public and agency comments on this AA Report.

2.2 Alternatives and Options Previously Considered

As summarized in Section 1.2.2, the TTRP considered options to address a variety of transportation issues identified in the Tillamook TSP. The TTRP recommended additional study of three options in downtown Tillamook to reduce congestion and improve safety.

Between January 2009 and March 2010, ODOT, in cooperation with the City of Tillamook and Tillamook County, considered the three options and identified a range of other options. The following paragraphs summarize the Tillamook US 101/OR 6 Project Alternatives and Options Previously Considered Technical Memorandum (ODOT, 2011a), which documents the options and alternatives considered and the framework for screening options and alternatives.

ODOT hosted an open house in January 2009 to identify other options and to gather additional ideas for improvements. ODOT also solicited ideas from other stakeholders, including the SAC. Through this process, 11 new options were identified. The resulting 14 options (3 from the TTRP and 11 new options) were screened against the project’s problem statement.
The following four options were dismissed from consideration because they would not meet key elements of the problem statement:

- **Close Pacific Avenue from 2nd Street to 1st Street and replace the traffic signal at the 1st Street/Pacific Avenue intersection with a stop sign.** This option would not improve mobility and would route highway traffic onto streets classified as local streets and collectors in the Tillamook TSP.

- **Extend OR 6 on 1st Street five blocks to the west of Main Avenue to connect back into Oregon State Highway 131 (OR 131; 3rd Street) west of US 101 and remove traffic from 3rd Street.** This option would not improve mobility and would route highway traffic onto streets classified as local streets and collectors in the Tillamook TSP.

- **Construct a new four-lane road down the center of the block between Main and Pacific Avenues and redevelop downtown.** This option would remove all structures between Main and Pacific Avenues from 1st Street to 4th Street, which would displace businesses and weaken the economic vitality of downtown Tillamook.

- **Construct a new four-lane road on Pacific Avenue with a new bridge at Pacific Avenue.** This option would remove all structures on the west or east side of Pacific Avenue from 1st Street to 4th Street, which would displace businesses and weaken the economic vitality of downtown Tillamook.

The remaining 10 options were combined to form five alternatives, named Alternatives A through E (Table 2-1). The five alternatives were rated using measures tied to the Tillamook US 101/OR 6 Alternatives Study goals and objectives. The performance of the alternatives and input from the public and the SAC were used to screen alternatives. The SAC reviewed the results of the screening assessment in April 2009 and the public reviewed the results at an open house in June 2009. Table 2-2 shows the alternatives considered and a summary of the rationale for advancing or dismissing them (see the *Alternatives and Options Previously Considered Technical Memorandum* for more detailed information, including the quantitative and qualitative measures used to screen the alternatives).

The following performance measures were the most relevant for comparing alternatives:

- **Future mobility at study intersections compared to future mobility at the same study intersections if the project were not built,** measured by the volume-to-capacity (v/c) ratio

- **Economic vitality of downtown Tillamook,** measured by the number of on-street parking spaces removed and retained

- **Sensitivity to the community and natural environment,** measured by a qualitative assessment of natural resource, park, and business effects

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2 A volume-to-capacity (v/c) ratio is a ratio of traffic flow rate to capacity of the road to handle that traffic flow. A v/c ratio at or over 1.0 indicates the road or intersection is over-capacity; a v/c ratio under 1.0 indicates additional vehicles can be accommodated.
### TABLE 2-1
Options that Formed Alternatives

<table>
<thead>
<tr>
<th>Option</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modify 1st Street and 3rd Street to two-way traffic</td>
<td>Included in Alternative A</td>
</tr>
<tr>
<td>Widen the existing Hoquarten Slough bridge</td>
<td>Included in Alternative C</td>
</tr>
<tr>
<td>Modify 1st Street and 3rd Street to two-way traffic and extend Pacific Avenue to the north</td>
<td>Included in Alternative B</td>
</tr>
<tr>
<td>Extend Pacific Avenue with a bridge over Hoquarten Slough; two-way traffic on 1st Street and 3rd Street</td>
<td>Included in Alternative B</td>
</tr>
<tr>
<td>Extend Pacific Avenue over Hoquarten Slough; modify existing bridge on US 101 to one-way traffic</td>
<td>Included in Alternative B</td>
</tr>
<tr>
<td>Extend Pacific Avenue and connect to US 101 mainline just north of slough; widen existing bridge</td>
<td>Included in Alternative B</td>
</tr>
<tr>
<td>Construct new bridges east and west of existing bridge, at Pacific Avenue and Stillwell Avenue with a new signalized intersection north of Hoquarten Slough</td>
<td>Included in Alternative D</td>
</tr>
<tr>
<td>Modify 1st Street and 3rd Street to two-way traffic; add an additional northbound lane over slough</td>
<td>Included in Alternative E</td>
</tr>
<tr>
<td>Reduce sidewalk width from 12 to 10 feet on each side of Main Avenue and Pacific Avenue in the downtown couplet</td>
<td>Included for any alternative</td>
</tr>
<tr>
<td>Consider opportunities to redesign local streets to provide additional on-street parking</td>
<td>Included for any alternative</td>
</tr>
</tbody>
</table>

*Stillwell Avenue is two blocks west of Main Avenue.*

Source: *Tillamook US 101/OR 6 Project Alternatives and Options Previously Considered Technical Memorandum* (ODOT, 2011a)

The US 101/OR 6 Transportation Alternatives Study: Alternatives Evaluation Findings Technical Memorandum (ODOT, 2009) provides the results of this analysis and the design refinement process that identified a cross-section for US 101 (Main and Pacific Avenues) and the OR 6 couplet (1st and 3rd Streets).

In summary, ODOT initially selected the following two build alternatives from the five alternatives to advance into this AA Report for further study:

- **Alternative B**: Extend Pacific Avenue north approximately one block and build a new bridge over Hoquarten Slough adjacent to the existing US 101 for northbound US 101 traffic, and make various traffic improvements in downtown Tillamook.

- **Alternative C**: Reconstruct the existing US 101 bridge across Hoquarten Slough to accommodate four lanes, bike lanes, and sidewalks, and make various traffic improvements in downtown Tillamook.
<table>
<thead>
<tr>
<th>Alternative</th>
<th>Advanced or Dismissed</th>
<th>Summary of Rationale for Advancing or Dismissing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alternative A</strong>&lt;br&gt;Convert 1st Street and 3rd Street in downtown Tillamook to two-way traffic</td>
<td>Dismissed</td>
<td>• Would not improve traffic issues (traffic operations and queuing)&lt;br&gt;• Would have the worst traffic performance of all the alternatives&lt;br&gt;• Would not improve mobility at the Main Avenue / 1st Street intersection, an intersection that would exceed mobility standards in the No-Build Alternative</td>
</tr>
<tr>
<td><strong>Alternative B</strong>&lt;br&gt;Extend Pacific Avenue north and build a new bridge over Hoquarten Slough adjacent to the existing US 101 for northbound US 101 traffic</td>
<td>Advanced</td>
<td>• Would remove the least number of on-street parking spaces (between 30 and 40 spaces, which is the same as with Alternative C)&lt;br&gt;• Would provide a clear route for northbound US 101 traffic from the downtown Tillamook couplet&lt;br&gt;• Would avoid effects to Sue H. Elmore Park and minimize effects on Main Avenue because the existing bridge would remain for southbound US 101 traffic</td>
</tr>
<tr>
<td><strong>Alternative C</strong>&lt;br&gt;Reconstruct the existing US 101 bridge across Hoquarten Slough to accommodate four lanes, bike lanes, and sidewalks</td>
<td>Advanced</td>
<td>• Would remove the least number of on-street parking spaces (between 30 and 40 spaces; which is the same as with Alternative B)&lt;br&gt;• Would remove the existing US 101 bridge that is within the 100-year floodplain and replace it with a new bridge above the floodplain</td>
</tr>
<tr>
<td><strong>Alternative D</strong>&lt;br&gt;Construct two new bridges across Hoquarten Slough at Pacific Avenue and Stillwell Avenue</td>
<td>Dismissed</td>
<td>• Would generally cost as much as 50 percent more than the other alternatives because it would require the construction of two new bridges across Hoquarten Slough, new bridge approaches for both bridges, and related roadway improvements&lt;br&gt;• Would require more right-of-way and would have more negative natural resource and park effects in the Hoquarten Slough area than the other alternatives because two new bridges would be constructed</td>
</tr>
<tr>
<td><strong>Alternative E</strong>&lt;br&gt;(Combination of Alternatives A and C)&lt;br&gt;Convert 1st Street and 3rd Street in downtown Tillamook to two-way streets and reconstruct the existing bridge to accommodate four travel lanes</td>
<td>Dismissed</td>
<td>• Would not address traffic issues better than Alternatives B and C (traffic operations and queuing)&lt;br&gt;• Would remove approximately twice as many on-street parking spaces as Alternatives B and C (approximately 75 spaces), which would adversely affect the economic vitality of downtown Tillamook</td>
</tr>
</tbody>
</table>

Source: *Tillamook US 101/OR 6 Project Alternatives and Options Previously Considered Technical Memorandum* (ODOT, 2011a). This memorandum includes figures showing Alternatives A through E.

To designate the two alternative designs more descriptively, ODOT changed their names – Alternative B became the “Extend Pacific Avenue North Alternative” and Alternative C became the “Replace US 101 Bridge Alternative.” ODOT also advanced a no-build alternative for additional study. The No-Build Alternative would retain the existing
conditions and maintenance activities would be conducted to ensure continued operations of the roadway and bridge.

2.2.1 Revised Build Alternative Designs

The two Build Alternative designs (Alternative B – Extend Pacific Avenue North and Alternative C – Replace US 101 Bridge) were carried forward for evaluation in March 2010. In response to questions from the public concerning federal, state, and local guidelines that were used to define a concept for the proposed replacement bridge across Hoquarten Slough, ODOT initiated a process to re-evaluate the bridge concepts of the Build Alternative designs. The purpose of the redesign effort was to avoid or minimize adverse effects to parks and access to properties south and north of Hoquarten Slough, and to further improve traffic operations and roadway design.

The two resulting designs of the Build Alternative (Alternative B – Extend Pacific Avenue North and Alternative C – Replace US 101 Bridge) were substantially the same following the design-refinement process. The common design elements included removing the existing bridge, constructing a new four-lane bridge over Hoquarten Slough, and making the same roadway design generally south of 1st Street, east of Pacific Avenue, west of Main Avenue, and north of Hoquarten Slough. Through the process, the PMT concluded that the new bridge could be designed to meet ODOT’s bridge and hydraulic guidelines, while minimizing changes to access to the properties south and north of Hoquarten Slough, and minimizing adverse effects to Hoquarten Interpretive Trail Park and Sue H. Elmore Park. ODOT also confirmed that the removal of the existing bridge and the revised design of the new bridge would not increase the 100-year water surface elevation. The design that would extend Pacific Avenue north was also modified to operate better than the No-Build Alternative at the intersections of 1st Street at Main and Pacific Avenues through the addition of dedicated turn lanes.

ODOT selected the proposed design for evaluation in this AA Report that would extend Pacific Avenue north because it would better meet the project’s Purpose and Need by:

- Providing a more intuitive local traffic pattern by extending Pacific Avenue north of 1st Street
- Adding more net parkland to Hoquarten Interpretive Trail Park
- Providing for two additional crosswalks in downtown Tillamook
- Allowing for better traffic operations at the Main Avenue (US 101) and 1st Street (OR 6) intersection

In identifying the preferred Build Alternative design, ODOT also considered comments that representatives of local jurisdictions and members of the public made at the following events: a PMT meeting on January 12, 2011; an SAC meeting on January 25, 2011; and an Open House held on February 2, 2011. At each of these events, ODOT presented the two revised Build Alternative designs and its recommendation to carry forward only the proposed design of the Build Alternative that would extend Pacific Avenue north. The PMT and the SAC unanimously endorsed the redesigns and ODOT’s recommendation.
In February 2011, ODOT, in consultation with the local jurisdictions and members of the public, advanced the Extend Pacific Avenue North design as the proposed Build Alternative for evaluation in this AA Report. The Replace US 101 Bridge design was eliminated from further consideration.

### 2.3 Description of Alternatives

Two alternatives are evaluated in this AA Report – the No-Build Alternative and the Build Alternative. The following sections provide a description of those two alternatives. The Tillamook US 101/OR 6 Project Alternative Description Technical Memorandum (ODOT, 2012f) describes the No-Build Alternative and the Build Alternative in more detail.

#### 2.3.1 No-Build Alternative

In addition to being a viable alternative, the No-Build Alternative provides a baseline against which to measure and compare the effects of the build alternative(s). This baseline helps decision-makers assess what would happen in the future if nothing were done to address the problem.

The No-Build Alternative related to the Tillamook US 101/OR 6 Project would generally retain and would not improve existing transportation facilities in the project study area (see Figure 1-1). Maintenance activities on those facilities would be conducted to ensure continued operations of the roadway and bridge. Figure 2-1 illustrates No-Build Alternative roadway cross-sections for selected locations. There are no other funded transportation projects in the project study area; therefore, no other transportation projects are included in the No-Build Alternative.

#### 2.3.2 Build Alternative

Figure 2-2 illustrates the Build Alternative and Figure 2-1 illustrates roadway cross-sections for selected locations. In general, the Build Alternative would:

- Widen the travel lanes by approximately 2 feet and narrow the sidewalks by approximately 2 feet on Main and Pacific Avenues between 1st and 4th Streets
- Extend the existing US 101 couplet (Main and Pacific Avenues) by extending Pacific Avenue north from the existing Pacific Avenue/1st Street intersection to Hoquarten Slough
- Replace the existing three-lane bridge across Hoquarten Slough with a new four-lane bridge, which would be up to 5 feet higher than the existing bridge, and which would include bike lanes and wider sidewalks
- Reconstruct US 101 approximately 700 feet north of Hoquarten Slough to accommodate the new grade and width of the bridge over Hoquarten Slough
- Modify access to Hoquarten Interpretive Trail Park by constructing a new public street that would also provide access to adjacent private parcels
Figure 2-1
No-Build Alternative and Proposed Build Alternative Cross-Sections at Selected Locations

A. US 101 North of Hoquarten Slough

B. US 101 at Hoquarten Slough (Existing Bridge)

C. 1st Street between Main and Pacific Avenues

D. Main Avenue between 2nd and 3rd Streets

E. Pacific Avenue between 2nd and 3rd Streets

Note: Figures are not to scale. Dimensions are approximate.
Under the Build Alternative, ODOT would determine during the design phase whether to divide the project into separate construction phases or to construct the project at one time. The project’s construction schedule and approach could entail, for example, dividing the contracted work geographically or by construction type (e.g., bridge work, roadwork). Whether the construction work is divided into separate contracts, major elements of the project could be scheduled concurrently, with some overlap or sequentially. In developing a construction schedule and approach, ODOT would consider several factors, such as potential contractor expertise, costs, minimizing construction impacts, traffic operations, environmental constraints, etc.

The following subsections describe the elements of the Build Alternative from south to north in more detail.

2.3.2.1 South of 1st Street
All proposed improvements south of 1st Street under the Build Alternative would occur within existing street right-of-way. The travel lanes on the US 101 couplet (the Main Avenue and Pacific Avenue paired one-way streets) between 1st Street and 4th Street would be widened from approximately 10 feet to approximately 12 feet by narrowing the sidewalks from approximately 12 feet to approximately 10 feet. On-street parking on both sides of Main and Pacific Avenues would be maintained. Figure 2-1 illustrates the proposed cross-section of Main and Pacific Avenues south of 1st Street. The eastbound approach of the Main Avenue and 3rd Street intersection would be modified as illustrated in Figure 2-2.

2.3.2.2 Main Avenue and 1st Street Intersection
The intersection at Main Avenue and 1st Street would be modified within existing street right-of-way as illustrated in Figure 2-2.

2.3.2.3 Pacific Avenue and 1st Street Intersection
A new northbound leg to the Pacific Avenue and 1st Street intersection would be constructed for northbound US 101 traffic. This intersection and 1st Street between Pacific Avenue and Laurel Avenue would be modified as illustrated in Figure 2-2. Figure 2-1 illustrates the proposed cross-section of 1st Street west and east of the 1st Street and Pacific Avenue intersection.

2.3.2.4 Between 1st Street and Hoquarten Slough
The elevation of US 101 north of 1st Street would be raised to match the elevation of the proposed replacement bridge over Hoquarten Slough. Access to and from Front Street from Main Avenue would be maintained.

Pacific Avenue would be extended north from 1st Street to south of Hoquarten Slough, where it would merge with Main Avenue, extending the Main Avenue/Pacific Avenue couplet of US 101 by approximately one city block. A new local public street would be constructed that would intersect with and extend east of the Pacific Avenue extension to provide access to Hoquarten Interpretive Trail Park. This would maintain right-in/right-out access to the park from northbound US 101.
2.3.2.5 Hoquarten Slough Bridge

The existing three-lane US 101 bridge across Hoquarten Slough would be removed under the Build Alternative and a new four-lane bridge across Hoquarten Slough would be constructed. In addition, existing remnant concrete piers from a prior bridge (located immediately east of the existing bridge) would be removed to facilitate construction and maintenance of the new bridge. The new bridge would be approximately 84 feet wide. Figure 2-1 illustrates the proposed cross-section of the new bridge. The new bridge would have a center set of piers within Hoquarten Slough. At the highest point on the new bridge, the bottom of its spans would be approximately 5 feet higher than the bottom of the existing bridge to be consistent with ODOT’s bridge design criteria. These design criteria factor in the 50-year flood elevation, clearance above the 50-year flood elevation, and forecasted sea-level rise. For more information, see the Hydraulic Bridge Height Recommendation for Proposed US 101 Hoquarten Slough Bridge Technical Memorandum (ODOT, 2011d). In general, traffic across Hoquarten Slough would be maintained during construction. Section 3.7 (Visual Resources) provides simulations of the view from and towards the proposed new bridge.

2.3.2.6 US 101 North of Hoquarten Slough

To tie the US 101 improvements into the existing US 101 alignment, the Build Alternative would reconstruct US 101 from Hoquarten Slough to approximately 700 feet north of Hoquarten Slough. US 101 would include wider sidewalks and a shared shoulder/bicycle lane in both directions. Figure 2-1 illustrates the proposed cross-section of this section of US 101.

2.3.2.7 Build Alternative Cost and Financing

ODOT developed construction cost estimates for the Build Alternative. The estimated cost to construct the Build Alternative is $21.7 million (in year of expenditure dollars). This cost estimate includes construction and engineering costs based on 2015 dollars and right-of-way costs based on 2014 dollars. (Under the current project schedule, right-of-way would be acquired between late 2012 and 2015, and construction would begin in 2015.) This estimate is based on current design and might change as the project design and mitigation measures are refined.

Planning, engineering design, and construction would be funded as part of the State of Oregon’s Jobs and Transportation Act (JTA) of 2009. As adopted by the 2009 State Legislature, the annual transportation funding from the JTA is approximately $300 million.³ The JTA allocated $27 million towards planning, engineering design, and construction for the Tillamook US 101/OR 6 Project.

³ More information about the JTA can be found at http://www.oregon.gov/ODOT/JTA.shtml.
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