Between January and July 2009, ODOT, along with the City of Tillamook and Tillamook County, considered a wide range of concepts to improve safety and mobility at the intersections of US 101 and OR 6 in downtown Tillamook. The US 101/OR 6 Alternative Study is focused on the intersections of 1st Street (US 6) and Main Avenue (US 101), 1st Street and Pacific Avenue, 3rd Street and Main Avenue, and 3rd Street and Pacific Avenue. The project used a two-step process to identify and screen alternatives, ultimately narrowing to two concepts recommended to advance into the project’s Environmental Assessment (EA). The two steps in the screening process, described below, were: 1) concept development and screening; and 2) alternative development and evaluation.

The US 101/OR 6 Alternatives Study follows a previous study that considered this problem, the 2006 Tillamook Transportation Refinement Plan. The Tillamook Transportation Refinement Plan (TTRP) identified several ideas for improvements to these intersections but stopped short of recommending a preferred strategy. The process used to identify and evaluate alternatives for the project began with the range of ideas that emerged from the TTRP. The process of understanding the problems in the area, and developing and evaluating alternatives, included input from the public open houses and from the project’s twenty-four member Stakeholder Advisory Committee (SAC).

This memorandum describes the following: 1) the overall recommendations from the Project Management Team (PMT) and SAC; 2) the project’s problem statement and evaluation framework; 3) the concept development and screening process and conclusions, including the public open house and SAC meeting; 3) the alternative development and evaluation process, including a description of the alternatives developed and evaluated and the rationale for alternatives removed from further study and alternatives recommended to advance into the EA; and 4) the cross section development phase.

Summary Recommendations

In summary, the PMT recommends studying alternatives C-1 and C-4 in the project’s environmental assessment. The team recommends developing alternatives C-1 and C-4 with cross section option 3 (widen road to both sides) on both Main and Pacific avenues.
This recommendation was endorsed by the SAC and will be shared with the Tillamook City Council and Tillamook County Board of Commissioners.

The Stakeholder Advisory Committee requested that the following items continue to be considered as the project is advanced:

- Consider constructing off-street parking to replace removed on-street parking through a partnership with the City.
- Identify opportunities to apply for grants or use urban renewal funds to provide amenities in downtown Tillamook such as pedestrian-scale lighting and street furniture.
- Consider the use of curb extensions to shorten the distance that pedestrians must cross from curb-to-curb.

The processes and rationale used to reach these recommendations are summarized below.

**Project problem statement and evaluation framework**

The project team developed a project problem statement and evaluation framework based on a technical assessment of the transportation problems in the study area, input from the community gathered at stakeholder interviews, and discussion at the first SAC meeting. The problem statement and evaluation framework were also vetted with the public at the first open house held in January 2009. Both documents are attached to this memo as appendices D (problem statement) and E. (evaluation framework).

The problem statement lays out problems in the study area including congestion, queuing, business access, and safety issues for drivers, bicyclists and pedestrians. The project alternatives were evaluated based on objectives related to these goals:

- Goal 1: Improve future (2030) mobility in downtown Tillamook for all users including cars, trucks, bicyclists and pedestrians.
- Goal 2: Provide for improved safety for all users in the study area.
- Goal 3: Support economic vitality in Tillamook and the coastal region.
- Goal 4: Construct a project that is sensitive to the community and natural environment.
- Goal 5: Provide for a cost-effective solution that can be implemented in phases.

**Concept development and screening**

**Tillamook Transportation Refinement Plan (2006)**

In 2006, ODOT, in cooperation with the City of Tillamook and Tillamook County, completed the TTRP. The TTRP considered improvements to address a variety of transportation issues in downtown Tillamook including changing the design of downtown parking, reducing truck traffic in downtown Tillamook by changing access to the Tillamook Lumber Mill and providing alternate truck routes, considering design alternatives on Main and Pacific avenues, and considering design alternatives for downtown traffic on US 101 and OR 6. The TTRP was prepared with the expectation that ODOT would advance this more detailed study of the intersection of US 101 and OR 6.
The set of alternatives from the TTRP that is most relevant to the Alternatives Study are the downtown traffic alternatives. The TTRP studied a range of alternatives that included intersection changes (signals and roundabouts) and changes to the transportation system. A full summary of the alternatives evaluated is attached to this memo.

Through the TTRP, two downtown traffic alternatives, Pacific Avenue Northward Extension and Extend OR 6 Couplet (Main Avenue to the West), were set-aside primarily because they did not improve traffic operations. The TTRP recommended additional study of combinations of three system alternatives with signals or roundabouts at intersections. These system alternatives include:

- Two-way OR 6/1st Street and 3rd street
- Widen Hoquarten Slough Bridge
- Two-way OR 6/1st Street and 3rd Street and Pacific Avenue Northward Extension

The roundabout alternatives recommended for further study included separate roundabouts at Main and Pacific avenues, combined roundabouts at Main and Pacific avenues, and a roundabout at OR 6 and Miller Street. The TTRP specified that traditional traffic signals also be studied at each of these locations.

**Concept development**

Beginning with the alternatives advanced from the TTRP, the project team asked community members at an open house in January 2009 to suggest concepts that should be considered. Concepts were also identified through brainstorming at internal working meetings, at a PMT meeting and at a SAC meeting. Thirteen new concepts were proposed. Similar or related concepts were combined and concepts that did not address the project problem were set-aside or forwarded to the appropriate jurisdiction. Table 1 shows the alternatives proposed and the action taken during the concept development phase, which led to the alternative development and evaluation phase.

In general, this project used a general progression and linkage between the planning and NEPA processes. Alternative concepts generated during the planning stages were evaluated with jurisdictional and public input. This planning and NEPA linkage resulted in the documented rationale for those alternative concepts that were dismissed from further consideration. This summary will be available for review during the NEPA process and can be appended to or referenced in the NEPA document. Although not anticipated, the alternatives that have been dismissed from consideration, could be revisited if the project details or scope changes.
### Table 1. Concepts developed and considered – concept development phase

<table>
<thead>
<tr>
<th>Concept</th>
<th>Next step</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TTRP ALTERNATIVES (2006)</strong></td>
<td></td>
</tr>
<tr>
<td>T1. Two-way OR6/1st Street and 3rd Street</td>
<td>Advance as alternative A</td>
</tr>
<tr>
<td>T4. Widen Hoquarten Slough Bridge</td>
<td>Advance as Alternative C</td>
</tr>
<tr>
<td>T5. Two-way OR6/1st Street and 3rd Street; Pacific Avenue northward extension</td>
<td>Advance as Alternative B</td>
</tr>
<tr>
<td><strong>OPEN HOUSE, SAC and PMT IDEAS (2009)</strong></td>
<td></td>
</tr>
<tr>
<td>Two-way OR 6/1st Street and 3rd Street. Extend Pacific Avenue with a bridge over the slough and join into US 101 with a signal north of slough.</td>
<td>Advance as Alternative B</td>
</tr>
<tr>
<td>Extend Pacific Avenue over the slough, but make existing bridge on US 101 one way as opposed to Alternative 5 from Refinement Plan that maintains existing bridge as two-way.</td>
<td>Advance as Alternative B.</td>
</tr>
<tr>
<td>Extend Pacific Avenue and join back into US 101 mainline just south of slough. Widen existing bridge.</td>
<td>Advance as Alternative B.</td>
</tr>
<tr>
<td>New bridges east and west of existing bridge (at Pacific and Stillwell with a new signalized intersection north of the slough)</td>
<td>Advance as Alternative D, which was subsequently removed from further study as it would be more expensive than other options and have greater adverse impacts.</td>
</tr>
<tr>
<td>Two-way 1st and 3rd streets and add an additional northbound lane over the Hoquarten Slough</td>
<td>Advance as Alternative E</td>
</tr>
<tr>
<td>Reduce sidewalk width by 2 feet on each side of Main and Pacific avenues in the downtown couplet. Add one lane on US 101 north of the couplet and across the slough.</td>
<td>Consider in conjunction with any alternative.</td>
</tr>
<tr>
<td>Consider opportunities to redesign local streets to provide additional on-street parking</td>
<td>Consider in conjunction with any alternative.</td>
</tr>
<tr>
<td>Improve signal timing and add interconnect on US 101.</td>
<td>ODOT will advance this idea outside of the project.</td>
</tr>
<tr>
<td>Change stop control on Stillwell Avenue and 1&lt;sup&gt;st&lt;/sup&gt; Street (drivers have to stop on a hill).</td>
<td>Does not address problem.</td>
</tr>
<tr>
<td>Close Pacific Avenue from 2&lt;sup&gt;nd&lt;/sup&gt; Street to 1&lt;sup&gt;st&lt;/sup&gt; Street. Replace traffic signal at 1&lt;sup&gt;st&lt;/sup&gt; Street and Pacific Avenue with a stop sign. Traffic coming north on Pacific Avenue will be diffused to local streets.</td>
<td>Idea would route through traffic on local streets which would not support the transportation facility hierarchy or meet ODOT’s goals of maintaining highway continuity.</td>
</tr>
<tr>
<td>Extend OR 6 on 1&lt;sup&gt;st&lt;/sup&gt; Street about five blocks to the west of Main Avenue to connect back into OR 131 (3&lt;sup&gt;rd&lt;/sup&gt; Street) west of US 101. Remove traffic from 3&lt;sup&gt;rd&lt;/sup&gt; Street.</td>
<td>Idea would route through traffic on local streets which would not support the transportation facility hierarchy or meet ODOT’s goals of maintaining highway continuity. Idea would not address major problem of better accommodating north-south traffic on US 101.</td>
</tr>
<tr>
<td>New four lane road down the center of the block between Main and Pacific avenues; redevelop downtown</td>
<td>This option does not meet the project goal of minimizing impacts to the community environment; would be expensive.</td>
</tr>
<tr>
<td>New four lane road on Pacific Avenue with a new bridge at Pacific Avenue</td>
<td>This option does not meet the project goal of minimizing impacts to the community environment; would be expensive.</td>
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</tbody>
</table>
Note that subsequent to the initial screening within the design concept phase, the SAC and PMT determined that alternative D, a concept that would construct two new slough crossings, should be removed from further study because it would likely not meet the project’s goals and objectives as well as other alternatives. Specifically:

- It would be more expensive than other alternatives because it would require the construction of two new bridges.
- It would have more impacts to natural resources in and around the Hoquarten Slough because it would require the construction of two new bridges.
- Potential floodplain and Section 4(f)/6(f) impacts due to second bridge crossing near the boat ramp.
- It could have substantially more property impacts than other alternatives.

Also later in the design concept phase, the project team also considered a variation of option B that would have extended Pacific Avenue north over the Slough but generally maintained one-way traffic on 1st and 3rd streets. This option would have required one eastbound lane on 1st Street between Main and Pacific avenues to allow eastbound traffic on 1st Street to go north on US 101. This option was removed from further study after initial traffic results indicated worse performance at the intersections of 1st Street and Main Avenue and 1st Street and Pacific Avenue than other alternatives.

**Alternative development and evaluation**

**Alternative development**

The project team developed footprints and intersection detail for each of the five remaining alternatives. Sketches of each alternative are attached in Appendix C.

- Alternative A: convert 1st Street and 3rd Street to two way streets.
- Alternative B-1: convert 1st Street and 3rd Street to two way streets and extend Pacific Avenue north over the Slough on a new structure near the existing bridge.
- Alternative B-2: convert 1st Street and 3rd Street to two way streets and extend Pacific Avenue north over the Slough on a new structure several hundred feet east of the existing bridge.
- Alternative C-1: construct a new crossing of the slough for northbound traffic; maintain southbound traffic on the existing structure. Add a new eastbound lane on 3rd Street between Ivy Avenue and Main Avenue to match the two eastbound lanes between Main and Pacific avenues.
- Alternative E: convert 1st Street and 3rd Street to two way streets and construct a new crossing of the slough for northbound traffic; maintain southbound traffic on the existing structure. (C and A combined)

The alternatives that would include two-way traffic on 1st and 3rd streets (A, B-1, B-2, E) included widening of 1st Street to two lanes westbound and one lane eastbound from Madrona Avenue to Main Avenue, and widening of 3rd Street to one lane westbound and two lanes eastbound from Ivy Avenue to Laurel Avenue. An option that would have provided four lanes on 3rd Street (two in each direction) between Main and Pacific avenues was considered and dismissed because the geometric design could not meet ODOT
standards without impacting buildings or narrowing sidewalks beyond an acceptable width.

**Alternative evaluation**

The consultant team and ODOT evaluated the five alternatives according to the evaluation framework. The alternative evaluation was reviewed by the PMT on April 16, 2009, by the SAC on April 30, 2009 and by the public at an open house on June 13, 2009. The alternative evaluation summary is attached as Appendix A, a technical memo describing the alternative evaluation results is attached as Appendix B, and the conceptual sketches of the alternatives are attached as Appendix C. Detailed traffic analysis for each option is available as a separate memo, 2030 Future Build Alternatives Transportation Analysis (June 2009).

**Alternatives set aside**

*Alternative A*

Alternative A (two way traffic on 1st and 3rd streets) was set aside because it did not show any operational benefits for the system. While some intersections showed improved traffic performance, others showed much worse performance. Given the impacts to the downtown community including narrowing of sidewalks on 3rd Street and removal of parking on 1st and 3rd streets, and the costs of implementation, this option was not advanced. Key aspects of the analysis included:

- Volume to capacity (v/c) ratios that do not meet ODOT mobility standards and are worse than the no-build at Main Avenue/1st Street and Pacific Avenue/3rd Street; and that do not meet ODOT mobility standards at Main Avenue/3rd Street. Those intersections that do meet ODOT mobility standards also meet mobility standards in the no-build.
- Queue length is only reduced by more than 50 feet at two intersections and is worsened by more than 50 feet at two intersections.
- Would remove 82 on-street parking spaces.
- Could impact up to five businesses.
- Would require improvements to Madrona Avenue at 3rd Street.

*Alternative B-1 and B-2*

Alternative B-2 (Pacific Avenue northward extension wide variant) was set aside because it did not show an operational benefit compared to Alternative B-1, and it would have more community and environmental impacts than B-1. The impacts included two business displacements, disturbance to a park, and potential natural resource impacts. Alternative B-1 was set aside because it removed significant parking on 1st and 3rd streets, reduced sidewalk width on 3rd Street, and had more business impacts than C without improved operational benefits.

Key aspects of the analysis included (traffic operations for B-1 and B-2 are similar):

- V/C ratio that does not meet ODOT mobility standards and is worse than the no-build at Pacific Avenue/3rd Street; and that do not meet ODOT mobility standards at Main Avenue/3rd Street. With the exception of Main Avenue/1st Street, those intersections that do meet ODOT mobility standards also meet mobility standards in the no-build.
- Queue length is reduced by more than 50 feet at five intersections and is worsened by more than 50 feet at two intersections.
- Would remove 88 on-street parking spaces.
- Could impact up to five businesses (B-1) and seven businesses (B-2)
- Would bisect the Hoquarten Trail area (Section 4(f) resource) (B-2).
- Would require improvements to Madrona Avenue at 3rd Street.

**Alternate E**

Alternative E (two way traffic on 1st and 3rd streets and new northbound lanes over the Slough) was set aside because it had more impacts in terms of downtown parking and sidewalk width on 3rd Street than alternative C, but did not provide better transportation performance than Alternative C. Key aspects of the analysis included:

- V/C ratio that does not meet ODOT mobility standards and is worse than the no-build at Pacific Avenue/3rd Street; and that does not meet ODOT mobility standards at Main Avenue/1st Street and Main Avenue/3rd Street. Those intersections that do meet ODOT mobility standards also meet mobility standards in the no-build.
- Queue length is only reduced by more than 50 feet at three intersections and is worsened by more than 50 feet at two intersections.
- Would remove 82 on-street parking spaces.
- Could impact up to five businesses.
- Would require improvements to Madrona Avenue at 3rd Street.

**Alternative C refinement**

After reviewing the evaluation of alternatives A, B-1, B-2, C-1 and E, it was apparent that further refinements to option C could yield better transportation performance while still having fewer environmental and community impacts than the other alternatives. Several variations of Alternative C were considered to improve transportation performance at the intersections of 3rd Street and Main Avenue and 3rd street and Pacific Avenue. These refined alternatives were evaluated against a subset of the evaluation criteria that were likely to differentiate between these design options:

- Support convenient customer access to downtown businesses.
- Improve pedestrian crossings and sidewalk conditions in downtown Tillamook.
- Consider total construction cost.
- Improve vehicle and freight mobility for local and through traffic.
- Reduce queuing that affects adjacent intersections.

Refined alternatives included:

- Alternative C-1: construct a new crossing of the slough for northbound traffic; maintain southbound traffic on the existing structure. Add a new eastbound lane on 3rd Street between Ivy Avenue and Main Avenue to match the two eastbound lanes between Main and Pacific avenues.
- Alternative C-2: construct a new crossing of the slough for northbound traffic; maintain southbound traffic on the existing structure. Add a new eastbound lane on 3rd Street
between Ivy Avenue and Main Avenue and an eastbound lane on 3\textsuperscript{rd} Street between Main and Pacific avenues.

- Alternative C-3: construct a new crossing of the slough for northbound traffic; maintain southbound traffic on the existing structure. Add a westbound lane between Main and Pacific avenues on 3\textsuperscript{rd} Street.
- Alternative C-4: construct a new crossing of the slough for northbound traffic; maintain southbound traffic on the existing structure. Add a westbound lane between Main and Pacific avenues on 3\textsuperscript{rd} Street. Add a new eastbound lane between Miller and Main avenues on 1\textsuperscript{st} Street.

**Alternatives set aside**

*Alternative C-2*

Alternative C2 (three eastbound lanes on 3\textsuperscript{rd} Street from Main to Pacific avenues) was removed from further study because it had did not provide improved east-west connectivity in downtown Tillamook and reduce out-of-direction travel. Key aspects of the analysis included:

- V/C ratios that were lower than the no-build at Main Avenue/1\textsuperscript{st} Street and Main Avenue/3\textsuperscript{rd} Street, but not as low as C-3 and C-4. These two intersections had the highest v/c ratios in the no-build.
- Queue length is worsened by more than 50 feet at one intersection.
- Removes 31 on-street parking spaces.
- Could require relocation of up to five businesses.

*Alternative C-3*

Alternative C-3 (two eastbound lanes and one westbound lane on 3\textsuperscript{rd} Street from Main to Pacific avenues) was removed from further study, though it offered good traffic performance and queue reduction, it had fewer operational benefits to the system than C-4 while having many of the same impacts. Compared to C-4, it only provided improved east-west connectivity in downtown Tillamook on 3\textsuperscript{rd} Street. Key aspects of the analysis included:

- V/C ratios that were lower than the no-build at Main Avenue/1\textsuperscript{st} Street, Pacific Avenue/1\textsuperscript{st} Street and Main Avenue/3\textsuperscript{rd} Street, but not as low as C-4. V/C ratio is higher than in the no-build at Pacific Avenue/3\textsuperscript{rd} Street.
- Queuing is the same or improved at all study intersections.
- Provides for improved circulation in downtown Tillamook through the addition of a new westbound lane on 3\textsuperscript{rd} Street between Main and Pacific avenues.
- Removes 31 on-street parking spaces.
- Could require relocation of up to five businesses.
Alternatives carried forward
The SAC and PMT both recommended carrying forward C-1 and C-4 for further analysis. The SAC preferred C-4, but recommended continued study of C-1 until the potential impact to the Post Office on 1st Street and a strategy to replace parking on 1st and 3rd streets is better defined.

Alternative C-1
Alternative C-1 (two eastbound lanes on 3rd Street from Main to Pacific avenues) was advanced because, while it would result in fewer operational benefits to the system than the other alternatives, it would have acceptable performance compared to the no-build alternative and would have fewer parking impacts than C-2, C-3 and C-4. This option would also maintain current circulation patterns in downtown Tillamook which is perceived as a benefit by some downtown business owners who value the large number of cars passing through downtown Tillamook.

This alternative would improve volume to capacity (v/c) ratios at every intersection in the study area that failed to meet mobility standards in the no-build. It would not meet mobility standards at the intersection of Main Avenue and 3rd Street in 2030. Queuing would be worsened by more than 50 feet at only one intersection.

This option would remove 24 on-street parking spaces and could require relocation of up to five businesses.

Alternative C-4
Alternative C-4 (modified two-way traffic on 1st and 3rd streets) was advanced because it would provide the best overall traffic performance and queue reduction and provided for improved circulation in downtown Tillamook through the addition of a new westbound lane on 3rd Street between Main and Pacific avenues, and a new eastbound lane on 1st Street from Main Avenue to Miller Avenue. The new westbound lane would allow northbound traffic on Pacific Avenue to turn west on 3rd Street rather than turning west on 1st Street, south on Main Avenue and west on 3rd Street. The new eastbound lane would allow southbound traffic on US 101 to turn east on 1st Street without traveling through the core of downtown Tillamook on Main Avenue and 3rd Street.
Alternative C-4 would meet ODOT’s mobility standards at every study area intersection. Alternative C-4 would reduce queue lengths by more than 10% or would not change queue length at all study intersections when compared to the no-build alternative.

Alternative C-4 would remove 71 parking spaces from 1st and 3rd streets and would impact five businesses. The cross-section on 1st Street would be wider (five lanes between Main and Pacific avenues) than under any other “C” alternative. While this configuration would provide for the best traffic performance, the SAC and PMT both suggested that the pedestrian crossing of 1st Street should be carefully considered during the design process. Alternative C-4 would remove more parking on 1st Street than the other “C” alternatives. For the PMT and SAC, the potential traffic operations and circulation benefit of the eastbound lane on 1st Street outweighed the parking impact.

Cross-section development

The project’s problem statement also identified safety and economic vitality issues related to the relatively narrow lanes on US 101 (Main and Pacific avenues) in the study area. The 10’ travel lanes do not provide adequate width for large trucks and oversize vehicles to safely travel through downtown while providing comfortable, attractive on-street parking for customers of downtown businesses. The 10’ travel lanes also do not meet ODOT’s minimum lane width (11’ for Special Transportation Areas (STA) on a National Highway System (NHS) route).

The project team developed three potential cross-sections that provided for 11’ or 12’ travel lanes by either removing parking on one side of the street or narrowing the sidewalks and maintaining parking on both sides of the streets. The options were reviewed by the PMT, the SAC, the public at a June 13, 2009 open house, and by business owners at a targeted meeting on July 8, 2009.
**Option 1: No street widening – remove parking on one side**

This option would remove parking from the west side of Main Avenue and the east side of Pacific Avenue to provide width for two 12’ travel lanes, a bike lane, and one lane of on-street parking. It would maintain the current 12’ sidewalks. The sidewalks and drainage system would not be replaced or upgraded with this option.

This option would have the lowest cost because it would only require repaving the street and restriping. Business owners, the public and the SAC agreed that this was the least desirable option because it would remove on-street parking in downtown Tillamook. Business owners and other community members said that removing on-street parking would make it more difficult to maintain economic vitality in downtown Tillamook.

**Option 2: Widen road to one side**

This option would narrow the sidewalk on the west side of Main Avenue and the east side of Pacific Avenue to provide width for two 11’ travel lanes, and parallel parking on both sides of the street. It would maintain the current 12’ sidewalks on the east side of Main Avenue and the west side of Pacific Avenue, but would narrow the sidewalks to 10’ on the other side of both streets. The sidewalks and drainage system would be replaced where the sidewalks are narrowed.

This option would cost about $1 million and would include rebuilding sidewalks and replacing drainage on one side of each street, and a pavement inlay. Business owners, the public and the SAC agreed that this option was less desirable than option 3 because it only widens the travel lanes to 11’ which could still be tight given the heavy volume of large trucks and oversized vehicles traveling on US 101. This option would also only replace the sidewalks on one side of the street. This option would require that bikes share travel lanes on US 101. The speed limit of 20 MPH should accommodate shared bike/through lanes. A parallel route on Stillwell Avenue is also available for cyclists.

**Option 3: Widen road to both sides**

This option would narrow the sidewalks on both sides of Main and Pacific avenues to provide width for two 12’ travel lanes, a bike lane and parallel parking on both sides of the street. It would narrow the sidewalks to 10’ on both sides of Main and Pacific avenues. The sidewalks and drainage system would be replaced.

This option would cost about $2.2 million and would include rebuilding sidewalks and replacing drainage, and a pavement inlay. This option may require complicated structural
work to narrow the sidewalks around the Tillamook Hotel building where the basement extends to the curb. Business owners, the public and the SAC preferred this option because it maintained parking and provided for 12’ travel lanes as well as included new sidewalks and drainage on both sides of Main and Pacific avenues. This option would require that bikes share travel lanes on US 101. The speed limit of 20 MPH should accommodate shared bike/through lanes. A parallel route on Stillwell Avenue is also available for cyclists.
### US 101/OR 6 Alternative Study Evaluation Summary

<table>
<thead>
<tr>
<th>Criteria Categories (Goals)</th>
<th>Criteria (Objectives)</th>
<th>Measure</th>
<th>Alternative A</th>
<th>Alternative B-1</th>
<th>Alternative B-2</th>
<th>Alternative C-1</th>
<th>Alternative E</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Goal 1:</strong> Improve future (2030) mobility in downtown Tillamook for all users including cars, trucks, bicyclists and pedestrians.</td>
<td>Improve vehicle and freight mobility for local and through travel.</td>
<td>Study intersections in 2030 Build scenario that exceed applicable OHP mobility standard</td>
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<tr>
<td></td>
<td>Improve pedestrian crossings and sidewalk conditions in downtown Tillamook.</td>
<td>Assessment of pedestrian facilities in downtown Tillamook</td>
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<tr>
<td></td>
<td>Provide for clear routes within downtown Tillamook, even for those who are unfamiliar with the area.</td>
<td>Assessment of continuity of OR 101 and OR 6 in downtown Tillamook</td>
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<tr>
<td></td>
<td>Provide for circulation of buses in downtown and to the transit center.</td>
<td>Ease of access to transit center</td>
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<tr>
<td><strong>Goal 2:</strong> Provide for improved safety for all users in the study area.</td>
<td>Minimize conflict points from private driveways near intersections.</td>
<td>Not measured at this time</td>
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<td></td>
<td>Reduce queuing that affects adjacent intersections.</td>
<td>Assessment of queue lengths at study intersections in 2030 Build scenario</td>
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<tr>
<td></td>
<td>Enhance safety for pedestrians, bicyclists and transit users.</td>
<td>Not measured at this time</td>
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<tr>
<td><strong>Goal 3:</strong> Support economic vitality in Tillamook and the coastal region.</td>
<td>Support convenient customer access to downtown businesses.</td>
<td>Number of on-street parking spaces impacted</td>
<td></td>
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<td></td>
<td>Provide for efficient movement of goods and people between US 101 and OR 6 and on Highway 131.</td>
<td>Vehicle delay at signalized study intersections</td>
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<tr>
<td><strong>Goal 4:</strong> Construct a project that is sensitive to the community and natural environment.</td>
<td>Avoid, minimize or mitigate impacts to natural resources including riparian habitat, floodplain, wetlands, and water quality.</td>
<td>Assessment of natural resource impact</td>
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<td></td>
<td>Avoid, minimize or mitigate impacts to downtown businesses.</td>
<td>Number of displaced or substantially impacted businesses</td>
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<td>Avoid, minimize or mitigate impacts to historic resources.</td>
<td>Number of historic resources directly impacted</td>
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<tr>
<td></td>
<td>Avoid, minimize or mitigate impacts to parks and trails.</td>
<td>Assessment of direct impact to park and trail facilities</td>
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<tr>
<td><strong>Goal 5:</strong> Provide for a cost-effective solution that can be implemented in phases.</td>
<td>Consider total construction cost.</td>
<td>Order of magnitude construction cost</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Provide for a project that can be constructed in phases.</td>
<td>Ability to construct in phases</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Consider the relationship to other planned and envisioned projects.</td>
<td>Non-differentiating criterion</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

| Overall assessment | Few impacts to natural or built environment; little benefit to traffic operations. | More impacts to the natural and built environment due to two-way traffic on 1st and 3rd streets; similar traffic performance as other options. | Significantly more impacts to the natural and built environment due to two-way traffic on 1st and 3rd streets and new bridge farther to the east; similar traffic performance as other options. | Fewer impacts to the natural and built environment; better traffic performance than other options. | More impacts to the natural and built environment due to two-way traffic on 1st and 3rd streets; similar traffic performance as other options. |

- **High**/meets criteria well
- **Medium**/meets criteria somewhat
- **Low**/meets criteria poorly
- **Not measured at this time** or non-differentiating
Introduction

The purpose of this memorandum is to summarize the evaluation of alternatives for the US 101/OR 6 Transportation Alternatives Study. For a description of the methodology used to evaluate alternatives, see the US 101/OR 6 Transportation Alternative Study: Alternatives Evaluation Methodology Technical Memorandum (April 2009).

ODOT, in cooperation with the City of Tillamook and Tillamook County, is undertaking a study to identify better ways (alternatives) to move through-traffic between US 101 and OR 6 in downtown Tillamook. OR 6 is the 1st Street (westbound) and 3rd Street (eastbound) couplet and US 101 is the Main Avenue (southbound) and Pacific Avenue (northbound) couplet in downtown Tillamook. These streets were not designed to safely carry the large volume of traffic, particularly truck traffic that currently uses these streets. The US 101/OR 6 Transportation Alternatives Study is a refinement plan that includes a baseline environmental review. The Study’s goal is to identify a narrow range of feasible alternatives to make traveling through downtown Tillamook more efficient and safe for all modes (cars, trucks, buses, bicyclists and pedestrians). To build on previous work, the US 101/OR 6 Transportation Alternatives Study will consider the recommendations from the 2006 Tillamook Transportation Refinement Plan (TTRP) and new ideas.

Summary of Alternatives

The following summarizes the five alternatives evaluated.

Alternative A

Alternative A, illustrated in Figure 1, would:

- Modify 1st Street between US 101 and Miller Avenue from one-way traffic westbound to two-way traffic.
- Modify 3rd Street between US 101 and Miller Avenue from one-way traffic eastbound to two-way traffic.
• Install an intersection control at the OR 6/1st Street/3rd Street/Miller Avenue intersection.

• Modify the lane configuration and striping on various streets, implement miscellaneous pedestrian and bicycle improvements, and reconfigure on-street parking, as shown in Figure 1.

**Alternative B-1**
Alternative B-1, illustrated in Figure 2, would do the same as Alternative A and:

• Construct a new northbound leg to the 1st Street/Pacific Avenue intersection for northbound US 101 traffic.

• Construct a second bridge across Hoquarten Slough for northbound US 101 traffic immediately east of the existing bridge and tie-in with US 101 approximately 1,100 feet north of the slough. The bridge would have a sidewalk on the east side and a designated bicycle lane. Only southbound US 101 traffic would use the existing bridge across the slough.

• Modify the lane configuration and striping on various streets, implement miscellaneous pedestrian and bicycle improvements, and reconfigure on-street parking, as shown in Figure 2.

**Alternative B-2**
Alternative B-2, illustrated in Figure 3, is the same as Alternative B-1, except the bridge across Hoquarten Slough would be aligned approximately 200 feet east of the existing bridge and tie into US 101 approximately 1,250 feet north of the slough.

**Alternative C**
Alternative C, illustrated in Figure 4, would:

• Construct a second bridge across Hoquarten Slough for northbound US 101 traffic immediately east of the existing bridge.

• Modify the lane configuration and striping on US 101, and implement miscellaneous pedestrian and bicycle improvements, as shown in Figure 4.

**Alternative E**
Alternative E, illustrated in Figure 5, would combine Alternatives A and C into one alternative (combination of both alternatives).
Description of Findings and Ratings by Goal and Objective

The following describes the findings by goal and objective (evaluation criterion).

**Goal 1:** Improve future (2030) mobility in downtown Tillamook for all users including cars, trucks, and bicyclists

**1.1: Improve vehicle and freight mobility for through and local travel.**¹

This criterion used the applicable Oregon Highway Plan (OHP) mobility standards to measure vehicle mobility at key study area intersections.

Alternatives B-1 and B-2 were rated “High” because one of the nine study intersections would fail to meet the applicable Oregon Highway Plan (OHP) mobility standard in 2030.

Alternatives C and E were rated “Medium” because two of the nine study intersections would fail to meet the applicable OHP mobility standard in 2030.

Alternative A was rated “Low” because three of the nine study intersections would fail to meet the applicable OHP mobility standard in 2030.

The following table summarizes the ratings for this evaluation criterion.

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Intersections not Meeting Applicable Mobility Standard</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>3</td>
<td>Low</td>
</tr>
<tr>
<td>B-1</td>
<td>1</td>
<td>High</td>
</tr>
<tr>
<td>B-2</td>
<td>1</td>
<td>High</td>
</tr>
<tr>
<td>C</td>
<td>2</td>
<td>Medium</td>
</tr>
<tr>
<td>E</td>
<td>2</td>
<td>Medium</td>
</tr>
</tbody>
</table>

**1.2: Improve pedestrian crossings and sidewalk conditions in downtown Tillamook**

Alternative C was rated “High” because it would improve pedestrian facilities on the existing bridge (southbound US 101 traffic) and implement new pedestrian facilities on the new second bridge across Hoquarten Slough (northbound US 101 traffic).

Alternatives B-1, B-2, and E were rated “Medium” because they would improve pedestrian facilities on the existing bridge (southbound US 101 traffic) and implement new pedestrian facilities on the new second bridge across Hoquarten Slough (northbound US 101 traffic), but narrow the sidewalk on 3rd Street.

Alternative A was rated “Low” because it would not improve facilities on the existing US 101 bridge across Hoquarten Slough.

¹ This evaluation criterion was originally separated as two criteria: local and through traffic. However, the available data does not differentiate between local and through trips, and therefore was combined into one criterion.
1.3: Provide for clear routes within downtown Tillamook, even for those who are unfamiliar with the area.

Alternative A, B-1, B-2, and E were rated “High” because they would change 1st Street and 3rd Street to two-way traffic and thus would provide a clearer route within downtown Tillamook than one-way streets that require out-of-direction travel.

Alternative C was rated “Medium” because it would maintain existing conditions with one-way traffic on 1st Street and 3rd Street, which provides a slightly less clear route within downtown Tillamook than two-way traffic on 1st Street and 3rd Street.

1.4: Provide for circulation of buses in downtown and to the transit center.

This criterion did not differentiate between alternatives because they did not significantly change bus circulation downtown and to the transit center.

Goal 2: Provide for improved safety for all users in the study area.

2.1: Minimize conflict points from private driveways near intersections.

This evaluation criterion could not be used to evaluate alternatives due to the lack of available data, but will be considered in the project’s access management plan that will be developed in a future project phase.

2.2: Reduce queuing that affects adjacent intersections.

Alternatives B-1, B-2, and E were rated “Medium” because most intersections would have intersections with queues that are within and exceed the available storage length.

Alternatives A and C were rated “Low” because the queues for most movements would be worse than the alternatives rated “Medium” and because all queues at several intersections would exceed the available storage length.

It should be noted that Alternative C could show reduced queue lengths if the intersection of Main Avenue and 3rd Street is changed to allow for additional turn lanes or through lanes, particularly on 3rd Street eastbound. B-1, B-2 and E all include significant changes at this intersection to reduce queuing.

2.3: Enhance safety for pedestrians, bicyclists, and transit users.

This evaluation criterion could not be used to evaluate alternatives due to the lack of available data, but will be considered in the project’s Environmental Assessment, which will be developed in a future project phase.

Goal 3: Support economic vitality in Tillamook and the coastal region.

3.1: Support convenient customer access to downtown businesses.

Alternative C was rated “High” because it would impact the fewest number of parking spaces (10-15 spaces).

Alternatives A, B-1, B-2, and E were rated “Low” because they would impact substantially more parking spaces (more than 75 spaces) than Alternative A.
3.2: Provide for efficient movement of goods and people between US 101 and OR 6 and on Highway 131.
Alternatives A, B-1, B-2, and E were rated “High” because the vehicle delay at all study intersections would be less than 55 seconds.

Alternative C was rated “Medium” because one study intersection had a vehicle delay greater than 55 seconds (Main Street and 3rd Street; control delay of 105 seconds; LOS F). Vehicle delay at Main Street and 3rd Street may be able to be reduced through changes to the design of this intersection.

Goal 4: Construct a project that is sensitive to the community and the natural environment.

4.1: Avoid, minimize, or mitigate impacts to natural resources including riparian habitat, floodplain, wetlands, and water quality.

Alternative A could not be applied to this alternative because it would only change 1st Street and 3rd Street from one-way to two-way traffic, and thus would not directly impact the natural environment.

Alternatives B-1, C, and E were rated “Medium” because they would construct a second bridge across Hoquarten Slough for northbound traffic immediately east of and parallel to the existing bridge that would directly impact Hoquarten Slough and other natural resources in the area.

Alternative B-2 was rated “Low” because it would construct a second bridge across Hoquarten Slough approximately 250 feet east of the existing bridge for northbound traffic. The bridge would be located on a new alignment in an area more environmentally undisturbed than adjacent to the existing bridge.

4.2: Avoid, minimize, or mitigate impacts to downtown businesses.

Alternative A was rated “High” because it would directly impact one business.

Alternatives C and E were rated “Medium” because they would directly impact four businesses (all four businesses are immediately south of the Hoquarten Slough and east of US 101).

Alternatives B-1 and B-2 were rated “Low” because they would directly impact five businesses (four businesses are immediately south of the Hoquarten Slough and east of US 101; one business is north of the Hoquarten Slough and east of US 101).

4.3: Avoid, minimize, or mitigate impacts to historic resources.
The Oregon Historic Sites database identifies six properties in the project area. Since none of the alternatives would directly impact any of these six historic properties including the former U.S. Post Office, they were all rated “non-differentiating.”

4.4: Avoid, minimize, or mitigate impacts to parks and trails.

Alternative A could not be applied to this alternative because it would be entirely within the existing built environment.
Alternatives B-1, C, and E were rated “Medium” because these alternatives would construct a second bridge across Hoquarten Slough for northbound US 101 traffic immediately east of and parallel to the existing bridge that would carry US 101 southbound traffic. This new bridge for US 101 northbound traffic would directly impact Hoquarten Trail System facilities.

Alternative B-2 was rated “Low” because it would construct a second bridge across Hoquarten Slough approximately 250 feet east of the existing bridge for northbound US 101 traffic. Because the bridge would not be located adjacent to the existing bridge, it would isolate the Hoquarten Trail System facilities between the existing and new bridge and complicate access to this portion of the trail system.

**Goal 5: Provide for a cost-effective solution that can be implemented in phases.**

5.1: Consider total construction cost.

Alternative A was rated “High” because it would have the lowest estimated construction cost.

Alternative B-2 were rated “Low” because the estimated construction costs would be higher than any other alternative.

Alternatives B-1, C, and E were rated “Medium” because the estimated construction costs would be higher than Alternative A, but lower than B-2.

The following table shows the estimated construction cost for each alternative its rating.

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Estimated Construction Cost</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>$3-5 million</td>
<td>High</td>
</tr>
<tr>
<td>B-1</td>
<td>$11-13 million</td>
<td>Medium</td>
</tr>
<tr>
<td>B-2</td>
<td>$12-14 million</td>
<td>Low</td>
</tr>
<tr>
<td>C</td>
<td>$9-11 million</td>
<td>Medium</td>
</tr>
<tr>
<td>E</td>
<td>$11-13 million</td>
<td>Medium</td>
</tr>
</tbody>
</table>

5.2: Provide for a project that can be constructed in phases.

The first phase of alternatives B-1, B-2 and E would be converting 1st and 3rd streets to two-way traffic. Converting these to two-way streets shows little benefit in terms of congestion reduction, but would have significant community impacts. Alternative A and C could not be constructed in phases. Thus, this evaluation criterion did not differentiate between alternatives.

5.3: Consider the relationship to other planned and envisioned projects.

This evaluation criterion had similar results for all alternatives because all alternatives would consider other planned and envisioned projects. Thus, this evaluation criterion did not differentiate between alternatives.
Problem Statement

The intersection of US 101 and OR 6 does not safely provide mobility for cars, trucks, pedestrians and bicyclists in downtown Tillamook. Recognizing the important contribution of the intersection of two state highways to the movement of goods and people, the project will seek to balance the needs of through traffic movement with the community’s vision for downtown Tillamook as a vital, pedestrian-oriented place.

Problems related to mobility and safety at the intersection of US 101 and OR 6 in downtown Tillamook were identified in the City of Tillamook’s 2004 Transportation System Plan (TSP) and again in the 2006 Tillamook Transportation Refinement Plan (TTRP).

Specific problems in the study area include:

- **Gridlocked traffic.** Traffic congestion is exacerbated by short blocks where traffic queues regularly exceed storage available which leads to problems with how the system operates, even at intersections that meet ODOT’s adopted mobility standards. This means that traffic waiting at a signal may backup through the previous intersection causing cars waiting at that signal to miss their opportunity to pull forward on a green light. This leads to increased delays for drivers throughout downtown Tillamook. Some stakeholders note that this gridlocked traffic leads to drivers cutting through adjacent neighborhoods.

- **Congestion.** The intersection of 1st Street and Main Avenue and 3rd Street and Main Avenue are expected to exceed ODOT’s adopted mobility standard and will cause delay for travelers by 2030. The intersection of 3rd Street and Main Avenue exceeds standards today. In addition, stakeholders report experiencing congestion at all four study intersections.

- **Safety.** Private driveways near intersections increase conflict points. The crash rate in the study area exceeds what is typical on other similar facilities in the state. The streets in the area are narrow which can lead to people in cars and trucks, either driving or parking, as well as on foot or on bike to feel unsafe. Bike facilities are not provided in the area though Highway 101 is designated as a bike route which can result in an environment that is not safe for cyclists. Some stakeholders say that these safety issues are compounded by unclear routes that can be confusing to those unfamiliar with the area. Some stakeholders note that frustration and time lost due to congestion downtown contributes to people driving too quickly once they leave downtown core.

- **Freight movement.** A relatively high proportion of traffic is comprised of medium and heavy trucks. The narrow streets in downtown Tillamook are not wide enough to safely accommodate large trucks particularly at intersections with sharp turning radii.

- **Economic vitality.** Downtown Tillamook lacks adequate safe and convenient parking to support businesses. The parking that is available on Main and Pacific avenues and 1st and 3rd streets is unattractive for some customers because of the narrow travel lanes and high traffic volumes. Stakeholders report that trucks often hit parked cars on these streets.
US 101/OR 6 Alternatives Study Goals and Objectives

PREPARED FOR: Tony Snyder, ODOT
PREPARED BY: Kristin Hull
DATE: January 29, 2009 (updated)

The purpose of this memorandum is to outline a proposed set of goals and objectives to guide the evaluation of concepts for the US 101/OR 6 Alternatives Study.

Goals are intended to be broad statements about the overarching purpose of the study. Objectives are specific targets that concepts should aim to meet. Goals and objectives are used to differentiate and identify trade-offs among alternatives and financing options. To be most effective, an objective must be measurable and well defined. This ensures a common understanding of each objective’s meaning, and allows for a clear comparison among alternatives.

The draft goals and objectives were developed after reviewing notes from stakeholder interviews, the first Project Management Team (PMT) meeting, and the first Stakeholder Advisory Committee (SAC) meeting. The goals were also based, in part, on the Tillamook Transportation Refinement Plan (2006) goals and evaluation criteria.

These draft goals and objectives will be reviewed by the Project Management Team and the Stakeholder Advisory Committee before they are finalized. The general public will also have the opportunity to provide input about the goals and objectives at first project open house. A subset of these goals along with the project purpose statement will be used as threshold criteria that will screen out ideas that do not meet the project’s basic purpose.

Draft goals and objectives

Goal 1: Improve future (2030) mobility in downtown Tillamook for all users including cars, trucks, bicyclists and pedestrians.
- Improve vehicle and freight mobility for local travel.
- Improve vehicle and freight mobility for through travel.
- Improve pedestrian crossings and sidewalk conditions in downtown Tillamook.
- Provide for clear routes within downtown Tillamook, even for those who are unfamiliar with the area.
- Provide for circulation of buses in downtown and to the transit center.

Goal 2: Provide for improved safety for all users in the study area.
- Minimize conflict points from private driveways near intersections.
- Reduce queuing that affects adjacent intersections.
- Enhance safety for pedestrians, bicyclists and transit users.
Goal 3: Support economic vitality in Tillamook and the coastal region.
- Support convenient customer access to downtown businesses (e.g. provide adequate, convenient parking).
- Provide for efficient movement of goods and people between US 101 and OR 6 and on Highway 131.

Goal 4: Construct a project that is sensitive to the community and natural environment.
- Avoid, minimize or mitigate impacts to natural resources including riparian habitat, floodplain, wetlands, and water quality.
- Avoid, minimize or mitigate impacts to downtown businesses.
- Avoid, minimize or mitigate impacts to historic resources.
- Avoid, minimize or mitigate impacts to parks and trails.

Goal 5: Provide for a cost-effective solution that can be implemented in phases.
- Consider total construction cost.
- Provide for a project that can be constructed in phases.
- Considers the relationship to other planned and envisioned projects (e.g. Oregon Solutions Flood Mitigation, future highway bypass).