V. ALTERNATIVES DEVELOPED AND EVALUATED

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The Advisory Committee considered a very comprehensive array of potential solutions to the identified transportation problems and needs in Northwest Butler County and carefully weighed every option in its ability to address their established project goals.

The Do Nothing / No Build Alternative

Maintenance of the existing transportation facilities, the network of roads and limited transit service, in the NBTS area represents a potential future scenario. Although, as population is projected to increase (as discussed and shown in Exhibit 2) and as projected travel demand will increase substantially throughout the NBTS area (as depicted in Figure 5), the possibility that a Do Nothing or No Build plan could be the result of this study was considered. The Do Nothing / No Build Alternative does not include any major roadway or transportation improvements and consists of the continued use of the existing roadway network and transit service with only routine maintenance and upkeep. Existing facilities and committed improvement projects in the OKI region are included in the Do Nothing / No Build scenario. In the NBTS area, the only projects currently in the OKI Regional Transportation Plan in the NBTS area are:

1) the improvement of approximately 2 miles of US 27 north of the City of Oxford (widen to three lanes, sidewalks and signal improvement),
2) the development of a shared use (bicycle and highway) corridor around the City of Oxford, and
3) the construction of a park-and-ride facility along US 27 near the City of Oxford.

Although the Advisory Committee concurred that the Do Nothing / No Build alternative would fail to meet their established project goals, this alternative was carried throughout the study and was used as the baseline condition for comparison of benefits and impacts of all other alternatives.

Consideration of TSM and TDM Solutions

Early in the study process, before developing or considering major capacity increasing transportation improvement alternatives such as new highway facilities, the Advisory Committee reviewed an array of alternative solutions that may be less capital intensive or require less right-of-way for potential applicability in addressing transportation needs in Northwest Butler County. These alternatives generally fall into two categories: Transportation System Management (TSM) and Transportation Demand Management (TDM).

TSM includes a variety of measures designed to optimize the efficiency and capacity of the existing system such as access management, signalization, widening, and transit support. TDM takes a different approach, rather than changing system capacity, it includes measures to reduce travel demand, or better manage the demand by shifting some of it from peak hours. TDM relies on incentives and disincentives to encourage changes in behavior attractive such as telecommuting and flex time for workers.

Transportation Systems Management (TSM) Alternatives

Transportation System Management (TSM) alternative strategies focus on optimizing the existing transportation network and components to accommodate transportation demands. This type of alternative also includes the addition or expansion of non-highway travel modes. The following are brief descriptions of the TSM alternatives that were considered by the Advisory Committee for the NBTS and eliminated from consideration. However, some TSM alternatives, such as intersection and roadway upgrades, were advanced for further consideration to be included as part of the final recommendation for this study.

Intelligent Transportation Systems

Intelligent Transportation Systems (ITS) are advanced communication technologies that are linked to the transportation infrastructure to move people and goods more efficiently. Intelligent Transportation System technologies can include multiple components that support each other and optimize transportation efficiency. ARTIMIS, which stands for Advanced Regional Interactive Traffic Management and Information System, is the first project of this type in Ohio and Kentucky. Through the use of electronic surveillance and changeable message signs, radio interconnection and phone access coupled to freeway service patrol vans and a control center, it is designed to manage congestion by monitoring traffic problems, such as congestion, accidents, or disabled vehicles on 88 miles of freeway in the Cincinnati - Northern Kentucky area. The goals of ARTIMIS include the improvement of safety, travel time and air quality. The following is a list of some of those components that can function within an ITS: 1) Advanced Traffic Management System, 2) Traveler Information System, 3) Incident Management Program, 4) Advanced Traffic Monitoring System, 5) Advanced Public Transit Management System, and 6) Traffic Signal Control System.

Transit Support (Park-and-Ride)

Transit support facilities provide or improve modes of travel to reduce single occupant vehicles (SOV's) during peak periods. Bus transit ridership can be enhanced through the use of park-and-ride facilities, which increase accessibility to major bus routes linking outlying areas with major employment, education or shopping areas.

Rail Freight Support Facilities

Rail freight support facilities provide for reliable and efficient movement of freight and goods between producers and markets, while reducing congestion, air, and noise pollution. Intermodal facilities include transfer hubs that allow goods to be placed on trucks, trains, pipelines, barges, and planes.

Bike and Pedestrian Facilities

Bike and pedestrian facilities provide non-highway alternatives for some SOV travel and a means of connecting with transit to reduce congestion and vehicle emissions, especially from short-distance SOV trips. The most effective approach is to expand facilities that enable these modes to be used safely, primarily by reducing conflicts with motorized vehicles (including: on-road bicycle facilities, separate off-road facilities and sidewalks).

Growth Management Strategies

Growth management strategies involve the public sector in shaping new development patterns to help reduce SOV travel as well as address environmental, social, and fiscal issues. Typically, growth management promotes compact mixed-use development patterns that place employment and commercial activities closer to residential areas to promote travel by transit, bicycle, and pedestrian modes. Land use planning in this area, particularly with the City of Oxford's and the eight townships' recent future land use plan development, has begun to deal with the issue of growth management.

Transportation Demand Management Alternatives

Transportation Demand Management (TDM) alternative strategies are used to better manage, control or accommodate transportation demand. TDM: Measures to reduce travel demand, or shift from peak hours. TDM relies on incentives and disincentives to make shifts in behavior attractive (telecommuting, flextime). The following are brief descriptions of the TDM alternatives that were considered for the NBTS.

Telecommuting

Telecommuting would allow workers to work at home by using an electronic connection to their place of work, i.e., using a computer connected to the employer's network. This measure functions as a transportation improvement measure on the basis of replacing commuter trips (whether by car or bus) with that of electronic "trips" (phone or computer). This is often achieved by increasing the opportunities for work at home, which in turn, decrease the number of daily commuter trips. Telecommuting is effective when employers allow or encourage employees to work from home or at remote "satellite" facilities to eliminate, shorten or reduce the commuter trips to work.

Parking Management

Parking management is a technique that functions by discouraging SOV travel and rewards those who carpool and utilize more efficient means of travel. This technique is employed by structuring public and private parking fees to provide incentives for carpooling, incentives to travel outside of peak periods, and disincentives to drive-alone travel. Parking lots can designate spaces for rideshare. Zoning ordinances may discourage SOV travel by requiring a minimum number of parking spaces, or maximum parking requirements could be set at low levels to create a shortage of parking and encourage alternative modes of travel or multiple occupancy vehicle travel.

Alternative Work Schedules

Alternative work schedules can result in a redistribution of travel demand to reduce peak hour congestion. A variety of different programs could be used to reduce worker commute trips during peak periods including: flex time, staggered work hours, and compressed work week schedules.

High Occupancy Vehicle Strategies

High Occupancy Vehicle (HOV) lanes are designated lanes on existing multi-lane roadways that are reserved for the exclusive use of vehicles carrying more than one person (buses, carpools, and vanpools). These lanes are designed to provide an incentive to travelers to carpool or use transit by reducing their travel time during peak periods. This measure can only be applied where multiple lanes are available.

Congestion Pricing

Congestion pricing involves charging a fee for using a particular major thoroughfare or for crossing into a certain area during peak commuting periods. This measure is designed to encourage travel off peak, thereby reducing demand during the most congested times of day.

Summary of Disposition of TSM and TDM Alternatives Solutions Considered

The Advisory Committee considered and voted on the potential applicability of each of these TSM and TDM alternative solutions to the project purpose, need and goals (see Appendix A). The Advisory Committee recommended the following alternatives be eliminated from consideration due to having the least potential applicability: High Occupancy Vehicle Strategies, Congestion Pricing, Rail Freight Support Facilities, Intelligent Transportation Systems, and Telecommuting. Measures such as Alternative Work Schedules, Parking Management, and Growth Management were determined to have some potential applicability but were not seen as viable alternatives to pursue.

Alternative solutions that were determined to have a higher potential applicability were noted for further consideration as appropriate: Transit Support (Park-and-Ride) and Bike and Pedestrian Facilities.

The Advisory Committee concluded that these alternatives could play some role in the future transportation plans for the NBTS area, but in general, none of these alternatives could substantially satisfy the key project goals and need components.

The Build Alternatives

Based on developing an understanding the area's problems and needs, reviewing projected conditions and soliciting public input, a number of potential projects or improvements were developed ranging from intersection improvements to roadway upgrades to potential new roadway facilities. These possible improvement projects were presented to the public in April 2003 as independent project components to consider for incorporation into a comprehensive long range plan for Northwest Butler County. Following that public meeting and upon review of the public comments received, the individual project components were assembled into six possible long range plans, consisting of various combinations of improvements.

Six Build Plans were compiled for evaluation. It is important to understand that roadway extensions or new facilities in any of the plans represent conceptual, directional paths, not actual roadway alignments. The development of physical roadway alignments or "footprints" is beyond the scope of this study and would require in-depth planning, environmental and engineering study.

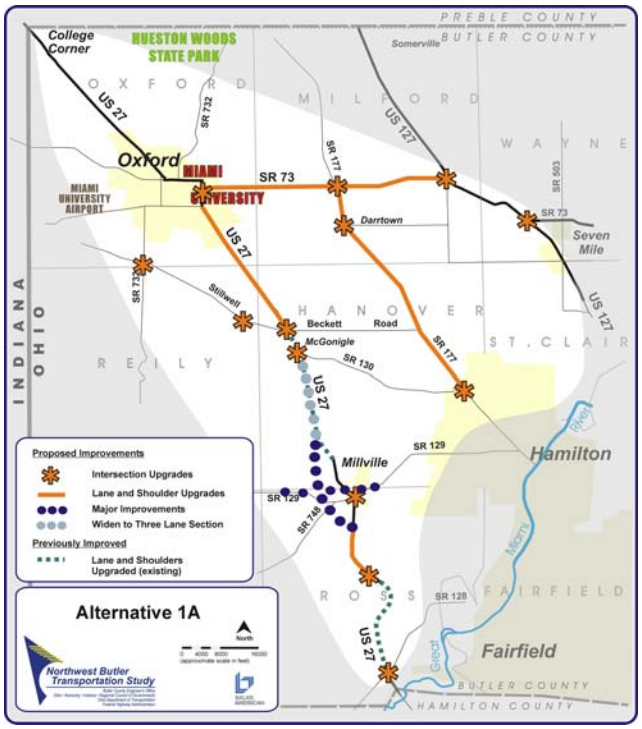
Each Build Alternative plan considered for the project included some common elements as follows:

- Transportation System Management (TSM) upgrades at identified critical intersections;
- lane and shoulder width upgrades of major roadways identified; and
- a Millville Realignment of US 27 to the west of Millville, with a re-alignment of the SR 129 intersections both east and west of US 27.

Each successively numbered Build Alternative has additional components that build upon this base. The following pages describe the six Build plans as compiled and evaluated by the Advisory Committee and presented to the public for review and comment.

1A: Upgrade plus US 27 Access Management

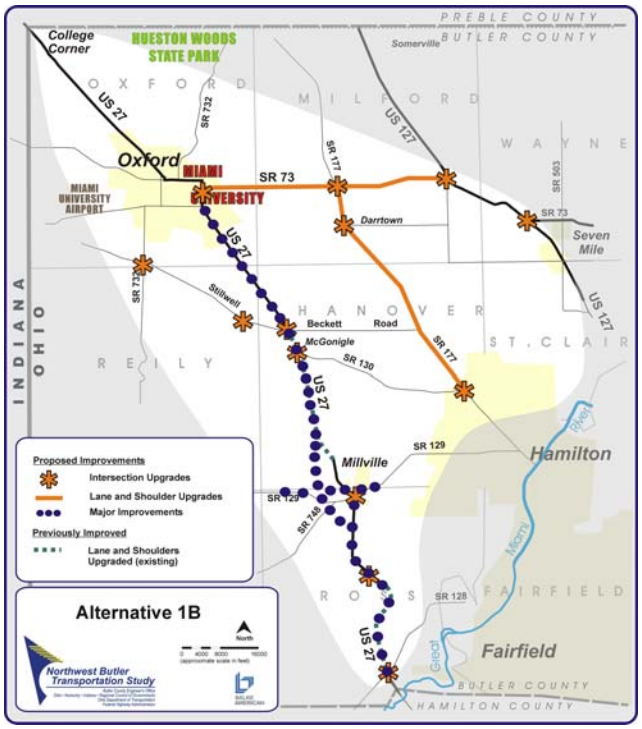
- Upgrade key intersections and roadway sections (lane and shoulder widths)
- plus re-align US 27 and SR 129 in Millville
- plus additional three lane segment for improved access management and through capacity between Minton Road and SR 130



1B: Upgrade plus Four Lane (Ross to Oxford)

- Upgrade key intersections and roadway sections (lane and shoulder widths)
- plus re-align US 27 and SR 129 in Millville
- plus widen or re-align US 27 to four lanes from SR 128 to Oxford

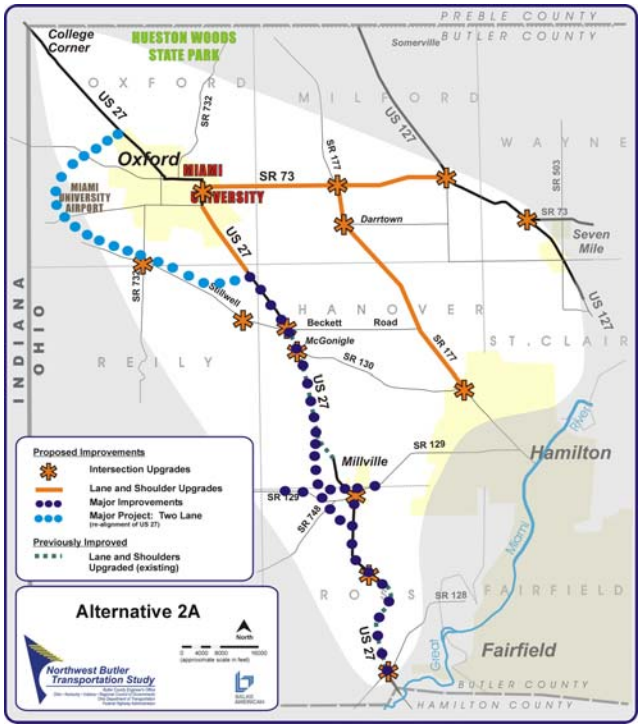
Build Alternative 1B includes the widening of US 27 to four lanes between SR 128 and the City of Oxford or a new four lane road parallel (east or west) to US 27, with the existing US 27 then becoming a local access road.



2A: Upgrade plus US 27 Four Lane plus Western Oxford Realignment

- Upgrade key intersections and roadway sections (lane and shoulder widths)
- plus re-align US 27 and SR 129 in Millville
- plus widen or re-align US 27 to four lanes from SR 128 to Oxford
- plus add two lane western parkway-design roadway / re-alignment of US 27 around Oxford

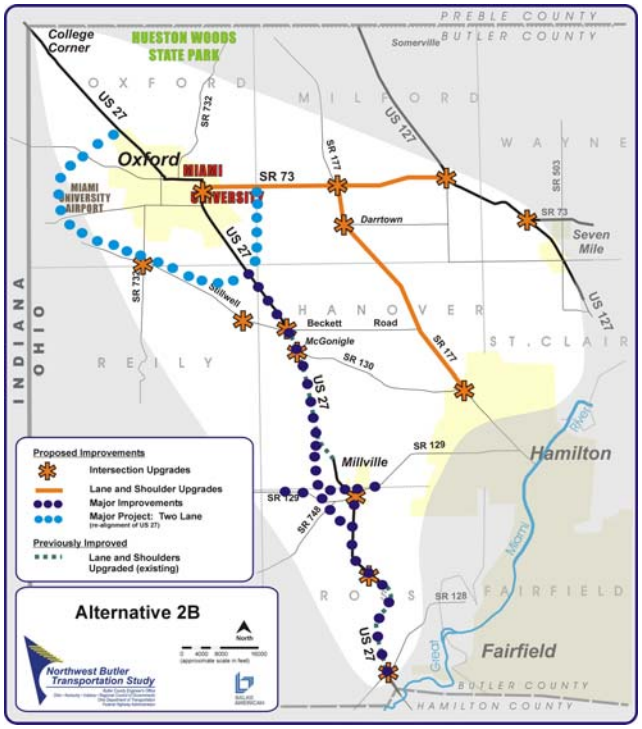
The US 27 realignment would run around the southwest side of Oxford, around the west side of the Miami University Airport and rejoin existing US 27 northwest of the City of Oxford.



2B: Upgrade plus US 27 Four Lane plus Western Oxford Re-alignment with Eastward Extension to SR 73

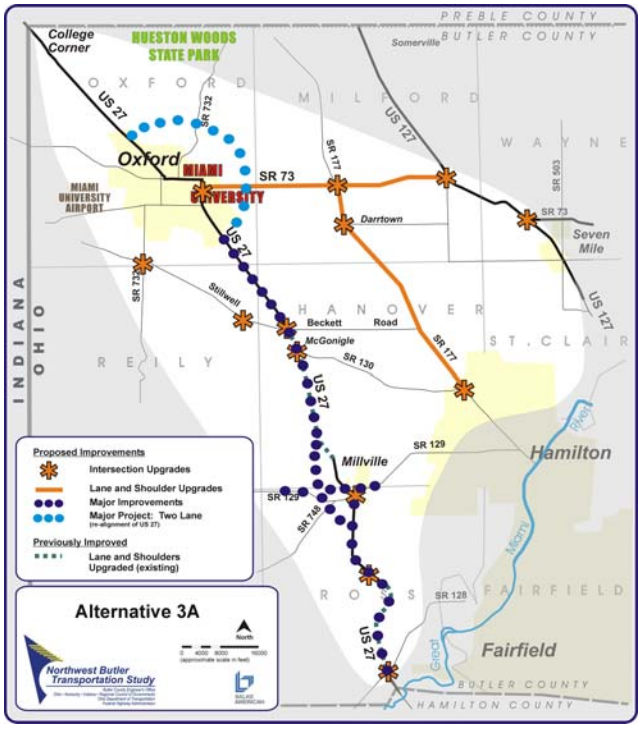
- Upgrade key intersections and roadway sections (lane and shoulder widths)
- plus re-align US 27 and SR 129 in Millville
- plus widen or re-align US 27 to four lanes from SR 128 to Oxford
- plus add two lane western parkway-design roadway / re-alignment of US 27 around Oxford with eastward parkway-design roadway extension to SR 73

Alternative 2B is the same as Build Alternative 2A with an extension from the southern termini of the western re-alignment at US 27, eastward to connect with SR 73 east of the City of Oxford.



3A: Upgrade plus US 27 Four Lane plus Eastern Oxford Re-alignment

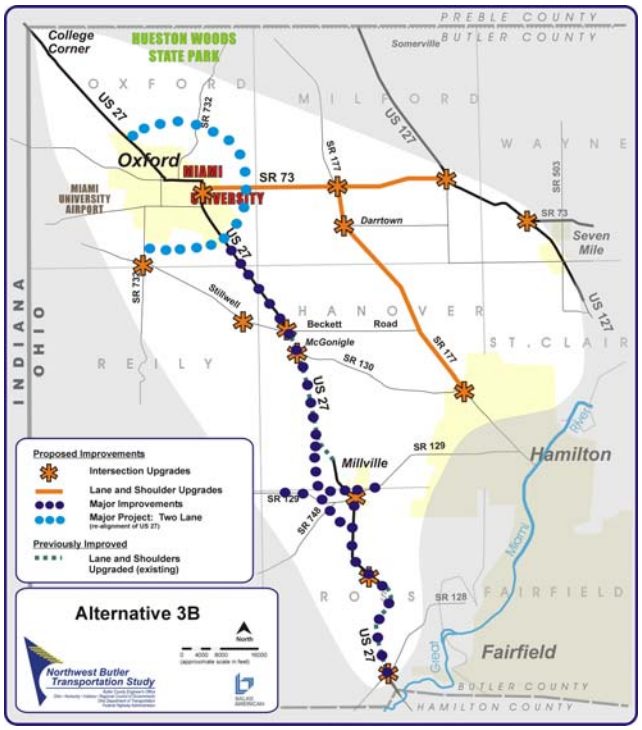
- Upgrade key intersections and roadway sections (lane and shoulder widths)
- plus re-align US 27 and SR 129 in Millville
- plus widen or re-align US 27 to four lanes from SR 128 to Oxford
- plus eastern parkway-design roadway / re-alignment of US 27 around Oxford



Build Alternative 3A includes the realignment of US 27 to the east side of the City of Oxford, as a two-lane parkway with access only at a limited number of intersections.

3B: Upgrade plus US 27 Four Lane plus Eastern Oxford Re-alignment with Westward Extension to SR 732 (south of Oxford)

- Upgrade key intersections and roadway sections (lane and shoulder widths)
- plus re-align US 27 and SR 129 in Millville
- plus widen or re-align US 27 to four lanes from SR 128 to Oxford
- plus eastern parkway-design roadway / re-alignment of US 27 around Oxford
- plus westward parkway-design roadway extension to SR 732 south of Oxford



Build Alternative 3B is the same as Build Alternative 3A with an extension of the US 27 realignment around the east side of the City of Oxford west to SR 732. These connections would be parkway-design, two-lane facilities with access only at a limited number of intersecting roads.

Evaluating the Alternatives

Recognizing that all seven alternatives are not equal in terms of benefit, impact or cost and that any of the Build alternatives would involve substantial capital costs to implement, the Advisory Committee was asked to focus their evaluation on the project goals they had established as the foundation of the decision-making process and ultimate advancement of a recommended plan.

The following tables, Tables 3 through 5, were developed to better illuminate the differences among the alternatives. The analysis is based on the Year 2030 projected traffic for each scenario using the OKI Regional Travel Demand Model output. The proposed improvements and components of each scenario were input into the model to assess future travel patterns and volumes.

Table 3 compares projected safety benefits in terms of predicted increase or decrease in traffic accidents on US 27 and SR 73, the two most important roadways in the Northwest Butler area, using projected accident rates and projected volumes. Accident rates were calculated for roadway segments based on the proposed roadway improvements. The rates were then used to predict accident numbers based on projected traffic volumes and then each Build alternative was compared to the Do Nothing / No Build projected conditions.

Table 3: Comparison of Safety Benefits of Alternatives

Alternatives:	Do Nothing / No Build	1A	1B	2A	2B	3A	3B
Safety Benefit **Potential increase or reduction in number of traffic accidents on US 27 and SR 73 (compared to Existing accident levels)**	85% Increase	47% Increase	34% Increase	5% Reduction	12% Reduction	15% Reduction	13% Reduction
Potential increase or reduction in number of traffic accidents on US 27 and SR 73 (compared to predicted Yr. 2030 No Build accidents)	----	21% Reduction	28% Reduction	49% Reduction	52% Reduction	54% Reduction	53% Reduction

Table 4 illustrates transportation benefits, i.e., how each alternative plan will perform in terms of level of service based on the proposed improvements within each alternative. Level of Service is a quantitative and qualitative measure of traffic operations and conditions taking into account the effect of several factors including: traffic, truck volumes, speed, traffic interruptions, safety, and operating costs. Level of Service is rated from A to F, with A being the highest level, and C being the generally accepted standard.

Table 4: Comparison of Transportation Benefits of Alternatives

Alternatives:	Do Nothing / No Build	1A	1B	2A	2B	3A	3B
Percentage of US 27 and SR 73 in the NBTS with *unacceptable Level of Service (does not include US 27 or SR 73 within corporate limits of Oxford)**	41%	37%	12%	12%	12%	13%	13%
Projected change in through volumes from No Build on existing streets within corporate limits of Oxford**	----	2% Increase	7% Increase	10% Reduction	10% Reduction	11% Reduction	15% Reduction
Projected change in traffic volumes from No Build on existing SR 73 within corporate limits of Oxford	----	2% Reduction	11% Reduction	18% Reduction	26% Reduction	30% Reduction	34% Reduction

* = Levels of D, E or F are considered unacceptable for roads in the Northwest Butler County area.
** = based on an average of daily traffic on US 27 (High) and Chestnut Street.

As the cost estimates in Table 5 illustrate, the alternative plans all involve substantial cost. Potential implementation of any major improvement or component of the recommended plan will require a combination of local, state and federal funding, and without a strong basis in addressing the project's stated purpose and need, funding will be denied.

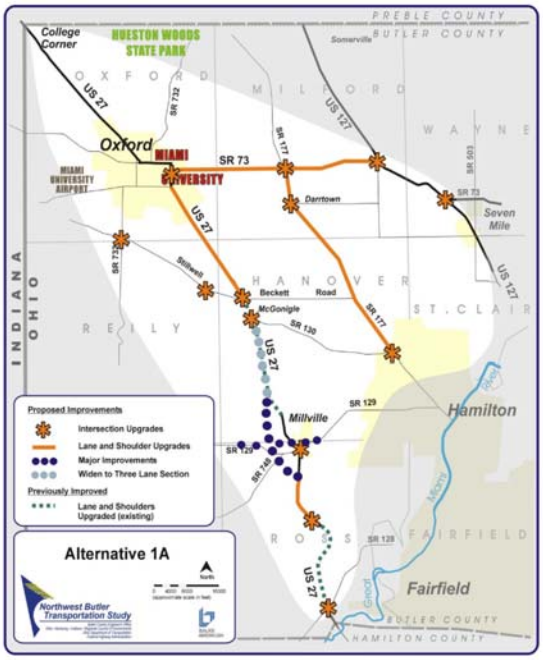
Table 5: Comparison of Cost Estimates of Alternatives

Alternatives:	Do Nothing / No Build	1A	1B	2A	2B	3A	3B
Preliminary Cost Estimate **(does not include right-of-way acquisition or utility relocation costs)**	No Initial Construction Cost	$52 to 63 million	$83 to 104 million	$90 to 110 million	$96 to 118 million	$95 to 116 million	$99 to 122 million

The Committee evaluated the six plans based on each plan's ability to address the project goals and forecasted travel demand and performance capabilities, compared each to the Do Nothing / No Build alternative and voted to determine a preferred plan to present to the public.

Two plans emerged on top receiving equal votes from the Advisory Committee, Alternatives 1A and 3B, depicted below. The Committee then agreed to present the plans with the highest votes, as well as all six of the considered plans to the public in July 2003 for review and comment.

Alternative 1A



- Upgrade key intersections and roadway sections (lane and shoulder widths)
- plus re-align US 27 and SR 129 in Millville
- plus additional three lane segment for access management between Minton Road and SR 130

Alternative 3B

- Upgrade key intersections and roadway sections (lane and shoulder widths)
- plus re-align US 27 and SR 129 in Millville
- plus widen or re-align US 27 to four lanes from SR 128 to Oxford
- plus eastern re-alignment of US 27 around Oxford
- plus westward extension to SR 732 south of Oxford

Figure 7: Alternatives 1A and 3B received equal votes in the Advisory Committee vote at the June 2003 Meeting

Working Towards Consensus

The Advisory Committee reconvened after the July public workshop to review the public input and to consider the next steps toward reaching a consensus recommended plan. Based on the review of the public input and several possible modifications to the

proposed plans (developed based on that input) presented at the August Advisory Committee meeting, the Committee directed OKI and the project planning team to develop additional information on a new alternative plan, labeled as Alternative 5C as depicted below and in Exhibit 8.

Alternative 5C consists of:

- Upgrade key intersections and roadway sections (lane and shoulder widths)
- plus re-align US 27 and SR 129 in Millville
- plus widen US 27 to four lanes from SR 128 to Millville
- plus three lane segment on US 27 between Minton Road and McGonigle and between Stillwell Beckett and Chestnut Roads
- plus two lane connector between US 27 and SR 73 and between US 27 and SR 732 (south of Oxford)
- plus consideration of re-routing US 27 over local roads.