FHWA Policy and Approval of Interchange Improvements to the Interstate System
The Interstate System is the backbone of the nation’s surface transportation network and has played a major role in shaping our nation’s economy and history of development.

Since the initial building of the System, population growth, economic prosperity, and changes in land use have not only led to a steady increase in the number of vehicles using the Interstate System, but also an increase in the demand for access to the System (i.e., new interchanges).
Managing access (i.e. the location and design of interchanges) is essential to maintaining the safety and efficiency of the Interstate System.

Interchanges are inherently points of traffic conflict and may create “turbulence” in the traffic stream under higher volume conditions.

Providing access to the Interstate System from other portions of the highway network is crucial to the performance of the system as a whole. However, poor designs or too many ramps closely spaced within a freeway segment can greatly diminish traffic operations and safety.
The desire to provide new Interstate access is often tied to goals for enhancing economic or social activity. Sometimes these goals of greater accessibility can directly conflict with goals to improve or preserve traffic operations and safety.

Making smart choices about Interstate access requires an understanding of the proper balance between system operations (i.e. maintaining the uninterrupted flow of freeway traffic) and allowing reasonable accessibility to the other components of the transportation system.
All agreements between the Secretary and the State transportation department for the construction of projects on the Interstate System shall contain a clause providing that the State will not add any points of access to, or exit from, the project in addition to those approved by the Secretary in the plans for such project, without the prior approval of the Secretary.

The USDOT Secretary has delegated this authority to the Federal Highway Administrator.
FHWA’s Policy on Access to the Interstate System provides the requirements for the justification and documentation necessary to substantiate proposed changes in access to the Interstate System

- Facilitates decision-making
- Considers and is consistent with long-range transportation plans of a metropolitan area, region and State
- Reflects the congressional intent provided in SAFETEA–LU

“the Secretary should take appropriate actions to preserve and enhance the Interstate System to meet the needs of the 21st century.”
• Policy was first published in the Federal Register in 1990 and then modified in 1998

• The latest updated policy was published in the Federal Register on **August 27, 2009** (Vol. 74, No. 165)
“It is in the national interest to preserve and enhance the Interstate System to meet the needs of the 21st Century by assuring that it provides the highest level of service in terms of safety and mobility.”
The FHWA Policy is applicable to new or revised access points to existing Interstate facilities regardless of the funding of the original construction or the funding for the new access points.

- Includes routes incorporated under legislative provisions [23 U.S.C. 103(c)(4)(A)]

- Routes approved as a future part of the Interstate represent a special case because they are not yet a part of the Interstate System. Since the intention to add the route to the Interstate System has been formalized by agreement, any proposed new or significant changes in access beyond those covered in the agreement, regardless of funding, must be approved by FHWA.
FHWA’s decision to approve new or revised access points to the Interstate System must be supported by substantiated information justifying and documenting that decision. The FHWA’s decision to approve a request is dependent on the proposal satisfying and documenting the following requirements.

1) Existing network with reasonable improvements cannot satisfactorily address the need
2) Consideration of all reasonable alternatives
3) No significant adverse impact on safety and operations
4) Connects to a public road and provides for all movements
5) Consistent with local and regional land use and transportation plans
6) Need for systematic study of effects
7) Coordination with related development
8) Coordination with environmental evaluation and approval process
The need ... cannot be adequately satisfied by existing interchanges ..., and/or local roads ... can neither provide the desired access, nor can they be reasonably improved to satisfactorily accommodate the design year traffic demands.
INTENTS OF POLICY POINT ONE

- Convey clear objectives (purpose and need) for the requested access change

- Describe why the existing access points and the existing network is unable to meet those needs

- Consider a wide array of alternatives including improvements to existing interchanges and the local system
  - Capacity improvements to existing interchanges and surface streets
  - Traffic control modifications
  - Access management improvements along surface streets
  - Improving ramp terminals and adjacent intersections (adding turn bays or lengthening storage)
An efficient roadway network allows the various components to work together. Roadway system components have “functions”, and although there may be some overlap in those functions, clearly freeways have a different role than local roads.
New interchanges should serve regional traffic needs (as opposed to simply trying to solve a localized traffic problem)

- If it is a local traffic problem, solve it with an improvement to the local system component

The Interstate capacity should be preserved for “regional” traffic needs and not relied on for localized traffic circulation
WHAT IT DOESN’T INTEND ...

• The Policy is NOT intended to discourage planned local development.

• The Policy is NOT intended to interject the FHWA into local land use policy.

• The Policy is NOT intended to imply automatic denial of access requests where an “off-Interstate” alternative exists (but is not practical).

The “off-Interstate” or non-access changing alternatives must be reasonable and practical.
The need ... cannot be adequately satisfied by reasonable transportation system management, geometric design, and alternative improvements to the Interstate without the change in access.
INTENT OF POLICY POINT TWO

- **Consider** all reasonable alternatives including:
  - Interchange location
  - Interchange configurations
  - Local network modifications
  - Transportation system management (TSM) type improvements

- Be consistent with future planned improvements (HOV systems, ramp metering, park & ride, transit or other multi-modal solutions)
WHAT IT DOESN’T INTEND ...

- The requirement to “assess” various options is NOT intended to require extensive and costly engineering analysis for options determined to be impractical.

- There are many locations where transportation system management (TSM) options are not applicable.

- The Policy does NOT require implementing TSM type improvements, but in some instances mitigation strategies such as ramp metering may be necessary for the concept to function properly.
An operational and safety analysis concludes there is no significant adverse impact

- Interstate mainline, ramps, crossroad and intersections

“... assessment of the impacts and ability of the proposed changes to safely and efficiently collect, distribute and accommodate traffic ...”
INTENTS OF POLICY POINT THREE

- Demonstrate that safety and traffic operations of the system will be compatible with local goals for current and future year traffic conditions with an analysis of:
  - Interstate mainline lanes
  - Existing, new or modified ramps
  - Ramp intersections with crossroad
  - At least the first adjacent existing or proposed interchanges of the proposed change in access
  - Local street network (including the crossroad to at least the first major adjacent intersections)
INTENTS OF POLICY POINT THREE

- Compare operations and safety of the proposed “build” to a “no-build” condition
- The No-build option may include other independent planned improvements

Vs.
Demonstrating that the proposed access change has an “acceptable” level of service is **not** the sole basis of operational acceptability.

<table>
<thead>
<tr>
<th>LOS</th>
<th>Density (pc/mi/ln)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>&lt; 11</td>
<td>Free-flow speed operations with unimpeded maneuvers</td>
</tr>
<tr>
<td>B</td>
<td>&gt; 11-18</td>
<td>Reasonably free-flow speed operations with slightly restricted maneuvers</td>
</tr>
<tr>
<td>C</td>
<td>&gt; 18-26</td>
<td>Speeds near free-flow speeds with noticeably restricted maneuvers</td>
</tr>
<tr>
<td>D</td>
<td>&gt; 26-35</td>
<td>Speeds begin to decline with seriously limited ability to maneuver</td>
</tr>
<tr>
<td>E</td>
<td>&gt; 35-45</td>
<td>Operation at capacity with little room to maneuver</td>
</tr>
<tr>
<td>F</td>
<td>&gt; 45</td>
<td>Demand exceeds capacity with breakdown or unstable flow</td>
</tr>
</tbody>
</table>


**DISCUSSION: WHAT IS A MINIMUM ACCEPTABLE LEVEL OF SERVICE?**

**The Bottom Line Answer:** It Depends!!!

An appropriate design level of service is project specific and should be based on context.

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**Table 2-5. Guidelines for Selection of Design Levels of Service**

<table>
<thead>
<tr>
<th>Functional Class</th>
<th>Rural Level</th>
<th>Rural Rolling</th>
<th>Rural Mountainous</th>
<th>Urban and Suburban</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freeway</td>
<td>B</td>
<td>B</td>
<td>C</td>
<td>C or D</td>
</tr>
<tr>
<td>Arterial</td>
<td>B</td>
<td>B</td>
<td>C</td>
<td>C or D</td>
</tr>
<tr>
<td>Collector</td>
<td>C</td>
<td>C</td>
<td>D</td>
<td>D</td>
</tr>
<tr>
<td>Local</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
</tr>
</tbody>
</table>

Source: AASHTO “Policy on Geometric Design of Highways and Streets”
Chapter 2 – Design Controls and Criteria

“Choice of an appropriate level of service for design is properly left to the highway designer.”
Design Traffic –

“Each section of interstate highway shall be designed to safely and efficiently accommodate the volumes of passenger vehicles, buses, trucks – including tractor-trailer and semi-trailer combinations, and corresponding military equipment estimated for the design year.”

A minimum LOS is not prescribed

What constitutes accommodating traffic volumes “safely and efficiently” is based on context and should be agreed upon as part of the project development process.
Preliminary engineering should be advanced to a level necessary to demonstrate engineering and operational acceptability. This will vary based on project complexity.

- Level of needed design detail at access request stage will vary
- Level of traffic analysis and appropriate analysis tools will vary
Each request must also include a conceptual signing plan
The proposed access connects to a public road only and will provide for all traffic movements. Less than "full interchanges" may be considered on a case-by-case basis for applications requiring special access for managed lanes (e.g. transit, HOV's, HOT lanes) or park and ride lots. The proposed access will be designed to meet or exceed current standards.
”connects to a public road only” –

• Avoid adding Interstate access that exclusively serves a narrow, private interest

• Ensure the operational integrity of the crossroad
“provide for all traffic movements” –

- Operational consistency for unfamiliar drivers

From AASHTO Green Book

“To minimize wrong way movements, all freeway interchanges with non-access controlled highways should provide all directional movements. As a special case treatment, a freeway-to-freeway movement may be omitted if the turning traffic is minor and can be accommodated by and given the same route signing over other freeway facilities.”
“The proposed access will be designed to meet or exceed current standards” –

- The preliminary design work should be advanced to a level sufficient to demonstrate the geometric viability and constructability of the proposed alternatives.

- Design exceptions are discouraged for new interchanges, but may be appropriate for improvements to existing conditions.
In locations with known geometric and safety problems, proposals for revised access should attempt to correct these problems as part of the overall solution.
The proposal considers and is consistent with local and regional land use and transportation plans. Prior to receiving final approval, all requests for new or revised access must be included in an adopted Metropolitan Transportation Plan, in the adopted Statewide or Metropolitan Transportation Improvement Program (STIP or TIP), and the Congestion Management Process within transportation management areas, as appropriate and as specified in 23 CFR part 450, and the transportation conformity requirements of 40 CFR parts 51 and 93.
INTENT OF POLICY POINT FIVE

➢ To assure the proposal is consistent with the current transportation plan, and that it reflects appropriate coordination.

➢ To complement the federal regulations regarding air quality conformance.
The inclusion of a project involving new Interstate access within a regional plan is not a guarantee of the approval of the access by FHWA.
In corridors where the potential exists for future multiple interchange additions, a comprehensive corridor or network study must accompany all requests for new or revised access with recommendations that address all of the proposed and desired access changes within the context of a longer-range system or network plan.
**INTENT OF POLICY POINT SIX**

- To avoid conflicts with other proposed changes in access or corridor improvements
- To reinforce the need for longer range planning and to be *proactive* in issues of added or changed access
- To assess and account for the cumulative system effects of access changes

**Example:** Florida DOT I-4 (Orlando) System Study

[www.trans4mation.org](http://www.trans4mation.org)
Not all Interstate access approvals within a corridor study need to be approved simultaneously – the individual projects may advance at different time frames.
When a new or revised access point is due to a new, expanded, or substantial change in current or planned future development or land use, requests must demonstrate appropriate coordination has occurred between the development and any proposed transportation system improvements. The request must describe the commitments agreed upon to assure adequate collection and dispersion of the traffic resulting from the development with the adjoining local street network and Interstate access point.
Avoid the “Interchanges to Nowhere Syndrome”
Coordinate the proposed improvements with other street system improvements associated with the land development that is driving the request. Some access approvals may require contingencies or “pre-conditions” involving timing of other improvements.

Oftentimes the “Work By Others” is critical to make the system function properly. Obtain appropriate commitments for the timing of improvement actions.
The proposal can be expected to be included as an alternative in the required environmental evaluation, review and processing. The proposal should include supporting information and current status of the environmental processing.
**INTENT OF POLICY POINT EIGHT**

- Interstate access approval constitutes a Federal action
  - The National Environmental Policy Act (NEPA) process must be followed regardless of the source of funding for the project (including private funding)

- Policy allows for a two-step approval process:
  - Step 1: determination of engineering and operational acceptability
  - Step 2: environmental (NEPA) concurrence process
COMMON ISSUES & CONCERNS REGARDING INTERSTATE ACCESS REQUESTS
<table>
<thead>
<tr>
<th></th>
<th>COMMON ISSUES AND CONCERNS</th>
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<tbody>
<tr>
<td>1.</td>
<td>Policy Misunderstandings</td>
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<tr>
<td>2.</td>
<td>Poor Purpose &amp; Need</td>
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<tr>
<td>3.</td>
<td>Ignoring Alternatives</td>
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<td>4.</td>
<td>Ignoring Other Users</td>
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<td>5.</td>
<td>Ignoring the Crossroad</td>
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<tr>
<td>6.</td>
<td>Misapplying Traffic Analysis Tools</td>
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<td>7.</td>
<td>Inappropriate Design Volumes</td>
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<tr>
<td>8.</td>
<td>Weak safety analysis</td>
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<tr>
<td>9.</td>
<td>Forcing design criteria to the wrong context</td>
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<tr>
<td>10.</td>
<td>Ignoring signing</td>
</tr>
<tr>
<td>11.</td>
<td>Documentation – missing or too much</td>
</tr>
<tr>
<td>12.</td>
<td>Skimping on reevaluations</td>
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</table>
1. FHWA POLICY MISUNDERSTANDINGS

- Clarification of the “8 Points”
  - Wording choices in the policy perhaps not the best
- Intent (and non-intent) of the points

What is FHWA looking for ???
2. KNOWING THE PURPOSE & NEED

- Why are we proposing this project???
- What problems are we trying to solve???

Examples might include:
- Address an existing or future congestion problem
- Address an existing safety problem
- Connectivity or linkage to a new regional facility
- Access to areas not currently served
- User benefits
2. KNOWING THE PURPOSE & NEED

How do we measure “Success”???

Establish objectives that are specific and measurable

Too Generic
- Reduce congestion
- Improve safety

More Specific
- Improve mainline freeway speeds during PM peak hour from current 32 mph average to 50 mph
- Reduce queue length on Elmwood Ave. exit ramp during AM peak from reaching freeway mainline
3. ASSESS AN ARRAY OF ALTERNATIVES

- We have one that we like and it works - what wrong with that???

- Innovative concepts vs. “tried and true”

- How many alternatives do I need?
Interchange alternatives can differ greatly in terms of:

- Fitting into the existing conditions and constraints
- Level of traffic operations and safety provided
- Pedestrian accommodation
- Cost/resource requirements

Validate any key assumptions
EVALUATING RECONSTRUCTION OF EXISTING INTERCHANGE

- Availability of ROW
- Constructability
  - Maintenance of traffic
  - Maintenance of local access
  - Construction sequencing
- Ramp closures and detours
- Temporary signing

Constructability may be a very significant factor when evaluating alternatives.
4. DON’T IGNORE PEDESTRIANS WHEN COMPARING ALTERNATIVES

- Signal timing is impacted
- Free flow movements vs. signalized
- “Target” operating speeds at intersections
- Typically emphasis has been on “moving cars”

Challenging to balance the mobility & safety of pedestrians with the efficient movement of vehicles
BALANCING TRADE-OFFS

- Reducing Vehicular Speeds
- Restricting Free Turns
- Reduced Crossing Distances
- Crosswalk Alignment for Visibility
- Generous Pedestrian Signal Timing

Moving more cars !!!
5. THOROUGHLY ASSESS THE CROSSROAD

- Typically the “weakest link”
- What needs to be improved on the crossroad???
- Innovative strategies sometimes needed
6. MISUSING TRAFFIC ANALYSIS TOOLS

- When should we use microsimulation???
- Calibration – what’s that???
- “Assessing” vs. “Defending”
- Cartoons Can Lie
What is an appropriate design LOS?

Using a “sensitivity” analysis

Universal truths: death, taxes, and traffic!!!
Travel demand forecasting is NOT an exact science – make design choices that consider the potential traffic variability

Suggested Practice – Develop a Range of Design Volumes
Suggested Practice – Early Agreement on Traffic Parameters

- Design Year
- Model Used
  - MPO data
  - Land use assumptions
- Future Network
- Factors (K, D, T)
8. INTEGRATING SAFETY ANALYSIS

- It’s a “journey”
- What can the tools currently do and not do?

Interactive Highway Safety Design Model
Interchange Safety Analysis Tool
ISATe
9. CONTEXTUAL FREEWAY/INTERCHANGE DESIGN CRITERIA
Interchange Spacing
Route Continuity
Lane Drops
Auxiliary Lanes
Overlapping Routes
Uniformity of Interchange Patterns
Signing & Marking
Lane Balance
Collector-Distributor Systems
10. INTEGRATING SIGNING AND GEOMETRY

- Signing? – We let the new guy prepare those plans
11. DOCUMENTATION SUPPORTING REQUEST

- What should be included???
- What should be an appendix or a referenced separate document???
- Hard copy or electronic

Not “paid by the pound”
12. REEVALUATION OF APPROVAL

- When is it needed???
- What is involved???
- Overcoming the “fear”!!!!
An affirmative determination by FHWA of engineering and operational acceptability for proposals for new or revised access points to the Interstate System should be reevaluated whenever a significant change in conditions occurs (e.g., land use, traffic volumes, roadway configuration or design, environmental commitments). Proposals shall be reevaluated if the project has not progressed to construction within 8 years of receiving an affirmative determination of engineering and operational acceptability (23 CFR 625.2(a)).
If the project is not constructed within this time period, an updated justification report based on current and projected future conditions must be submitted to FHWA to receive either an affirmative determination of engineering and operational acceptability, or final approval if all other requirements have been satisfied.
QUESTIONS