OHIO TRAFFIC FORECASTING MANUAL

Module 1: Traffic Forecasting Background
Module 1: Traffic Forecasting Background
Policy, Administrative and Technical Overview

Module 2: Traffic Forecasting Methodologies
Data and Parameters, Step-by-Step Procedures, Examples

Module 3: Travel Demand Forecast Modeling
Model Selection, Checks and Refinements

Forecast User
Traffic Forecaster/Modeler

Intended Audience
Ohio Traffic Forecasting Training Modules

TRAINING ORGANIZATION
Traffic Forecasting: What is it and why do we do it?

Traffic Forecasting Fundamentals

Understanding Forecasts

Traffic Monitoring Data

Selecting a Traffic Forecasting Method

Certified Design Traffic

Scope and Requests for Certification

SHIFT

Traffic Impact Studies
Traffic Forecasting: What is it and why do we do it?
WHAT IS TRAFFIC FORECASTING?

A traffic forecast refers to an estimation of traffic volumes for any future year.

Forecasts include future estimates of:

- Annual Average Daily Traffic (AADT)
- Design Hour Volumes (DHVs)
- Truck Percentages (TD and T24)
**WHY DO WE DO IT?**

Traffic forecasts are essential for use in project planning and design.

**Planners** use traffic forecasts primarily to determine the purpose and need for a project or to determine the proper location of alternatives.

**Design** engineers may use forecasts to:
- Determine the number of lanes needed for a project;
- Determine the need for, the length of, and the number of turning lanes; and
- Provide pavement design inputs.
**Traffic Forecast**
Any estimate of future traffic volumes.

**Design Traffic**
A finalized traffic forecast that has been subjected to rigorous checks and adjustments. Suitable for use in roadway design.

**Certified Design Traffic**
Design Traffic that has been explicitly certified (either directly prepared or approved) by ODOT M&F.
CERTIFIED DESIGN TRAFFIC

Projects that may require Certified Design Traffic include those that are:

- Administered by ODOT,
- On the State System, and/or
- Have Federal Funding

Even projects that meet all of these criteria may not require Certified Design Traffic.
Early Coordination Meeting

Projects that require Certified Design Traffic often involve multiple parties.

An Early Coordination Meeting is held to ensure that all parties agree on forecast scoping items to help avoid delays.
RESOURCES

- Location and Design Manual, Volume 1

- Access Management Manual
  http://www.dot.state.oh.us/Divisions/Engineering/Roadway/AccessManagement/Pages/default.aspx

- Studies: IJS/IMS/IOS
  http://www.dot.state.oh.us/Divisions/Engineering/Roadway/studies/Pages/IJSandIMS.aspx

- Project Development Process Manual
  http://www.dot.state.oh.us/projects/pdp/Pages/Manual.aspx

- Pavement Design Manual
  http://www.dot.state.oh.us/Divisions/Engineering/Pavement/Pavement%20Design%20Rehabilitation%20Manual/Forms/AllItems.aspx
TRAFFIC FORECASTING FUNDAMENTALS
Traffic Forecasting Components:

- Traffic Counts
- Road Network
- Population & Employment Factors
- Land Use

Traffic Forecast
Trend Line Analysis

- Using historic traffic count data to calculate an annual average growth rate
- Applying that growth rate to estimate future traffic volumes
- Typically linear regression
- Is used when a Travel Demand Forecasting (TDF) Model is not available or not feasible
Travel Demand Forecasting (TDF) Models

- Computer-based model used to estimate travel patterns at a future time
- Used when interaction between road network, land-use, and socioeconomic data is complex
Ohio Models

Statewide Model

Less detailed, but more focus on freight and commercial vehicles

Urban Area Models (17)
Ohio Models

In Ohio, each of the 17 MPOs has an urban area model which focuses on passenger transport.

These urban models tend to be more detailed and are used for projects completely contained in an urban area, when truck/freight travel is not the main focus.
What Are Models?

A Model of Record exists for each of these. This is the default model run for each area consisting of three or four actual model runs:

- Base Year Validation Run
- “Existing” Year Model Run (optional)
- Long Range Plan Year - No Build Run (E+C/TIP)
- Long Range Plan Year - Build Run

The Model of Record is the starting point for project level modeling and is sometimes referred to directly.
EXAMPLE: ZONES AND NETWORK
WHAT IS AN ORIGIN-DESTINATION MATRIX?

Trip behavior data is often collected as an OD matrix. An OD matrix reflects aggregate flows between a number of discrete locations over a period of time (Fig. 1).

![Spatial Interactions]

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>Ti</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0</td>
<td>0</td>
<td>50</td>
<td>0</td>
<td>0</td>
<td>50</td>
</tr>
<tr>
<td>B</td>
<td>0</td>
<td>0</td>
<td>60</td>
<td>0</td>
<td>30</td>
<td>90</td>
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<tr>
<td>C</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>30</td>
<td>0</td>
<td>30</td>
</tr>
<tr>
<td>D</td>
<td>20</td>
<td>0</td>
<td>80</td>
<td>0</td>
<td>20</td>
<td>120</td>
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<tr>
<td>E</td>
<td>0</td>
<td>0</td>
<td>90</td>
<td>10</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Tj</td>
<td>20</td>
<td>0</td>
<td>280</td>
<td>40</td>
<td>50</td>
<td>390</td>
</tr>
</tbody>
</table>

Figure 1. A conceptual diagram of an origin-destination matrix. Source: Dr. Jean-Paul Rodrigue, Dept. of Global Studies & Geography, Hofstra University, New York, USA.
Models were originally designed for General Planning tasks:

- Needs Analysis
- Long Range Plan Alternatives Analysis
- Air Quality Conformity
- Congestion Management

They are calibrated to a regional level to provide reasonable daily (or multi-hour period) system statistics for these purposes.
**WHO DOES THE MODELING?**

- ODOT Statewide Planning & Research provides model support as a service.
- MPO has primary responsibility in their area but can request our help.
- ODOT Districts are encouraged to route model work through MPO.
- When OSPR is involved on project modeling, we recommend early involvement to ensure models and data are ready.
- Determined at the Early Coordination Meeting
**TOOLBOX**

**Trip Generation**
- New developments or minor changes in land use estimated using most recent ITE Trip Generation Manual

**Other Adjustments**
- Minor changes to the highway network that do not significantly affect the overall traffic patterns (e.g. restricting or relocating relatively minor movement)

**Shopping Center (820)**

<table>
<thead>
<tr>
<th>Trip Generation per 1000 Sq. Feet Gross Leasable Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Value</td>
</tr>
<tr>
<td>3.27</td>
</tr>
</tbody>
</table>

**Data Plot and Equation**

- Linear regression equation: \( y = 0.87 \ln(x) + 3.31 \)
- Goodness of fit: \( R^2 = 0.81 \)

_Screenshot, ITE Trip Generation Manual_

Ohio Traffic Forecasting Manual
Volume 1, Section 2.1
TYPES OF FORECASTS

- Raw Model Output
- Planning Level Traffic
- Refined Alternative Level Traffic
- Design Traffic

Forecast Accuracy

Level of Effort

Ohio Traffic Forecasting Manual
Volume 1, Section 2.2
**Types of Forecasts**

- **Raw Model Output** has not been subjected to any of the checking/adjusting/refining procedures
  - Usually not used directly though, sometimes used to calculate growth rates for less complex projects
Planning Level Traffic (PLT) has been subjected to various checks and adjustments as shown in Module 3 of this training:

- Not necessarily refined enough to produce accurate values at all locations/times within the study area.
- Major projects requiring modeling will have PLT as part of the design traffic process whether requested or not.
- Requesting PLT to narrow alternatives saves time/resources.
A project requiring turning movements at the circled intersection, however, requires greater detail for this zone.
Refined Alternative Level Traffic uses matrix estimation or other techniques to refine travel demand results for traffic operations simulation.

- Less manual refinement than design traffic but still a lot of work, only done when wide area traffic simulation needed.
Types of Forecasts

Design Traffic consists of the final traffic forecasts and related information needed to inform the final detailed design of a project.
**Design Forecast Parameters**

**Daily Parameters**

**Annual Average Daily Traffic (AADT)**
- Number of vehicles that travel on a segment of roadway per day
- Averaged over a duration of one year

**Average Daily Traffic (ADT)**
- Number of vehicles that travel on a segment of roadway per day
- Averaged over a duration of at least 24 hours and less than one year

**Daily Truck Percentage (T24)**
- The percentage of AADT that is comprised of heavy and commercial trucks

AADT is essential for developing traffic forecasts
Subdaily Parameters

8th Highest Hour Factor

- The percentage of the AADT that occurs during the 8th highest hour of the average day
- Used for traffic signal warrants

Ohio Traffic Forecasting Manual
Volume 1, Section 2.3
**Design Forecast Parameters**

**Hourly**

**K-factor (K)**
- The percentage of the AADT occurring during the design hour

**Design Hourly Volume (DHV)**
- The number of vehicles that travel along a segment of roadway during the design hour
- Used for making roadway, structural, and capacity design decisions

\[
DHV = K \times AADT
\]

**Design Hour Truck Percentage (TD)**
- The percentage of DHV that is comprised of heavy and commercial trucks

*The 30th highest hour of the year is the standard design hour applied by many agencies nationwide.*
Hourly

Directional factor (D)
- The percentage of traffic moving in the peak direction during the design hour

Directional Design Hourly Volume (DDHV)
- The number of vehicles that travel along a segment of roadway in the peak direction during the design hour

\[
DDHV = D \times K \times AADT = D \times DHV
\]
UNDERSTANDING FORECASTS
Plates

Summary Table

<table>
<thead>
<tr>
<th>Year</th>
<th>ADT (new)</th>
<th>CD (new)</th>
<th>ADT (new)</th>
<th>CD (new)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>18,910</td>
<td>15,020</td>
<td>11,930</td>
<td>27,940</td>
</tr>
<tr>
<td>2035</td>
<td>35,780</td>
<td>29,040</td>
<td>23,070</td>
<td>48,470</td>
</tr>
<tr>
<td>K</td>
<td>0.10</td>
<td>0.11</td>
<td>0.13</td>
<td>0.10</td>
</tr>
<tr>
<td>K</td>
<td>0.09</td>
<td>0.09</td>
<td>0.09</td>
<td>0.09</td>
</tr>
<tr>
<td>D</td>
<td>0.56</td>
<td>0.57</td>
<td>0.70</td>
<td>0.70</td>
</tr>
<tr>
<td>D</td>
<td>0.65</td>
<td>0.65</td>
<td>0.65</td>
<td>0.65</td>
</tr>
<tr>
<td>T24</td>
<td>0.08</td>
<td>0.08</td>
<td>0.02</td>
<td>0.02</td>
</tr>
<tr>
<td>TD</td>
<td>0.05</td>
<td>0.05</td>
<td>0.01</td>
<td>0.01</td>
</tr>
</tbody>
</table>
**INTERPRETING VOLUMES**

**Growth Rate Limitations**

- **Minimum**
  - Generally, no negative growth rates should be used to prepare design traffic forecasts
  - Ensures that traffic operations do not fail at the project opening
  - Exception if the volume of traffic decreases due to traffic diversion in the project Build alternative

- **Maximum**
  - No set policy on maximum growth rates
  - Growth rates of 3% or more (beyond traffic diversion) should be given further consideration

**Rounding**

- Forecasts should be rounded to nearest 10 to indicate level of precision
Uncertainty is inherent in all traffic forecasts, but can be minimized with ample information

- Existing and historic traffic counts
- Existing and future land use
- Existing and future road network
Major lack of data calls for:

- Coordination with project stakeholders
- Documentation in technical report and on forecast plates

ODOT M&F has created standardized notes for forecasts prepared with limited data

<table>
<thead>
<tr>
<th>Uncertainty Type</th>
<th>Note Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of Long Term Count Data</td>
<td>Design traffic conducted without the benefit of long term counts, numbers should be considered within ±15%.</td>
</tr>
<tr>
<td>Uncertain Future Development</td>
<td>Design traffic in high growth area, includes growth exceeding 3% per year on indicated links.</td>
</tr>
</tbody>
</table>
Traffic Monitoring Data
Traffic count data is the basis for all forecasts. Inaccurate traffic count data will significantly affect the quality of the traffic forecast.
## Count Types

<table>
<thead>
<tr>
<th></th>
<th>Link Counts</th>
<th>Intersection Turning Movement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>Continuous Permanently installed counters</td>
<td>Collected at intersections manually or using video technology</td>
</tr>
<tr>
<td></td>
<td>Short-Term Portable machine counters</td>
<td></td>
</tr>
<tr>
<td><strong>Location(s)</strong></td>
<td>Varies, as available in study area</td>
<td>All study intersections where turn movements forecasts are requested.</td>
</tr>
<tr>
<td></td>
<td>All ramps, arterials, and collectors in the study area, unless AADT &lt; 1,000 vpd</td>
<td></td>
</tr>
<tr>
<td><strong>Duration</strong></td>
<td>Continuous</td>
<td>Minimum of eight (8) hours; twelve (12) hours if midday peak</td>
</tr>
<tr>
<td></td>
<td>Minimum 24 hours, preferred 48 hours</td>
<td></td>
</tr>
</tbody>
</table>

- **Calculate AADT and Design Hour Factors**
- **Calculate ADT and Estimate AADT**
ODOT Traffic Monitoring Section with relevant forecast parameters such as seasonal adjustment factors and design hour factors. Information is summarized by roadway functional classification.

**ODOT Traffic Monitoring Management System** (TMMS or MS2) provides access to continuous and short-term link count data available on the State System.


**ODOT Traffic Information Mapping System** (TIMS) provides access to mapping data such as planned project locations, car and truck growth rates, and AADT data.

https://gis.dot.state.oh.us/tims

**Metropolitan Planning Organizations (MPO)** may have supplemental short-term link count or intersection turning movement count data.
DATA COLLECTION GUIDELINES

Age of Data
- Counts should be no more than 3 years old at the time that the forecast is developed

Time Period
- Should be conducted on a typical weekday (Tuesday - Thursday)
- Typically avoid holidays, construction, or any other circumstances that cause abnormal traffic patterns
- Intersection turning movement counts should capture peak hours (typically 7-11am and 2-6pm)
- Short-Term counts should capture a 48-hour period.

Traffic count data should be verified by comparing between count locations.

These guidelines do not apply to all projects! Consider your project area and needs when collecting count data.
FEATURES

Time Interval

- Intersection turning movement counts should be broken down by 15-minute intervals
- Link counts should be broken down by hourly intervals at a minimum; 15-minute intervals are preferable

Classification

- At a minimum, all traffic count data should be classified into “cars” and “trucks”
- “Cars” - motorcycles, passenger cars, panel (four-tire) trucks and pick-up trucks
- “Trucks” - Everything else
# Vehicle Classification

<table>
<thead>
<tr>
<th>Minimum Classification</th>
<th>FHWA Scheme F Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passenger Cars (P&amp;A)</td>
<td>1</td>
<td>Motorcycles</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Passenger Cars</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Other Two-Axle, Four-Tire, Single-Unit Vehicles</td>
</tr>
<tr>
<td>Trucks (B&amp;C)</td>
<td>4 - 13</td>
<td>All other vehicles including buses and Three-Axle or more trucks</td>
</tr>
</tbody>
</table>

See Ohio Traffic Forecasting Manual for additional classification information and equivalencies.
Project Specific Long-Term Counts are temporarily placed when longer-term count data is needed but no continuous count station exists (major projects).

Queue Counts provide the number of vehicles within the queue upstream of the count location, which equates the unmet demand after a certain time interval.
SELECTING A FORECASTING METHOD
The PDP is a project management and transportation decision-making tool that outlines project development from concept through completion.

ODOT’s traffic forecasting policies are aligned with the PDP.
<table>
<thead>
<tr>
<th>Paths 1 &amp; 2</th>
<th>Path 3</th>
<th>Paths 4 &amp; 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple transportation improvement projects that do not significantly change the highway network</td>
<td>Moderate roadway and/or structure work that may include capacity additions</td>
<td>Complex transportation improvement projects which include roadway and structure work that adds capacity</td>
</tr>
</tbody>
</table>
| ▪ Routine maintenance  
  ▪ Resurfacing  
  ▪ Minor widening  
  ▪ Culvert replacement | ▪ Changing an interchange type  
  ▪ Relocating ramp terminals  
  ▪ Turn lanes additions and/or modifications  
  ▪ Two way left turn lanes  
  ▪ Auxiliary freeway lanes  
  ▪ Changing lane use | ▪ A new interchange  
  ▪ Interchange access modification  
  ▪ Addition of continuous through lanes (freeway or local) in an urban or developing region  
  ▪ All Complex Path 3 projects |

**Low Risk Projects**

**High Risk Projects**

**Certified Traffic Required**

Note that rarely a Path 1-2 project may contain features making it High Risk.
## PDP Phases

<table>
<thead>
<tr>
<th>Planning (Phase 1)</th>
<th>Preliminary Engineering (Phase 2)</th>
<th>Final Design (Phases 3-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Project Start-Up</td>
<td>▪ Feasibility Study</td>
<td>▪ Final detailed engineering design of the Preferred Build Alternative</td>
</tr>
<tr>
<td>▪ Existing &amp; Future Conditions Analysis</td>
<td>▪ NEPA Studies</td>
<td>▪ Finalize right-of-way acquisition</td>
</tr>
<tr>
<td>▪ Purpose &amp; Need (P&amp;N) Study</td>
<td>▪ Cost Estimates</td>
<td>▪ Others...</td>
</tr>
<tr>
<td>▪ Concept Development</td>
<td>▪ Begin Stage 1 Design Alternatives Evaluation Report</td>
<td></td>
</tr>
<tr>
<td>▪ Scope &amp; Budget</td>
<td>▪ Selection of Preferred Build Alternative</td>
<td></td>
</tr>
<tr>
<td><strong>General Tasks</strong></td>
<td><strong>Design Traffic Tasks</strong></td>
<td><strong>None</strong></td>
</tr>
<tr>
<td>▪ Early Coordination Meeting</td>
<td>▪ Preliminary Forecast Estimates, Build Alternative(s)</td>
<td></td>
</tr>
<tr>
<td>▪ Design Traffic, No Build</td>
<td>▪ Design Traffic, Build Alternatives(s)</td>
<td></td>
</tr>
<tr>
<td>▪ Preliminary Forecast Estimates, Build Alternatives(s)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If required, a Purpose and Need (P&N) study is used to justify the need for a project.

[http://www.dot.state.oh.us/projects/pdp/Pages/Manual.aspx](http://www.dot.state.oh.us/projects/pdp/Pages/Manual.aspx)
PDP and Certified Design Traffic

Planning Phase

- Purpose & Need Study (if required)
- Early Coordination Meeting
- Certified Design Traffic for No Build
PDP AND CERTIFIED DESIGN TRAFFIC

Preliminary Engineering Phase

- Preliminary traffic forecast estimates for all Build alternatives
- Certified Design Traffic for some Build alternatives

Final Design Phases

- Select preferred Build alternative
- Prepare final designs based upon Certified Design Traffic
Types of Studies

A Traffic Impact Study (TIS) is performed to assess the impact of a future development on traffic operations of the supporting road network.

The State Highway Access Management Manual (SHAMM) classifies a TIS based on total number of trip ends during the highest hour:

- TIS Level 1: 200 - 499 trip ends
- TIS Level 2: 500+ trip ends

Traffic impact studies do not require Certified Design Traffic.

http://www.dot.state.oh.us/Divisions/Engineering/Roadway/AccessManagement/Pages/default.aspx
**Types of Studies**

Interchange Studies include the following three types of studies:

- **Interchange Operations Study (IOS):** Request for minor revised access to the Interstate System; altering the number and/or type of lanes at a ramp terminal (e.g. turn lane additions)

- **Interchange Modification Study (IMS):** Request for major revised access to the Interstate System; reconfiguration of existing interchange (e.g. Diamond to Full Cloverleaf)

- **Interchange Justification Study (IJS):** Request for new access to the Interstate System; new interchange where one does not currently exist.


[http://www.dot.state.oh.us/Divisions/Engineering/Roadway/studies/Pages/IJSandIMS.aspx](http://www.dot.state.oh.us/Divisions/Engineering/Roadway/studies/Pages/IJSandIMS.aspx)
**Risk-Based Traffic Forecasting**

ODOT’s recommended traffic forecasting procedure varies by the project’s relative risk level.

**Low risk** projects are minor projects that do not significantly change the highway network.

**High risk** projects change the highway network, add capacity, and/or alter traffic patterns.
DEFINITION OF HIGH RISK PROJECTS

High Risk
- Classified as PDP Path 4 or 5
- Project adds or removes through lanes on roadways
- Project adds or removes a road
- Project adds or removes interchange or ramp connections
- Project requires an IMS/IJS
- Project involves land use changes that would meet the criteria for a Level 2 TIS per the State Highway Access Management Manual (SHAMM)
- Any project involving tolling, managed lanes or ITS/connected vehicle technology

Low Risk
- All other projects
**Design Traffic Methods**

**Low Risk Design Traffic**
- Simplified Highway Forecasting Tool (SHIFT)
- Obtain growth rate from MPO
- Calculate growth rate from historic count data (linear regression) or Model of Record results
- Estimate growth rate using area growth trends

**High Risk Design Traffic** requires TDF modeling as a basis and involves a more labor-intensive post-processing effort.
OTHER (LOW RISK) METHODS

The following are additional, application-specific methods:

- **Simplified State Highway Access Management Manual (SHAMM) Methods** can be used for TIS Level 1 projects (< 500 trip ends). These methods are not covered by this training.

- **Non-Interstate Bridge Replacement** form uses default factors to estimate forecasts for bridge replacements on US highways, state routes, county routes, township routes or local streets.

- **Planning Level Traffic** (TDF model outputs) can be used directly, without any post-processing, to make high-level decisions such as the number of general purpose travel lanes required.

- **Forecasts for Resurfacing Projects** estimate Equivalent Single Axel Loads (ESALs) using the procedures in Section 200 of the Pavement Design Manual.

http://www.dot.state.oh.us/Divisions/Engineering/Pavement/Pavement%20Design%20%20Rehabilitation%20Manual/Forms/AllItems.aspx
For the purpose of selecting a traffic forecasting method, projects that are on the State System are those that:

- Improve a State Route (SR), US Route (US), or Interstate Route (IR)
- Intersect a State System route
- Involve a Level 2 TIS whose study area includes or intersects a State System route
### Overview of Certified Design Traffic Cases

<table>
<thead>
<tr>
<th>Case</th>
<th>Risk Level</th>
<th>Applicable Method(s)</th>
<th>Traffic Forecaster</th>
<th>Certification Required</th>
<th>District Approval Required</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TIS</strong></td>
<td>Low (Level 1)</td>
<td>A</td>
<td>Project sponsor or their consultant</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>High (Level 2)</td>
<td>F</td>
<td>Project sponsor or their consultant</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Planning Study</strong></td>
<td>Not Applicable</td>
<td>B</td>
<td>Project sponsor or their consultant</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Locally Administered, Not on State System, and No Federal Funding</strong></td>
<td>Not Applicable</td>
<td>D, E, F</td>
<td>Project sponsor or their consultant</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>Locally Administered, Not on State System, with Federal Funding</strong></td>
<td>Low</td>
<td>D, E</td>
<td>Project sponsor or their consultant</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>F</td>
<td>Project sponsor or their consultant</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>ODOT Administered or on State System</strong></td>
<td>Low</td>
<td>C (State Routes), D, E</td>
<td>District or their consultant</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>F</td>
<td>ODOT M&amp;F or project consultant</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Ohio Traffic Forecasting Manual
OVERVIEW OF CERTIFIED DESIGN TRAFFIC METHODS

A = Simplified State Highway Access Management Manual (SHAMM) Methods

B = Planning Level Traffic

C = Simplified Highway Forecasting Tool (SHIFT)

D = MPO Growth Rate

E = Other Growth Rate

F = High Risk (Certified) Design Traffic Process
Traffic Impact Study

1. **TIS Level**
   - Simplified SHAMM Methods
   - High Risk Design Traffic (No Certification)

Planning Study

2. **Planning Level Traffic**

Locally or ODOT Administered Project

- **Risk Level**
  - **High**
    - Federal Funding?
      - Yes
        - ODOT Admin or on State Sys?
          - Yes
            - High Risk Design Traffic (Certification Req’d)
          - No
            - MPO Growth Rate
              - Yes
                - MPO
              - No
                - Use Other Growth Rate (e.g. Linear Regression)
        - No
          - SHIFT
            - Yes
              - MPO
            - No
              - ODOT Admin or on State Sys?
                - Yes
                  - High Risk Design Traffic (Certification Req’d)
                - No

Contact ODOT District Office for guidance if project does not fall within these categories.
EXERCISES
Forecasting Method Selection
**EXERCISE #1: FORECASTING METHOD SELECTION**

**Project Information provided:**

### LOCATION

<table>
<thead>
<tr>
<th>PID</th>
<th>DISTRICT</th>
<th>COUNTY</th>
<th>ROUTE</th>
<th>LOG From:</th>
<th>To:</th>
</tr>
</thead>
<tbody>
<tr>
<td>102035</td>
<td>2</td>
<td>SAN - Sandusky</td>
<td>SR-53</td>
<td>6.02</td>
<td></td>
</tr>
</tbody>
</table>

**DESCRIBE THE PROJECT BOUNDARIES** *(i.e. all road sections, ramps, and bridges requiring a value)*

Include a street-network map of the study area with this request which clearly identifies the locations requiring forecasted traffic.

Certified traffic is being requested for the intersection of SR-53 with US-6/Hayes Ave.

### OTHER REQUEST DETAILS

**PROJECT OPENING YEAR** 2018  **DESIGN YEAR** 2038

**PREVIOUS STUDIES:** Have any previous studies (GIS, Planning, etc) relevant to this project been conducted?

- □ No
- ○ Yes  *(Please attach with request)*

**PROJECT DESCRIPTION & REASON FOR REQUEST** *(The reason helps us provide forecasts tailored to the purpose and need.)*

A safety funded project to upgrade signal heads and support; modify signal timing; provide protected/permissive phasing for left turns from EB US-6 to NB and SB SR-53; perform necessary related work.
ExERCISE #1: FORECASTING METHOD SELECTION

Project Information provided:

**Project Name:** SAN SR53 6.02 Sgnl Sfy

**Project Status:** Active

**Project Type:** Let

**Locate:** SAN

**Project Description:** Safety funded project to upgrade signal heads and support; modify signal timing; provide protected/permisive phasing for left turn from EB US-6 to NB and SB SR-53; perform necessary related work.

**Letting Type:** ODOT Let.

**Contract Type:** Standard Build

**Work Categories:** Safety-Signals

**Primary Work Category:** Signals

**Project Purpose:** Mead Hunt Inc.

**Designers:** Mead Hunt Inc.

**Responsible Design Agency:** DISTRICT 2 PRODUCTION

**Sponsoring Agency:** DISTRICT 2 PRODUCTION

**Plans Measurement Type:** English Units

**FHWA Oversight:** Delegated/State Administered

**Reporting Group Codes:** TNS 07 Signals

**Project Termina:** Intersection of SR-53 and US-6 in Sandusky County
**Exercise #1: Forecasting Method Selection**

**SOLUTION**

Locally or ODOT Administered Project

1. Risk Level
   - Low
   - High

2. On State System?
   - Yes
   - No

3. In MPO Boundary?
   - Yes
   - No

4. Federal Funding?
   - Yes
   - No

5. ODOT Admin or on State Sys?
   - Yes
   - No

6. MPO Growth Rate

7. High Risk Design Traffic (No Certification)

8. High Risk Design Traffic (Certification Req’d)

Design Traffic developed at District level.
EXERCISE #2: FORECASTING METHOD SELECTION

Project Information provided:

**LOCATION**

<table>
<thead>
<tr>
<th>PID</th>
<th>DISTRICT</th>
<th>COUNTY</th>
<th>ROUTE</th>
<th>LOG From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>93446</td>
<td>6</td>
<td>FRA - Franklin</td>
<td>71</td>
<td>19.00</td>
<td>19.09</td>
</tr>
</tbody>
</table>

DESCRIBE THE PROJECT BOUNDARIES (i.e. all road sections, ramps, and bridges requiring a value)
Include a street-network map of the study area with this request which clearly identifies the locations requiring forecasted traffic.

Ramp from 670 West to 71 North only

**OTHER REQUEST DETAILS**

PROJECT OPENING YEAR 2017 DESIGN YEAR 2037

PREVIOUS STUDIES: Have any previous studies (TIS, Planning, etc) relevant to this project been conducted?

- No
- Yes (Please attach with request)

PROJECT DESCRIPTION & REASON FOR REQUEST (The reason helps us provide forecasts tailored to the purpose and need.)

Noise wall project on ramp
EXERCISE #2: FORECASTING METHOD SELECTION

Project Information provided:

PROJECT INFORMATION

**Project Name:** FRA IR 71/SR 315 Noise Walls

**Project Status:** Candidate

**Project Type:** Let

**Locate:** FRA

**Project Description:** Replace existing noise wall panels with fiberglass panels. Remove existing steel posts SB 5th Ave ramp to I-71 SB 5th Ave ramp to I-770 WBC Construct new noise wall along SR 315 from Garret Drio Henderson Rd.

**Letting Type:** ODOT Let

**Contract Type:** Standard Bid

**Work Categories:** Roadway Appurtenances - Noise Wall

**Primary Work Category:** Noise Wall

**Project Purpose:** Consultant Not Yet Selected

**Responsible Design Agency:** DISTRICT 6 - PRODUCTION

**Responsible Design Agency:** DISTRICT 6 - PLANNING

**Plans Measurement Type:** English Units

**FHWA Oversight:** Delegated/State Administered

**Reporting Group:** TMS 17 Noise Wall

**Project Team:**
- Columbus - FRA 71/5th Ave SB Ramps
- FRA 315 Garret Drio Henderson Rd

**Project Manager:** WENGERT, CYNTHIA A

**Contractor:**

**Environmental Document Type:** Exempt

**Tractive:**

**Federal Congestional District:** 12

**Program Family:**

**Reservoir Year:**

**FHWA Project Type:** Conventional

**Primary MPO:** MDHPC

Traffic Forecasting Manual
This was a single ramp forecast with a PID. It can't be done directly in SHIFT because the ramp is not in the database. Most ramps are not in SHIFT but there are some exceptions. Under current guidelines District would generate design traffic potentially borrowing a growth rate from the mainline from SHIFT or one of the other methods.

Design Traffic developed at District level.

Ohio Traffic Forecasting Manual
**EXERCISE #3: FORECASTING METHOD SELECTION**

Project Information provided:

<table>
<thead>
<tr>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PID</td>
</tr>
<tr>
<td>99336</td>
</tr>
</tbody>
</table>

**DESCRIBE THE PROJECT BOUNDARIES** (i.e. all road sections, ramps, and bridges requiring a value)

Include a street-network map of the study area with this request which clearly identifies the locations requiring forecasted traffic.

Addition of new right and left turn lanes accessing Fabens Park Drive. Right-turn lane addition begins approximately 1100' east of the US 6 EB forward bridge abutment over SR 2. The last left median turn lane ends approximately 1550' to the east (2650' from said bridge limit).

**OTHER REQUEST DETAILS**

<table>
<thead>
<tr>
<th>PROJECT OPENING YEAR</th>
<th>DESIGN YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>2036</td>
</tr>
</tbody>
</table>

**PREVIOUS STUDIES:** Have any previous studies (TIS, Planning, etc) relevant to this project been conducted?

- [ ] No
- [ ] Yes *(Please attach with request)*

**PROJECT DESCRIPTION & REASON FOR REQUEST** *(The reason helps us provide forecasts tailored to the purpose and need.)*

Roadway widening on US 6 to accommodate a right turn lane and two left turn lanes to improve access to Fabens Park.
**Exercise #3: Forecasting Method Selection**

Project Information provided:

<table>
<thead>
<tr>
<th>BASIC PROJECT INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Name: SRI US 036173 (Fabens Pk)</td>
</tr>
<tr>
<td>PD: 59336</td>
</tr>
<tr>
<td>Project Status: Active</td>
</tr>
<tr>
<td>Responsible District: 2</td>
</tr>
<tr>
<td>Project Type: Local</td>
</tr>
<tr>
<td>PDI Classification: Path 1</td>
</tr>
<tr>
<td>Locale: SRI</td>
</tr>
<tr>
<td>Project Number: N</td>
</tr>
<tr>
<td>Project Description: Installation of median turn to improve access to Fabens Park</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DETAILED PROJECT INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learing Type: Local</td>
</tr>
<tr>
<td>Contract Type: Standard Job</td>
</tr>
<tr>
<td>Contract Number: C1</td>
</tr>
<tr>
<td>Work Category: Safety Intersection Improvement</td>
</tr>
<tr>
<td>Primary Work Category: Intersection Improvement</td>
</tr>
<tr>
<td>Document Type: ENVIRONMENTAL</td>
</tr>
<tr>
<td>Tracer: TMS 05 Intersection</td>
</tr>
<tr>
<td>Consultant: Not Yet Selected</td>
</tr>
<tr>
<td>Consultant Not Yet Selected:</td>
</tr>
<tr>
<td>Responsible Design Agency: City of Huron</td>
</tr>
<tr>
<td>Sponsoring Agency: City of Huron</td>
</tr>
<tr>
<td>Plans Measurement Type: English Units</td>
</tr>
<tr>
<td>FHWA Oversight: Delegated/Locally Administered</td>
</tr>
<tr>
<td>FWHA Project Type: Conventional</td>
</tr>
<tr>
<td>MPO: ERPC</td>
</tr>
</tbody>
</table>

Ohio Traffic Forecasting Manual
## Exercise #3: Forecasting Method Selection

### Solutions

<table>
<thead>
<tr>
<th>Paths 1 &amp; 2</th>
<th>Path 3</th>
<th>Paths 4 &amp; 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple transportation improvement projects that do not significantly change the highway network</td>
<td>Moderate roadway and/or structure work that may include capacity additions</td>
<td>Complex transportation improvement projects which include roadway and structure work that adds capacity</td>
</tr>
<tr>
<td>▪ Routine maintenance</td>
<td>▪ Changing an interchange type</td>
<td>▪ A new interchange</td>
</tr>
<tr>
<td>▪ Resurfacing</td>
<td>▪ Relocating ramp terminals</td>
<td>▪ Interchange access modification</td>
</tr>
<tr>
<td><strong>Minor widening</strong></td>
<td>▪ Turn lanes additions and/or modifications</td>
<td>▪ Addition of continuous through lanes (freeway or local) in an urban or developing region</td>
</tr>
<tr>
<td>▪ Culvert replacement</td>
<td>▪ Two way left turn lanes</td>
<td>▪ All Complex Path 3 projects</td>
</tr>
<tr>
<td></td>
<td>▪ Auxiliary freeway lanes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Changing lane use</td>
<td></td>
</tr>
</tbody>
</table>

Low Risk Projects

High Risk Projects

Certified Traffic Required
**Exercise #3: Forecasting Method Selection**

**Solution**

Locally or ODOT Administered Project

- **Risk Level**
  - Low
  - Yes, SHIFT

- **On State System?**
  - No
  - No, Use Other Growth Rate (e.g. Linear Regression)

  - Yes, MPO Growth Rate

- **In MPO Boundary?**
  - No
  - No, MPO Growth Rate

  - Yes, High Risk Design Traffic (No Certification)

- **High Risk Design Traffic (Certification Req’d)**

- **Federal Funding?**
  - Yes
  - Yes, SHIFT

  - No, ODOT Admin or on State Sys?
    - Yes, High Risk Design Traffic (Certification Req’d)
    - No, MPO Growth Rate

**Per the project types diagram on the preceding page, turn lane additions are low risk projects.**

**Design Traffic developed at District level.**
EXERCISE #4: FORECASTING METHOD SELECTION

Project Information provided:

LOCATION

<table>
<thead>
<tr>
<th>PID</th>
<th>DISTRICT</th>
<th>COUNTY</th>
<th>ROUTE</th>
<th>LOG From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>101941</td>
<td>12</td>
<td>CUY</td>
<td>SR 176</td>
<td>10,13</td>
<td></td>
</tr>
</tbody>
</table>

DESCRIBE THE PROJECT BOUNDARIES (i.e. all road sections, ramps, and bridges requiring a value)

Include a street-network map of the study area with this request which clearly identifies the locations requiring forecasted traffic.

SR 176 Systems Interchange with I-480, between SR 94 (State Road) to I-77 interchange along I-480, and north to Spring Road interchange along SR 176. See attached map showing desired traffic movements for Interchange Modification Study.

OTHER REQUEST DETAILS

PROJECT OPENING YEAR 2019 DESIGN YEAR 2039

EARLY COORDINATION MEETING WITH MODELING & FORECASTING STAFF HELD:

☐ Yes  ☐ No  Date of Meeting [attached meeting minutes with request]

FUNDING AVAILABLE FOR C.O. TASK ORDER CONSULTANT:

☐ Yes  ☐ No (Review Requests)

PREVIOUS STUDIES: Have any previous studies (TIS, Planning, etc) relevant to this project been completed?

☐ Yes  ☐ No  (please attach with request)

PROJECT DESCRIPTION & REASON FOR REQUEST (The reason helps us provide forecast tailored to the purpose and need.)

Update of prior request dated 8/8/2016 requesting additional analysis by FHWA as part of review of Interchange Modification Study. This request is being supplemented with additional traffic data (Station 53818 dated 10/30/17-11/1/17) to verify observed traffic volumes on ramp from I-480 WB to SR 176 NB, the forecasted volume was higher than expected. Need for coordination meeting TBD.

Ohio Traffic Forecasting Manual
**EXERCISE #4: FORECASTING METHOD SELECTION**

Project Information provided:

<table>
<thead>
<tr>
<th>BASIC PROJECT INFORMATION</th>
<th>DETAILED PROJECT INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Name</strong></td>
<td>CUY SR 176 14.13</td>
</tr>
<tr>
<td><strong>Project Status</strong></td>
<td>Active</td>
</tr>
<tr>
<td><strong>Project Type</strong></td>
<td>Let</td>
</tr>
<tr>
<td><strong>Locale</strong></td>
<td>CUY</td>
</tr>
<tr>
<td><strong>Project Description</strong></td>
<td>Replace the concrete pavement in the I-480/SR-176 interchange in Cleveland and Brooklyn Heights; create new access points for SR 176 SB to enter I-480 EB quicker; modify legs entering SR 176 NB such that one full lane enters from Brookpark Road, I-480 SB, and I-480 WB each; rebuild traffic signal at ramp terminal at SR 17 Brookpark Road.</td>
</tr>
<tr>
<td><strong>Letting Type</strong></td>
<td>ODOT Let</td>
</tr>
<tr>
<td><strong>Contract Type</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Work Categories</strong></td>
<td>Preservation- Major Rehabilitation</td>
</tr>
<tr>
<td><strong>Primary Work Category</strong></td>
<td>Major Rehabilitation</td>
</tr>
<tr>
<td><strong>Project Purpose</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Designers</strong></td>
<td>AECOM</td>
</tr>
<tr>
<td><strong>Responsible Design Agency</strong></td>
<td>DISTRICT 12 PRODUCTION</td>
</tr>
<tr>
<td><strong>Sponsoring Agency</strong></td>
<td>ODOT SPONSORING AGENCY</td>
</tr>
<tr>
<td><strong>Plane Measurement Type</strong></td>
<td>English Units</td>
</tr>
<tr>
<td><strong>FMHA Oversight</strong></td>
<td>Delegated/State Administered</td>
</tr>
<tr>
<td><strong>Reporting Group Codes</strong></td>
<td>D12 FM EMK TMS 01 Major Construction</td>
</tr>
<tr>
<td><strong>Project Termini</strong></td>
<td>Cleveland, Brooklyn Hts; SR-17 to N of Schaeff</td>
</tr>
</tbody>
</table>

*Ohio Traffic Forecasting Manual*
Locally or ODOT Administered Project

Risk Level

High

Federal Funding?

Yes

High Risk Design Traffic (Certification Req’d)

No

ODOT Admin or on State Sys?

Yes

High Risk Design Traffic (No Certification)

No

MPO Growth Rate

In MPO Boundary?

Yes

SHIFT

No

No

Use Other Growth Rate (e.g. Linear Regression)

On State System?

Yes

No

Path 2 project, involved IMS, if the project were via an IOS, the exact nature of the interchange reconfiguration would be consulted to determine the need for Certified Design Traffic. Project is ODOT Let so funding source is irrelevant.

Certified Design Traffic
EXERCISE #5: FORECASTING METHOD SELECTION

Project Information provided:

LOCATION

<table>
<thead>
<tr>
<th>PID</th>
<th>DISTRICT</th>
<th>COUNTY</th>
<th>ROUTE</th>
<th>LOG From:</th>
<th>To:</th>
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</thead>
<tbody>
<tr>
<td>79608</td>
<td>6</td>
<td>DEL - Delaware</td>
<td>71</td>
<td>FRA 28.30</td>
<td>MRW 1.95</td>
</tr>
</tbody>
</table>

DESCRIBE THE PROJECT BOUNDARIES (i.e. all road sections, ramps, and bridges requiring a value)
Include a street-network map of the study area with this request which clearly identifies the locations requiring forecasted traffic.

Log points above are from the Northern I-71 & I-270 Interchange (St. Log 119.37) to the I-71 & SR-61 Interchange (St. Log 140.15). Connections to the west at Africa Road and to the east back to US 36/SR37 near Kintner Pkwy. See attached maps for other roads.

OTHER REQUEST DETAILS

PROJECT OPENING YEAR 2020    DESIGN YEAR 2040

PREVIOUS STUDIES: Have any previous studies (TIS, Planning, etc) relevant to this project been conducted?

☐ No  ☑ Yes  (Please attach with request)

PROJECT DESCRIPTION & REASON FOR REQUEST (The reason helps us provide forecasts tailored to the purpose and needs of this project.)

The data will be used to develop in the evaluation of an interchange and an IMS for modification at Big Walnut.
EXERCISE #5: FORECASTING METHOD SELECTION

Project Information provided:

<table>
<thead>
<tr>
<th>Ohio Department of Transportation Ellis Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BASIC PROJECT INFORMATION</strong></td>
</tr>
<tr>
<td>Project Name: DEL I-71 3.550</td>
</tr>
<tr>
<td>Project Status: Active</td>
</tr>
<tr>
<td>Project Type: Let</td>
</tr>
<tr>
<td>Location: DEL</td>
</tr>
<tr>
<td>Project Description: Construct new interchange at I-71/Big Walnut Rd. (TR 169) Only PE is funded at this time. Note: O-H154 funded. Feasibility study completed under this PID by URS paid for by Delaware County Engineer.</td>
</tr>
<tr>
<td>RD: 79638</td>
</tr>
<tr>
<td>Responsible District: 6</td>
</tr>
<tr>
<td>PDF Classification: Path 4</td>
</tr>
</tbody>
</table>

| **DETAILED PROJECT INFORMATION**                 |
| Contract Type: Standard Bid                     |
| Work Categories: Studies / Tasks - Feasibility study, New Alignment / Interchange, New |
| Primary Work Category: Interchange, New         |
| Project Purpose:                              |
| Designers: Consultant Not Yet Selected        |
| Responsible Design Agency: DELAWARE COUNTY ENGINEER |
| Sponsoring Agency: DELAWARE COUNTY ENGINEER    |
| Data Measurement Type: English Units          |
| FHWA Oversight: Full Oversight / Locally Administered |
| Receiving Group: THS 19 Other, CO Air Quality Nonexempt, DRB Env Gardener, DRB PlanPN Cabin |
| Project Termin: IR 71 AT TR 103 (Big Walnut Rd) SLM 3.55 |
| Project Manager: CARLIN, DAVID J               |
| Contract Officer:                              |
| Environmental: CE Level 3                      |
| Document Type:                                 |
| Federal Congestional: 15                       |
| Demo ID: O-H154                                |
| Reservoir Year:                                |
| FHWA Project Type: Demo                       |
| Primary MPO: NORPC                             |

Ohio Traffic Forecasting Manual
Locally or ODOT Administered Project

Risk Level
- High
- Low

On State System?
- Yes → SHIFT
- No → In MPO Boundary?
  - Yes → MPO Growth Rate
  - No → Use Other Growth Rate (e.g. Linear Regression)

Federal Funding?
- Yes
- No → ODOT Admin or on State Sys?
  - Yes → High Risk Design Traffic (Certification Req’d)
  - No → High Risk Design Traffic (No Certification)
- No

Certified Design Traffic

Path 4 ODOT Let project, funding source irrelevant
**Exercise #6: Forecasting Method Selection**

**Project Information provided:**

**Location**

<table>
<thead>
<tr>
<th>PID</th>
<th>District</th>
<th>County</th>
<th>Route</th>
<th>LOG From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>FRA - Franklin</td>
<td>SR 315</td>
<td>0.0</td>
<td>1.5</td>
<td></td>
</tr>
</tbody>
</table>

*Include a street-network map of the study area with this request* which clearly identifies the locations requiring forecasted traffic.

- IR-71 Northbound south of the IR-70/IR-71/SR-315 interchange. IR-71 northbound off-ramp to SR-315 northbound.
- IR-71 northbound off-ramp to Sullivant Street (future exit ramp). IR-70 westbound off-ramp to SR-315 northbound.

**Other Request Details**

- **Project Opening Year:** 2016
- **Design Year:** 2036

**Previous Studies:** Have any previous studies (TIS, Planning, etc) relevant to this project been conducted?

- [ ] No
- [x] Yes *(Please attach with request)*

**Project Description & Reason for Request:** *(The reason helps us provide forecasts tailored to the purpose and need.)*

- Requesting certified traffic for the S.R. 315 interchange at Rich/Town/Sullivant Streets for an Interchange Modification Study (IMS).
EXERCISE #6: FORECASTING METHOD SELECTION

Project Information provided:

<table>
<thead>
<tr>
<th>TYPE OF REQUEST</th>
<th>Description</th>
<th>Reason(s)</th>
<th>Date of previous forecast</th>
<th>Date of planning level traffic</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEW Project Forecast</td>
<td>There are no previous forecasts for this project.</td>
<td>Change in future year(s) of interest</td>
<td>2019-06-30</td>
<td>(Attach if not done by ODOT Modeling &amp; Forecasting)</td>
</tr>
<tr>
<td>UPDATE Project Forecast</td>
<td>Previous forecast(s) for this project exist. Provide reason for update (check all that apply):</td>
<td>Change in design alternative/alignment (provide drawings of each new alternative)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Other changes: Rich Street & Town Street are changing from 1-way streets to 2-way streets at the SR 315 interchange.

<table>
<thead>
<tr>
<th>OTHER CHANGES</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rich Street &amp; Town Street</td>
<td>Changing from 1-way streets to 2-way streets at the SR 315 interchange.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DESIRED DESIGN DESIGNATIONS</th>
<th>Certified design traffic requests only</th>
</tr>
</thead>
<tbody>
<tr>
<td>K &amp; D Factors</td>
<td>✔️</td>
</tr>
<tr>
<td>T24</td>
<td>✔️</td>
</tr>
<tr>
<td>TD</td>
<td>✔️</td>
</tr>
<tr>
<td>8th highest hour factor</td>
<td>✔️</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>REQUESTED SERVICES</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certified Design Traffic - Project involving no new roads* and no new general purpose (GP) lanes.</td>
<td></td>
</tr>
<tr>
<td>Certified Design Traffic - Project involves new roads or GP lanes and planning level traffic is complete.</td>
<td></td>
</tr>
</tbody>
</table>

Date of planning level traffic

| Certifying Traffic - Project involves new roads or GP lanes and NO planning level traffic is available. | |
| Planning Level Traffic ** | |

*New roads includes new ramps and/or interchanges.
**Planning level traffic is used for analysis of new roads or other projects expected to substantially change traffic volumes. See Certified Traffic Manual, Appendix C for details.

<table>
<thead>
<tr>
<th>TURNING MOVEMENT VOLUMES</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔️ ADT</td>
<td>✔️ A.M. DHV</td>
</tr>
</tbody>
</table>

Turn movement counts attached for all intersections requested. Counts required should normally be weekday counts, conducted from 7:00-11:00 a.m. and 2:00-6:00 p.m. Exception occur when designing for unique local conditions.

Turning movement counts NOT attached for all intersections requested - M&F will order counts.

Towns Street & Green Street; Town Street & SR-315 Southbound Off-Ramp/Plato Street; Town Street & SR-315 Northbound On-Ramp/Sandsucky Street; Rich Street & SR-315 Southbound On-Ramp/Plato; Rich Street & Sandsucky Street; SR-315 northbound off-ramp & Sullivan Street.

Ohio Traffic Forecasting Manual
**EXERCISE #6: FORECASTING METHOD SELECTION**

### Project Information provided:

**REQUIRED ALTERNATIVES ANALYSIS**
Does this project require analysis of alternative future scenarios in addition to the base case/no build?
- ☑ No  ☐ Yes  *(Provide drawings of each alternative)*

For modeling purposes, roadway networks with committed construction projects (E+C) will be used unless otherwise specified.

**COMMITTED and/or PLANNED DEVELOPMENT IN VICINITY**
- ☑ MPO long range plan assumptions should be modified as described below.
- ☐ MPO long range plan assumptions are acceptable for this project.

Provide all information available about the planned development, i.e. number of employees, square footage of buildings, site map, location map, etc. For projects in MPO planning areas, if no development information is provided, then the MPO long range plan land use will be assumed.

<table>
<thead>
<tr>
<th>Development Project</th>
<th>Planned Land Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Franklinton Redevelopment Project</td>
<td>retail (mixed use with multi-family)</td>
</tr>
</tbody>
</table>

**SPECIAL CONDITIONS** *(i.e. concerns with existing counts, special site impacts to be considered, etc.) and/or need by date:*

Would also like peak hour directional volumes on Rich Street, Town Street, and Broad Street just west of McDowell Street if possible. (McDowell Street is about 4 blocks east of SR 315.)
SOLUTION

Locally or ODOT Administered Project

Risk Level

High

Federal Funding?

Yes

No

On State System?

Yes

ODOT Admin or on State Sys?

Yes

No

In MPO Boundary?

Yes

MPO Growth Rate

No

Use Other Growth Rate (e.g. Linear Regression)

High Risk Design Traffic (No Certification)

SHIFT

High Risk Design Traffic (Certification Req’d)

Certified Design Traffic

Local project (no PID so no Ellis entry) with major development and side street improvements intersecting and impacting state system as part of an IMS.
EXERCISE #7:  
FORECASTING METHOD SELECTION

Project Information provided:

LOCATION

<table>
<thead>
<tr>
<th>PID</th>
<th>DISTRICT</th>
<th>COUNTY</th>
<th>ROUTE</th>
<th>LOG From</th>
<th>Tc</th>
</tr>
</thead>
<tbody>
<tr>
<td>89068</td>
<td></td>
<td>HAM - Hamilton</td>
<td>Brent Spence Bridge HAM 71/75</td>
<td>OH 2.7</td>
<td>KY186.7</td>
</tr>
</tbody>
</table>

DESCRIBE THE PROJECT BOUNDARIES (i.e. all road sections, ramps, and bridges requiring a value)
Include a street network map of the study area with this request which clearly identifies the locations requiring forecasted traffic.

The project corridor is 7.8 miles long, carrying I-71 and I-75 in Kentucky (KY mile marker 186.7) and Ohio (OH mile marker 2.7). The northern limit of the project is 1,500 feet north of the midpoint of the Western Hills Viaduct Interchange on I-75 in Cincinnati, Ohio. The southern limit of the project is 5,000 feet south of the midpoint of the Dixie Highway Interchange on I-71/I-75 in Fort Wright, which is south of Covington, Kentucky. The eastern and western limits of the study area generally follow the existing alignment of I-75.

[See Appendix A, Exhibit 4: Project Study Area]

OTHER REQUEST DETAILS

PROJECT OPENING YEAR 2020  DESIGN YEAR 2040

PREVIOUS STUDIES: Have any previous studies (TIS, Planning, etc) relevant to this project been conducted?

☐ No  ☑ Yes  (Please attach with request)

PROJECT DESCRIPTION & REASON FOR REQUEST (The reason helps us provide forecasts tailored to the purpose and need.)

The Brent Spence Bridge opened to traffic in 1963. Although it was designed to carry 80,000 vehicles per day, it currently provides a crossing of the Ohio River for about 160,000 vehicles per day. Due to its integral location and economic importance, that is projected to grow even further as documented in this request. The corridor carries traffic for both I-71 and I-75, and connects to I-74 and US 50. I-71 and I-75 are each important corridors to the regional economy. However, the growing traffic demands create safety and efficiency issues including operational and environmental concerns.

This project proposes to rehabilitate the existing Brent Spence double-decker bridge to assure continued use, as well as improve the Collector-Distributor (CD) system that parallels the corridor in Northern Kentucky. A schematic of the alternative is included in Appendix A, Exhibit 1-3. The Brent Spence Bridge Corridor project was initially developed through the Environmental Assessment (under PID 75119), which was accepted by the FHWA in March 2012. However, funding issues required the addition of tolling to the proposed river crossing to complete the project. The Interchange Modification Study, Environmental Assessment and Finding Of No Significant impact documents are available at http://www.brentspencebridgecorridor.com/documents/.

The project team is currently developing environmental documentation to document the impact of tolling. Traffic volumes in this request are a result of a Travel Demand Modeling process that considered multiple values of time.
EXERCISE #7: FORECASTING METHOD SELECTION

Project Information provided:

SPECIAL CONDITIONS (i.e. concerns with existing counts, special site impacts to be considered, etc.) and/or need by date:

This certified traffic request includes traffic for two build scenarios, Tapped and Toll-free. This builds on the Interchange Modification Study (IMS) that was approved in November 2011 and revised in September 2012. The IMS discussed traffic operations, comparing 2035 Build Toll-Free and No Build scenarios, using OKI Travel Demand Model Version 6.0 as the base. This certified traffic addresses the addition of tolling to the project by providing Tapped and Toll-free traffic volumes, both in the current design year of 2040.

The project team modified the OKI Travel Demand Model Version 7.6 to reflect the 2040 Build condition. Updates included planned projects, socioeconomic data, baseline existing traffic, values of time, zonal disaggregation, and tolling. These modifications are described in detail in Appendix D: Travel Forecasting Documentation. The Forecasting Spreadsheet, attached to this submittal, shows the execution of the forecasting process described in the Travel Forecasting Document.
## Exercise #7: Forecasting Method Selection

Project Information provided:

### Ohio Department of Transportation Ellis Reporting

<table>
<thead>
<tr>
<th>Basic Project Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Name</strong></td>
</tr>
<tr>
<td><strong>Project Status</strong></td>
</tr>
<tr>
<td><strong>Project Type</strong></td>
</tr>
<tr>
<td><strong>Locate</strong></td>
</tr>
<tr>
<td><strong>Project Description</strong></td>
</tr>
<tr>
<td><strong>BID</strong></td>
</tr>
</tbody>
</table>

### Detailed Project Information

<table>
<thead>
<tr>
<th>Detailed Project Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DOT Let</strong></td>
</tr>
<tr>
<td><strong>Project Manager</strong></td>
</tr>
<tr>
<td><strong>Contract Feature</strong></td>
</tr>
<tr>
<td><strong>Primary Work Category</strong></td>
</tr>
<tr>
<td><strong>Primary Purpose</strong></td>
</tr>
<tr>
<td><strong>Designers</strong></td>
</tr>
<tr>
<td><strong>Responsible Design Agency</strong></td>
</tr>
<tr>
<td><strong>Sponsoring Agency</strong></td>
</tr>
<tr>
<td><strong>Plan Measurement Type</strong></td>
</tr>
<tr>
<td><strong>FHWA Oversight</strong></td>
</tr>
<tr>
<td><strong>Reporting Group</strong></td>
</tr>
<tr>
<td><strong>Codes</strong></td>
</tr>
<tr>
<td><strong>Project Terminal</strong></td>
</tr>
</tbody>
</table>

Ohio Department of Transportation

annual
Brent Spence Bridge project. Path listed as Major due to project age, equivalent to Path 5. This is the type of project that would require EC meeting(s), extensive data collection, and Project Modeling. This particular project has been done multiple times due to changes in funding, previous versions being out date, etc.
EXERCISE #8: FORECASTING METHOD SELECTION

Project Information provided:

LOCATION

<table>
<thead>
<tr>
<th>PID</th>
<th>DISTRICT</th>
<th>COUNTY</th>
<th>ROUTE</th>
<th>LOG From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>HAN - Hancock</td>
<td>County Road 99</td>
<td>0.95</td>
<td>2.05</td>
</tr>
</tbody>
</table>

DESCRIBE THE PROJECT BOUNDARIES (i.e. all road sections, ramps, and bridges requiring a value)

Include a street-network map of the study area with this request which clearly identifies the locations requiring forecasted traffic.

The study area is bound on the west by Technology Drive/Township Road 142 and on the east by North Main Street. The project is bounded on the north by the I-75 and CR 99 merge/diverge area and on the south but the I-75 and CR 99 merge/diverge area. The study does not have a PID at this time but will in the near future.

OTHER REQUEST DETAILS

<table>
<thead>
<tr>
<th>PROJECT OPENING YEAR</th>
<th>DESIGN YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>2040</td>
</tr>
</tbody>
</table>

PREVIOUS STUDIES: Have any previous studies (TIS, Planning, etc) relevant to this project been conducted?

○ No  ○ Yes (Please attach with request)

PROJECT DESCRIPTION & REASON FOR REQUEST (The reason helps us provide forecasts tailored to the purpose and need.)

The study will combine planning level traffic forecasts with traffic impact study projects for current and planned existing business expansion and proposed new business. There is currently no dedicated left turn movements from CR 99 to I-75. A previous IMS showed that no additional traffic could be put onto I-75 without degrading the operation of I-75. There is planned construction for I-75 through the city of Findlay that will add a third lane in both directions. With the added third lane this study will explore possible improvements to improve the operation of the interchange with consideration to future growth. The study is funded by the City of Findlay. It will be completed by an ODOT task order consultant, and will be managed by ODOT District 1.
EXERCISE #8: FORECASTING METHOD SELECTION

Project Information provided:

BASIC PROJECT INFORMATION

- Project Name: HAN IR 75/CR 99 Traffic Study
- Responsible District: 1
- PID: 102375
- Non-Let
- ODOT SPONSORING AGENCY
- English Units
- Delegated/State Administered
- CR 99 from Technology Drive to Main Street, including the interchange ramps with IR75.

DETAILED PROJECT INFORMATION

- Project Manager: SCIERLOH, DERRICK T
- Contract Feature
- Environmental
- Document Type: Ci
- TRAC Tier
- Program Family
- Federal Congressional: 4
- District
- Demo ID
- Reservoir Year
- FHWA Project Type: Conventional
- Primary MPO: Findlay

Ohio Traffic Forecasting Manual
Came in without a PID, assigned after they sent it. A study to be used to assess possible improvements after the new lane is added to I-75 in both directions (references previous design traffic and IMS). No path was given in ELLIS, not ODOT administered, no Federal funding, the project potentially intersects the state system but with low risk improvements to be determined by study.

Design Traffic developed or reviewed at District level (outside MPO area).
CERTIFIED DESIGN TRAFFIC WORKFLOW
Contact District Representative

Risk Level

Low

High

Low Risk Design Traffic Process

High Risk (Certified) Design Traffic Process

On US/IR/State Route?

Yes

Use Simplified Highway Forecasting Tool (SHIFT)

No

Use Linear Regression, MPO Growth Rate, or Other Growth Rate Method**

Forecast causes design problems?

Yes

Conduct Early Coordination Meeting

Submit Certified Traffic Request Form to ODOT M&F

Consultant

ODOT M&F

No

Design to Forecast

Collect Traffic Count Data

Obtain TDF Model Results*

Develop Forecasts*

Submit to ODOT M&F for review with Certified Traffic Request Form

ODOT Design Traffic Process

Yes

Yes

No

No

*Processes detailed in training for Volumes 2 and 3

**Other methods summarized in following slides

Ohio Traffic Forecasting Manual
Volume 1, Section 4.1
CERTIFIED DESIGN TRAFFIC WORKFLOW

- Project Initiation
- Scope Development
- Forecast Assignment
- Count Evaluation
- Growth Evaluation
- Project Level Modeling
- Draft Design Traffic
- Certified Design Traffic
Certified Design Traffic Workflow

- Verify the need for Certified Design Traffic
- Contact District Office

- Project Initiation
- Scope Development
- Forecast Assignment
- Count Evaluation
- Growth Evaluation
- Project Level Modeling
- Draft Design Traffic
- Certified Design Traffic
Certified Design Traffic Workflow

- Project Initiation
- Scope Development
- Forecast Assignment
- Count Evaluation
- Growth Evaluation
- Project Level Modeling
- Draft Design Traffic
- Certified Design Traffic

Conduct Early Coordination Meeting and define:

- Study Area
- Analysis Year(s)
- Analysis Time Periods (i.e. AM, PM)
- Project Alternatives
- Existing count data availability and need for more data
- Model availability and applicability
- Need for project level modeling
- Project Schedule

Ohio Traffic Forecasting Manual
Volume 1, Section 5.2
## CERTIFIED DESIGN TRAFFIC WORKFLOW

### Recommended Reference Information, Early Coordination Meeting

<table>
<thead>
<tr>
<th>District</th>
<th>Central Office (M&amp;F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Maps of study area showing limits, impacted roadways</td>
<td>▪ TAZ Maps with model variables</td>
</tr>
<tr>
<td>▪ Description of alternatives to the extent known</td>
<td>▪ Previous traffic forecasts</td>
</tr>
<tr>
<td>▪ Description of proposed developments</td>
<td>▪ Map/list of continuous count stations near project</td>
</tr>
<tr>
<td>▪ Previously completed studies</td>
<td>▪ Map showing projects accounted for in long-range plan</td>
</tr>
<tr>
<td>▪ Available count data</td>
<td>▪ Other information relating to forecast parameters (K, D, etc.)</td>
</tr>
<tr>
<td>▪ List of future projects</td>
<td></td>
</tr>
</tbody>
</table>

- **Project Initiation**
- **Scope Development**
- **Forecast Assignment**
- **Count Evaluation**
- **Growth Evaluation**
- **Project Level Modeling**
- **Draft Design Traffic**
- **Certified Design Traffic**

---

Ohio Traffic Forecasting Manual
Volume 1, Section 5.2
Participants in Early Coordination Meeting:

Required
District Project Manager
Modeling & Forecasting

Others
Locals (City, County, MPO)
Office of Roadway Engineering
Office of Environmental Services
Certified Design Traffic Workflow

- **Project Initiation**
- **Scope Development**
- **Forecast Assignment**
- **Count Evaluation**
- **Growth Evaluation**
- **Project Level Modeling**
- **Draft Design Traffic**
- **Certified Design Traffic**

Screenshot, Early Coordination Meeting Checklist, a sample is included in the manual appendix, but this might be modified to be specific to the project.

---

**Modeling and Forecasting Early Coordination Checklist**

This checklist is to be completed at the time of the early coordination meeting and is meant to help identify potential issues with upcoming PDf path and/or I projects and workload responsibilities. This checklist also serves as a guide for the meeting minutes.

**MEETING ATTENDEES**
Please list attendee names and the organization they represent below.

**PROJECT DESCRIPTION**
Give a brief description of the project below. Include boundaries, build changes, new developments, etc.

**PROJECT ALTERNATIVES AND STUDY AREA**
Does study area encompass minimum traffic analysis study area? (use larger of two)

- Yes
- No

How many build alternatives?

- Yes

Do any alternatives substantially change the highway network?

- Yes (modeling)
- No (probably no modeling, use Model of Record or SHIFT)

Is study area completely contained in an MPO area?

- Yes (MPO Model)
- No (Statewide Model)

Are freight impacts the central driver of the project?

- Yes (Statewide Model)
- No (see above)

If multiple versions of model available, which to use? (coordinate with MPO as needed)
Certified Design Traffic Workflow

- **Project Initiation**
- **Scope Development**
- **Forecast Assignment**
- **Count Evaluation**
- **Growth Evaluation**
- **Project Level Modeling**
- **Draft Design Traffic**
- **Certified Design Traffic**

Forecaster will be assigned based on the project type and discussions at the Early Coordination Meeting:

- Completed internally by ODOT M&F
- External consultant
- District
- MPO

Ohio Traffic Forecasting Manual
Volume 1, Section 5.3
When all count data is compiled, traffic forecaster reviews data set for inconsistencies.

For some projects, a brief Count Evaluation Memo will be required to document:

- Sources
- Dates
- Gaps and conflicts in the data

The need for a Count Evaluation Memo will be determined at Early Coordination Meeting.
Traffic forecaster compares growth trends from all available sources including:

- TDF Models
- Historic count data
- Previously developed forecasts
- Population and employment projections
- Development activity

For some projects, a Growth Rate Evaluation Memo will be required (determined at Early Coordination Meeting).
ODOT M&F will coordinate or perform project level modeling tasks (if required) for each alternative. Project level modeling reflects changes in:

- Land use
- Road network

For larger projects, this step is completed in earlier planning steps the results of which can be used as Planning Level Traffic.
Traffic forecaster develops draft design traffic for all alternatives and submits a technical report to ODOT District, including:

- All assumptions
- Adjustments made to post-processed TDF model results
- Traffic volume plates and other design traffic parameters
CERTIFIED DESIGN TRAFFIC WORKFLOW

Project Initiation

Scope Development

Forecast Assignment

Count Evaluation

Growth Evaluation

Project Level Modeling

Draft Design Traffic

Certified Design Traffic

Example Certified Design Traffic Request Form from ODOT Modeling and Forecasting Section

Traffic Forecast Request Form

Ohio Traffic Forecasting Manual
Volume 1, Section 5.8
CERTIFIED DESIGN TRAFFIC WORKFLOW

Project Initiation
Scope Development
Forecast Assignment
Count Evaluation
Growth Evaluation
Project Level Modeling
Draft Design Traffic
Certified Design Traffic

Example Certified Design Traffic Approval Letter from ODOT Modeling and Forecasting Section

Ohio Traffic Forecasting Manual
Volume 1, Section 5.8
Design Traffic is ONLY said to be Certified when approved as such by the ODOT Office of Statewide Planning and Research Modeling & Forecasting Section.
Certified Design Traffic Workflow

FEEDBACK

- Design traffic, certified or not is not sacred
- The process flow provides the opportunity for feedback
- ANY design traffic created under the low risk process can be re-evaluated if the design team finds problems
- SOME certified design traffic will contain notes indicating uncertainty and these can be re-evaluated
- If the Early Coordination Meeting has resolved and discussed all sources of uncertainty, re-evaluation becomes less likely
Traffic Tracker is ODOT’s internal database for tracking forecasts. Logged milestones include:

- After Early Coordination Meeting
- Model request is received by ODOT M&F
- Design traffic is received by ODOT M&F for review/certification

ODOT M&F also publishes Google Earth .KML maps showing previous forecasts (currently internal only)

Screenshot, Google Earth .KML Maps
CERTIFIED DESIGN TRAFFIC SCOPE
BOILERPLATE SCOPE LANGUAGE

ODOT M&F has prepared boilerplate language to assist in Certified Design Traffic scope development.

Project Information can be found on the project website at: [link here]

Opening Year: #
Design Year: #

Final plates are as follows:
- Build Opening Year - AM, PM, 24 hour
- Build Design Year - AM, PM, 24 hour
- Truck percentages - TD, T24
- List any additional plates here, including any No Build requests. This should match the Design Traffic Request Form

Interchanges include:
- List interchanges here - specify Ramps only if no turning movements are needed

Intersections include:
- List intersections here

MPO will provide model assignments for:
- List all alternatives here - confirm with MPO before stating that they will be available

ODOT will provide model assignments for:
- List all alternatives here - confirm with OSPR before stating that they will be available

Any additional model run requests should be submitted with the cost proposal.

List any additional notes here.

Task Order Completion Time: 21 days from notice to proceed or as negotiated.

Products:
- Traffic Count Plate(s) (.pdf and Microstation)
- Design Traffic Plates(s) (.pdf and Microstation)
- Traffic Adjuster Spreadsheets (.xlsx)
- Documentation (.docx)
- Model inputs, scripts and outputs if not generated by ODOT
- Other assistance as needed.
Certified Design Traffic study area is larger of:

- Traffic analysis study area (i.e. IJS/IMS/IOS requirements)
- Project study area
Alternatives

- No Build
- At least one Build

Analysis Years

- Section 102.2 of the ODOT Location and Design Manual defines design years for different project types
  - Project Opening Year
  - Design Year = Project Opening Year + 20 years
- Intermediate study years may be required if project is phased

Analysis Periods

- Typically AM and PM Design Hour Volumes
- Midday analyses may be required for heavily commercialized areas
DATA COLLECTION GUIDELINES

Certified Design Traffic forecasts must strictly adhere to the data collection guidelines set forth by ODOT M&F

Found on the: Certified Traffic Webpage
MODEL SELECTION

Use MPO model if project study area falls completely within MPO boundary.

Use Statewide model if project study area is not covered by MPO model, or if freight impacts are of particular concern.
**Model Version**

The *Model of Record* is maintained by the agency and serves as the basis for the latest long-range plan/transportation improvement program analysis.

- Produces the default set of raw model results
- Used when project level modeling is unavailable

In addition to the Model of Record, agencies may maintain alternate versions of the future year model (e.g. Existing plus committed/funded future projects only).
Model Version

Forecaster should check TAZ inputs for future year model(s) to:

- Select the model version that is most consistent with the assumed project alternatives
- Make note of whether or not project-related development is already included in the future year model.
OTHER STUDIES AND FORECASTS

Previous Studies in the project area and Future Studies that impact the project in question will be identified at the Early Coordination Meeting.

Relevant studies include:

- Safety studies
- Traffic impact studies
- Planning studies
- Design traffic/modeling (Google Earth .KML maps)
FORECASTS are checked against those from Previous Studies to ensure consistency between projects.

Future Studies are important to coordinate so that data collection and project modeling can be done for all projects anticipated in the area, thus ensuring consistency amongst the forecasts.
Certified Design Traffic Request Form
All project requests submitted to Modeling and Forecasting should include a completed request form.

The latest version can either be obtained from Modeling & Forecasting directly or from the following link:

http://www.dot.state.oh.us/Divisions/Planning/SPR/ModelForecastingUnit/Documents/CertTrafReqForm.pdf

Note: It is expected that the form will be submitted by ODOT District Staff.
The request form is intended to gather as much information as possible so Modeling & Forecasting staff can address all the needs for the project.

The first page collects general information such as:

- PID, County, Route & Log
- Project Boundaries and Description
- Opening and Design years
- Type of Request (new, update, review)
# Certified Design Traffic Request Form

The second page focuses primarily on what is needed for the final product:

- Design Designations (K, D, T24, etc.)
- Type of service needed (Certified Design Traffic, Planning Level Traffic)
- Required forecasts (ADT, DHV, Turning movements, etc.)
- Confirmation of counts included with request

<table>
<thead>
<tr>
<th><strong>Desired Design Designations:</strong> (Certified design traffic requests only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ K</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Requested Services:</strong>—Briefly state:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certified Design Traffic — Project involving new roads* and/or new exclusive purpose (EP) lanes. (Include reason for submitting in Special Conditions below)</td>
</tr>
<tr>
<td>Certified Design Traffic — Project involves new roads or EP lanes and planning level traffic is complete.</td>
</tr>
<tr>
<td>Date of planning level traffic: * (Attach if not done by date of request)</td>
</tr>
<tr>
<td>Certified Design Traffic — Project involves new roads or EP lanes and no planning level traffic is available.</td>
</tr>
<tr>
<td>Planning Level Traffic***</td>
</tr>
<tr>
<td>*New roads include new ramps and/or interchanges. **Planning level traffic used for analysis of new roads or other projects expected to substantially change traffic volumes. See Certified Traffic Manual, Appendix C for details.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Traffic Counts &amp; Required Forecasts:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Counts following the recommended guidelines attached for all locations requested.*</td>
</tr>
<tr>
<td>☐ Plate attached with request. (Should be included with all MOAA descriptions.)</td>
</tr>
<tr>
<td>*See guidelines for traffic counts used for Certified Traffic Counts for Certified Traffic Manual for traffic count guidelines.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Required Forecast Periods:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ ADT</td>
</tr>
<tr>
<td>Required Forecast Type (check all that apply):</td>
</tr>
<tr>
<td>☐ Turning Movements</td>
</tr>
<tr>
<td>***If not covered by interaction forecasts.</td>
</tr>
<tr>
<td><strong>If not covered by intersection forecasts.</strong></td>
</tr>
<tr>
<td><strong>If not covered by interaction forecasts.</strong></td>
</tr>
</tbody>
</table>

**Capacity Constraints:**

Are there capacity constraints in or near the project area that would impact the forecast? ☐ Yes ☐ No

Please list locations and restrictions below.
The third page of the form looks at modeling information and has a section for any special conditions to be listed. There is also a check box to indicate if there will be multiple alternatives.

If an Early Coordination meeting was not held & there are multiple alternatives some detailed descriptions should be included in the special conditions or project description sections.
SIMPLIFIED HIGHWAY FORECASTING TOOL (SHIFT)
**WHAT IS SHIFT?**

**SHIFT** is a front-end software application for reporting simplified traffic forecasts for State highway design purposes.

- Uses a Microsoft Access database file containing historic traffic count data and Model of Record results
- Design designations are generated based on historic trend line analysis and/or model results
LIMITATIONS

- For Low Risk Design Traffic forecasts only; not suitable for High Risk projects
- Forecasts are created independently; no effort towards consistency with other forecasts or developments
- Only provides forecasts on State mainline road segments
- Turning movement forecasts are simplistic and require the input of count data
- Currently for ODOT internal use only
Generates report with design designations for links and/or intersections.

**SHIFT Link Forecast Report**  
**SHIFT Turning Movement Forecast Report**
More Information

- Remember, at present, SHIFT is only available to ODOT personnel
- Video training for using SHIFT is available
- ODOT M&F can provide in person training as needed
- SHIFT is currently being redeveloped as a web enabled application within ODOT’s traffic data management system (TMMS)
- When it becomes generally available, the current training will be updated to include SHIFT
TRAFFIC IMPACT STUDIES
TIS Traffic Forecasting

Traffic impact studies usually do not significantly alter the highway network and do not require Certified Design Traffic.

However, a Level 2 TIS should follow the High Risk Design Traffic forecasting method.

- The SHAMM now references the Traffic Forecasting Manual
- While TISs themselves do not need Certified, following the guidance will also ensure that future projects developed in response to the TIS can be Certified
Trip Generation

Recommendations for trip generation estimates:

▪ Use latest version of *ITE Trip Generation Manual*
▪ Avoid multi-use land uses if possible (e.g. Office Park)
▪ Use trip generation method (rate vs. equation) following guidance provided in the *ITE Trip Generation Handbook*.
▪ Typically use the Peak Hour of Adjacent Street Traffic for analysis
▪ Account for pass-by and internal capture trips using the latest version of the *ITE Trip Generation Handbook*
▪ Trip distribution assumptions should be reasonable and well-documented
▪ Proprietary trip generation rates must be well-documented
TIS report should include:

- Location map
- Site Plan
- Original raw traffic counts
- Growth rate documentation or calculations
- Trip Generation worksheets or table
- Traffic distributions or redistributions, if applicable
- Traffic volume figures or plates for each analysis period
  - Existing Background Peak Hour Volumes
  - Design Year Background (No Build) Volumes
  - Site Generated Volumes
  - Design Year Build Volume Plates
- Documented assumptions