Appendix B: SFY 2008 Administrative Update

As stipulated by Section A.3 in Appendix A of the Miami Valley Regional ITS Architecture, MVRPC is required to complete a comprehensive update to the Regional ITS Architecture concurrently with the update to the MVRPC Long Range Transportation Plan (LRTP). The SFY 2008 Regional ITS Architecture Administrative Update is the first update to the SFY 2005 Regional ITS Architecture (hereafter 2005 Architecture) since its origination in February 2005. The Administrative Update was completed concurrently with the latest LRTP update and includes only minor changes reflecting the limited implementation of ITS projects and programs in the Dayton Region since 2005. The results of the update are presented below.

B.1 Background, Purpose, and Need

The Dayton/Springfield Freeway Management System – currently planned for construction in 2011 – will include many of the Region's premiere ITS systems. Since the approval of the original Regional ITS Architecture in 2005, ITS implementation in the Dayton Region has been limited to a few local, independent systems from a handful of jurisdictions and government entities. In addition, a majority of the Region's ITS stakeholders, architecture elements, market packages, institutional agreements, and current/planned data flows identified in the original document remain unchanged. Therefore, MVRPC staff, along with the Architecture Maintenance Team, determined that a full, comprehensive update of the architecture was unnecessary at this time. In its place, an Administrative Update was initiated to bring the 2005 Architecture up-to-date with current ITS rules, regulations, and practice, and account for those ITS projects completed to date. Though current ITS operations in the Dayton Region are limited, an Administrative Update was needed to fulfill the following goals:

1. Update the 2005 Architecture in concurrence with the 2030 LRTP update
2. Ensure compliance with the latest FHWA, FTA, and ODOT rules and regulations regarding ITS
3. Conform to the latest National ITS Architecture (v6.0)
4. Document recent changes in planning and deployment of ITS in the Miami Valley
5. Simplify the Turbo Architecture database to make it more "user-friendly" and easier to maintain
6. Re-energize regional ITS stakeholders in advance of the proposed construction of the Dayton/Springfield Freeway Management System in SFY2011

The Administrative Update maintained the architecture's accuracy and validity with regards to current and future ITS deployments in the Miami Valley Region. The goal of a Regional ITS Architecture is to document regional ITS integration so planning and deployment can occur in an organized and coordinated fashion. The SFY 2008 Administrative Update will ensure that the Miami Valley Regional ITS Architecture will remain an integral part of ITS deployment in the Miami Valley.

To act as the consulting body for the Administrative Update, MVRPC re-formed the Architecture Maintenance Team, composed of the original stakeholders involved in drafting the 2005 Architecture. The Maintenance Team included representatives from local governments, public transportation agencies, FHWA, and ODOT.

B.2 Stakeholder Meetings

The SFY 2008 Administrative Update began with an initial kick-off meeting on August 28, 2007. The meeting was attended by MVRPC staff and members of the Architecture Maintenance Team. A presentation was given by MVRPC staff outlining the goals, objectives, and expected outcomes of the Administrative Update. Attendees were also briefed on current federal and state ITS rules and regulations with regards to ITS project planning and implementation, then asked to provide feedback on the update process. Subsequent meetings of the Maintenance Team were held when the process reached specific milestones, including the re-organization of the Turbo Architecture database and to request information on new or planned ITS projects in the Region. During each meeting, MVRPC staff solicited the Architecture Maintenance Team for comments, concerns, and suggestions for next steps.

B.3 Summary of Update Process

As previously stated, an administrative update was determined to be the best course of action given the current state of ITS implementation in the Region and the relative youth of the Regional ITS Architecture. The administrative update included a review of the SFY 2005 Regional ITS Architecture to meet the goals outlined in Section B.1. Below is an explanation of how each goal was addressed:

Goal #1: Update the Regional ITS Architecture in concurrence with the 2030 LRTP Update.

The SFY 2008 Transportation Budget and Work Plan, Section 621.1 called for MVRPC staff to "complete an update to the Miami Valley Regional ITS Architecture, including TURBO Architecture files in coordination with the Long Range Transportation Plan." To meet this requirement, MVRPC staff initiated the administrative update with a kick-off meeting on August 28, 2007. The SFY 2008 Administrative Update to the 2005 Architecture was approved by the Architecture Maintenance Team on July 11, 2008.

Goal #2: Ensure compliance with the latest FHWA, FTA, and ODOT rules and regulations regarding ITS

Federal Rule 23 CFR 940 (January 8, 2001) stipulated that any region with active or planned ITS projects must have a regional ITS Architecture within four years. To meet this requirement, MVRPC and its regional ITS partners published the Miami Valley Regional ITS Architecture in February 2005. The 2005 Architecture was developed to reflect the National ITS Architecture, including all applicable regulations and standards, in accordance with 23 CFR 940. The accompanying TURBO architecture database files were developed using TURBO Architecture version 3.0, a software tool developed to assist planners in managing their regional ITS architectures. Each new version of TURBO Architecture software includes the rules, regulations, and standards from the latest National ITS Architecture.

The 2008 Architecture was developed in accordance with the latest version of the National ITS Architecture (v. 6.0, May 2007) using the recently released TURBO Architecture version 4.0 software (October 2007). Both the National ITS Architecture and the TURBO Architecture software incorporate the latest ITS

standards as approved by the USDOT ITS Standards Program. To date, no significant amendments have been made to Federal Rule 23 CFR 940. Therefore, the Miami Valley Regional ITS Architecture remains in compliance with the Rule.

Revised January 2008, Part 13 of the ODOT Traffic Engineering Manual (TEM) provides an interpretation of Federal Rule 23 CFR 940 to address project definitions, ITS architecture modifications, and systems engineering for the State of Ohio. In addition, the document guides local project sponsors in adhering to the requirements of 23 CFR 940, most notably the requirement to cultivate projects using a System Engineering Analysis (SEA) and develop a project-level ITS architecture in accordance with the applicable Regional and/or National ITS Architecture prior to the authorization of Federal construction funds. MVRPC is committed to assisting jurisdictions in using SEA and documenting project compliance with the Regional ITS Architecture as required by TEM Part 13.

MVRPC is also required by TEM Part 13 to notify the relevant ODOT District Office of any potential transit and highway ITS projects when reviewing local programs for inclusion in the Transportation Improvement Program (TIP). To meet this requirement, MVRPC forwarded two letters to ODOT Districts 7 and 8 providing notification of seven (7) potential ITS project already included in the SFY 2008-2011 TIP. In the future, MVRPC staff will advise ODOT District staff of all potential ITS project prior to their inclusion in the TIP.

Goal #3: Conform to the latest National ITS Architecture (v. 6.0)

As stated under Goal #2, the SFY 2008 Administrative Update to the 2005 Architecture was conducted in accordance with version 6.0 of the National ITS Architecture. Use of TURBO Architecture v. 4.0 ensured the Administrative Update would conform to the National ITS Architecture.

Goal #4: Document recent changes in planning and deployment of ITS in the Miami Valley

The 2005 Architecture documented a number of ITS projects existing or planned as of February 2005. For the 2008 Architecture, MVRPC staff identified existing and planned ITS projects in the Dayton Region using two methods: 1) The SFY 2008-2011 TIP was examined for ITS projects nearing construction, and 2) a survey was made available via the MVRPC website to identify newly existing or planned ITS projects since 2005.

The combined examination and survey revealed nine (9) potential existing or planned ITS projects in the Dayton Region since 2005: Five centrally-controlled traffic signal systems, a transit AVL and vehicle surveillance system, an emergency vehicle prevention system, a downtown transit intermodal hub, and the Dayton Early Deployment Project (See Table B-1). Four projects are funded in the SFY 2008-2011 TIP.

Each project was entered into the TURBO Architecture database and mapped to the appropriate stakeholder(s), market package(s), and data flows. It is expected

that each system will integrate into the Dayton/Springfield Freeway Management System when it comes on-line in 2011.

Table B.1: Post-2005 Existing or Planned ITS Projects, Dayton Region

PROJECT SPONSOR	PROJECT TYPE	PROJECT SCALE	STATUS
City of Beavercreek	Centrally-Controlled Traffic Signal System	Major	Planned
City of Dayton	Centrally-Controlled Traffic Signal System	Major	Existing
Greene CATS	Automatic Vehicle Location (AVL) system and vehicle surveillance cameras	Major	Planned
Montgomery County	Emergency Vehicle Pre-emption	Minor	Planned
ODOT	Dayton Early Deployment Project (EDP)	Major	Planned*
SCAT	Downtown Intermodal Transit Hub	Major	Planned
City of Tipp City	Centrally-Controlled Traffic Signal System	Major	Planned*
City of West Carrollton	Centrally-Controlled Traffic Signal System	Major	Planned*
City of Xenia	Centrally-Controlled Traffic Signal System	Major	Planned*

* = Project included in SFY 2008-2011 TIP.

Many of the existing and planned ITS projects in the Dayton Region primarily include systems operating on the local transportation network. However, in support of maintenance-of-traffic efforts for the I-75 reconstruction through Downtown Dayton, ODOT will be implementing a preliminary roll-out of the Dayton/Springfield Freeway Management System (D/SFMS), the Dayton Region's flagship ITS system. Known as the Dayton Early Deployment Project (EDP), a limited number of regional ITS systems will be installed to assist motorists in navigating through the region during construction. In addition, the basic infrastructure for the D/SFMS (i.e. conduit, pull boxes, and cable laterals) will also be installed to avoid unnecessary roadway reconstruction and traffic disruptions during construction of the D/SFMS in 2011. ITS systems to be installed as part of the Dayton EDP include:

- Dynamic Message Signs (5) on I-70 and I-75 – Permanent
- Highway Advisory Radio stations (4) along I-70 and I-75 – Semi-permanent
- Closed-Circuit Television Cameras (13) at various locations – Temporary
- Associated communication equipment necessary for remote Traffic Management Center operations – Permanent

A local traffic management center (TMC) will not be constructed in the Dayton Region as part of the Dayton EDP project. The Advanced Regional Traffic Interactive Management and Information System (ARTIMIS) TMC in Cincinnati, Ohio will operate the Dayton EDP. In the event of an incident on the freeway network, ARTIMIS staff will coordinate with ODOT District staff and local first responders to detect and manage the incident.

Documentation addressing Federal Rule 23 CFR 940 was submitted to MVRPC in advance of construction in order to include the project as part of the Regional ITS Architecture. Any changes made to the operation of the Dayton EDP during or immediately after construction will be documented and submitted to MVRPC to update the Regional ITS Architecture. More information on the Dayton EDP is available through the ODOT Office of ITS Program Management (www.dot.state.oh.us/its/its.asp).

MVRPC will incorporate as-built Federal Rule 23 CFR 940 documentation from TIP-funded ITS projects into the Regional ITS Architecture once the project is completed.

Goal #5: Simplify the TURBO Architecture database to make it more "user-friendly" and easier to maintain

The Architecture Maintenance Team and MVRPC recognize the importance of the Regional ITS Architecture and the TURBO Architecture database to facilitate an ordered, integrated ITS system in the Dayton Region. However, a complicated architecture inhibits its use as a planning document, particularly at the local level where regional ITS integration may not be a significant consideration during project development. In addition, maintenance of the TURBO database can become burdensome if it is allowed to become too detailed in its documentation of regional ITS integration relative to the level of ITS implementation in the Region. With these concerns in mind, an assessment of the TURBO database was conducted to determine where redundancies in the database could be eliminated to produce a streamlined, user-friendly architecture.

An assessment of the original TURBO Architecture database revealed it contained a large number of redundant regional ITS stakeholders and stakeholder elements. This redundancy tended to create confusion with regards to the planned implementation of the Region's ITS systems, potentially leading to frustration as local project sponsors adhered to their 23 CFR 940 documentation requirements. In addition, redundancies resulted in significant issues with regards to maintenance and accuracy. Therefore, a simplification of the existing TURBO Architecture database was seen as an opportunity to:

- Assist local project sponsors with their 23 CFR 940 documentation requirements
- Encourage continued engagement in regional ITS implementation
- Foster new investment in ITS technologies, projects, and programs
- Provide an easily updatable database flexible enough to accommodate future ITS expansion, but detailed enough for project sponsors to incorporate during project development

Ultimately, the re-organized TURBO Architecture database eliminated many of the redundancies that were barriers to integrating the 2005 Architecture into ITS-related projects and programs in the Region. In addition, the TURBO Architecture will be more responsive to new stakeholders as they invest in ITS by accommodating Project ITS Architectures, rather than adding new or planned ITS projects directly to the Regional ITS Architecture. This reduces the need to add discrete stakeholders and stakeholder elements each time a new project is planned or implemented, thus reducing the overall complexity of the Regional ITS Architecture. Other benefits of a streamlined Regional ITS Architecture will include fewer maintenance requirements and enhanced ITS project sequencing.

This effort has led to important changes to the TURBO Architecture database. To document these changes, MVRPC staff produced a series of three (3) documents outlining the changes to the 2005 Architecture stakeholders and

elements lists. Below are brief explanations of the information contained within each document. As a result of this consolidation effort, it will be easier for roadway and transit planners to identify where their project fits into the Regional ITS Architecture, thus ensuring the coordinated deployment of ITS infrastructure. These documents are available via the MVRPC website.

Document A: Stakeholder List

Document A summarizes the changes made to the list of 2005 Architecture stakeholders for the Miami Valley. Though no previously unaccounted for stakeholders were added, several existing stakeholders were bundled to form new stakeholder "groups." These groupings were created to facilitate and simplify the process for documenting changes in the list of stakeholders and associated ITS elements. For example, the 2005 Architecture included Miami, Montgomery, Greene, and Clark Counties as individual stakeholders. For the SFY 2008 Administrative Update, these four stakeholders were combined to form a stakeholder grouping titled 'County Governments' since county governments provide essentially identical functions and services. In addition, other counties can be seamlessly integrated into the Regional ITS Architecture as needed in the future, rather than adding new elements and data flows for each additional stakeholder. This limits the need to constantly update the Regional ITS Architecture as stakeholders are added or dropped.

The list contains the name and brief description of each stakeholder from both the 2005 and 2008 Architectures, plus a summary of changes relative to the 2005 Architecture and a list of associated ITS elements. In addition, an indication of status relative to the 2008 Architecture is provided for each element; each stakeholder was identified as 'New' (renamed or previously non-existent), 'Unchanged', or 'Eliminated'.

In all, 21 stakeholders remain from the 2005 Architecture, while seven new stakeholder groupings were added. A total of 21 individual stakeholders have been eliminated, though most have been rolled into one or more new stakeholder groupings. While now included more broadly within the Regional ITS Architecture, they continue to be important individual ITS partners.

Document B: ITS Elements List

Document B summarizes the changes made to the list of 2005 Architecture elements for the Miami Valley. Broadly defined, an ITS element is "a collection of hardware, software, data, processes, and people that work together to achieve a common goal" (National ITS Architecture v6.0). As with the stakeholders list, the collection of Regional ITS elements has been trimmed in order to make it more manageable and reflective of current ITS deployment in the Region. Many purged elements were included in new and/or restructured elements as a result of the Administrative Update. However, a small number of elements were entirely eliminated from the Regional ITS Architecture due to their limited applicability to the Region's ITS requirements. For example, the SFY 2005 Architecture contained three (3) distinct elements representing the public works vehicle fleets of the counties, municipalities/townships, and ODOT. For the SFY 2008 Administrative Update, these elements were combined to form the 'Basic

Maintenance and Construction Vehicle' element since many of these vehicles perform similar functions (i.e. road maintenance, construction, snow removal, etc.). Any new ITS-related functions added to these vehicles can be accounted for through individual Project ITS Architectures.

Similar to Document A, the list includes the name and description of each ITS element from both the 2005 and 2008 Architectures, plus a summary of changes. The status of each ITS element relative to the 2008 Architecture is also provided; each element was identified as 'New' (renamed or previously non-existent), 'Restructured' (split into multiple elements), 'Unchanged', or 'Eliminated'.

In total, 20 ITS elements remain from the 2005 Architecture, while another 43 new elements were added. In all, 119 individual ITS elements were either regrouped into new element groupings, or entirely removed from the Regional ITS Architecture.

Document C: Summary of Elements, Stakeholders, and Market Packages

Document C provides an overall summary of the 2008 Regional ITS Architecture. The document includes a list of each Architecture element, its current operational status, the relevant stakeholder, a brief description, and a list of Market Packages of which the element is a part. A Market Package is a specific function provided by the region's ITS projects and programs; each regional ITS element contributes to the production of that service. The operational status has been identified as either 'Existing' or 'Planned'.

In total, 63 individual ITS elements were included in the 2008 Architecture. This list covers the spectrum of ITS elements, including traffic operations, roadway engineering, public transportation, public works, law enforcement, and emergency management.

Goal #6: Re-energize regional ITS stakeholders in advance of the proposed construction of the Dayton/Springfield Freeway Management System in SFY2011

The original Architecture Maintenance Team was reconvened to administer the SFY 2008 Administrative Update in order to maintain continuity between the 2005 and 2008 Architectures. The list of Architecture participants included representatives from:

City of Dayton	Montgomery County	OSHP
City of Kettering	Miami County	FHWA
City of Moraine	Clark County	GDRTA
City of Riverside	CC-STCC	Greene CATS
City of Springfield	ODOT District 7	Miami County Transit
City of Centerville	ODOT District 8	County Sheriff's Offices
City of Springboro	ODOT Central Office	WPAFB

Multiple meetings were held to acquire input from the Region's ITS stakeholders. Attendees were also encouraged to invite other interested parties to attend the meetings.

MVRPC continues to stress the importance of the Regional ITS Architecture to our regional partners. Regional ITS stakeholders and other interested parties will be actively engaged in planning the Region's flagship ITS system, the Dayton/Springfield Freeway Management System, as the project moves toward construction in 2011. All efforts to inform project sponsors of their 23 CFR 940 documentation requirements will be explored and assistance will be provided by MVRPC staff were appropriate. If necessary, the Architecture Maintenance Team may be re-convened to amend the Regional ITS Architecture prior to the next update cycle. All ITS-related information and alerts are to be posted on the MVRPC ITS website as they become available.

ITS implementation in the Region remains relatively light compared to other regions in Ohio with active freeway management systems, such as Cincinnati/Hamilton County and Columbus/Franklin County. However, planning for ITS projects within the Region is increasing as regional leaders realize the potential ITS holds for saving money, reducing congestion, and improving safety. As these projects evolve, the Regional ITS Architecture stands to play a pivotal role in planning and implementation. MVRPC remains committed to expanding ITS capabilities in the Region and working with regional ITS stakeholders to develop an integrated regional ITS system.

B.3 Amended Maintenance Schedule

Appendix A, Section A.3 requires that a comprehensive architecture update be completed every three years, concurrent with the update of the Long Range Transportation Plan. The 2005 SAFETEA-LU legislation authorized a four-year LRTP update cycle. To match the intent of Section A.3, the next comprehensive update of the Regional ITS Architecture will occur every four years. As scheduled, the LRTP and Regional ITS Architecture are to be updated in SFY 2012. However, a new federal transportation bill is anticipated in FFY2009.