Developing a Methodology for School Travel Plan Development for Large School Districts

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for the Ohio Department of Transportation
Office of Research and Development

State Job Number 134577
October 2012
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Safe Routes to School (SRTS) is a national and international movement to create safe, convenient, and fun opportunities for children to bicycle and walk to and from schools. Within the United State, SRTS is a Federal-Aid program of the U.S. Department of Transportation's Federal Highway Administration (FHWA). Every State manages its own program and develops its own processes to solicit and select projects for funding. The goal of Ohio's SRTS program is to assist communities in developing and implementing projects and programs that encourage and enable children in grades K-8, including those with disabilities to walk or bike to school safely. This is done by creating a school travel plan (STP) that addresses the 5 Es of the SRTS program: engineering, education, enforcement, encouragement, and evaluation. The current Ohio Department of Transportation (ODOT) funding process restricts applications for STP development to four schools.

The purpose of this research project was to develop a process that lets large school districts in Ohio develop comprehensive, district-wide School Travel Plans (STP). Large school districts are defined by the ODOT as those with more than fifteen kindergarten through 8th grade (K-8) schools. In order to develop a district-wide STP process, a pilot district (Cincinnati Public Schools) was chosen so that the methodologies could be tested and refined. Methodologies were developed based upon three key areas identified by ODOT: mapping, infrastructure project identification and prioritization, and non-infrastructure project identification and prioritization.

In the end, a district-wide STP was created for Cincinnati, along with a set of guidelines that can be used by other large districts looking to create a district-wide STP. The Cincinnati STP is the first district-wide STP for a large school district in Ohio and is thought to be the first Large District STP nationally to incorporate both infrastructure and non-infrastructure items.
FINAL REPORT

DEVELOPING A METHODOLOGY FOR SCHOOL TRAVEL PLAN DEVELOPMENT FOR LARGE SCHOOL DISTRICTS

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October 2012

The contents of this report reflect the views of the authors who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the Ohio Department of Transportation or the Federal Highway Administration. This report does not constitute a standard, specification, or regulation.
ACKNOWLEDGMENTS

Prepared in cooperation with the Ohio Department of Transportation and the U.S. Department of Transportation, Federal Highway Administration.

Special thanks go out to the following people for their help and support in the development of the District-wide School Travel Plan Guidelines and the Cincinnati Public Schools’ District-wide School Travel Plan:

- Mary Rowan, Superintendent of Cincinnati Public Schools
- Cincinnati Public School’s Board of Education
- City of Cincinnati’s Department of Transportation and Engineering
- Julie Walcoff, Ohio Department of Transportation Safe Routes to Schools Program Manager
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DEFINITIONS

Throughout this report, there are references that relate to the various groups involved in the research process. The following list defines the groups that are referred to within the report:

- **The Consultant Team** – This is the team of consultants from TranSystems Corporation and Toole Design Group that were contracted by Ohio Department of Transportation (ODOT) to complete this research project.
- **The Project Team** – This is the team of representatives from the ODOT as well as the consultants from TranSystems Corporation and Toole Design Group.
- **The Cincinnati Team** – This is the team that has been in place in Cincinnati for the past three years implementing Safe Routes to School (SRTS) efforts throughout the district. The Cincinnati Team consists of members from the following groups and organizations:
  - Cincinnati Public Schools (CPS)
  - The City of Cincinnati
  - AAA
  - Alliance for Leadership and Interconnection (ALI)
  - Cincinnati Children’s Hospital
  - Cincinnati Public Health
  - Conquer Obesity-Foundation for a Healthier America (COFHA)
  - Executive Service Corps of Cincinnati (ESCC)
  - Growing Well Cincinnati
  - Health Foundation
  - Leave No Child Inside
  - Ohio-Kentucky-Indiana Regional Council of Governments (OKI)
  - Place Matters
  - YMCA of Greater Cincinnati

This team is also referred to as “the local team” when speaking of future districts that intend to create a district-wide STP.
EXECUTIVE SUMMARY

PROJECT BACKGROUND
The purpose of this research project was to explore a process that allows for and aids large school districts in Ohio to develop comprehensive, district-wide School Travel Plans (STP). Large school districts are defined by the Ohio Department of Transportation (ODOT) as those with more than fifteen kindergarten through 8th grade (K-8) schools. Throughout the duration of their Safe Routes to School (SRTS) program, ODOT observed that large school districts have not been submitting SRTS grant applications at a rate proportionate to their representation in the state. One reason that was believed to cause this was that it was not time-efficient and/or politically feasible for a large school district to generate STPs for just four schools at a time, a limitation of ODOT’s existing STP process. ODOT proposed removing the four school limit to allow large school districts to develop district-wide STPs but also recognized that developing a district-wide STP in large school districts presents challenges.

STUDY OBJECTIVES
The primary objective of this research project was to develop a district-wide STP process that could be utilized by a large school district. This was to be done by developing and testing three methodologies for creating a district-wide STP in large school districts. Methodologies that were developed and tested were based upon three key areas identified by ODOT: mapping, infrastructure project identification and prioritization, and non-infrastructure project identification and prioritization. Developing methodologies for these three areas was intended to help simplify the process for gathering and manipulating much of the data that goes into an STP, helping to make the STP development process easier for large districts.

DESCRIPTION OF WORK
This project began in April 2011, with research being done to see if other states had large district travel plans in place and what they included. Research was conducted through the use of SRTS listservs, the Transportation Research Board’s TRID database, and the National Center for Safe Routes to School database. Research through the SRTS listservs only yielded a few suggestions on how to develop a district-wide STP in large school districts; no one indicated that they had developed or knew of any other areas that had developed a district-wide STP for large school districts. Research on the TRID database generated similar results – no documents specific to large district STPs were found, but a number of documents focusing on why students walk/bicycle to school, the impacts SRTS programs have on child pedestrian/bicycle crashes, and information on prioritizing and implementing projects successfully were found through the TRID database. Research on the National Center for SRTS database found 25 projects in nine states that dealt with large district SRTS programs. These were narrowed down to six projects that were more closely related with the goals of this research project; further information was only able to be obtained for three of these projects: one in Irvine, California, one in Danville, California, and one in Black Hawk County, Iowa. The two projects in California focused more on implementing education and encouragement activities at a district-wide level; the project in Iowa focused on completing a county-wide SRTS study including three school districts for a total of around 30 schools.
After the initial research was completed, the focus turned to the development of the methodologies. Mapping, infrastructure project identification and prioritization, and non-infrastructure project identification and prioritization methodologies were developed to help make STPs for large districts easier to develop and implement. At the same time that the methodologies were being developed, information was being gathered regarding the existing conditions of the Cincinnati schools covered by the district-wide STP.

**Methodology Development**

The original intent of the mapping methodology was to determine a process for collecting and displaying student address data. However, as the process was developed, it was determined that this methodology would also be useful for determining priority routes that a majority of students would be able to take to get to and from school; these routes are called “priority corridors” and they became a focus for the SRTS countermeasures that were later identified. In the end, mapping was used to display student locations, priority corridors, and the countermeasures that had been identified for each school.

The infrastructure methodology was originally intended to include public involvement, needs assessment, and solution recognition/prioritization. However, with the development of the mapping methodology, it was determined that since the area covered in a district-wide plan is so large, all of the infrastructure projects would be based upon the priority corridors that had been developed and then refined from there. The Project Team’s methodology for identifying infrastructure recommendations relied on a combination of existing conditions analysis, public input, best practice research, and professional judgment. Additionally, Google Earth was an important factor in identifying infrastructure countermeasures. Google Earth was used to view locations for potential countermeasures. It was also used as a way to share information with the Cincinnati Team, as the Consultant Team was able to put all the GIS layers they had created for priority corridors and countermeasure into Google Earth for the Cincinnati Team to see.

A primary focus of the non-infrastructure methodology was identifying partners to support these countermeasures. Project partners were identified early on this process that had the capacity to provide support for education, encouragement, enforcement, and evaluation activities on a district-wide level. This methodology recognizes that an education process is necessary for potential partners to understand how they can support SRTS. The ultimate goal is to identify non-infrastructure activities that partners are willing and able to support. The Project Team’s methodology for identifying non-infrastructure and policy recommendations relied on a combination of existing conditions analysis, public input, best practice research, and professional judgment.

Additionally, two methodologies were developed for prioritizing countermeasures, one for infrastructure countermeasures and one for non-infrastructure and policy countermeasures. This was because it was thought that it would be difficult to apply the same methodology to all countermeasure types, due the fact that infrastructure countermeasures are location-specific while non-infrastructure and policy countermeasures are not. The methodology for prioritizing infrastructure projects depended on a matrix of weighted prioritization of the following general criteria: pedestrian and bicycle potential,
deficiency, feasibility, support, and school demographics. The non-infrastructure prioritization was done through the use of a sortable Excel spreadsheet, which included the following three categories that were key to project rankings: level of Cincinnati Team effort (high, medium, low); external partner needed for implementation (yes, no); and likelihood of support from key external partners (likely, unlikely, unknown).

**Local Information Gathering**

An important factor in the local information gathering process was determining how to effectively and efficiently gather district-wide local-level information. Local information was gathered through walk audits, input from the Cincinnati Team, and surveys to CPS principals and parents, as well as through Google Earth. It wasn’t feasible for walk audits to be conducted at every school in the district, so the Consultant Team conducted walk audits at 12 selected schools. Cincinnati Team members were trained on these walk audits so that they could conduct them on their own at the remaining schools in the district as needed. The Cincinnati Team also held bi-weekly conference calls where they discussed the status of local SRTS efforts, were given updates of the district-wide STP development, and were able to provide feedback on specific aspects of the STP as needed.

Because it would not have been feasible to talk with each principal individually, an online survey was sent out to the principals of all the K-8 schools in the district; these received an 83% response rate. Similarly, an online partner survey was sent out to potential partner organizations to garner their support levels for the Cincinnati SRTS program; these had a much lower response rate, most likely because many partners were already involved in the Cincinnati SRTS program. A parent survey was also sent out by the district to all K-8 parents. Typically, the survey sent out is one that was created by the National Center; however, Cincinnati converted this survey into a Scantron format, which proved to be very time-consuming in the end. Student travel tallies are another key factor in local information gathering. In the case of Cincinnati, these surveys did not go out before the completion of the Cincinnati STP, but they will be distributed in future years as an evaluation method.

**Research Findings & Conclusions**

The major outcome of this research project was the Cincinnati District-wide STP. This plan will serve as a template for other large districts throughout Ohio, and even across the country. The final STP was submitted to ODOT on June 4, 2012. It was then adopted by the Cincinnati Team members, the CPS Board of Education, and the City of Cincinnati.

Additionally, a guide was created for use by the consultants working with ODOT and large school districts; this guide is similar in form to the existing Consultant STP Guide that is already being used for the development of STPs for up to four schools. Both the template and guide are thought to be the first of their kind nationally to incorporate both infrastructure and non-infrastructure items in a district-wide STP for large school districts.

In developing the district-wide process and the Cincinnati STP, the Consultant Team learned several lessons and generated some recommendations. The lessons learned and subsequent recommendations
were related to such issues as the importance of a district-level SRTS coordinator and having a local SRTS team in place, communicating expectations, processes, and timeframes with all team members, effective ways to gather localized information from a large district, and ways to prioritize the identified countermeasures.

IMPLEMENTATION RECOMMENDATIONS

The District-wide School Travel Plan Guidelines should be made available to other communities interested in developing travel plans. ODOT should identify additional jurisdictions that are ready to undertake this effort, paying particular attention to those communities that already are working on SRTS projects. Additionally, ODOT should continue to provide school travel plan development assistance to large school districts as resources allow. Given the level of effort required by the Ohio SRTS Coordinator and other ODOT staff, it is suggested that two large school district planning projects running concurrently should be the limit, although more could be considered with appropriate staffing availability.

The District-wide School Travel Plan Guide that is being developed as part of this project will be a key resource in ensuring efficiency in plan development and relative consistency in plan content. ODOT should provide training on the use of this Guide to transportation planning and design firms who will be called on to develop these large school district travel plans.

Finally, ODOT should evaluate the effectiveness of the Cincinnati District-wide STP, as well as other school travel plans, in achieving the overall goals of the program of increasing the number of students who walk and bicycle to school, as well as improving the safety of those who currently walk or bicycle. This information should then be incorporated into future refinements to the process, ensuring that future communities benefit from the experiences of their predecessors.
1.0 INTRODUCTION

Safe Routes to School (SRTS) is a national and international movement to create safe, convenient, and fun opportunities for children to bicycle and walk to and from schools. Within the United State, SRTS is a Federal-Aid program of the U.S. Department of Transportation's Federal Highway Administration (FHWA). The federal SRTS program provides funds to individual States to substantially improve the ability of primary and middle school students (kindergarten through eighth grade) to walk and bicycle to school safely. The overall purposes of the program are:

1. To enable and encourage children, including those with disabilities, to walk and bicycle to school.
2. To make bicycling and walking to school a safer and more appealing transportation alternative, thereby encouraging a healthy and active lifestyle from an early age.
3. To facilitate the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity (approximately 2 miles) of primary and middle schools (grades K-8).

Every State manages its own program and develops its own processes to solicit and select projects for funding. The goal of Ohio’s SRTS program is to assist communities in developing and implementing projects and programs that encourage and enable children in grades K-8, including those with disabilities to walk or bike to school safely. A School Travel Plan (STP) is a requirement for funding requests through the ODOT SRTS program. An STP is the written document that outlines a community’s intentions for enabling students to engage in active transportation (i.e. walking or bicycling) as they travel to and from school. Serving as foundation for an SRTS program, the STP can be updated and modified as needed to comply with community values and goals. The plan is created through a team-based approach that involves key community stakeholders in both identifying barriers to active transportation and a set of countermeasures to address them. Successful SRTS programs within Ohio include an integrated approach that addresses all 5 Es of the program:

- **Engineering** – Creating operational and physical improvements to the infrastructure within 2 miles of schools which include children in grades K-8, improvements will reduce speeds and potential conflicts with motor vehicle traffic, and establish safer and fully accessible crossings, walkways, trails and bikeways.
- **Education** – Teaching children and care givers about transportation choices, instructing them in lifelong bicycling and walking safety skills, and launching driver safety campaigns.
- **Enforcement** – Partnering with local law enforcement to ensure traffic laws are enforced in the vicinity of schools (this includes enforcement of speeds, yielding to pedestrians in crossings, and proper walking and bicycling behaviors), and initiating community enforcement such as crossing guard programs.
- **Encouragement** – Using events and activities to promote walking and bicycling.
Evaluation – Monitoring and documenting outcomes and trends through the collection of data, including the collection of data before and after the intervention(s).

The purpose of this research project was to develop a process that allows for and aids large school districts in Ohio to develop comprehensive, district-wide School Travel Plans (STP). Large school districts are defined by the Ohio Department of Transportation (ODOT) as those with more than fifteen kindergarten through 8th grade (K-8) schools. The current ODOT funding process restricts applications for STP development to four schools.

As of July 2010, Ohio had 14 school districts with more than 15 K-8 schools. That includes eight of Ohio’s top 10 most populous cities (in order): Columbus, Cleveland, Cincinnati, Toledo, Akron, Dayton, Parma, and Canton. The other six large school districts are located in suburban locations around Columbus including: Dublin, Hilliard, Olentangy (southern Delaware County), Southwest (southwest Franklin County including Grove City and portions of Columbus), Westerville, and Worthington. ODOT has observed that large school districts have not been included in SRTS grant applications at a rate proportionate to their representation in the state, and believes one reason may be that it is not time-efficient and/or politically feasible for a large school district to generate STPs for just four schools at a time. ODOT has proposed removing the four school limit to allow large school districts to develop district-wide STPs but also recognizes that developing a district-wide STP in large school districts presents challenges. These challenges include but are not limited to:

- The current STP guide requires detailed information for each school included in the STP. It may be difficult to provide this level of detail for an STP that addresses more than fifteen schools.
- The current four-school limit creates a burden for large school districts. A district such as those in Akron, Cincinnati, Cleveland, Columbus, and Toledo would need to complete at least eight STPs to cover the entire district under the current format.
- Traditional public input tools, such as public meetings and stakeholder interviews, may not be cost-effective to implement in a large school district on a district-wide scale due to the number of people that would need to be involved.
- The current STP guide requires an action plan with a time frame for each identified countermeasure yet requires minimal additional priority information. However, in the case of large school districts, additional priority information may be necessary due to the potential for a large number of countermeasures and the community’s need to determine which countermeasures to pursue first.
- Large school districts must overcome hurdles that result from greater organizational complexity than small districts, both within the district and across the greater municipal government.
- Data collection and analysis in large urban areas could be more cumbersome than for small districts due to the size of the collective study area for the school district.

To address the challenges and determine a process, ODOT determined that a pilot school district was necessary. After meeting with members of the SRTS committee for Cincinnati in early 2011, ODOT
chose Cincinnati as the pilot for the research project. The district-wide STP developed for Cincinnati would then be made into a guide to create district-wide STPs for other large districts. Additionally, research done at the on-set of this project found that there are currently no district-wide STP templates like this on a national level, making this district-wide STP the first of its kind nationally. Not only is this intended to be a template for all large districts in Ohio, it can be a national template as well.

2.0  RESEARCH OBJECTIVES

The primary objective of this research project was to develop a district-wide STP process that could be utilized by a large school district. This was to be done by developing and testing three methodologies for creating a district-wide STP in large school districts. The following methodologies were developed and tested, based upon three key areas identified by ODOT:

- A statistical methodology to identify the distance that K-8 students reside from their assigned schools, so this can be applied statewide (mapping/priority corridors).
- A methodology for identifying and prioritizing infrastructure countermeasures.
- A methodology for identifying and prioritizing non-infrastructure countermeasures.

Developing methodologies for these three areas was intended to help simplify the process for gathering and manipulating much of the data that goes into an STP, helping to make the STP development process easier for large districts.

Secondary objectives of this research project included the following items:

- Explore SRTS-related databases and other DOT’s SRTS processes and understand if/how they deal with larger school districts.
- Develop a step-by-step process that provides the framework to develop an easier STP process for large school districts, using the Cincinnati Public Schools as an example.
- A greater understanding of the barriers that children face in larger school districts (or urban areas).

3.0  DESCRIPTION OF RESEARCH

In order to determine if any other communities or organizations had attempted a similar district-wide process for large districts, ODOT and the consultant team conducted some research. The methods and findings are detailed as follows.
3.1 DATABASE RESEARCH AND FINDINGS

Initial research was completed over a three-month window beginning in June 2011 to see if other states had attempted large district travel plans and what they included. Searches were conducted through the use of SRTS listservs, the Transportation Research Board’s TRID database, and the National Center for Safe Routes to School database. Findings from these listservs and databases are detailed in the following sections.

3.1.1 SRTS COORDINATORS LISTSERV

Two emails were sent out to the SRTS Coordinator’s listserv. The first was sent out by ODOT in June 2010, prior to this project beginning. The intent was to inform the statewide coordinators that ODOT was working on developing a process to complete STPs for large school districts and to ask for any related information they might have. At that time, only the statewide coordinator from Maine responded and mentioned the use of their online mapping capabilities.

The second was sent out once the project began, in June 2011, as part of the initial research efforts. This email asked two specific questions:

1. Does your state have an established process for developing comprehensive SRTS travel plans that seems to work for large urban school districts? If so, could you share that with me?
2. Have any large urban school districts in your state successfully completed comprehensive SRTS travel plans (regardless of whether you have a specific process for them)? If so, could you suggest people for me to contact in those districts to discuss how they went about it?

Again, the Maine coordinator was the only statewide coordinator to respond to the email. In early July 2011, the project team followed up with the statewide coordinator in Maine regarding their program. The Maine coordinator did suggest setting up a project website and mentioned that they use online interactive mapping in the STP creation process. Overall, Maine does not have an established process for larger districts nor have they completed any large district plans.

3.1.2 ASSOCIATION OF PEDESTRIAN AND BICYCLE PROFESSIONALS (APBP) LISTSERV

In June 2011, an email was sent to the APBPs email listserv. Similar to the SRTS Coordinator’s email request, the intent was to inform them of ODOT’s project and ask if they were aware of any communities that had explored large district STPs. Matt Lasky of the San Francisco Metropolitan Transportation Agency (SFMTA) recommended contacting Nora Cody who is currently Alameda County, California’s SRTS Coordinator. Alameda County is an urban area that includes the City of Oakland. Ms. Cody had the following insights:

- It may be unrealistic to expect large urban school districts to make a substantial contribution to the development of a comprehensive SRTS travel plan. Ms. Cody discussed her experience in Oakland, where she said the school district is understaffed and focused almost entirely on
improving academic performance due to No Child Left Behind and the consequences of failure to make adequate yearly progress. She did not feel that the Oakland Unified School District would have the capacity or desire, given other priorities, to develop a comprehensive plan (even if it was just the non-infrastructure side). Instead, her organization bypasses the school district and communicates directly with individual school champions to identify potential infrastructure and non-infrastructure projects.

- **Conducting walk audits may be a good non-infrastructure conversation starter.** Ms. Cody’s non-profit group, Transform, conducts walk audits at individual school with assistance from Alta Planning and Design, a private consulting firm. Alta develops concept plans for infrastructure improvements based on these walks, which include the school champion, principal, and parents. The walk audits have also been helpful for identifying non-infrastructure needs. Ms. Cody finds that school principals, parents, etc. are more open to non-infrastructure strategies when they are out in the field and can observe the behavioral issues impacting walking and bicycling to school.

### 3.1.3 SRTS PARTNERSHIP LISTSERV

In June 2011, an email was sent to the SRTS Partnership’s email listserv. Similar to the SRTS Coordinator’s email request, the intent was to inform them of ODOT’s project and ask if they were aware of any communities that had explored large district STPs. No responses were received.

### 3.1.4 TRANSPORTATION RESEARCH BOARD’S TRID DATABASE

Prior research documents were obtained from the Transportation Research Board’s (TRB) TRID database to determine if any prior process or methodology had been studied. The search determined that over the past few years there have been numerous studies undertaken across the country related to Safe Routes to School programs. Most of the documents found through the TRID database focused on three main ideas:

1. Why students walk/bicycle (or do not walk/bicycle) to and from school.
2. The impacts of implemented Safe Routes to School programs on child pedestrian and bicycle crashes.
3. General information about Safe Routes to School programs focusing on how to prioritize projects for funding and how to implement projects successfully.

While none of the studies found in the TRID database specifically detail any processes or methodologies for a SRTS program in a large school district, they were explored for any related materials. Each study is listed in **7.0 References**.

### 3.1.5 NATIONAL CENTER FOR SAFE ROUTES TO SCHOOL DATABASE

In June 2011, ODOT contacted the National Center for SRTS to inform them of this research project and request information related to projects or programs that have benefited more than 20 schools. In this
instance, 20 rather than ODOT’s previously defined 15 schools was utilized to narrow down the search criteria. The intent was to then filter through that information and determine several statewide coordinators or local SRTS contacts to speak with. The initial list included roughly 25 projects in nine states which the project team then narrowed down to six projects. Of those six only three responded to our inquiries; they are listed below.

**Irvine, California**

The SRTS project goal was to provide a comprehensive, district-wide bicycle/walking safety educational program and develop a sustainable walking program for youth in grades K-8 at 24 elementary and five middle schools within the Irvine school district. The program was funded by a $500,000 federal SRTS grant and is continuing into 2013. The SRTS grant combined several existing efforts throughout the city including: a public works department program that included bike and walking safety, a community sustainability department Walk To School Day effort, walk to school maps, and other activities in various departments.

Upon receiving the grant, the City of Irvine hired a consultant to conduct biking and walking education which included: safety workshops for students in assembly format at schools, bike rodeos, bike and walking safety education video, parent workshops, walk to school maps for every school, and the very popular walk to school Wednesday.

To date, city officials consider the educational program extremely successful; however, there have been several challenges. While the school officials at the district level were supportive, it was tough working with some of the principals at individual schools. Since the principals have strong control over their schools, those that were not on board with SRTS cited the fact that they just had too many education issues on their plate and did not have time for other things. Additionally, the pilot walk to school program failed due to a lack of volunteer and school (individual and district) support. It was modified after four months and became Walk to School Wednesdays. This program received improved volunteer and individual school support and was more successful. City officials always envisioned this effort as solely a non-infrastructure project, but they plan to focus on infrastructure projects during the next funding round.

**Danville, California**

The project involves one school district located within two cities and unincorporated portions of the county. Therefore the project included four main partners whose major goal was to expand the local Street Smarts program to provide education and encouragement activities for 21 elementary and eight middle schools. The Street Smarts program began in 2004 with poster and video contests for school age children. In 2009, the program received SRTS funding which allowed it to expand. The initial grant was for three years and they are roughly half of the way through. Some of the successful non-infrastructure activities to date include police led pedestrian and bicycle safety lessons during physical education
classes as a part of the general curriculum. Additionally, several assemblies have been held and over 2,500 students have taken part in after school bicycle rodeos.

**Black Hawk County, Iowa**

The Iowa Northland Regional Council of Governments was awarded a $138,000 grant from the Iowa DOT’s SRTS Program in 2008 to complete a SRTS study for the Black Hawk County Metropolitan Area. The project included three adjacent school districts totaling approximately 30 schools within the county. The intent of the project was to complete a final report which included 1-3 pages for each school including existing conditions, a map with relevant information for a 1-2 mile radius (1 mile for elementary schools, 2 mile for middle schools), and planning-level cost projections for recommended improvements. General data that was obtained ranged from interviews with principals, parent and student surveys, school boundaries, and existing infrastructure data. The overall recommendations primarily came from four sources: school principals, parent surveys, school observations, and engineering judgment. A prior sidewalk mapping project was of great benefit to the recommendations.

The plan, which was completed in January 2011, has been used as documentation to receive four grants to implement improvements. It is not anticipated that future school travel plans will be completed for individual schools to look at issues in more depth. Unfortunately, there were no official approvals at the document’s completion, from either city councils or school boards.

The project took approximately twice as long (three years) as anticipated. Local officials felt the delay was due to a variety of issues, including school boundary changes, the opening of new schools, and old school closure. If there is a next time they would complete the project in one school year to avoid these changes. Other issues experienced:

- Open enrollment does exist in the districts, but was not considered in the project. Local officials felt that open enrollment students lived too far away from schools and walking and biking were not a valid option.
- School districts provided geographic locations for groups of student, but would not provide individual dots on a map due to privacy concerns.
- Some students are bused from a short distance to school, due to extreme barriers such as busy or wide roads. In these cases, it was deemed too challenging to make those barriers walkable, so they were left unchanged.
- There was a parent survey response rate of 20-30% at many schools. Schools had significant Spanish and Bosnian populations, so surveys were translated. School teachers distributed surveys in student folders taken home by children each day.
- Crime was a concern that was mentioned in many parent surveys. Anecdotally, planners knew of neighborhoods with a reputation for high crime. These issues were not mapped or analyzed formally though.
- A goal was to have a local public relations firm work with Parent-Teacher Organizations (PTO’s) to implement non-infrastructure programs, but this did not occur.

Each of these projects/programs provided insight into the challenges Ohio would face in dealing with a large school district process. The following observations were made from the project team’s interviews.

- Overall, the projects in California are interesting because they focused on non-infrastructure activities for an entire school district, including every SRTS-eligible school in the district. Projects in Irvine and Danville are examples that used only non-infrastructure methods to impact every school in the district or region in a cost-effective way.
- California’s SRTS grant applications recommend that candidates include various letters of support from relevant agencies (city planning, city public health, city public works, school superintendent, etc.) at the beginning of the process. This provides assurances that the different entities support the effort.
- Interviewees emphasized the importance of beginning and ending STP processes within one year, due to ever-changing school openings, closings, etc.
- When many public or stakeholder meetings are not feasible and/or not well-attended, the most important public input appears to be phone interviews with principals at every school. This can provide a shorthand summary of pertinent issues, which is especially important when limited effort can be spent analyzing each school.

3.2 DEVELOPMENT OF METHODOLOGIES

After the initial research was completed, the focus turned to the development of the methodologies. Mapping, infrastructure project identification and prioritization, and non-infrastructure project identification and prioritization methodologies were developed to help make STPs for large districts easier to create and implement.

The methodology for prioritization is listed separate, as it works in combination with both the infrastructure and non-infrastructure project identification. Each of the methodologies is detailed in the following sections; they were also incorporated in the district-wide STP process (available at www.dot.state.oh.us/saferoutes under the “School Travel Plan” section).

3.2.1 MAPPING

The original intent of the mapping methodology was to determine a process for collecting and displaying student address data. ODOT currently has a successful process where they require all applicants provide an excel spreadsheet with student address data. This information can then be geo-coded (spatially displayed) within a GIS platform. Even when dealing with a large district, that process was found to be successful and there are no reasons why it should be changed. An example of the maps ODOT creates with the student address information they receive is shown in Figure 1 compared to the student location maps created for the Cincinnati STP shown in Figure 2.
In the initial project discussions, it became apparent that the amount of detail typically put into the maps related to barriers, countermeasures, and recommended walking/biking routes were not feasible in larger school districts. Under the current STP guidelines, maps depicting the proposed countermeasures and student walking routes are done for each school, with multiple maps for each school. Initially, the feasibility of these individual maps was questioned and it was decided that larger
scale maps covering multiple schools would be used when appropriate. In instances where maps were necessary for each school individually, less detail would be shown (for example, when mapping the proposed infrastructure countermeasures for each school, only a generic “point” or “line” will be shown to indicate when a proposed countermeasure is located instead of displaying different icons for each type of countermeasure).

What was also apparent was that there was no current method for determining the safest and best walking/biking routes within large districts. Therefore, the mapping methodology was modified to include all available data within a GIS platform to determine priority walking/biking corridors for each school. It was thought that the following types of data would be useful to help identify barriers as well as help with the identification of countermeasures: school addresses, attendance boundaries, student addresses, crossing guard locations, speed data, crash data, crime data, sidewalk locations, traffic signal and crosswalk locations, and future road improvements. Additionally, other items such as comments from the parent surveys, school/city policies, and prior discussions with the SRTS team, principals, and key stakeholders were anticipated to be utilized. For the purposes of creating the pilot STP the following data was obtained:

- Cincinnati Public Schools provided school addresses and student address data (including school attending and grade),
- Cincinnati Area GIS (CAGIS) provided general base mapping including sidewalk data,
- Cincinnati Police Department provided two years of crime data by location and type,
- And vehicular and pedestrian/bicycle crash data was obtained from ODOT over a three year period.

Originally, the study team thought they could focus on the schools with the most kids within a one-mile radius of each school and, therefore, the highest potential number of walkers and bikers. However, as the study team was obtaining data and beginning to develop the mapping files, the true geographic extent (almost 100 square miles) and number of schools within Cincinnati (48 K-8 schools) led to a modification of the methodology. A decision was made to focus on location-specific issues and countermeasures along what would be called “priority corridors.” Priority corridors are defined as routes where a significant number of students are currently walking and biking, or could potentially walk and bike. The priority corridors would then represent the areas where the most students would be coming from and would focus problem identification and the proposed countermeasures to these areas. The study team identified priority corridors by analyzing the spatial relationship between school locations, student addresses, sidewalks, and pedestrian crossing locations in GIS. The analysis was limited to a one mile radius around each school based on CPS current busing policy, which restricts eligibility for busing to students who live one mile or more from the schools they attend. Additionally, since one of ODOT’s criteria for funding infrastructure improvements is the percentage of students that would benefit, the study team felt that any routes beyond one mile would be rank considerably lower. Decisive factors for this analysis included the presence of sidewalks and signalized locations for crossing.
higher volume streets. When the mapping process began, student address data that was available was for the 2010-2011 school year, and the initial priority corridors were developed with this information. However, when the 2011-2012 data became available, the priority corridors were updated as needed to reflect the new student locations. An example of the maps created for the Cincinnati STP showing the priority corridors is shown in Figure 3.

Figure 3: Priority Corridor Map for Rockdale (One Mile Radius)

3.2.2 INFRASTRUCTURE PROJECT IDENTIFICATION

The infrastructure methodology was originally intended to include public involvement, needs assessment, and countermeasure recognition/prioritization. However, as the mapping methodology was further refined, it was determined that, due to the area covered in a district-wide plan, all of the infrastructure projects would initially be based upon the priority corridors that had been developed and then refined from there. Therefore, the needs assessment and countermeasure recognition/prioritization became dependent on the priority corridors.

The Project Team’s methodology for identifying infrastructure recommendations relied on a combination of existing conditions analysis, public input, best practice research, and professional judgment.

Existing Conditions Analysis

The Project Team’s existing conditions analysis included conducting walk audits at selected schools, collecting input from CPS school principals and parents, and getting input from the Cincinnati Team. Because walk audits couldn’t be done at all CPS schools, Google Earth was key in identifying
infrastructure issues that existed at other schools throughout the district. The Consultant Team was able to zoom in to areas that were identified by principals and parents to get a better idea of what the existing conditions were. They were also able to view areas where no feedback was received and see if there were any issues that needed to be addressed.

As information was gathered from walk audits, surveys, Cincinnati Team conference calls (see 3.3 Local Information Gathering for more information on these techniques), and Google Earth, problem areas were noted. These were then compared to the priority corridors to see which issues would benefit the most students if addressed.

3.2.3 Non-infrastructure Project Identification

This methodology focuses on identifying partners to support non-infrastructure countermeasures. Project partners were identified early on this process that had the capacity to provide support for education, encouragement, enforcement, and evaluation activities on a district-wide level. Support may include material needs and/or volunteer hours for activity coordination and implementation. The methodology recognizes that an education process is necessary for potential partners to understand how they can support SRTS. The ultimate goal is to identify non-infrastructure activities that partners are willing and able to support.

The Project Team’s methodology for identifying non-infrastructure and policy recommendations relied on a combination of existing conditions analysis, public input, best practice research, and professional judgment.

Existing Conditions Analysis

The existing conditions analysis included: analyzing the spatial relationships between student residences, school locations, pedestrian and bicycle crash locations, and the pedestrian, bicycle, and roadway network; analyzing existing policies and programs; collecting input from local school principals, parents, and potential partners; and conducting walk audits at selected schools.

Analysis of Existing Policies and Programs

The Project Team analyzed existing policies and programs at the school district and local government levels. At the school district level, information was collected through the CPS Board of Education’s website and through the discussions with Cincinnati Team members regarding accomplishments and planned activities, as well as programs affecting student travel by walking and bicycling. Discussions included conversations at Cincinnati Team meetings and telephone interviews with each “E Captain,” i.e., the Cincinnati Team members given responsibility for each of the five Es of SRTS — education, encouragement, enforcement, evaluation, and engineering.

At the local government level, the information was collected through websites of key local government agencies, including the Cincinnati Engineering & Transportation Department, Cincinnati Health
Department, the Cincinnati City Planning & Buildings Department, and the Ohio-Kentucky-Indiana Regional Council of Governments (OKI), though direct feedback from OKI and City of Cincinnati staff members, and through a review of relevant planning documents, including a draft version of Plan Cincinnati, an update of the City of Cincinnati’s long-range, comprehensive plan.

**Best Practice Research**

The Project Team conducted a review of existing literature describing SRTS non-infrastructure and policy best practices. A list of the documents that were reviewed can be seen in **7.0 References**.

As mentioned in **3.1.1 SRTS Coordinators Listserv**, the Project Team also reached out to individuals with other SRTS programs with experience in developing district wide school travel plans.

### 3.2.4 PROJECT PRIORITIZATION

ODOT aspires to create a greater balance between engineering and non-engineering countermeasures; therefore, the project team has identified a methodology for efficiently prioritizing countermeasures for use in the Action Plan of the STP. The current STP guide does not require a priority column. However, the Cincinnati Team felt further prioritizing countermeasures would be especially important in a large district context due to the relatively large number likely to be generated and the local community’s need, given limited resources, to distinguish some countermeasures for additional focus. The Cincinnati Team believed specifying formal prioritization methodologies could achieve this objective most efficiently and transparently.

The Project Team ultimately created two methodologies, one for infrastructure countermeasures and one for non-infrastructure and policy countermeasures. The two methodologies were in response to the Cincinnati Team’s concern that it would be difficult to apply the same methodology to all countermeasure types, due the fact that infrastructure countermeasures are location-specific while non-infrastructure and policy countermeasures are not. Also, infrastructure countermeasures are more easily assessed with objective data than are non-infrastructure and policy countermeasures.

**Infrastructure Project Prioritization**

The methodology for prioritizing infrastructure projects depended on a matrix of weighted prioritization criteria. The Project Team selected the criteria based on research into methodologies used by other communities, and conversations with the Ohio SRTS Coordinator regarding the criteria ODOT currently uses for SRTS project evaluation. The criteria fell into five general categories:

1. **Pedestrian and bicycle potential.** This criteria category was meant to distinguish projects likely to benefit more students from those likely to benefit fewer students. Criteria in this category included: the number of K-8 schools within a half-mile of the project; and that the project is on a priority corridor or within a quarter-mile of a priority corridor and on a connecting street.
2. **Deficiency.** This criteria category was meant to distinguish projects at locations where safety was more of a concern from projects where safety was less of a concern. Criteria in this category included: project is on block with missing sidewalk; project is along or facilitates crossing a road where traffic speed or traffic volume may be a concern based on roadway classification; and project is within 500 feet of a pedestrian or bicycle crash location that has occurred within the last 5 years.

3. **Feasibility.** This criteria category was meant to distinguish projects that were more feasible from projects that were less feasible. Criteria in this category included: estimated project cost; and project requires right-of-way acquisition.

4. **Support.** This criteria category was meant to distinguish projects near schools that had participated in SRTS activities from those that had not. It was also meant to distinguish projects that the local schools, the Cincinnati Team, and the Project Team felt should be prioritized above other projects. Criteria in this category included: project is within a quarter-mile of a K-8 school that has delivered a child pedestrian or bicycle safety education program in the last two years; project is located within a quarter-mile of a K-8 school that has participated in the international Walk to School Day in the past year; project identified as a priority by local SRTS leadership; project identified as a priority by the Cincinnati Team; and project identified as a priority project by the Project Team to address safety concerns.

5. **School demographics.** This criteria category was meant to distinguish projects close to schools with higher percentages of economically disadvantaged and disabled students from projects with lower percentages of economically disadvantaged and disabled students. Criteria in this category included: percent of children at K-8 school closest to the project that are classified by the Ohio Department of Education school report card as economically disadvantaged; and percentage of students with disabilities at school closest to the project is above state average.

The Consultant Team assigned scores to each criterion based on a maximum 20-point scale to make the effect of weighting on the final score clear. Each criterion was then weighted based on conversations with the Ohio SRTS Coordinator and the Project Team’s sense of which factors were most important. The Prioritization Matrix that was developed for prioritizing the infrastructure projects is shown in Figure 4.

**Figure 4: Infrastructure Prioritization Matrix**

<table>
<thead>
<tr>
<th>Category</th>
<th>Criterion</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestrian/ bicycle potential</td>
<td>Project supports priority corridor (on priority corridor = 20 points; within 1/4 mile of priority corridor = 5 points).</td>
<td>4</td>
</tr>
<tr>
<td>Pedestrian/ bicycle potential</td>
<td>K-8 schools within 1/2 mile of project (2+ schools = 20 points, 1 school = 10 points).</td>
<td>11</td>
</tr>
<tr>
<td>Category</td>
<td>Criterion</td>
<td>Weight</td>
</tr>
<tr>
<td>------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Deficiency</td>
<td>Sidewalk project is on a block with missing sidewalk (block has no sidewalks and project would provide continuous sidewalk on at least one side = 20 points; block does not have continuous sidewalks and project would provide continuous sidewalk on at least one side = 15 points; block has continuous sidewalk on one side and project would provide continuous sidewalk on the other side = 10 points; block has continuous sidewalk on one side and discontinuous sidewalk on the other side and project would complete the discontinuous sidewalk, 5 points).</td>
<td>4</td>
</tr>
<tr>
<td>Deficiency</td>
<td>Project is along or facilitates crossing a road where traffic speed or traffic volume may be a concern (road classification is US Highway = 20 points; road classification is State Highway = 15 points; road classification is collector = 10 points).</td>
<td>4</td>
</tr>
<tr>
<td>Deficiency</td>
<td>Project is within 500 feet of a pedestrian or bicycle crash location that has occurred within the last 5 years (5 or more crashes = 20 points; 4 crashes = 16 points; 3 crashes = 12 points; 2 crashes = 8 points; 1 crash = 4 points).</td>
<td>7</td>
</tr>
<tr>
<td>Feasibility</td>
<td>Estimated project cost is categorized as low or medium (estimated project cost is under $20,000 = 20 points; estimated project cost is $20,000 to $149,999 = 10 points; estimated project cost is $150,000 or more = 0 points).</td>
<td>9</td>
</tr>
<tr>
<td>Feasibility</td>
<td>Project requires ROW acquisition (yes = -20)</td>
<td>3</td>
</tr>
<tr>
<td>School demographics</td>
<td>Percent of students at school closest to project that are classified by the Ohio Department of Education school report card as economically disadvantaged (over 75% = 20 points; 50-75% = 14 points; 25-50% = 6 points)</td>
<td>3</td>
</tr>
<tr>
<td>School demographics</td>
<td>Percentage of students with disabilities at school closest to project is above 15% (state average) (yes = 20 points)</td>
<td>2</td>
</tr>
<tr>
<td>Support</td>
<td>Project is within 1/4 mile of a K-8 school that has delivered a child pedestrian or bicycle safety education program in the last 2 years (yes = 20)</td>
<td>2</td>
</tr>
<tr>
<td>Support</td>
<td>Pedestrian or bicycle project identified as a priority project by the study team to address safety concerns (yes = 20)</td>
<td>2</td>
</tr>
<tr>
<td>Support</td>
<td>Pedestrian or bicycle project identified as priority by local school SRTS leadership (yes = 20 points)</td>
<td>1</td>
</tr>
<tr>
<td>Support</td>
<td>Pedestrian or bicycle project identified as priority by Cincinnati Team (yes = 20 points)</td>
<td>2</td>
</tr>
<tr>
<td>Support</td>
<td>Project is within 1/4 mile of K-8 school that has participated in International Walk to School Day in the last 2 years (yes = 20)</td>
<td>2</td>
</tr>
</tbody>
</table>

The Consultant Team calculated weighted scores for each identified infrastructure project in two iterations. The initial prioritization excluded one criterion (“Project identified as a priority by the Cincinnati Team.”) because it was not feasible for the Cincinnati Team to review and assign priority levels to almost 200 projects. Instead, the Cincinnati Team was asked to assign priority levels to the 40 projects with the highest weighted scores based on the initial prioritization and participated in a Cincinnati Team meeting to help facilitate this process. Once the priorities were established from the shorter list of projects, the Consultant Team factored them into the final prioritization.

**Non-infrastructure Project Prioritization**

The methodology for prioritizing non-infrastructure and policy countermeasures differed from the methodology for prioritizing infrastructure countermeasures in that the Project Team did not generate a weighted raw score for each countermeasure. Instead, the countermeasures were listed in a sortable
Excel spreadsheet (see Figure 5) that included the same fields as were included in the countermeasure tables in Chapter 5 of the final Cincinnati STP, with three additional fields to aid in decision making:

1. Level of Cincinnati Team effort (high, medium, low).
2. External partner needed for implementation (yes, no).
3. Likelihood of support from key external partners (likely, unlikely, unknown).

In order to stimulate discussion and reaction, the Project Team pre-populated these fields as well as other fields deemed important for prioritization, including estimated cost to SRTS program, timeframe (i.e., the time period during which the countermeasure would first be implemented), and frequency (i.e., how often the countermeasure was proposed to be implemented and at what time of year, if known).

Figure 5: Non-infrastructure Countermeasure Table

<table>
<thead>
<tr>
<th>Countermeasure</th>
<th>Issues Addressed</th>
<th>Es Supported</th>
<th>Priority</th>
<th>Timeframe</th>
<th>Estimated Cost</th>
<th>Possible Funding Source</th>
<th>Responsible Party</th>
<th>Steering Committee Lead</th>
<th>Potential Partners</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Find assistant for SRTS Director or consultant to assist in implementation of</td>
<td>SRTS Program Sustainability</td>
<td>All</td>
<td>High</td>
<td>Within 1 year</td>
<td>Low Cost</td>
<td>SRTS</td>
<td>Steering Committee</td>
<td>Carmen Burks</td>
<td></td>
<td>Not yet implemented</td>
</tr>
<tr>
<td>the many programs.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continue cultivating local school SRTS champions.</td>
<td>Local School Support for SRTS</td>
<td>All</td>
<td>High</td>
<td>Within 1 year</td>
<td>Low Cost</td>
<td>SRTS</td>
<td>Steering Committee</td>
<td>Carmen Burks</td>
<td>All</td>
<td>Currently implementing</td>
</tr>
</tbody>
</table>

The Project Team also pre-identified countermeasures that it considered high priority based on the vision and goals expressed by the Cincinnati Team for the Cincinnati STP. This was done at their request due the large number of non-infrastructure and policy countermeasures and limited time for the committee to review and prioritize them. The Consultant Team then participated in two Cincinnati Team meetings, during which they discussed the countermeasures, asked questions, confirmed and adjusted priorities, timeframes, and filled in any missing information.

3.3 LOCAL INFORMATION GATHERING

Local information gathering is an important factor of any STP. The purpose of this is to identify as many of the barriers to active transportation as possible. When preparing an STP for one to four schools, it is feasible to witness arrival and dismissal, conduct walk audits, and talk to principals, parents, and representatives from each school. However, with a district-wide STP, these tasks aren’t as feasible. Local information gathering was done concurrently with the methodology development described in 3.2 Development of Methodologies. The way that local information gathering was handled for a district-wide STP is explained in the sections that follow.

3.3.1 WALK AUDITS

Due to time and budget constraints, it was not possible to conduct walk audits at all 48 K-8 schools in the CPS district. Therefore, the Cincinnati Team identified certain schools and walk audits were
conducted at those schools in late October and early November, 2011. Each walk audit included members of the Cincinnati Team along with principals, resources officers, and interested parents. The primary goal of the walk audits was to analyze the schools’ walking and biking environments, but the consultant team also taught several individuals how to conduct walk audits. The training will allow the Cincinnati Team to conduct future walk audits at additional schools around the district. The following CPS schools were included in the walk audits primarily based on their expressed interest in the Cincinnati SRTS program:

- John P. Parker
- Riverview East Academy
- Rees E. Price Academy
- Evanston Academy
- Hartwell
- Woodford Paideia Academy
- Sands Montessori
- Rockdale Academy
- William H. Taft
- Kilgour School
- Clark Montessori
- Bond Hill Academy

Additionally, prior to most of the walk audits, a meeting was held with the local school SRTS representatives. The purpose of these meetings were to:

- Confirm the priority corridors.
- Confirm the walk audit route.
- Identify barriers on the planned walk audit route prior to observation in the field
- Identify barriers beyond planned walk audit route.
- Introduce the walk audit checklist.

The walk audit included observing conditions along priority corridors and taking notes and photographs of existing bicycle and pedestrian infrastructure and likely barriers to walking and bicycling to school. The information collected contributed to the countermeasures recommended in the district-wide STP for Cincinnati. An online interactive map was also developed for each walk audit that was conducted by the Consultant Team (see Figure 6) showing key elements of the pedestrian and bicycle infrastructure near the school. While these maps were not used for the development of the STP, they will be used by the schools to track changes to pedestrian and bicycle infrastructure.
3.3.2 PRINCIPAL SURVEYS

Due to the number of schools covered in the district-wide travel plan, it wasn’t feasible to set up individual interviews with principals or school resource coordinators (who act as a link between students, families, and communities) from each school. Instead, an online survey (created on Survey Monkey) was developed to get the feedback that would have been obtained in individual interviews, but in a less time-consuming manner. At the end of the STP development period (May 31, 2012), the principals’ survey had been completed by 40 out of 48 schools. The survey asked each principal or resource coordinator to answer the following questions:

- Name, title/position, and school.
- Approximately what percentage of students at your school regularly travel to/from school by walking, bicycling, car, and bus?
- Which streets currently serve as key routes for students walking or bicycling to/from school?
- Which streets could serve as key routes for students walking or bicycling to/from school?
- Rank the following key barriers to walking and bicycling to/from your school (rank at least the top four):
  - Distance.
  - Convenience.
  - Lack of sidewalks/pathways.
  - Safety at intersections and crossings.
  - Lack of crossing guards.
  - Speed of traffic along key routes.
- Volume of traffic along key routes.
- Lack of adult supervision.
- Concern about violence or crime.
- Before-/after-school activities.
- Students lack pedestrian/bicycle safety skills.
- Other reason (please specify).

- Explain specific barriers.
- Are students prohibited from walking and/or bicycling to school? Please explain if so.
- If walking and/or biking to and from your school is prohibited, what would need to be done for this prohibition to be relaxed or reversed?
- How well would you say your current arrival and dismissal processes works for pedestrians and bicyclists? Please explain if “fair” or “poor.”
- Would you be interested receiving expert advice on how improve your arrival and/or dismissal processes?
- How is your school’s school zone identified for drivers?
- Does your school have bicycle racks? If yes, do you feel that your bicycle racks are inadequate (poorly placed, poorly designed, poor condition, not the recommended style shown below, etc.)? Please explain.
- Please identify the activities and strategies your school is currently implementing as well as the ones your school would be interested in implementing in the future with support from the Cincinnati SRTS Program.
  - Pedestrian safety education.
  - Bicycle safety education.
  - Personal security education.
  - Education regarding the health benefits of walking and bicycling to school.
  - Education regarding the environmental benefits of walking and bicycling to school.
  - International Walk to School Day.
  - Regular walking and/or bicycling events (e.g., weekly or monthly Walk on Wednesdays).
  - Walking school buses (adult supervised groups of children who regularly walk to/from school together).
  - Bicycle trains (adult supervised groups of children who regularly bicycle to/from together).
  - Mileage clubs or contests (students track miles walked in return for prizes or incentives).
  - Carpools.
  - Speed reduction campaign.
  - No phone zone campaign (to discourage cell phone use while driving).
  - Student travel tallies (using form provided by National Center for Safe Routes to School).
  - Parent surveys (using form provided by National Center for Safe Routes to School).
  - Assessment of walkability and bikeability in the area around the school.
o Observation of school arrival and dismissal.
  o Other activity/strategy (please specify).
  ▪ Does your school currently use crossing guards and/or safety patrollers?
  ▪ Where are crossing guards/safety patrollers located (if already used at your school) or where are they needed (if you would like to implement them in the future)?
  ▪ Are there any organizations affiliated with your school that are working on Safe Routes to School activities? If so, please specify the organization and the activity.
  ▪ Is your school planning on implementing any Safe Routes to School programs in the future? If yes, what programs are they? Would you like help implementing them?

3.3.3 PARTNER SURVEYS

The Consultant Team developed an online survey on Survey Monkey for potential partner organizations that could help implement the Cincinnati SRTS program. The aim of the survey was to identify and encourage partners, and also to better understand the CPS community’s capacity for implementing common non-infrastructure strategies. The survey included questions about the following:

  ▪ The organization’s interest in supporting the Cincinnati SRTS program generally.
  ▪ Which of the 5 Es the organization would be interested in supporting (engineering, education, encouragement, enforcement, and evaluation).
  ▪ The type of support the organization could offer (e.g., financial, volunteer, etc.).
  ▪ Whether the organization would like to focus its SRTS efforts on a specific school or on a particular part of the city.
  ▪ When the organization could begin providing support and how often they could provide it (if applicable).
  ▪ The organization’s primary contact person for matters related to the Cincinnati SRTS program.

3.3.4 PARENT SURVEYS

The Consultant Team collaborated with the Cincinnati Team and with CPS staff to send a survey about walking and bicycling to school to all CPS student households. The survey was created by the National Center for Safe Routes to School and includes questions about the following areas:

  ▪ Student travel modes, distances, and times to and from school.
  ▪ Barriers to walking and bicycling to school.
  ▪ The age at which parents would feel comfortable allowing their child to walk or bicycle to school.
  ▪ How healthy parents perceive walking and bicycling to school to be.
  ▪ How much parents think their child’s school encourages walking and bicycling.

A copy of the parent survey that was prepared by the National Center can be seen here: www.saferoutesinfo.org/program-tools/evaluation-parent-survey.
Typically, districts just send out copies of the survey that was prepared by the National Center, or they will have parents fill out an online version of the survey. However, in the case of Cincinnati, the school district wanted to send parents a Scantron version of the survey so that they could keep survey results on-file with the district. Results of this method are explained under the “Lessons Learned” section in 4.0 Results.

3.3.5 STUDENT TRAVEL TALLIES

A key component of all STPs is administering Student Travel Tallies to get an initial idea of how many students walk and bicycle to school and then to administer follow-up surveys every school year as an evaluation tool to see how the numbers have changed. This is no different for the district-wide process. However, when completing the STP for Cincinnati, the district/Cincinnati Team did not have enough time to send out the initial student surveys. Instead, they will be distributed in October 2012, at the same time as the Parent Surveys. Because these surveys were not completed before the STP was developed, they were not used to help determine the recommended countermeasures. However, they will be key to ongoing evaluation of the SRTS program in Cincinnati.

3.3.6 BI-WEEKLY CINCINNATI CONFERENCE CALLS

Beginning in August 2011, the Cincinnati Team held bi-weekly conference calls to discuss the status of SRTS efforts in Cincinnati, including the development of the district-wide STP. These calls included as many of the Cincinnati Team members that could be present (or that could call in) for that week, including representatives from CPS, Cincinnati Public Health, the City of Cincinnati’s Department of Transportation and Engineering, and the Ohio-Kentucky-Indiana Regional Council of Governments (OKI).

On each call, the Cincinnati Team went through an agenda of items that included giving status updates of the various SRTS efforts that were going on throughout the district. These calls were also a chance for updates to be given on the status of the district-wide STP and for feedback to be given on specific aspects of the STP as needed.

4.0 RESULTS AND RECOMMENDATIONS

Once the methodologies had been tested and refined, the district-wide STP for Cincinnati was able to be completed. The following sections detail the outcomes and lessons learned as a result of creating the Cincinnati STP.

4.1 PROJECT OUTCOMES

As indicated in 2.0 Research Objectives, the primary objective of this research project was to develop a district-wide STP process that could be utilized by a large school district. This was to be done through
the completion of a pilot district-wide STP for CPS. The Project Team submitted the final STP to ODOT on June 4, 2012. The STP was subsequently adopted by the Cincinnati Team members, the CPS Board of Education, and the City of Cincinnati. The other component to this was the completion of a District-wide STP Guide, for use by future large school districts wanting to complete a district-wide STP. Both the District-wide STP Guide and Cincinnati District-wide STP are available on ODOT’s SRTS website (www.dot.state.oh.us/saferoutes) under the “School Travel Plan” section.

The Cincinnati School Travel Plan took approximately one year to complete. It is anticipated that future large district school travel plans could take a little less time to complete, since the initial work on this project included a national survey of best practices in developing large school travel plans. Future planning efforts can benefit from this research and omit this task.

The team identified 19 countermeasures addressing school and city policies, 62 non-infrastructure countermeasures, and 61 infrastructure countermeasures. Of the non-infrastructure countermeasures, 52 are planned to be implemented during the first year after plan adoption, eight are planned to be implemented within two years, and two are planned to be implemented within five years after STP adoption. Of the infrastructure countermeasures, ten are currently being implemented, one is in the process of being completed, and three are already planned for completion; of those remaining, 15 are planned to be implemented within the next two years and 32 are planned to be implemented within the next five years.

4.2 Lessons Learned and Recommendations

In developing the district-wide process and the Cincinnati STP, the Consultant Team learned several lessons and generated some recommendations that are listed in the following sections. The lessons learned and recommendations are broken down into four categories:

- “Pre-conditions for Planning Success” – Items that are in-place before developing a district-wide STP.
- “Lessons from the Planning Process” – Items observed during the methodology development and local information gathering periods.
- “Countermeasure Identification” – Items noted during the countermeasure identification period.
- “Countermeasure Prioritization” – Items noted during countermeasure prioritization.

4.2.1 Pre-conditions for Planning Success

District-level SRTS coordinators play a critical role in STP development and implementation.

The importance of a district-level SRTS coordinator for successful STP development and implementation cannot be overstated. Developing and implementing a district-wide STP for a large school district is significantly more complex and time-intensive than developing a district-wide STP for a small school
district, because it covers more schools, involves more stakeholders (including, in this case, multiple local government jurisdictions), and requires more partners for implementation.

ODOT funded a full-time SRTS coordinator who was employed by CPS for the duration of the STP planning period. The CPS SRTS Coordinator operated as the chief point of contact for the planning process, providing a critical link between the Project Team, the Cincinnati Team, the CPS Central Office, local school officials, and key stakeholders. The CPS SRTS Coordinator also managed implementation of the district’s SRTS program and lead efforts to educate the broader CPS community regarding SRTS goals and the STP process. It is unlikely that the Cincinnati STP could have been developed within the timeframe and budget established for this project without the assistance of a full-time SRTS coordinator.

Recommendations:

- If a large school district is selected for STP planning assistance but does not currently have a full-time, district-level SRTS coordinator, ODOT should provide funding for a district-level SRTS Coordinator who is employed by the school district for the duration of STP planning period at minimum.

District-wide STPs cannot be developed and implemented without strong support from school district central offices.

The Cincinnati STP could not have been completed without strong support from the CPS’s Central Office. CPS’s Chief Operating Officer (COO) was an active member of the Cincinnati Team throughout the planning process. The COO took a holistic view of CPS’s responsibility for student transportation that included walking and bicycling alongside busing. The COO was able to provide valuable insight into district operations and helped the Consultant Team and Cincinnati Team members overcome bureaucratic hurdles that might otherwise have scuttled or substantially slowed development and implementation of the STP.

Recommendations:

- ODOT should verify support from district administration before providing STP planning assistance to large school districts.
- ODOT should require that the local team includes at least one district administrator.

It is important that local government staff be actively engaged in STP development.

It is important to include local government officials in STP development regardless of the number of schools covered, since many countermeasures must be implemented directly by local government or with the local government approval and support. However, large district STPs will likely require a higher level of local government involvement throughout the planning process due to their scale. Otherwise, a
large number of countermeasures may be identified that local government may not support or considers infeasible.

The Cincinnati Team included two local government officials, one from the Cincinnati Health Department and one from the Cincinnati Transportation and Engineering Department. These officials regularly participated in Cincinnati Team meetings, and their involvement was crucial to identifying infrastructure and non-infrastructure countermeasures that the city could embrace. It is important that the representatives identified are either empowered to make decisions on behalf of their agencies, or are able to confirm their agency’s reactions to a proposed concept or recommendation in a timely manner. This will help maintain project efficiency and momentum by allowing the team to quickly come to an understanding on an issue and move on.

**Recommendations:**

- ODOT should require involvement of local government officials on the local team as a condition of planning assistance. Agencies that should be represented on the committee include the transportation department, planning department, health department, and police department. It is important that local government officials be able to communicate the agency’s position on a given proposed countermeasure and that they regularly attend the local team meetings.

**Pre-existing local team and stakeholder engagement shortens the timeframe for STP development.**

The Cincinnati Team had been working on SRTS issues for three years prior to launching the STP planning effort, and many of the key stakeholders were either on the committee or already involved in supporting SRTS program implementation when planning process started. Without this level of pre-existing engagement, the Project Team would have had to spend far more time educating the Cincinnati Team members about SRTS, identifying key stakeholders, and building support and enthusiasm for the planning process.

**Recommendations:**

- ODOT should include pre-existing local team and stakeholder engagement as a criterion when selecting large school districts for STP planning assistance.

**The prospect of funding for plan implementation motivates engagement.**

Developing a district-wide STP requires substantial effort and time. Key parties to development of the Cincinnati STP knew at the start of the planning process that there was a strong possibility ODOT would fund at least some of the countermeasures identified through the process. It is unlikely that these parties would have manifested the same level of support and engagement had the prospect of funding been less certain.
Recommendations:

- ODOT should clearly communicate to large school district applicants for STP planning assistance how much funding is likely to be available for plan implementation and what criteria ODOT will use to determine whether and how the funding might be allocated to the district.

4.2.2 Lessons from the Planning Process

STP kick-off meetings are an opportunity to calibrate expectations, collect feedback from key stakeholders, launch the STP development process, and publicize SRTS.

The Project Team conducted a kickoff meeting with the Cincinnati Team at John P. Parker Elementary School on May 24, 2011. The meeting was an opportunity for key project stakeholders to discuss the general planning process and the travel plan methodology for large school districts. Stakeholders also discussed their goals and objectives for the project. Lastly, the Cincinnati Team provided an overview of the Cincinnati planning context, including related initiatives, key project challenges and available resources.

This kickoff meeting also provided an opportunity for the Project Team to gain a better understanding of relevant work to date on SRTS in the region and have a preliminary discussion of additional partners or stakeholders who should be engaged in the process. This allowed all parties involved to focus their efforts on substantive tasks that moved the project forward.

The Ohio SRTS Coordinator attended the meeting, which was also covered by local news. This high profile kickoff reinforced the importance of the project and built energy to carry the work forward.

Recommendations:

- The local team should be prepared to provide an overview of relevant activities to the Project Team at the kickoff meeting.
- If ODOT provides STP planning assistance to a large district, then the Ohio SRTS Coordinator should attend the large district STP kick-off meeting. A high profile kickoff is recommended as it demonstrates the importance of the project to the school district, the community and ODOT.

It is important to adequately communicate the timeframe for STP development and implementation to local team members and key stakeholders.

Large district STPs can take a year or more to develop, and some countermeasures may take years to fully implement. People unfamiliar with transportation planning are unlikely to anticipate such lengthy timetables, which can lead to disappointment and disaffection with the planning process if expectations are not effectively recalibrated at the beginning of the planning process.

Recommendations:
The project team should emphasize the timetable for development and implementation of the STP during the kick-off meeting and should reiterate the timetable in subsequent communications with the local team and key stakeholders.

**It is important to communicate to the local team members and key stakeholders what the district-wide STP will cover and what it will not cover.**

Given constraints on time and budget, it is not possible for large district STPs to provide the same level of detail for individual schools as single school STPs. The local team members and key stakeholders may, however, expect the large district STP to be a scaled-up version of a single school STP (i.e., more schools, same level of detail), particularly if they have previous experience with single school STPs. It is, therefore, important to explain the differences between large district STPs and single school STPs at the outset of the planning process.

**Recommendations:**

- The project team should explain the differences between large district STPs and single school STPs during the kick-off meeting and should reiterate these differences in subsequent communications with the local team and key stakeholders.

4.2.3 **Countermeasure Identification**

**Online surveys are an effective way to collect input from local school administrators in large districts.**

Feedback from local school administrators is essential to a large district plan. Local schools influence conditions for walking and bicycling in a variety of ways, including through: 1) policies and procedures related to walking and bicycling; 2) policies and procedures related to school arrival and dismissal; 3) communications with students and parents; 4) classroom instruction; 5) extracurricular activities; 6) school-sponsored events; and 7) school wellness committees. Local school administrators are in the best position to report on these issues; however, it can be difficult to obtain feedback from a large number of local school administrators. In single school or small district STP, local school administrators might participate directly in the local team or might provide feedback in one-on-one interviews. The Project Team decided this approach would be not be feasible in a large school district, given constraints on time and budget, and opted instead to send local school administrators an online survey.

Local school administrators from 40 out of 48 CPS K-8 schools completed the survey. Obtaining similar information through one-on-one interviews would have taken much more time, and the response rate might not have been so high due the difficulty of coordinating schedules. For these reasons, sending principals an online survey appears to have been effective approach to obtaining feedback from local school administrators in a large school district.
Recommendations:

- Project teams developing large district STPs are advised to collect feedback from local school administrators using an online survey. It is important that the online survey be as short and to the point as possible, while still providing the project team with the information it needs to develop the STP.

When collecting info from local school administrators it is important to provide additional reminders.

Local school administrators must respond to multiple issues, and SRTS will not always rise to the top. Although the online survey for local school administrators was much more time-efficient than collecting feedback via one-on-one interviews, achieving such a high rate of participation required repeated follow-ups to ensure that completing the survey remained on local school administrators’ “to do” list.

Recommendations:

- Project teams that use online surveys to collect feedback from local school administrators should build in time for follow-ups.

The parent survey provided by the national center for safe routes to school is an effective way to collect feedback from parents.

Parent or caregiver input is crucial for SRTS program success. Parents and caregivers decide how children get to and from school, model pedestrian and bicycle behaviors, and influence the travel environment near schools by following (or failing to follow) traffic laws and arrival/dismissal procedures. Parents and caregivers typically understand the barriers to walking and bicycling to school better than school or district staff, and are very often the ones who plan and implement SRTS activities.

The Parent Survey developed by the National Center for Safe Routes for School is a valuable tool for collecting input from parents and caregivers regarding student travel patterns and parents/caregiver attitudes and concerns regarding walking and biking to school. The survey has been professionally vetted and has been used by communities across the country. The National Center will process Parent Survey at no cost to local communities and provides online tools that allow the processed data to be downloaded, summarized (e.g., at the school or district level), and compared. Using the Parent Survey form and submitted the forms to the National Center also contributes to national-level knowledge regarding student travel behaviors, parent attitudes regarding walking and bicycling to school, and related trends.

Over 4,400 Parent Surveys were returned out of approximately 35,000 sent out, for a response rate of approximately 13 percent district-wide. Response rates varied significantly by school, from 0% at some schools to over 40% at others. The district-wide response rate was not as high as the Project Team had
hoped, and the extremely low response rates at some schools made it difficult to draw conclusions specific to those schools; however, the data collected through the Parent Survey did provide valuable insight into student travel patterns and parent/caregiver concerns at a district-wide level (the focus of a district-wide STP), and will serve as a baseline against which to measure the CPS SRTS program’s progress over time.

Recommendations:

- ODOT currently requires that Parent Survey data be collected as part of the STP development process. This requirement should be maintained. Longer processing times should be expected given the relatively large volume of surveys.

It is important to be aware of the school district policies regarding survey research.

CPS required that all surveys be reviewed by district administration before they could be sent out. In addition, CPS required that all data be collected in Scantron format and processed internally before it could be sent to the National Center for Safe Routes to School. This process took much longer than anticipated, with the result that the data collected through the parent survey was not available to the Consultant Team until shortly before the STP was finalized. The data was still worth collecting, but it would have been beneficial to have it sooner.

Recommendations:

- The project team should fully understand the district’s survey research policy and associated timetable before establishing a timetable for STP development.

Potential partners should be identified early in the STP development process.

Partners are extremely important for implementing the non-infrastructure elements of large-district STPs. Consequently, identifying potential partners early on in the STP development process, and understanding their capacities and interests, can help the project team craft non-infrastructure countermeasures that are well-suited to the local community’s capacity to implement them.

The Project Team understood this and developed an online survey that it hoped would provide insight regarding potential partners; however, only eight surveys were returned. Several factors contributed to this low response rate, including the timing of the survey. Additionally, several partners were already working with the Cincinnati Team when the Consultant Team sent out the partner surveys, so many of them may not have felt the need to respond since they were already involved in SRTS efforts. The survey distributed to potential partners until shortly before the winter holidays, a time when it can be very difficult to reach people. The Cincinnati Team discussed strategies for collecting additional surveys after the winter holidays; however, by that time the Cincinnati Team and the Project Team were fully consumed with developing the draft STP.
Recommendations:

- Distributing an online survey to potential partners might be an effective way of identifying partners for STP implementation and understanding a community’s implementation capacity. If the project team decides to pursue this approach, it should send the partner survey out early in the STP development process.
- Project teams should set aside time at the beginning of the STP development process to brainstorm potential partner organizations with the local team members and identify contacts in each of the identified partner organizations to whom the survey can be sent. The local team members should be tasked with reaching out to potential partners they have identified as this personal relationship can be effective in obtaining participation.

Walk audits are not feasible for all schools in a district-wide STP; however, they provide an opportunity for the project team to train local community members to conduct walk audits without project team assistance so that they can collect the valuable information available through walk audits.

Due to constraints on budget and time, the Project Team conducted walk audits at 12 schools. The primary goal of the walk audits was to analyze the schools’ walking and biking environments. In addition, the Project Team also taught several individuals how to conduct walk audits. This training will enable the Cincinnati Team to conduct walk audits at additional schools without the Project Team’s assistance. The Project Team also prepared a worksheet to guide walk audit participants through the walk audit process; online maps for recording and updating the data collected were also created for the Cincinnati Team’s use.

Recommendations:

- Early in the process, the Project Team and the local team should identify key schools that would benefit the most from a walk audit.
- It is not feasible for the Consultant Team to conduct walk audits at every school in a large district. If walk audits are desired at all schools in the district, the Project Team should make sure that enough local team members are trained so that more walk audits can be conducted.
- Those conducting walk audits should understand how to conduct a walk audit and be comfortable doing so. They should be able to recognize and note key issues on walk audits so that they can easily input this data into a GIS platform.

4.2.4 COUNTERMEASURE PRIORITIZATION

Establishing a formal prioritization method for infrastructure countermeasure prioritization was an effective method of distinguishing high priority infrastructure projects.
STP countermeasures are typically prioritized by the local team. The local team may consider various prioritization criteria as they assign priorities, but these criteria are often not quantified. The Consultant Team felt this approach would be infeasible for the Cincinnati STP due to the large number of infrastructure countermeasures likely to be generated in a district with 48 K-8 schools. Instead, the Consultant Team developed a methodology that allowed for Cincinnati Team input but relied heavily on objective data to operationalize the prioritization process. A key consideration in developing the matrix was determining which data were readily available at the local level and could easily be incorporated into the prioritization matrix. The criteria were defined and weighted in consultation with the Ohio SRTS Coordinator, with the hope that the weighted scores would distinguish projects that had both the support of the Cincinnati Team and good chance of receiving ODOT funding.

The time spent developing the prioritization tool was ultimately worth it, considering that that just under 200 infrastructure projects were initially identified and needed to be prioritized. This matrix can now be used by other communities to prioritize SRTS infrastructure projects.

**Recommendations:**

- Project teams developing large-district plans can benefit by using the prioritization matrix developed by the Consultant Team. However, it will be important for these teams to determine early on whether the data needed to operationalize prioritization criteria are locally available, so that alternative data may be substituted, if needed. In addition, project teams may need to adjust the methodology for deriving raw scores to suit locally available data.

**The method developed by the Consultant Team for prioritizing policy and non-infrastructure countermeasures worked well.**

Presenting the Cincinnati Team with sortable table of non-infrastructure countermeasures helped the Cincinnati Team prioritize and think in greater detail about implementation. This table included columns for local team effort, external partner needed, likelihood of obtaining partner support, as well as cost and timeframe and the Consultant Team pre-populated most elements of the table, including the potential priority projects. Even with this advance work, it took two 90-minute Cincinnati Team meetings to talk through and prioritize the countermeasures identified.

**Recommendations:**

- The Consultant Team should provide the local team with sufficient guidance regarding non-infrastructure and policy prioritization. The table developed by the Consultant Team can be used by other project teams to help provide this guidance.
5.0 CONCLUSIONS

The primary objective of this research project was to develop a district-wide STP process that could be utilized by a large school district. Limited attempts have been made to create district-wide STP’s in large cities across the country. The Cincinnati STP is the first district-wide STP for a large school district in Ohio and is the first large district STP nationally to incorporate both infrastructure and non-infrastructure items.

The ability to plan improvements for almost 50 schools covering almost 100 square miles became feasible through the use of Geographic Information Systems (GIS) and Google Earth. Analysis in GIS allowed for the identification of “priority corridors” where infrastructure improvements could be focused and affect the greatest number of schoolchildren. Google Earth, a mapping program available for free on the internet, provided the ability to share potential improvements and foster discussion between the consultant and the many stakeholders on the Cincinnati Team.

Above all, the ability to create an STP with the promise of lasting success depended on the human and built environment already existing in Cincinnati. Great leaders from government officials and school principals to parents and students provided the ongoing commitment to improve their communities. The Cincinnati Team that was in place prior to the beginning of the project was engaged in developing the STP process throughout the study. Furthermore, it can’t be understated how important it is that many schoolchildren already live within one mile of their schools and walk to and from school. This results in an identifiable and attainable number of obstacles to be overcome through infrastructure countermeasures, policies, and programs. If many students live a significant distance from school, there is little that can be done in an STP to avoid simply transporting those students in buses or private automobiles.

Cincinnati proved an optimal location to develop a district-wide STP methodology. Cincinnati schools and neighborhoods will benefit from the resulting STP. Many other large cities in Ohio stand to benefit from the methodology that has been developed as a result of this research project.

6.0 IMPLEMENTATION PLAN

The Project Team, in collaboration with the Cincinnati Team, has developed guidelines for creating school travel plans for large school districts. This resource should be made available to other communities interested in developing travel plans, and ODOT should identify additional jurisdictions that are ready to undertake this effort. When considering candidates, ODOT should refer to the ingredients for success in this report. Perhaps the most important ingredient being a community that is already working towards this goal, and has commitment to collaboration by high level officials from both the school district and the local government. In addition, ODOT should ensure that a local SRTS
coordinator has been identified to help lead the school district’s participation in the process. If necessary, ODOT should find ways to help underwrite this position— at least for the duration of the plan development.

ODOT should continue to provide school travel plan development assistance to large school districts as resources allow. Given the level of effort required by the Ohio SRTS Coordinator and other ODOT staff, it is suggested that two large school district planning projects running concurrently should be the limit, although more could be considered with appropriate staffing availability.

The District-wide School Travel Plan Guide that is being developed as part of this project will be a key resource in ensuring efficiency in plan development and relative consistency in plan content. ODOT should provide training on the use of this Guide to transportation planning and design firms who will be called on to develop these large school district travel plans.

Lastly, ODOT should evaluate the effectiveness of the Cincinnati District-wide STP, as well as other school travel plans, in achieving the overall goals of the program of increasing the number of students who walk and bicycle to school, as well as improving the safety of those who currently walk or bicycle. There are a wide variety of metrics that could be used, including changes in the rate of student walking and bicycling to school, numbers of trainings in bicycle and pedestrian safety that students receive, number or dollar value of different infrastructure projects, the number of students who could potentially benefit from an improvement, and even qualitative feedback from planning assistance recipients on the value of the process. This information should then be incorporated into future refinements to the process, ensuring that future communities benefit from the experiences of their predecessors.
7.0 REFERENCES

REFERENCES FROM INITIAL RESEARCH


**REFERENCES FROM METHODOLOGY DEVELOPMENT**


**ADDITIONAL RESOURCES**
